```
Adsorbed_Cd_Subsoil[Field1](t) = Adsorbed_Cd_Subsoil[Field1](t - dt) +
(Cd_Ads_DesSubsoil[Field1]) * dt
INIT Adsorbed_Cd_Subsoil[Field1] = (70+55)
Adsorbed_Cd_Subsoil[Field2](t) = Adsorbed_Cd_Subsoil[Field2](t - dt) +
(Cd_Ads_DesSubsoil[Field2]) * dt
INIT Adsorbed_Cd_Subsoil[Field2] = (123+84)
Adsorbed_Cd_Subsoil[Field3](t) = Adsorbed_Cd_Subsoil[Field3](t - dt) +
(Cd_Ads_DesSubsoil[Field3]) * dt
INIT Adsorbed_Cd_Subsoil[Field3] = (99+80)
Adsorbed_Cd_Subsoil[Field4](t) = Adsorbed_Cd_Subsoil[Field4](t - dt) +
(Cd_Ads_DesSubsoil[Field4]) * dt
INIT Adsorbed_Cd_Subsoil[Field4] = (144+89)
Adsorbed_Cd_Subsoil[Field5](t) = Adsorbed_Cd_Subsoil[Field5](t - dt) +
(Cd_Ads_DesSubsoil[Field5]) * dt
INIT Adsorbed_Cd_Subsoil[Field5] = (112+169)
Adsorbed_Cd_Subsoil[Field6](t) = Adsorbed_Cd_Subsoil[Field6](t - dt) +
(Cd_Ads_DesSubsoil[Field6]) * dt
INIT Adsorbed_Cd_Subsoil[Field6] = (100+113)
Cd_Ads_DesSubsoil[Field] = -0.01*((Cd_Ads_Subsoil_g_per_kg_soil[Field]-
(Cd_Kd_Subsoil*Cd_Subsoil_Conc_g_per_dm3[Field]))*Bulkdensity[Field])-
(0*Cd_Upptag_subsoil_per_Field[Field])
Adsorbed_Cd_Topsoil[Field1](t) = Adsorbed_Cd_Topsoil[Field1](t - dt) +
(Cd_Inflows_to_Ads_Cd_Topsoil[Field1] + Ads_DesCd_Topsoil[Field1]) * dt
INIT Adsorbed_Cd_Topsoil[Field1] = 202
Adsorbed_Cd_Topsoil[Field2](t) = Adsorbed_Cd_Topsoil[Field2](t - dt) +
(Cd_Inflows_to_Ads_Cd_Topsoil[Field2] + Ads_DesCd_Topsoil[Field2]) * dt
INIT Adsorbed_Cd_Topsoil[Field2] = 261
Adsorbed_Cd_Topsoil[Field3](t) = Adsorbed_Cd_Topsoil[Field3](t - dt) +
(Cd_Inflows_to_Ads_Cd_Topsoil[Field3] + Ads_DesCd_Topsoil[Field3]) * dt
INIT Adsorbed_Cd_Topsoil[Field3] = 180
Adsorbed_Cd_Topsoil[Field4](t) = Adsorbed_Cd_Topsoil[Field4](t - dt) +
(Cd_Inflows_to_Ads_Cd_Topsoil[Field4] + Ads_DesCd_Topsoil[Field4]) * dt
INIT Adsorbed_Cd_Topsoil[Field4] = 263
Adsorbed_Cd_Topsoil[Field5](t) = Adsorbed_Cd_Topsoil[Field5](t - dt) +
(Cd_Inflows_to_Ads_Cd_Topsoil[Field5] + Ads_DesCd_Topsoil[Field5]) * dt
INIT Adsorbed_Cd_Topsoil[Field5] = 328
Adsorbed_Cd_Topsoil[Field6](t) = Adsorbed_Cd_Topsoil[Field6](t - dt) +
(Cd_Inflows_to_Ads_Cd_Topsoil[Field6] + Ads_DesCd_Topsoil[Field6]) * dt
INIT Adsorbed_Cd_Topsoil[Field6] = 239
Cd_Inflows_to_Ads_Cd_Topsoil[Field] =
Cd_Manure_Seeds_Deposition_Pesticide_Fieldwise[Field]
Ads_DesCd_Topsoil[Field] = -0.01*((Cd_Ads_Matj_g_per_kg_jord[Field]-
Cd_Kd_Topsoil*Cd_Topsoil_Conc_g_per_dm3[Field])*Bulkdensity[Field])-
(0*Cd_Upptag_topsoil_per_Field[Field])
Adsorbed_Zn_topsoil[Field1](t) = Adsorbed_Zn_topsoil[Field1](t - dt) +
(Zn_Inflows_to_adsorbed_Zn_topsoil[Field1] + Zn_topsoil_Ads_Des[Field1]) *
dt
INIT Adsorbed_Zn_topsoil[Field1] = 98000
Adsorbed_Zn_topsoil[Field2](t) = Adsorbed_Zn_topsoil[Field2](t - dt) +
(Zn_Inflows_to_adsorbed_Zn_topsoil[Field2] + Zn_topsoil_Ads_Des[Field2]) *
```

```
dt
INIT Adsorbed_Zn_topsoil[Field2] = 99000
Adsorbed_Zn_topsoil[Field3](t) = Adsorbed_Zn_topsoil[Field3](t - dt) +
(Zn_Inflows_to_adsorbed_Zn_topsoil[Field3] + Zn_topsoil_Ads_Des[Field3]) *
dt
INIT Adsorbed_Zn_topsoil[Field3] = 74160
Adsorbed_Zn_topsoil[Field4](t) = Adsorbed_Zn_topsoil[Field4](t - dt) +
(Zn_Inflows_to_adsorbed_Zn_topsoil[Field4] + Zn_topsoil_Ads_Des[Field4]) *
dt
INIT Adsorbed_Zn_topsoil[Field4] = 76000
Adsorbed_Zn_topsoil[Field5](t) = Adsorbed_Zn_topsoil[Field5](t - dt) +
(Zn_Inflows_to_adsorbed_Zn_topsoil[Field5] + Zn_topsoil_Ads_Des[Field5]) *
dt
INIT Adsorbed_Zn_topsoil[Field5] = 109100
Adsorbed_Zn_topsoil[Field6](t) = Adsorbed_Zn_topsoil[Field6](t - dt) +
(Zn_Inflows_to_adsorbed_Zn_topsoil[Field6] + Zn_topsoil_Ads_Des[Field6]) *
dt
INIT Adsorbed_Zn_topsoil[Field6] = 79000
Zn_Inflows_to_adsorbed_Zn_topsoil[Field] =
Zn_Manure_Seeds_Deposition_Pesticid_Fieldwise[Field]
Zn_topsoil_Ads_Des[Field] = -0.01*((Zn_Ads_topsoil_g_Zn_per_kg_soil[Field]-
Zn_Kd_topsoil*Zn_topsoil_conc_g_per_dm3[Field])*Bulkdensity[Field])-
(0*Zn_Upptag_topsoil_per_Field[Field])
Bought_Cd(t) = Bought_Cd(t - dt) + (Inflow_of_Cd - Emptying_of_bought_Cd) *
dt
INIT Bought_Cd = 0
Inflow_of_Cd =
Cd_Beetpulp+Cd_Mineral_and_concentrate+Cd_Simulated_Barley_Import+Cd_in_hei
fers+Cd_Sawdust+Sum_of_Cd_Seeds_Total+Sum_of_mineral_fertiliser_use+Sum_of_
Cd_Pesticide_use+Sum_of_Cd_lime_use+Cd_Water_Herd
Emptying_of_bought_Cd = IF(Time_for_emptying_of_bought_and_sold_Cd>0) THEN
(PULSE(Bought_Cd)) ELSE (0)
Csubsoiles(t) = Csubsoiles(t - dt) + (Csubsoiling - Csubsoiles_sold) * dt
INIT Csubsoiles = 3
Csubsoiling = Cows*0.07
Csubsoiles_sold = Csubsoiles
Cd_Barley_Storage(t) = Cd_Barley_Storage(t - dt) +
(Cd_Simulated_Barley_Import + Cd_Homegrown_Barley - Cd_barley) * dt
INIT Cd_Barley_Storage = 1644*Cows*0.00001
Cd_Simulated_Barley_Import = (Cd_Total_barley_requirements-
Cd_Barley_Storage)
Cd_Homegrown_Barley = Cd_Sum_array_barley
Cd_barley = Cd_Total_barley_requirements
Cd_Barley_Storage_1[Field,Crop](t) = Cd_Barley_Storage_1[Field,Crop](t -
dt) + (Cd_Barley_per_ha_to_total[Field,Crop]) * dt
INIT Cd_Barley_Storage_1[Field,Crop] = 0
Cd_Barley_per_ha_to_total[Field1,Oats&pea] = (1-
Proportion_Cd_i_barleystraw)*Cd_Harvested_Barley_and_straw[Field1,Oats&pea]
*5.82
Cd_Barley_per_ha_to_total[Field1,LeyI] = (1-
```

```
Proportion_Cd_i_barleystraw)*Cd_Harvested_Barley_and_straw[Field1,LeyI]*5.8
2
Cd_Barley_per_ha_to_total[Field1,LeyII] = (1-
Proportion_Cd_i_barleystraw)*Cd_Harvested_Barley_and_straw[Field1,LeyII]*5.
82
Cd_Barley_per_ha_to_total[Field1,LeyIII] = (1-
Proportion_Cd_i_barleystraw)*Cd_Harvested_Barley_and_straw[Field1,LeyIII]*5
.82
Cd_Barley_per_ha_to_total[Field1,Barley] = (1-
Proportion_Cd_i_barleystraw)*Cd_Harvested_Barley_and_straw[Field1,Barley]*5
.82
Cd_Barley_per_ha_to_total[Field1,Potato] = (1-
Proportion_Cd_i_barleystraw)*Cd_Harvested_Barley_and_straw[Field1,Potato]*5
.82
Cd_Barley_per_ha_to_total[Field2,Oats&pea] = (1-
Proportion_Cd_i_barleystraw)*Cd_Harvested_Barley_and_straw[Field2,Oats&pea]
*6.22
Cd_Barley_per_ha_to_total[Field2,LeyI] = (1-
Proportion_Cd_i_barleystraw)*Cd_Harvested_Barley_and_straw[Field2,LeyI]*6.2
2
Cd_Barley_per_ha_to_total[Field2,LeyII] = (1-
Proportion_Cd_i_barleystraw)*Cd_Harvested_Barley_and_straw[Field2,LeyII]*6.
22
Cd_Barley_per_ha_to_total[Field2,LeyIII] = (1-
Proportion_Cd_i_barleystraw)*Cd_Harvested_Barley_and_straw[Field2,LeyIII]*6
.22
Cd_Barley_per_ha_to_total[Field2,Barley] = (1-
Proportion_Cd_i_barleystraw)*Cd_Harvested_Barley_and_straw[Field2,Barley]*6
.22
Cd_Barley_per_ha_to_total[Field2,Potato] = (1-
Proportion_Cd_i_barleystraw)*Cd_Harvested_Barley_and_straw[Field2,Potato]*6
.22
Cd_Barley_per_ha_to_total[Field3,Oats&pea] = (1-
Proportion_Cd_i_barleystraw)*Cd_Harvested_Barley_and_straw[Field3,Oats&pea]
*7.75
Cd_Barley_per_ha_to_total[Field3,LeyI] = (1-
Proportion_Cd_i_barleystraw)*Cd_Harvested_Barley_and_straw[Field3,LeyI]*7.7
5
Cd_Barley_per_ha_to_total[Field3,LeyII] = (1-
Proportion_Cd_i_barleystraw)*Cd_Harvested_Barley_and_straw[Field3,LeyII]*7.
75
Cd_Barley_per_ha_to_total[Field3,LeyIII] = (1-
Proportion_Cd_i_barleystraw)*Cd_Harvested_Barley_and_straw[Field3,LeyIII]*7
.75
Cd_Barley_per_ha_to_total[Field3,Barley] = (1-
Proportion_Cd_i_barleystraw)*Cd_Harvested_Barley_and_straw[Field3,Barley]*7
.75
Cd_Barley_per_ha_to_total[Field3,Potato] = (1-
Proportion_Cd_i_barleystraw)*Cd_Harvested_Barley_and_straw[Field3,Potato]*7
.75
```

```
Cd_Barley_per_ha_to_total[Field4,Oats&pea] = (1-
Proportion_Cd_i_barleystraw)*Cd_Harvested_Barley_and_straw[Field4,Oats&pea]
*6.3
Cd_Barley_per_ha_to_total[Field4,LeyI] = (1-
Proportion_Cd_i_barleystraw)*Cd_Harvested_Barley_and_straw[Field4,LeyI]*6.3
Cd_Barley_per_ha_to_total[Field4,LeyII] = (1-
Proportion_Cd_i_barleystraw)*Cd_Harvested_Barley_and_straw[Field4,LeyII]*6.
3
Cd_Barley_per_ha_to_total[Field4,LeyIII] = (1-
Proportion_Cd_i_barleystraw)*Cd_Harvested_Barley_and_straw[Field4,LeyIII]*6
.3
Cd_Barley_per_ha_to_total[Field4,Barley] = (1-
Proportion_Cd_i_barleystraw)*Cd_Harvested_Barley_and_straw[Field4,Barley]*6
.3
Cd_Barley_per_ha_to_total[Field4,Potato] = (1-
Proportion_Cd_i_barleystraw)*Cd_Harvested_Barley_and_straw[Field4,Potato]*6
.3
Cd_Barley_per_ha_to_total[Field5,Oats&pea] = (1-
Proportion_Cd_i_barleystraw)*Cd_Harvested_Barley_and_straw[Field5,Oats&pea]
*7.35
Cd_Barley_per_ha_to_total[Field5,LeyI] = (1-
Proportion_Cd_i_barleystraw)*Cd_Harvested_Barley_and_straw[Field5,LeyI]*7.3
5
Cd_Barley_per_ha_to_total[Field5,LeyII] = (1-
Proportion_Cd_i_barleystraw)*Cd_Harvested_Barley_and_straw[Field5,LeyII]*7.
35
Cd_Barley_per_ha_to_total[Field5,LeyIII] = (1-
Proportion_Cd_i_barleystraw)*Cd_Harvested_Barley_and_straw[Field5,LeyIII]*7
.35
Cd_Barley_per_ha_to_total[Field5,Barley] = (1-
Proportion_Cd_i_barleystraw)*Cd_Harvested_Barley_and_straw[Field5,Barley]*7
.35
Cd_Barley_per_ha_to_total[Field5,Potato] = (1-
Proportion_Cd_i_barleystraw)*Cd_Harvested_Barley_and_straw[Field5,Potato]*7
.35
Cd_Barley_per_ha_to_total[Field6,Oats&pea] = (1-
Proportion_Cd_i_barleystraw)*Cd_Harvested_Barley_and_straw[Field6,Oats&pea]
*5.38
Cd_Barley_per_ha_to_total[Field6,LeyI] = (1-
Proportion_Cd_i_barleystraw)*Cd_Harvested_Barley_and_straw[Field6,LeyI]*5.3
8
Cd_Barley_per_ha_to_total[Field6,LeyII] = (1-
Proportion_Cd_i_barleystraw)*Cd_Harvested_Barley_and_straw[Field6,LeyII]*5.
38
Cd_Barley_per_ha_to_total[Field6,LeyIII] = (1-
Proportion_Cd_i_barleystraw)*Cd_Harvested_Barley_and_straw[Field6,LeyIII]*5
.38
Cd_Barley_per_ha_to_total[Field6,Barley] = (1-
Proportion_Cd_i_barleystraw)*Cd_Harvested_Barley_and_straw[Field6,Barley]*5
.38
```

```
Cd_Barley_per_ha_to_total[Field6,Potato] = (1-
Proportion_Cd_i_barleystraw)*Cd_Harvested_Barley_and_straw[Field6,Potato]*5
.38
Cd_Fertilisation_II[Field,Crop](t) = Cd_Fertilisation_II[Field,Crop](t -
dt) + (Cd_Urine_spreadning_per_ha[Field,Crop] +
Cd_Mineral_fertiliser_flow[Field,Crop]) * dt
INIT Cd_Fertilisation_II[Field,Crop] = 0
Cd_Urine_spreadning_per_ha[Field1,Oats&pea] =
Cd_Urinematris[Field1,Oats&pea]/5.82
Cd_Urine_spreadning_per_ha[Field1,LeyI] = Cd_Urinematris[Field1,LeyI]/5.82
Cd_Urine_spreadning_per_ha[Field1,LeyII] = Cd_Urinematris[Field1,LeyII]/
5.82
Cd_Urine_spreadning_per_ha[Field1,LeyIII] = Cd_Urinematris[Field1,LeyIII]/
5.82
Cd_Urine_spreadning_per_ha[Field1,Barley] = Cd_Urinematris[Field1,Barley]/
5.82
Cd_Urine_spreadning_per_ha[Field1,Potato] = Cd_Urinematris[Field1,Potato]/
5.82
Cd_Urine_spreadning_per_ha[Field2,Oats&pea] =
Cd_Urinematris[Field2,Oats&pea]/6.22
Cd_Urine_spreadning_per_ha[Field2,LeyI] = Cd_Urinematris[Field2,LeyI]/6.22
Cd_Urine_spreadning_per_ha[Field2,LeyII] = Cd_Urinematris[Field2,LeyII]/
6.22
Cd_Urine_spreadning_per_ha[Field2,LeyIII] = Cd_Urinematris[Field2,LeyIII]/
6.22
Cd_Urine_spreadning_per_ha[Field2,Barley] = Cd_Urinematris[Field2,Barley]/
6.22
Cd_Urine_spreadning_per_ha[Field2,Potato] = Cd_Urinematris[Field2,Potato]/
6.22
Cd_Urine_spreadning_per_ha[Field3,Oats&pea] =
Cd_Urinematris[Field3,Oats&pea]/7.75
Cd_Urine_spreadning_per_ha[Field3,LeyI] = Cd_Urinematris[Field3,LeyI]/7.75
Cd_Urine_spreadning_per_ha[Field3,LeyII] = Cd_Urinematris[Field3,LeyII]/
7.75
Cd_Urine_spreadning_per_ha[Field3,LeyIII] = Cd_Urinematris[Field3,LeyIII]/
7.75
Cd_Urine_spreadning_per_ha[Field3,Barley] = Cd_Urinematris[Field3,Barley]/
7.75
Cd_Urine_spreadning_per_ha[Field3,Potato] = Cd_Urinematris[Field3,Potato]/
7.75
Cd_Urine_spreadning_per_ha[Field4,Oats&pea] =
Cd_Urinematris[Field4,Oats&pea]/6.3
Cd_Urine_spreadning_per_ha[Field4,LeyI] = Cd_Urinematris[Field4,LeyI]/6.3
Cd_Urine_spreadning_per_ha[Field4,LeyII] = Cd_Urinematris[Field4,LeyII]/6.3
Cd_Urine_spreadning_per_ha[Field4,LeyIII] = Cd_Urinematris[Field4,LeyIII]/
6.3
Cd_Urine_spreadning_per_ha[Field4,Barley] = Cd_Urinematris[Field4,Barley]/
6.3
Cd_Urine_spreadning_per_ha[Field4,Potato] = Cd_Urinematris[Field4,Potato]/
6.3
```

```
Cd_Urine_spreadning_per_ha[Field5,Oats&pea] =
Cd_Urinematris[Field5,Oats&pea]/7.35
Cd_Urine_spreadning_per_ha[Field5,LeyI] = Cd_Urinematris[Field5,LeyI]/7.35
Cd_Urine_spreadning_per_ha[Field5,LeyII] = Cd_Urinematris[Field5,LeyII]/
7.35
Cd_Urine_spreadning_per_ha[Field5,LeyIII] = Cd_Urinematris[Field5,LeyIII]/
7.35
Cd_Urine_spreadning_per_ha[Field5,Barley] = Cd_Urinematris[Field5,Barley]/
7.35
Cd_Urine_spreadning_per_ha[Field5,Potato] = Cd_Urinematris[Field5,Potato]/
7.35
Cd_Urine_spreadning_per_ha[Field6,Oats&pea] =
Cd_Urinematris[Field6,Oats&pea]/5.38
Cd_Urine_spreadning_per_ha[Field6,LeyI] = Cd_Urinematris[Field6,LeyI]/5.38
Cd_Urine_spreadning_per_ha[Field6,LeyII] = Cd_Urinematris[Field6,LeyII]/
5.38
Cd_Urine_spreadning_per_ha[Field6,LeyIII] = Cd_Urinematris[Field6,LeyIII]/
5.38
Cd_Urine_spreadning_per_ha[Field6,Barley] = Cd_Urinematris[Field6,Barley]/
5.38
Cd_Urine_spreadning_per_ha[Field6,Potato] = Cd_Urinematris[Field6,Potato]/
5.38
Cd_Mineral_fertiliser_flow[Field,Crop] = IF(Time_for_manure_application>0)
THEN (Cd_mineral_fertilisation_matrix[Field,Crop]) ELSE (0)
Cd_Hay_Storage_1[Field,Crop](t) = Cd_Hay_Storage_1[Field,Crop](t - dt) +
(Cd_Hay_per_ha_to_total[Field,Crop]) * dt
INIT Cd_Hay_Storage_1[Field,Crop] = 0
Cd_Hay_per_ha_to_total[Field1,Oats&pea] =
Cd_harvested_hay_for_silage[Field1,Oats&pea]*5.82
Cd_Hay_per_ha_to_total[Field1,LeyI] =
Cd_harvested_hay_for_silage[Field1,LeyI]*5.82
Cd_Hay_per_ha_to_total[Field1,LeyII] =
Cd_harvested_hay_for_silage[Field1,LeyII]*5.82
Cd_Hay_per_ha_to_total[Field1,LeyIII] =
Cd_harvested_hay_for_silage[Field1,LeyIII]*5.82
Cd_Hay_per_ha_to_total[Field1,Barley] =
Cd_harvested_hay_for_silage[Field1,Barley]*5.82
Cd_Hay_per_ha_to_total[Field1,Potato] =
Cd_harvested_hay_for_silage[Field1,Potato]*5.82
Cd_Hay_per_ha_to_total[Field2,Oats&pea] =
Cd_harvested_hay_for_silage[Field2,Oats&pea]*6.22
Cd_Hay_per_ha_to_total[Field2,LeyI] =
Cd_harvested_hay_for_silage[Field2,LeyI]*6.22
Cd_Hay_per_ha_to_total[Field2,LeyII] =
Cd_harvested_hay_for_silage[Field2,LeyII]*6.22
Cd_Hay_per_ha_to_total[Field2,LeyIII] =
Cd_harvested_hay_for_silage[Field2,LeyIII]*6.22
Cd_Hay_per_ha_to_total[Field2,Barley] =
Cd_harvested_hay_for_silage[Field2,Barley]*6.22
Cd_Hay_per_ha_to_total[Field2,Potato] =
```

```
Cd_harvested_hay_for_silage[Field2,Potato]*6.22
Cd_Hay_per_ha_to_total[Field3,Oats&pea] =
Cd_harvested_hay_for_silage[Field3,Oats&pea]*7.75
Cd_Hay_per_ha_to_total[Field3,LeyI] =
Cd_harvested_hay_for_silage[Field3,LeyI]*7.75
Cd_Hay_per_ha_to_total[Field3,LeyII] =
Cd_harvested_hay_for_silage[Field3,LeyII]*7.75
Cd_Hay_per_ha_to_total[Field3,LeyIII] =
Cd_harvested_hay_for_silage[Field3,LeyIII]*7.75
Cd_Hay_per_ha_to_total[Field3,Barley] =
Cd_harvested_hay_for_silage[Field3,Barley]*7.75
Cd_Hay_per_ha_to_total[Field3,Potato] =
Cd_harvested_hay_for_silage[Field3,Potato]*7.75
Cd_Hay_per_ha_to_total[Field4,Oats&pea] =
Cd_harvested_hay_for_silage[Field4,Oats&pea]*6.3
Cd_Hay_per_ha_to_total[Field4,LeyI] =
Cd_harvested_hay_for_silage[Field4,LeyI]*6.3
Cd_Hay_per_ha_to_total[Field4,LeyII] =
Cd_harvested_hay_for_silage[Field4,LeyII]*6.3
Cd_Hay_per_ha_to_total[Field4,LeyIII] =
Cd_harvested_hay_for_silage[Field4,LeyIII]*6.3
Cd_Hay_per_ha_to_total[Field4,Barley] =
Cd_harvested_hay_for_silage[Field4,Barley]*6.3
Cd_Hay_per_ha_to_total[Field4,Potato] =
Cd_harvested_hay_for_silage[Field4,Potato]*6.3
Cd_Hay_per_ha_to_total[Field5,Oats&pea] =
Cd_harvested_hay_for_silage[Field5,Oats&pea]*7.35
Cd_Hay_per_ha_to_total[Field5,LeyI] =
Cd_harvested_hay_for_silage[Field5,LeyI]*7.35
Cd_Hay_per_ha_to_total[Field5,LeyII] =
Cd_harvested_hay_for_silage[Field5,LeyII]*7.35
Cd_Hay_per_ha_to_total[Field5,LeyIII] =
Cd_harvested_hay_for_silage[Field5,LeyIII]*7.35
Cd_Hay_per_ha_to_total[Field5,Barley] =
Cd_harvested_hay_for_silage[Field5,Barley]*7.35
Cd_Hay_per_ha_to_total[Field5,Potato] =
Cd_harvested_hay_for_silage[Field5,Potato]*7.35
Cd_Hay_per_ha_to_total[Field6,Oats&pea] =
Cd_harvested_hay_for_silage[Field6,Oats&pea]*5.38
Cd_Hay_per_ha_to_total[Field6,LeyI] =
Cd_harvested_hay_for_silage[Field6,LeyI]*5.38
Cd_Hay_per_ha_to_total[Field6,LeyII] =
Cd_harvested_hay_for_silage[Field6,LeyII]*5.38
Cd_Hay_per_ha_to_total[Field6,LeyIII] =
Cd_harvested_hay_for_silage[Field6,LeyIII]*5.38
Cd_Hay_per_ha_to_total[Field6,Barley] =
Cd_harvested_hay_for_silage[Field6,Barley]*5.38
Cd_Hay_per_ha_to_total[Field6,Potato] =
Cd_harvested_hay_for_silage[Field6,Potato]*5.38
Cd_Inflows_to_crop_balances[Field,Crop](t) =
```

```
Cd_Inflows_to_crop_balances[Field,Crop](t - dt) +
(Cd_inflows_crop_balances[Field,Crop] -
Cd_Emptying_of_sum_of_crop_balance_input[Field,Crop]) * dt
INIT Cd_Inflows_to_crop_balances[Field,Crop] = 0
Cd_inflows_crop_balances[Field,Crop] =
Cd_atm_deposition[Field,Crop]+Cd_Solid_manure_application_per_ha[Field,Crop
]+Cd_Seeds[Field,Crop]+Cd_Mineral_fertiliser_flow[Field,Crop]+Cd_Urine_spre
adning_per_ha[Field,Crop]+Cd_Lime[Field,Crop]
Cd_Emptying_of_sum_of_crop_balance_input[Field,Crop] =
IF(Time_for_emptying_of_bought_and_sold_Cd>0) THEN
(PULSE(Cd_Inflows_to_crop_balances[Field,Crop])) ELSE (0)
Cd_in_herd_of_cows(t) = Cd_in_herd_of_cows(t - dt) + (Cd_barley + Cd_silage
+ Cd_Beetpulp + Cd_in_heifers + Cd_Mineral_and_concentrate + Cd_Water_Herd
- Cd_in_urine - Cd_in_manure - Cd_in_csubsoiles - Cd_in_milk -
Cd_in_slaughter) * dt
INIT Cd_in_herd_of_cows =  670*0.0000006*42
Cd_barley = Cd_Total_barley_requirements
Cd_silage = Feeding_of_Cd_silage
Cd_Beetpulp = Cows*Feeding_of_beetpulp*Cd_conc_beetpulp
Cd_in_heifers =
(Bought_heifers+Extra_heifers_at_roughage_surplus)*Average_weight_haifer*Cd
_conc_liveweight
Cd_Mineral_and_concentrate =
Cows*Feeding_of_mineral_concentrates*Cd_conc_mineral_concentrate
Cd_Water_Herd = Cows*Water_use_per_cow*Cd_conc_water
Cd_in_urine = (Urine_amount*cCd_conc_urine*Cows)+(0*Cd_in_slaughter)
Cd_in_manure =
Cd_silage+Cd_Beetpulp+Cd_barley+Cd_Mineral_and_concentrate+Cd_in_heifers+Cd
_Water_Herd-Cd_in_csubsoiles-Cd_in_milk-Cd_in_slaughter-
Cd_in_urine+(0*Cd_in_urine)
Cd_in_csubsoiles =
Average_weight_csubsoiles*Csubsoiles_sold*Cd_conc_liveweight
Cd_in_milk = (Milk_production*Cows*Cd_conc_milk)+(0*Cd_in_csubsoiles)
Cd_in_slaughter =
((Cows_sold+Cows_sold_at_roughage_deficit)*Average_weight_cow*Cd_conc_livew
eight)+(0*Cd_in_milk)
Cd_Lime_use[Field,Crop](t) = Cd_Lime_use[Field,Crop](t - dt) +
(Cd_Lime_use_per_ha_times_ha[Field,Crop] -
Emptying_of_Cd_lime_storage[Field,Crop]) * dt
INIT Cd_Lime_use[Field,Crop] = 0
Cd_Lime_use_per_ha_times_ha[Field1,Oats&pea] =
Cd_Lime[Field1,Oats&pea]*5.82
Cd_Lime_use_per_ha_times_ha[Field1,LeyI] = Cd_Lime[Field1,LeyI]*5.82
Cd_Lime_use_per_ha_times_ha[Field1,LeyII] = Cd_Lime[Field1,LeyII]*5.82
Cd_Lime_use_per_ha_times_ha[Field1,LeyIII] = Cd_Lime[Field1,LeyIII]*5.82
Cd_Lime_use_per_ha_times_ha[Field1,Barley] = Cd_Lime[Field1,Barley]*5.82
Cd_Lime_use_per_ha_times_ha[Field1,Potato] = Cd_Lime[Field1,Potato]*5.82
Cd_Lime_use_per_ha_times_ha[Field2,Oats&pea] =
Cd_Lime[Field2,Oats&pea]*6.22
Cd_Lime_use_per_ha_times_ha[Field2,LeyI] = Cd_Lime[Field2,LeyI]*6.22
```

```
Cd_Lime_use_per_ha_times_ha[Field2,LeyII] = Cd_Lime[Field2,LeyII]*6.22
Cd_Lime_use_per_ha_times_ha[Field2,LeyIII] = Cd_Lime[Field2,LeyIII]*6.22
Cd_Lime_use_per_ha_times_ha[Field2,Barley] = Cd_Lime[Field2,Barley]*6.22
Cd_Lime_use_per_ha_times_ha[Field2,Potato] = Cd_Lime[Field2,Potato]*6.22
Cd_Lime_use_per_ha_times_ha[Field3,Oats&pea] =
Cd_Lime[Field3,Oats&pea]*7.75
Cd_Lime_use_per_ha_times_ha[Field3,LeyI] = Cd_Lime[Field3,LeyI]*7.75
Cd_Lime_use_per_ha_times_ha[Field3,LeyII] = Cd_Lime[Field3,LeyII]*7.75
Cd_Lime_use_per_ha_times_ha[Field3,LeyIII] = Cd_Lime[Field3,LeyIII]*7.75
Cd_Lime_use_per_ha_times_ha[Field3,Barley] = Cd_Lime[Field3,Barley]*7.75
Cd_Lime_use_per_ha_times_ha[Field3,Potato] = Cd_Lime[Field3,Potato]*7.75
Cd_Lime_use_per_ha_times_ha[Field4,Oats&pea] = Cd_Lime[Field4,Oats&pea]*6.3
Cd_Lime_use_per_ha_times_ha[Field4,LeyI] = Cd_Lime[Field4,LeyI]*6.3
Cd_Lime_use_per_ha_times_ha[Field4,LeyII] = Cd_Lime[Field4,LeyII]*6.3
Cd_Lime_use_per_ha_times_ha[Field4,LeyIII] = Cd_Lime[Field4,LeyIII]*6.3
Cd_Lime_use_per_ha_times_ha[Field4,Barley] = Cd_Lime[Field4,Barley]*6.3
Cd_Lime_use_per_ha_times_ha[Field4,Potato] = Cd_Lime[Field4,Potato]*6.3
Cd_Lime_use_per_ha_times_ha[Field5,Oats&pea] =
Cd_Lime[Field5,Oats&pea]*7.35
Cd_Lime_use_per_ha_times_ha[Field5,LeyI] = Cd_Lime[Field5,LeyI]*7.35
Cd_Lime_use_per_ha_times_ha[Field5,LeyII] = Cd_Lime[Field5,LeyII]*7.35
Cd_Lime_use_per_ha_times_ha[Field5,LeyIII] = Cd_Lime[Field5,LeyIII]*7.35
Cd_Lime_use_per_ha_times_ha[Field5,Barley] = Cd_Lime[Field5,Barley]*7.35
Cd_Lime_use_per_ha_times_ha[Field5,Potato] = Cd_Lime[Field5,Potato]*7.35
Cd_Lime_use_per_ha_times_ha[Field6,Oats&pea] =
Cd_Lime[Field6,Oats&pea]*5.38
Cd_Lime_use_per_ha_times_ha[Field6,LeyI] = Cd_Lime[Field6,LeyI]*5.38
Cd_Lime_use_per_ha_times_ha[Field6,LeyII] = Cd_Lime[Field6,LeyII]*5.38
Cd_Lime_use_per_ha_times_ha[Field6,LeyIII] = Cd_Lime[Field6,LeyIII]*5.38
Cd_Lime_use_per_ha_times_ha[Field6,Barley] = Cd_Lime[Field6,Barley]*5.38
Cd_Lime_use_per_ha_times_ha[Field6,Potato] = Cd_Lime[Field6,Potato]*5.38
Emptying_of_Cd_lime_storage[Field,Crop] =
IF(Time_for_emptying_of_bought_and_sold_Cd>0) THEN
(PULSE(Cd_Lime_use[Field,Crop])) ELSE (0)
Cd_Manurepad(t) = Cd_Manurepad(t - dt) + (Cd_in_manure + Cd_Water +
Cd_Straw + Cd_Sawdust - Emptying ofmanure pad) * dt
INIT Cd_Manurepad = 0.5*39
Cd_in_manure =
Cd_silage+Cd_Beetpulp+Cd_barley+Cd_Mineral_and_concentrate+Cd_in_heifers+Cd
_Water_Herd-Cd_in_csubsoiles-Cd_in_milk-Cd_in_slaughter-
Cd_in_urine+(0*Cd_in_urine)
Cd_Water = Water_use_per_cow_in_stable*Cows*Cd_conc_water
Cd_Straw = Homegrown_straw
Cd_Sawdust = Import_sawdust*Cd_conc_sawdust
Emptying ofmanure pad = IF(Time_for_manure_application>0) THEN
(PULSE(Cd_Manurepad)) ELSE (0)
Cd_Manure_Sum[Field,Crop](t) = Cd_Manure_Sum[Field,Crop](t - dt) +
(Cd_Manure_per_ha[Field,Crop] - Cd_Empt_ManureSum[Field,Crop]) * dt
INIT Cd_Manure_Sum[Field,Crop] = 0
Cd_Manure_per_ha[Field,Crop] =
```

```
Cd_Solid_manure_application_per_ha[Field,Crop]+Cd_Urine_spreadning_per_ha[F
ield,Crop]
Cd_Empt_ManureSum[Field,Crop] =
IF(Time_for_emptying_of_bought_and_sold_Cd>0) THEN
(PULSE(Cd_Manure_Sum[Field,Crop])) ELSE (0)
Cd_mineral_fertiliser[Field,Crop](t) = Cd_mineral_fertiliser[Field,Crop](t
- dt) + (Cd_mineral_fertiliser_per_ha_times_ha[Field,Crop] -
Emptying_of_Cd_mineral_fertiliser[Field,Crop]) * dt
INIT Cd_mineral_fertiliser[Field,Crop] = 0
Cd_mineral_fertiliser_per_ha_times_ha[Field1,Oats&pea] =
Cd_mineral_fertilisation_matrix[Field1,Oats&pea]*5.82
Cd_mineral_fertiliser_per_ha_times_ha[Field1,LeyI] =
Cd_mineral_fertilisation_matrix[Field1,LeyI]*5.82
Cd_mineral_fertiliser_per_ha_times_ha[Field1,LeyII] =
Cd_mineral_fertilisation_matrix[Field1,LeyII]*5.82
Cd_mineral_fertiliser_per_ha_times_ha[Field1,LeyIII] =
Cd_mineral_fertilisation_matrix[Field1,LeyIII]*5.82
Cd_mineral_fertiliser_per_ha_times_ha[Field1,Barley] =
Cd_mineral_fertilisation_matrix[Field1,Barley]*5.82
Cd_mineral_fertiliser_per_ha_times_ha[Field1,Potato] =
Cd_mineral_fertilisation_matrix[Field1,Potato]*5.82
Cd_mineral_fertiliser_per_ha_times_ha[Field2,Oats&pea] =
Cd_mineral_fertilisation_matrix[Field2,Oats&pea]*6.22
Cd_mineral_fertiliser_per_ha_times_ha[Field2,LeyI] =
Cd_mineral_fertilisation_matrix[Field2,LeyI]*6.22
Cd_mineral_fertiliser_per_ha_times_ha[Field2,LeyII] =
Cd_mineral_fertilisation_matrix[Field2,LeyII]*6.22
Cd_mineral_fertiliser_per_ha_times_ha[Field2,LeyIII] =
Cd_mineral_fertilisation_matrix[Field2,LeyIII]*6.22
Cd_mineral_fertiliser_per_ha_times_ha[Field2,Barley] =
Cd_mineral_fertilisation_matrix[Field2,Barley]*6.22
Cd_mineral_fertiliser_per_ha_times_ha[Field2,Potato] =
Cd_mineral_fertilisation_matrix[Field2,Potato]*6.22
Cd_mineral_fertiliser_per_ha_times_ha[Field3,Oats&pea] =
Cd_mineral_fertilisation_matrix[Field3,Oats&pea]*7.75
Cd_mineral_fertiliser_per_ha_times_ha[Field3,LeyI] =
Cd_mineral_fertilisation_matrix[Field3,LeyI]*7.75
Cd_mineral_fertiliser_per_ha_times_ha[Field3,LeyII] =
Cd_mineral_fertilisation_matrix[Field3,LeyII]*7.75
Cd_mineral_fertiliser_per_ha_times_ha[Field3,LeyIII] =
Cd_mineral_fertilisation_matrix[Field3,LeyIII]*7.75
Cd_mineral_fertiliser_per_ha_times_ha[Field3,Barley] =
Cd_mineral_fertilisation_matrix[Field3,Barley]*7.75
Cd_mineral_fertiliser_per_ha_times_ha[Field3,Potato] =
Cd_mineral_fertilisation_matrix[Field3,Potato]*7.75
Cd_mineral_fertiliser_per_ha_times_ha[Field4,Oats&pea] =
Cd_mineral_fertilisation_matrix[Field4,Oats&pea]*6.3
Cd_mineral_fertiliser_per_ha_times_ha[Field4,LeyI] =
Cd_mineral_fertilisation_matrix[Field4,LeyI]*6.3
Cd_mineral_fertiliser_per_ha_times_ha[Field4,LeyII] =
```

```
Cd_mineral_fertilisation_matrix[Field4,LeyII]*6.3
Cd_mineral_fertiliser_per_ha_times_ha[Field4,LeyIII] =
Cd_mineral_fertilisation_matrix[Field4,LeyIII]*6.3
Cd_mineral_fertiliser_per_ha_times_ha[Field4,Barley] =
Cd_mineral_fertilisation_matrix[Field4,Barley]*6.3
Cd_mineral_fertiliser_per_ha_times_ha[Field4,Potato] =
Cd_mineral_fertilisation_matrix[Field4,Potato]*6.3
Cd_mineral_fertiliser_per_ha_times_ha[Field5,Oats&pea] =
Cd_mineral_fertilisation_matrix[Field5,Oats&pea]*7.35
Cd_mineral_fertiliser_per_ha_times_ha[Field5,LeyI] =
Cd_mineral_fertilisation_matrix[Field5,LeyI]*7.35
Cd_mineral_fertiliser_per_ha_times_ha[Field5,LeyII] =
Cd_mineral_fertilisation_matrix[Field5,LeyII]*7.35
Cd_mineral_fertiliser_per_ha_times_ha[Field5,LeyIII] =
Cd_mineral_fertilisation_matrix[Field5,LeyIII]*7.35
Cd_mineral_fertiliser_per_ha_times_ha[Field5,Barley] =
Cd_mineral_fertilisation_matrix[Field5,Barley]*7.35
Cd_mineral_fertiliser_per_ha_times_ha[Field5,Potato] =
Cd_mineral_fertilisation_matrix[Field5,Potato]*7.35
Cd_mineral_fertiliser_per_ha_times_ha[Field6,Oats&pea] =
Cd_mineral_fertilisation_matrix[Field6,Oats&pea]*5.38
Cd_mineral_fertiliser_per_ha_times_ha[Field6,LeyI] =
Cd_mineral_fertilisation_matrix[Field6,LeyI]*5.38
Cd_mineral_fertiliser_per_ha_times_ha[Field6,LeyII] =
Cd_mineral_fertilisation_matrix[Field6,LeyII]*5.38
Cd_mineral_fertiliser_per_ha_times_ha[Field6,LeyIII] =
Cd_mineral_fertilisation_matrix[Field6,LeyIII]*5.38
Cd_mineral_fertiliser_per_ha_times_ha[Field6,Barley] =
Cd_mineral_fertilisation_matrix[Field6,Barley]*5.38
Cd_mineral_fertiliser_per_ha_times_ha[Field6,Potato] =
Cd_mineral_fertilisation_matrix[Field6,Potato]*5.38
Emptying_of_Cd_mineral_fertiliser[Field,Crop] =
IF(Time_for_emptying_of_bought_and_sold_Cd>0) THEN
(PULSE(Cd_mineral_fertiliser[Field,Crop])) ELSE (0)
Cd_oats&peaonpotatoStorage_1[Field,Crop](t) =
Cd_oats&peaonpotatoStorage_1[Field,Crop](t - dt) +
(Cd_oats&peaonpotatofield[Field,Crop]) * dt
INIT Cd_oats&peaonpotatoStorage_1[Field,Crop] = 0
Cd_oats&peaonpotatofield[Field1,Oats&pea] =
Cd_Harvested_potato[Field1,Oats&pea]*(5.82-4)
Cd_oats&peaonpotatofield[Field1,LeyI] =
Cd_Harvested_potato[Field1,LeyI]*(5.82-4)
Cd_oats&peaonpotatofield[Field1,LeyII] =
Cd_Harvested_potato[Field1,LeyII]*(5.82-4)
Cd_oats&peaonpotatofield[Field1,LeyIII] =
Cd_Harvested_potato[Field1,LeyIII]*(5.82-4)
Cd_oats&peaonpotatofield[Field1,Barley] =
Cd_Harvested_potato[Field1,Barley]*(5.82-4)
Cd_oats&peaonpotatofield[Field1,Potato] =
Cd_Harvested_potato[Field1,Potato]*(5.82-4)
```

```
Cd_oats&peaonpotatofield[Field2,Oats&pea] =
Cd_Harvested_potato[Field2,Oats&pea]*(6.22-4)
Cd_oats&peaonpotatofield[Field2,LeyI] =
Cd_Harvested_potato[Field2,LeyI]*(6.22-4)
Cd_oats&peaonpotatofield[Field2,LeyII] =
Cd_Harvested_potato[Field2,LeyII]*(6.22-4)
Cd_oats&peaonpotatofield[Field2,LeyIII] =
Cd_Harvested_potato[Field2,LeyIII]*(6.22-4)
Cd_oats&peaonpotatofield[Field2,Barley] =
Cd_Harvested_potato[Field2,Barley]*(6.22-4)
Cd_oats&peaonpotatofield[Field2,Potato] =
Cd_Harvested_potato[Field2,Potato]*(6.22-4)
Cd_oats&peaonpotatofield[Field3,Oats&pea] =
Cd_Harvested_potato[Field3,Oats&pea]*(7.75-4)
Cd_oats&peaonpotatofield[Field3,LeyI] =
Cd_Harvested_potato[Field3,LeyI]*(7.75-4)
Cd_oats&peaonpotatofield[Field3,LeyII] =
Cd_Harvested_potato[Field3,LeyII]*(7.75-4)
Cd_oats&peaonpotatofield[Field3,LeyIII] =
Cd_Harvested_potato[Field3,LeyIII]*(7.75-4)
Cd_oats&peaonpotatofield[Field3,Barley] =
Cd_Harvested_potato[Field3,Barley]*(7.75-4)
Cd_oats&peaonpotatofield[Field3,Potato] =
Cd_Harvested_potato[Field3,Potato]*(7.75-4)
Cd_oats&peaonpotatofield[Field4,Oats&pea] =
Cd_Harvested_potato[Field4,Oats&pea]*(6.3-4)
Cd_oats&peaonpotatofield[Field4,LeyI] =
Cd_Harvested_potato[Field4,LeyI]*(6.3-4)
Cd_oats&peaonpotatofield[Field4,LeyII] =
Cd_Harvested_potato[Field4,LeyII]*(6.3-4)
Cd_oats&peaonpotatofield[Field4,LeyIII] =
Cd_Harvested_potato[Field4,LeyIII]*(6.3-4)
Cd_oats&peaonpotatofield[Field4,Barley] =
Cd_Harvested_potato[Field4,Barley]*(6.3-4)
Cd_oats&peaonpotatofield[Field4,Potato] =
Cd_Harvested_potato[Field4,Potato]*(6.3-4)
Cd_oats&peaonpotatofield[Field5,Oats&pea] =
Cd_Harvested_potato[Field5,Oats&pea]*(7.35-4)
Cd_oats&peaonpotatofield[Field5,LeyI] =
Cd_Harvested_potato[Field5,LeyI]*(7.35-4)
Cd_oats&peaonpotatofield[Field5,LeyII] =
Cd_Harvested_potato[Field5,LeyII]*(7.35-4)
Cd_oats&peaonpotatofield[Field5,LeyIII] =
Cd_Harvested_potato[Field5,LeyIII]*(7.35-4)
Cd_oats&peaonpotatofield[Field5,Barley] =
Cd_Harvested_potato[Field5,Barley]*(7.35-4)
Cd_oats&peaonpotatofield[Field5,Potato] =
Cd_Harvested_potato[Field5,Potato]*(7.35-4)
Cd_oats&peaonpotatofield[Field6,Oats&pea] =
Cd_Harvested_potato[Field6,Oats&pea]*(5.38-4)
```

```
Cd_oats&peaonpotatofield[Field6,LeyI] =
Cd_Harvested_potato[Field6,LeyI]*(5.38-4)
Cd_oats&peaonpotatofield[Field6,LeyII] =
Cd_Harvested_potato[Field6,LeyII]*(5.38-4)
Cd_oats&peaonpotatofield[Field6,LeyIII] =
Cd_Harvested_potato[Field6,LeyIII]*(5.38-4)
Cd_oats&peaonpotatofield[Field6,Barley] =
Cd_Harvested_potato[Field6,Barley]*(5.38-4)
Cd_oats&peaonpotatofield[Field6,Potato] =
Cd_Harvested_potato[Field6,Potato]*(5.38-4)
Cd_Oats&PeasStorage_1[Field,Crop](t) = Cd_Oats&PeasStorage_1[Field,Crop](t
- dt) + (Cd_Oats&Peas_per_ha_to_total[Field,Crop]) * dt
INIT Cd_Oats&PeasStorage_1[Field,Crop] = 0
Cd_Oats&Peas_per_ha_to_total[Field1,Oats&pea] =
Cd_Harvested_oats&peas[Field1,Oats&pea]*5.82
Cd_Oats&Peas_per_ha_to_total[Field1,LeyI] =
Cd_Harvested_oats&peas[Field1,LeyI]*5.82
Cd_Oats&Peas_per_ha_to_total[Field1,LeyII] =
Cd_Harvested_oats&peas[Field1,LeyII]*5.82
Cd_Oats&Peas_per_ha_to_total[Field1,LeyIII] =
Cd_Harvested_oats&peas[Field1,LeyIII]*5.82
Cd_Oats&Peas_per_ha_to_total[Field1,Barley] =
Cd_Harvested_oats&peas[Field1,Barley]*5.82
Cd_Oats&Peas_per_ha_to_total[Field1,Potato] =
Cd_Harvested_oats&peas[Field1,Potato]*5.82
Cd_Oats&Peas_per_ha_to_total[Field2,Oats&pea] =
Cd_Harvested_oats&peas[Field2,Oats&pea]*6.22
Cd_Oats&Peas_per_ha_to_total[Field2,LeyI] =
Cd_Harvested_oats&peas[Field2,LeyI]*6.22
Cd_Oats&Peas_per_ha_to_total[Field2,LeyII] =
Cd_Harvested_oats&peas[Field2,LeyII]*6.22
Cd_Oats&Peas_per_ha_to_total[Field2,LeyIII] =
Cd_Harvested_oats&peas[Field2,LeyIII]*6.22
Cd_Oats&Peas_per_ha_to_total[Field2,Barley] =
Cd_Harvested_oats&peas[Field2,Barley]*6.22
Cd_Oats&Peas_per_ha_to_total[Field2,Potato] =
Cd_Harvested_oats&peas[Field2,Potato]*6.22
Cd_Oats&Peas_per_ha_to_total[Field3,Oats&pea] =
Cd_Harvested_oats&peas[Field3,Oats&pea]*7.75
Cd_Oats&Peas_per_ha_to_total[Field3,LeyI] =
Cd_Harvested_oats&peas[Field3,LeyI]*7.75
Cd_Oats&Peas_per_ha_to_total[Field3,LeyII] =
Cd_Harvested_oats&peas[Field3,LeyII]*7.75
Cd_Oats&Peas_per_ha_to_total[Field3,LeyIII] =
Cd_Harvested_oats&peas[Field3,LeyIII]*7.75
Cd_Oats&Peas_per_ha_to_total[Field3,Barley] =
Cd_Harvested_oats&peas[Field3,Barley]*7.75
Cd_Oats&Peas_per_ha_to_total[Field3,Potato] =
Cd_Harvested_oats&peas[Field3,Potato]*7.75
Cd_Oats&Peas_per_ha_to_total[Field4,Oats&pea] =
```

```
Cd_Harvested_oats&peas[Field4,Oats&pea]*6.3
Cd_Oats&Peas_per_ha_to_total[Field4,LeyI] =
Cd_Harvested_oats&peas[Field4,LeyI]*6.3
Cd_Oats&Peas_per_ha_to_total[Field4,LeyII] =
Cd_Harvested_oats&peas[Field4,LeyII]*6.3
Cd_Oats&Peas_per_ha_to_total[Field4,LeyIII] =
Cd_Harvested_oats&peas[Field4,LeyIII]*6.3
Cd_Oats&Peas_per_ha_to_total[Field4,Barley] =
Cd_Harvested_oats&peas[Field4,Barley]*6.3
Cd_Oats&Peas_per_ha_to_total[Field4,Potato] =
Cd_Harvested_oats&peas[Field4,Potato]*6.3
Cd_Oats&Peas_per_ha_to_total[Field5,Oats&pea] =
Cd_Harvested_oats&peas[Field5,Oats&pea]*7.35
Cd_Oats&Peas_per_ha_to_total[Field5,LeyI] =
Cd_Harvested_oats&peas[Field5,LeyI]*7.35
Cd_Oats&Peas_per_ha_to_total[Field5,LeyII] =
Cd_Harvested_oats&peas[Field5,LeyII]*7.35
Cd_Oats&Peas_per_ha_to_total[Field5,LeyIII] =
Cd_Harvested_oats&peas[Field5,LeyIII]*7.35
Cd_Oats&Peas_per_ha_to_total[Field5,Barley] =
Cd_Harvested_oats&peas[Field5,Barley]*7.35
Cd_Oats&Peas_per_ha_to_total[Field5,Potato] =
Cd_Harvested_oats&peas[Field5,Potato]*7.35
Cd_Oats&Peas_per_ha_to_total[Field6,Oats&pea] =
Cd_Harvested_oats&peas[Field6,Oats&pea]*5.38
Cd_Oats&Peas_per_ha_to_total[Field6,LeyI] =
Cd_Harvested_oats&peas[Field6,LeyI]*5.38
Cd_Oats&Peas_per_ha_to_total[Field6,LeyII] =
Cd_Harvested_oats&peas[Field6,LeyII]*5.38
Cd_Oats&Peas_per_ha_to_total[Field6,LeyIII] =
Cd_Harvested_oats&peas[Field6,LeyIII]*5.38
Cd_Oats&Peas_per_ha_to_total[Field6,Barley] =
Cd_Harvested_oats&peas[Field6,Barley]*5.38
Cd_Oats&Peas_per_ha_to_total[Field6,Potato] =
Cd_Harvested_oats&peas[Field6,Potato]*5.38
Cd_output_cropbalances[Field,Crop](t) =
Cd_output_cropbalances[Field,Crop](t - dt) + (Cd_Harvest[Field,Crop] -
Cd_Emptying_of_sum_of_cropbalance_output[Field,Crop]) * dt
INIT Cd_output_cropbalances[Field,Crop] = 0
Cd_Harvest[Field,Crop] = Sum_of_Cd_uptake[Field,Crop]
Cd_Emptying_of_sum_of_cropbalance_output[Field,Crop] =
IF(Time_for_emptying_of_bought_and_sold_Cd>0) THEN
(PULSE(Cd_output_cropbalances[Field,Crop])) ELSE (0)
Cd_output_fieldbalances[Field,Crop](t) =
Cd_output_fieldbalances[Field,Crop](t - dt) +
(Cd_Harvest_Losses[Field,Crop] -
Emptying_of_Cd_fieldbalace_output[Field,Crop]) * dt
INIT Cd_output_fieldbalances[Field,Crop] = 0
Cd_Harvest_Losses[Field,Crop] =
Cd_losses_crop_rotation[Field,Crop]+Sum_of_Cd_uptake[Field,Crop]
```

```
Emptying_of_Cd_fieldbalace_output[Field,Crop] =
IF(Time_for_emptying_of_bought_and_sold_Cd>0) THEN
(PULSE(Cd_output_fieldbalances[Field,Crop])) ELSE (0)
Cd_Plant_available_Subsoil[Field](t) = Cd_Plant_available_Subsoil[Field](t
- dt) + (Cd_Leaching_from_topsoil_to_subsoil[Field] -
Cd_Leaching_Subsoil[Field] - Cd_Uptake_Subsoil[Field,Crop] -
Cd_Ads_DesSubsoil[Field]) * dt
INIT Cd_Plant_available_Subsoil[Field] =
(((0.00000004+0.00000018+0.00000005+0.00000010)/4)*1200000)
Cd_Leaching_from_topsoil_to_subsoil[Field] =
(Percolation_topsoil_to_subsoil*Cd_Topsoil_Conc_g_per_dm3[Field]*1000)+(0*C
d_Loss_Runoff[Field])
Cd_Leaching_Subsoil[Field] =
(Water_flow_from_subsoil*Cd_Subsoil_Conc_g_per_dm3[Field]*1000)
Cd_Uptake_Subsoil[Field,Crop] =
IF(Cd_Uptake_Topsoil[Field,Crop]<Cd_Ideal_uptake[Field,Crop])THEN(Cd_Uptake
Drive[Field,Crop]*Uptake_activity_Subsoil*Cropping_period*(Cd_Ideal_uptake[
Field,Crop]-Cd_Uptake_Topsoil[Field,Crop]))ELSE(0)
Cd_Ads_DesSubsoil[Field] = -0.01*((Cd_Ads_Subsoil_g_per_kg_soil[Field]-
(Cd_Kd_Subsoil*Cd_Subsoil_Conc_g_per_dm3[Field]))*Bulkdensity[Field])-
(0*Cd_Upptag_subsoil_per_Field[Field])
Cd_Plant_available_Topsoil[Field](t) = Cd_Plant_available_Topsoil[Field](t
- dt) + (Cd_Inflows_to_soil_solution_topsoil[Field] -
Cd_Uptake_Topsoil[Field,Crop] - Cd_Leaching_from_topsoil_to_subsoil[Field]
- Cd_Loss_Runoff[Field] - Ads_DesCd_Topsoil[Field]) * dt
INIT Cd_Plant_available_Topsoil[Field] =
(((0.0000001+0.00000015+0.00000005+0.00000005)/4)*750000)
Cd_Inflows_to_soil_solution_topsoil[Field] =
Sum_of_Cd_Inflows_Topsoil[Field]
Cd_Uptake_Topsoil[Field,Crop] =
Cd_UptakeDrive[Field,Crop]*Cd_Ideal_uptake[Field,Crop]*Uptake_activity_Tops
oil*Cropping_period
Cd_Leaching_from_topsoil_to_subsoil[Field] =
(Percolation_topsoil_to_subsoil*Cd_Topsoil_Conc_g_per_dm3[Field]*1000)+(0*C
d_Loss_Runoff[Field])
Cd_Loss_Runoff[Field] = (Cd_Topsoil_Conc_g_per_dm3[Field]*Runoff*1000)
Ads_DesCd_Topsoil[Field] = -0.01*((Cd_Ads_Matj_g_per_kg_jord[Field]-
Cd_Kd_Topsoil*Cd_Topsoil_Conc_g_per_dm3[Field])*Bulkdensity[Field])-
(0*Cd_Upptag_topsoil_per_Field[Field])
Cd_Potato_Storage_1[Field,Crop](t) = Cd_Potato_Storage_1[Field,Crop](t -
dt) + (Potato_per_ha_to_total[Field,Crop]) * dt
INIT Cd_Potato_Storage_1[Field,Crop] = 0
Potato_per_ha_to_total[Field,Crop] = Cd_Harvested_potato[Field,Crop]*4
Cd_Potato_Storage_2(t) = Cd_Potato_Storage_2(t - dt) + (Cd_Homegrown_potato
- Cd_Potato_Export) * dt
INIT Cd_Potato_Storage_2 = 0
Cd_Homegrown_potato = Cd_Sum_array_potato
Cd_Potato_Export = Cd_Potato_Storage_2
Cd_Seeds_storage[Field,Crop](t) = Cd_Seeds_storage[Field,Crop](t - dt) +
(Cd_Seeds_per_ha_to_total[Field,Crop] -
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```
Emptying_of_Cd_seeds_storage[Field,Crop]) * dt
INIT Cd_Seeds_storage[Field,Crop] = 0
Cd_Seeds_per_ha_to_total[Field1,Oats&pea] = Cd_Seeds[Field1,Oats&pea]*5.82
Cd_Seeds_per_ha_to_total[Field1,LeyI] = Cd_Seeds[Field1,LeyI]*5.82
Cd_Seeds_per_ha_to_total[Field1,LeyII] = Cd_Seeds[Field1,LeyII]*5.82
Cd_Seeds_per_ha_to_total[Field1,LeyIII] = Cd_Seeds[Field1,LeyIII]*5.82
Cd_Seeds_per_ha_to_total[Field1,Barley] = Cd_Seeds[Field1,Barley]*5.82
Cd_Seeds_per_ha_to_total[Field1,Potato] = Cd_Seeds[Field1,Potato]*5.82
Cd_Seeds_per_ha_to_total[Field2,Oats&pea] = Cd_Seeds[Field2,Oats&pea]*6.22
Cd_Seeds_per_ha_to_total[Field2,LeyI] = Cd_Seeds[Field2,LeyI]*6.22
Cd_Seeds_per_ha_to_total[Field2,LeyII] = Cd_Seeds[Field2,LeyII]*6.22
Cd_Seeds_per_ha_to_total[Field2,LeyIII] = Cd_Seeds[Field2,LeyIII]*6.22
Cd_Seeds_per_ha_to_total[Field2,Barley] = Cd_Seeds[Field2,Barley]*6.22
Cd_Seeds_per_ha_to_total[Field2,Potato] = Cd_Seeds[Field2,Potato]*6.22
Cd_Seeds_per_ha_to_total[Field3,Oats&pea] = Cd_Seeds[Field3,Oats&pea]*7.75
Cd_Seeds_per_ha_to_total[Field3,LeyI] = Cd_Seeds[Field3,LeyI]*7.75
Cd_Seeds_per_ha_to_total[Field3,LeyII] = Cd_Seeds[Field3,LeyII]*7.75
Cd_Seeds_per_ha_to_total[Field3,LeyIII] = Cd_Seeds[Field3,LeyIII]*7.75
Cd_Seeds_per_ha_to_total[Field3,Barley] = Cd_Seeds[Field3,Barley]*7.75
Cd_Seeds_per_ha_to_total[Field3,Potato] = Cd_Seeds[Field3,Potato]*7.75
Cd_Seeds_per_ha_to_total[Field4,Oats&pea] = Cd_Seeds[Field4,Oats&pea]*6.3
Cd_Seeds_per_ha_to_total[Field4,LeyI] = Cd_Seeds[Field4,LeyI]*6.3
Cd_Seeds_per_ha_to_total[Field4,LeyII] = Cd_Seeds[Field4,LeyII]*6.3
Cd_Seeds_per_ha_to_total[Field4,LeyIII] = Cd_Seeds[Field4,LeyIII]*6.3
Cd_Seeds_per_ha_to_total[Field4,Barley] = Cd_Seeds[Field4,Barley]*6.3
Cd_Seeds_per_ha_to_total[Field4,Potato] = Cd_Seeds[Field4,Potato]*6.3
Cd_Seeds_per_ha_to_total[Field5,Oats&pea] = Cd_Seeds[Field5,Oats&pea]*7.35
Cd_Seeds_per_ha_to_total[Field5,LeyI] = Cd_Seeds[Field5,LeyI]*7.35
Cd_Seeds_per_ha_to_total[Field5,LeyII] = Cd_Seeds[Field5,LeyII]*7.35
Cd_Seeds_per_ha_to_total[Field5,LeyIII] = Cd_Seeds[Field5,LeyIII]*7.35
Cd_Seeds_per_ha_to_total[Field5,Barley] = Cd_Seeds[Field5,Barley]*7.35
Cd_Seeds_per_ha_to_total[Field5,Potato] = Cd_Seeds[Field5,Potato]*7.35
Cd_Seeds_per_ha_to_total[Field6,Oats&pea] = Cd_Seeds[Field6,Oats&pea]*5.38
Cd_Seeds_per_ha_to_total[Field6,LeyI] = Cd_Seeds[Field6,LeyI]*5.38
Cd_Seeds_per_ha_to_total[Field6,LeyII] = Cd_Seeds[Field6,LeyII]*5.38
Cd_Seeds_per_ha_to_total[Field6,LeyIII] = Cd_Seeds[Field6,LeyIII]*5.38
Cd_Seeds_per_ha_to_total[Field6,Barley] = Cd_Seeds[Field6,Barley]*5.38
Cd_Seeds_per_ha_to_total[Field6,Potato] = Cd_Seeds[Field6,Potato]*5.38
Emptying_of_Cd_seeds_storage[Field,Crop] =
IF(Time_for_emptying_of_bought_and_sold_Cd>0) THEN
(PULSE(Cd_Seeds_storage[Field,Crop])) ELSE (0)
Cd_Silage_tower(t) = Cd_Silage_tower(t - dt) + (Cd_Grovfoderproduktion -
Cd_silage) * dt
INIT Cd_Silage_tower = 0.18*Cows
Cd_Grovfoderproduktion = Cd_Sum_of_inflow_to_silage_tower
Cd_silage = Feeding_of_Cd_silage
Cd_Sum_deposition[Field](t) = Cd_Sum_deposition[Field](t - dt) +
(Cd_dep_2[Field] - Cd_Empt_dep[Field]) * dt
INIT Cd_Sum_deposition[Field] = 0
Cd_dep_2[Field] = ARRAYSUM(Cd_atm_deposition[Field,*])
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Cd_Empt_dep[Field] = IF(Time_for_emptying_of_bought_and_sold_Cd>0) THEN
(PULSE(Cd_Sum_deposition[Field])) ELSE (0)
Cd_Sum_harvest[Field](t) = Cd_Sum_harvest[Field](t - dt) +
(Cd_harvest_2[Field] - Cd_Empt_sum_harvest[Field]) * dt
INIT Cd_Sum_harvest[Field] = 0
Cd_harvest_2[Field] = ARRAYSUM(Cd_Harvest[Field,*])
Cd_Empt_sum_harvest[Field] = IF(Time_for_emptying_of_bought_and_sold_Cd>0)
THEN (PULSE(Cd_Sum_harvest[Field])) ELSE (0)
Cd_Sum_lime[Field](t) = Cd_Sum_lime[Field](t - dt) + (Cd_lime_2[Field] -
Cd_Empt_lime[Field]) * dt
INIT Cd_Sum_lime[Field] = 0
Cd_lime_2[Field] = ARRAYSUM(Cd_Lime[Field,*])
Cd_Empt_lime[Field] = IF(Time_for_emptying_of_bought_and_sold_Cd>0) THEN
(PULSE(Cd_Sum_lime[Field])) ELSE (0)
Cd_Sum_losses[Field](t) = Cd_Sum_losses[Field](t - dt) +
(Cd_losses_2[Field] - Cd_Empt_losses[Field]) * dt
INIT Cd_Sum_losses[Field] = 0
Cd_losses_2[Field] = ARRAYSUM(Cd_losses_crop_rotation[Field,*])
Cd_Empt_losses[Field] = IF(Time_for_emptying_of_bought_and_sold_Cd>0)
THEN(PULSE(Cd_Sum_losses[Field])) ELSE(0)
Cd_Sum_minfert[Field](t) = Cd_Sum_minfert[Field](t - dt) +
(Cd_minfert_2[Field] - Cd_Empt_minfert[Field]) * dt
INIT Cd_Sum_minfert[Field] = 0
Cd_minfert_2[Field] = ARRAYSUM(Cd_Mineral_fertiliser_flow[Field,*])
Cd_Empt_minfert[Field] = IF(Time_for_emptying_of_bought_and_sold_Cd>0) THEN
(PULSE(Cd_Sum_minfert[Field])) ELSE (0)
Cd_Sum_of_harvest_barley[Field,Crop](t) =
Cd_Sum_of_harvest_barley[Field,Crop](t - dt) +
(Cd_Harvested_Barley_and_straw[Field,Crop]) * dt
INIT Cd_Sum_of_harvest_barley[Field,Crop] = 0
Cd_Harvested_Barley_and_straw[Field1,Oats&pea] =
0*Uptaken_Cd[Field1,Oats&pea]*Harvest_time
Cd_Harvested_Barley_and_straw[Field1,LeyI] =
0*Uptaken_Cd[Field1,LeyI]*Harvest_time
Cd_Harvested_Barley_and_straw[Field1,LeyII] =
0*Uptaken_Cd[Field1,LeyII]*Harvest_time
Cd_Harvested_Barley_and_straw[Field1,LeyIII] =
0*Uptaken_Cd[Field1,LeyIII]*Harvest_time
Cd_Harvested_Barley_and_straw[Field1,Barley] = IF(Harvest_time>0)
THEN(PULSE(Uptaken_Cd[Field1,Barley]))ELSE(0)
Cd_Harvested_Barley_and_straw[Field1,Potato] =
0*Uptaken_Cd[Field1,Potato]*Harvest_time
Cd_Harvested_Barley_and_straw[Field2,Oats&pea] =
0*Uptaken_Cd[Field2,Oats&pea]*Harvest_time
Cd_Harvested_Barley_and_straw[Field2,LeyI] =
0*Uptaken_Cd[Field2,LeyI]*Harvest_time
Cd_Harvested_Barley_and_straw[Field2,LeyII] =
0*Uptaken_Cd[Field2,LeyII]*Harvest_time
Cd_Harvested_Barley_and_straw[Field2,LeyIII] =
0*Uptaken_Cd[Field2,LeyIII]*Harvest_time
```

```
Cd_Harvested_Barley_and_straw[Field2,Barley] = IF(Harvest_time>0)
THEN(PULSE(Uptaken_Cd[Field2,Barley]))ELSE(0)
Cd_Harvested_Barley_and_straw[Field2,Potato] =
0*Uptaken_Cd[Field2,Potato]*Harvest_time
Cd_Harvested_Barley_and_straw[Field3,Oats&pea] =
0*Uptaken_Cd[Field3,Oats&pea]*Harvest_time
Cd_Harvested_Barley_and_straw[Field3,LeyI] =
0*Uptaken_Cd[Field3,LeyI]*Harvest_time
Cd_Harvested_Barley_and_straw[Field3,LeyII] =
0*Uptaken_Cd[Field3,LeyII]*Harvest_time
Cd_Harvested_Barley_and_straw[Field3,LeyIII] =
0*Uptaken_Cd[Field3,LeyIII]*Harvest_time
Cd_Harvested_Barley_and_straw[Field3,Barley] = IF(Harvest_time>0)
THEN(PULSE(Uptaken_Cd[Field3,Barley]))ELSE(0)
Cd_Harvested_Barley_and_straw[Field3,Potato] =
0*Uptaken_Cd[Field3,Potato]*Harvest_time
Cd_Harvested_Barley_and_straw[Field4,Oats&pea] =
0*Uptaken_Cd[Field4,Oats&pea]*Harvest_time
Cd_Harvested_Barley_and_straw[Field4,LeyI] =
0*Uptaken_Cd[Field4,LeyI]*Harvest_time
Cd_Harvested_Barley_and_straw[Field4,LeyII] =
0*Uptaken_Cd[Field4,LeyII]*Harvest_time
Cd_Harvested_Barley_and_straw[Field4,LeyIII] =
0*Uptaken_Cd[Field4,LeyIII]*Harvest_time
Cd_Harvested_Barley_and_straw[Field4,Barley] = IF(Harvest_time>0)
THEN(PULSE(Uptaken_Cd[Field4,Barley]))ELSE(0)
Cd_Harvested_Barley_and_straw[Field4,Potato] =
0*Uptaken_Cd[Field4,Potato]*Harvest_time
Cd_Harvested_Barley_and_straw[Field5,Oats&pea] =
0*Uptaken_Cd[Field5,Oats&pea]*Harvest_time
Cd_Harvested_Barley_and_straw[Field5,LeyI] =
0*Uptaken_Cd[Field5,LeyI]*Harvest_time
Cd_Harvested_Barley_and_straw[Field5,LeyII] =
0*Uptaken_Cd[Field5,LeyII]*Harvest_time
Cd_Harvested_Barley_and_straw[Field5,LeyIII] =
0*Uptaken_Cd[Field5,LeyIII]*Harvest_time
Cd_Harvested_Barley_and_straw[Field5,Barley] = IF(Harvest_time>0)
THEN(PULSE(Uptaken_Cd[Field5,Barley]))ELSE(0)
Cd_Harvested_Barley_and_straw[Field5,Potato] =
0*Uptaken_Cd[Field5,Potato]*Harvest_time
Cd_Harvested_Barley_and_straw[Field6,Oats&pea] =
0*Uptaken_Cd[Field6,Oats&pea]*Harvest_time
Cd_Harvested_Barley_and_straw[Field6,LeyI] =
0*Uptaken_Cd[Field6,LeyI]*Harvest_time
Cd_Harvested_Barley_and_straw[Field6,LeyII] =
0*Uptaken_Cd[Field6,LeyII]*Harvest_time
Cd_Harvested_Barley_and_straw[Field6,LeyIII] =
0*Uptaken_Cd[Field6,LeyIII]*Harvest_time
Cd_Harvested_Barley_and_straw[Field6,Barley] = IF(Harvest_time>0)
THEN(PULSE(Uptaken_Cd[Field6,Barley]))ELSE(0)
```

```
Cd_Harvested_Barley_and_straw[Field6,Potato] =
0*Uptaken_Cd[Field6,Potato]*Harvest_time
Cd_Sum_of_harvest_oats&pea[Field,Crop](t) =
Cd_Sum_of_harvest_oats&pea[Field,Crop](t - dt) +
(Cd_Harvested_oats&peas[Field,Crop]) * dt
INIT Cd_Sum_of_harvest_oats&pea[Field,Crop] = 0
Cd_Harvested_oats&peas[Field1,Oats&pea] = IF (Harvest_time>0) THEN
(PULSE(Uptaken_Cd[Field1,Oats&pea])) ELSE (0)
Cd_Harvested_oats&peas[Field1,LeyI] =
0*Uptaken_Cd[Field1,LeyI]*Harvest_time
Cd_Harvested_oats&peas[Field1,LeyII] =
0*Uptaken_Cd[Field1,LeyII]*Harvest_time
Cd_Harvested_oats&peas[Field1,LeyIII] =
0*Uptaken_Cd[Field1,LeyIII]*Harvest_time
Cd_Harvested_oats&peas[Field1,Barley] =
0*Uptaken_Cd[Field1,Barley]*Harvest_time
Cd_Harvested_oats&peas[Field1,Potato] =
0*Uptaken_Cd[Field1,Potato]*Harvest_time
Cd_Harvested_oats&peas[Field2,Oats&pea] = IF (Harvest_time>0) THEN
(PULSE(Uptaken_Cd[Field2,Oats&pea])) ELSE (0)
Cd_Harvested_oats&peas[Field2,LeyI] =
0*Uptaken_Cd[Field2,LeyI]*Harvest_time
Cd_Harvested_oats&peas[Field2,LeyII] =
0*Uptaken_Cd[Field2,LeyII]*Harvest_time
Cd_Harvested_oats&peas[Field2,LeyIII] =
0*Uptaken_Cd[Field2,LeyIII]*Harvest_time
Cd_Harvested_oats&peas[Field2,Barley] =
0*Uptaken_Cd[Field2,Barley]*Harvest_time
Cd_Harvested_oats&peas[Field2,Potato] =
0*Uptaken_Cd[Field2,Potato]*Harvest_time
Cd_Harvested_oats&peas[Field3,Oats&pea] = IF (Harvest_time>0) THEN
(PULSE(Uptaken_Cd[Field3,Oats&pea])) ELSE (0)
Cd_Harvested_oats&peas[Field3,LeyI] =
0*Uptaken_Cd[Field3,LeyI]*Harvest_time
Cd_Harvested_oats&peas[Field3,LeyII] =
0*Uptaken_Cd[Field3,LeyII]*Harvest_time
Cd_Harvested_oats&peas[Field3,LeyIII] =
0*Uptaken_Cd[Field3,LeyIII]*Harvest_time
Cd_Harvested_oats&peas[Field3,Barley] =
0*Uptaken_Cd[Field3,Barley]*Harvest_time
Cd_Harvested_oats&peas[Field3,Potato] =
0*Uptaken_Cd[Field3,Potato]*Harvest_time
Cd_Harvested_oats&peas[Field4,Oats&pea] = IF (Harvest_time>0) THEN
(PULSE(Uptaken_Cd[Field4,Oats&pea])) ELSE (0)
Cd_Harvested_oats&peas[Field4,LeyI] =
0*Uptaken_Cd[Field4,LeyI]*Harvest_time
Cd_Harvested_oats&peas[Field4,LeyII] =
0*Uptaken_Cd[Field4,LeyII]*Harvest_time
Cd_Harvested_oats&peas[Field4,LeyIII] =
0*Uptaken_Cd[Field4,LeyIII]*Harvest_time
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Cd_Harvested_oats&peas[Field4,Barley] =
0*Uptaken_Cd[Field4,Barley]*Harvest_time
Cd_Harvested_oats&peas[Field4,Potato] =
0*Uptaken_Cd[Field4,Potato]*Harvest_time
Cd_Harvested_oats&peas[Field5,Oats&pea] = IF (Harvest_time>0) THEN
(PULSE(Uptaken_Cd[Field5,Oats&pea])) ELSE (0)
Cd_Harvested_oats&peas[Field5,LeyI] =
0*Uptaken_Cd[Field5,LeyI]*Harvest_time
Cd_Harvested_oats&peas[Field5,LeyII] =
0*Uptaken_Cd[Field5,LeyII]*Harvest_time
Cd_Harvested_oats&peas[Field5,LeyIII] =
0*Uptaken_Cd[Field5,LeyIII]*Harvest_time
Cd_Harvested_oats&peas[Field5,Barley] =
0*Uptaken_Cd[Field5,Barley]*Harvest_time
Cd_Harvested_oats&peas[Field5,Potato] =
0*Uptaken_Cd[Field5,Potato]*Harvest_time
Cd_Harvested_oats&peas[Field6,Oats&pea] = IF (Harvest_time>0) THEN
(PULSE(Uptaken_Cd[Field6,Oats&pea])) ELSE (0)
Cd_Harvested_oats&peas[Field6,LeyI] =
0*Uptaken_Cd[Field6,LeyI]*Harvest_time
Cd_Harvested_oats&peas[Field6,LeyII] =
0*Uptaken_Cd[Field6,LeyII]*Harvest_time
Cd_Harvested_oats&peas[Field6,LeyIII] =
0*Uptaken_Cd[Field6,LeyIII]*Harvest_time
Cd_Harvested_oats&peas[Field6,Barley] =
0*Uptaken_Cd[Field6,Barley]*Harvest_time
Cd_Harvested_oats&peas[Field6,Potato] =
0*Uptaken_Cd[Field6,Potato]*Harvest_time
Cd_Sum_of_harvest_potato[Field,Crop](t) =
Cd_Sum_of_harvest_potato[Field,Crop](t - dt) +
(Cd_Harvested_potato[Field,Crop]) * dt
INIT Cd_Sum_of_harvest_potato[Field,Crop] = 0
Cd_Harvested_potato[Field1,Oats&pea] =
0*Uptaken_Cd[Field1,Oats&pea]*Harvest_time
Cd_Harvested_potato[Field1,LeyI] = 0*Uptaken_Cd[Field1,LeyI]*Harvest_time
Cd_Harvested_potato[Field1,LeyII] = 0*Uptaken_Cd[Field1,LeyII]*Harvest_time
Cd_Harvested_potato[Field1,LeyIII] =
0*Uptaken_Cd[Field1,LeyIII]*Harvest_time
Cd_Harvested_potato[Field1,Barley] =
0*Uptaken_Cd[Field1,Barley]*Harvest_time
Cd_Harvested_potato[Field1,Potato] = IF (Harvest_time>0) THEN
(PULSE(Uptaken_Cd[Field1,Potato])) ELSE (0)
Cd_Harvested_potato[Field2,Oats&pea] =
0*Uptaken_Cd[Field2,Oats&pea]*Harvest_time
Cd_Harvested_potato[Field2,LeyI] = 0*Uptaken_Cd[Field2,LeyI]*Harvest_time
Cd_Harvested_potato[Field2,LeyII] = 0*Uptaken_Cd[Field2,LeyII]*Harvest_time
Cd_Harvested_potato[Field2,LeyIII] =
0*Uptaken_Cd[Field2,LeyIII]*Harvest_time
Cd_Harvested_potato[Field2,Barley] =
0*Uptaken_Cd[Field2,Barley]*Harvest_time
```

```
Cd_Harvested_potato[Field2,Potato] = IF (Harvest_time>0) THEN
(PULSE(Uptaken_Cd[Field2,Potato])) ELSE (0)
Cd_Harvested_potato[Field3,Oats&pea] =
0*Uptaken_Cd[Field3,Oats&pea]*Harvest_time
Cd_Harvested_potato[Field3,LeyI] = 0*Uptaken_Cd[Field3,LeyI]*Harvest_time
Cd_Harvested_potato[Field3,LeyII] = 0*Uptaken_Cd[Field3,LeyII]*Harvest_time
Cd_Harvested_potato[Field3,LeyIII] =
0*Uptaken_Cd[Field3,LeyIII]*Harvest_time
Cd_Harvested_potato[Field3,Barley] =
0*Uptaken_Cd[Field3,Barley]*Harvest_time
Cd_Harvested_potato[Field3,Potato] = IF (Harvest_time>0) THEN
(PULSE(Uptaken_Cd[Field3,Potato])) ELSE (0)
Cd_Harvested_potato[Field4,Oats&pea] =
0*Uptaken_Cd[Field4,Oats&pea]*Harvest_time
Cd_Harvested_potato[Field4,LeyI] = 0*Uptaken_Cd[Field4,LeyI]*Harvest_time
Cd_Harvested_potato[Field4,LeyII] = 0*Uptaken_Cd[Field4,LeyII]*Harvest_time
Cd_Harvested_potato[Field4,LeyIII] =
0*Uptaken_Cd[Field4,LeyIII]*Harvest_time
Cd_Harvested_potato[Field4,Barley] =
0*Uptaken_Cd[Field4,Barley]*Harvest_time
Cd_Harvested_potato[Field4,Potato] = IF (Harvest_time>0) THEN
(PULSE(Uptaken_Cd[Field4,Potato])) ELSE (0)
Cd_Harvested_potato[Field5,Oats&pea] =
0*Uptaken_Cd[Field5,Oats&pea]*Harvest_time
Cd_Harvested_potato[Field5,LeyI] = 0*Uptaken_Cd[Field5,LeyI]*Harvest_time
Cd_Harvested_potato[Field5,LeyII] = 0*Uptaken_Cd[Field5,LeyII]*Harvest_time
Cd_Harvested_potato[Field5,LeyIII] =
0*Uptaken_Cd[Field5,LeyIII]*Harvest_time
Cd_Harvested_potato[Field5,Barley] =
0*Uptaken_Cd[Field5,Barley]*Harvest_time
Cd_Harvested_potato[Field5,Potato] = IF (Harvest_time>0) THEN
(PULSE(Uptaken_Cd[Field5,Potato])) ELSE (0)
Cd_Harvested_potato[Field6,Oats&pea] =
0*Uptaken_Cd[Field6,Oats&pea]*Harvest_time
Cd_Harvested_potato[Field6,LeyI] = 0*Uptaken_Cd[Field6,LeyI]*Harvest_time
Cd_Harvested_potato[Field6,LeyII] = 0*Uptaken_Cd[Field6,LeyII]*Harvest_time
Cd_Harvested_potato[Field6,LeyIII] =
0*Uptaken_Cd[Field6,LeyIII]*Harvest_time
Cd_Harvested_potato[Field6,Barley] =
0*Uptaken_Cd[Field6,Barley]*Harvest_time
Cd_Harvested_potato[Field6,Potato] = IF (Harvest_time>0) THEN
(PULSE(Uptaken_Cd[Field6,Potato])) ELSE (0)
Cd_Sum_of_harvest_silage[Field,Crop](t) =
Cd_Sum_of_harvest_silage[Field,Crop](t - dt) +
(Cd_harvested_hay_for_silage[Field,Crop]) * dt
INIT Cd_Sum_of_harvest_silage[Field,Crop] = 0
Cd_harvested_hay_for_silage[Field1,Oats&pea] =
0*Uptaken_Cd[Field1,Oats&pea]*Harvest_time
Cd_harvested_hay_for_silage[Field1,LeyI] = IF(Harvest_time>0) THEN
(PULSE(Uptaken_Cd[Field1,LeyI])) ELSE (0)
```

```
Cd_harvested_hay_for_silage[Field1,LeyII] = IF (Harvest_time>0) THEN
(PULSE(Uptaken_Cd[Field1,LeyII])) ELSE (0)
Cd_harvested_hay_for_silage[Field1,LeyIII] = IF (Harvest_time>0) THEN
(PULSE(Uptaken_Cd[Field1,LeyIII])) ELSE (0)
Cd_harvested_hay_for_silage[Field1,Barley] =
0*Uptaken_Cd[Field1,Barley]*Harvest_time
Cd_harvested_hay_for_silage[Field1,Potato] =
0*Uptaken_Cd[Field1,Potato]*Harvest_time
Cd_harvested_hay_for_silage[Field2,Oats&pea] =
0*Uptaken_Cd[Field2,Oats&pea]*Harvest_time
Cd_harvested_hay_for_silage[Field2,LeyI] = IF(Harvest_time>0) THEN
(PULSE(Uptaken_Cd[Field2,LeyI])) ELSE (0)
Cd_harvested_hay_for_silage[Field2,LeyII] = IF (Harvest_time>0) THEN
(PULSE(Uptaken_Cd[Field2,LeyII])) ELSE (0)
Cd_harvested_hay_for_silage[Field2,LeyIII] = IF (Harvest_time>0) THEN
(PULSE(Uptaken_Cd[Field2,LeyIII])) ELSE (0)
Cd_harvested_hay_for_silage[Field2,Barley] =
0*Uptaken_Cd[Field2,Barley]*Harvest_time
Cd_harvested_hay_for_silage[Field2,Potato] =
0*Uptaken_Cd[Field2,Potato]*Harvest_time
Cd_harvested_hay_for_silage[Field3,Oats&pea] =
0*Uptaken_Cd[Field3,Oats&pea]*Harvest_time
Cd_harvested_hay_for_silage[Field3,LeyI] = IF(Harvest_time>0) THEN
(PULSE(Uptaken_Cd[Field3,LeyI])) ELSE (0)
Cd_harvested_hay_for_silage[Field3,LeyII] = IF (Harvest_time>0) THEN
(PULSE(Uptaken_Cd[Field3,LeyII])) ELSE (0)
Cd_harvested_hay_for_silage[Field3,LeyIII] = IF (Harvest_time>0) THEN
(PULSE(Uptaken_Cd[Field3,LeyIII])) ELSE (0)
Cd_harvested_hay_for_silage[Field3,Barley] =
0*Uptaken_Cd[Field3,Barley]*Harvest_time
Cd_harvested_hay_for_silage[Field3,Potato] =
0*Uptaken_Cd[Field3,Potato]*Harvest_time
Cd_harvested_hay_for_silage[Field4,Oats&pea] =
0*Uptaken_Cd[Field4,Oats&pea]*Harvest_time
Cd_harvested_hay_for_silage[Field4,LeyI] = IF(Harvest_time>0) THEN
(PULSE(Uptaken_Cd[Field4,LeyI])) ELSE (0)
Cd_harvested_hay_for_silage[Field4,LeyII] = IF (Harvest_time>0) THEN
(PULSE(Uptaken_Cd[Field4,LeyII])) ELSE (0)
Cd_harvested_hay_for_silage[Field4,LeyIII] = IF (Harvest_time>0) THEN
(PULSE(Uptaken_Cd[Field4,LeyIII])) ELSE (0)
Cd_harvested_hay_for_silage[Field4,Barley] =
0*Uptaken_Cd[Field4,Barley]*Harvest_time
Cd_harvested_hay_for_silage[Field4,Potato] =
0*Uptaken_Cd[Field4,Potato]*Harvest_time
Cd_harvested_hay_for_silage[Field5,Oats&pea] =
0*Uptaken_Cd[Field5,Oats&pea]*Harvest_time
Cd_harvested_hay_for_silage[Field5,LeyI] = IF(Harvest_time>0) THEN
(PULSE(Uptaken_Cd[Field5,LeyI])) ELSE (0)
Cd_harvested_hay_for_silage[Field5,LeyII] = IF (Harvest_time>0) THEN
(PULSE(Uptaken_Cd[Field5,LeyII])) ELSE (0)
```

```
Cd_harvested_hay_for_silage[Field5,LeyIII] = IF (Harvest_time>0) THEN
(PULSE(Uptaken_Cd[Field5,LeyIII])) ELSE (0)
Cd_harvested_hay_for_silage[Field5,Barley] =
0*Uptaken_Cd[Field5,Barley]*Harvest_time
Cd_harvested_hay_for_silage[Field5,Potato] =
0*Uptaken_Cd[Field5,Potato]*Harvest_time
Cd_harvested_hay_for_silage[Field6,Oats&pea] =
0*Uptaken_Cd[Field6,Oats&pea]*Harvest_time
Cd_harvested_hay_for_silage[Field6,LeyI] = IF(Harvest_time>0) THEN
(PULSE(Uptaken_Cd[Field6,LeyI])) ELSE (0)
Cd_harvested_hay_for_silage[Field6,LeyII] = IF (Harvest_time>0) THEN
(PULSE(Uptaken_Cd[Field6,LeyII])) ELSE (0)
Cd_harvested_hay_for_silage[Field6,LeyIII] = IF (Harvest_time>0) THEN
(PULSE(Uptaken_Cd[Field6,LeyIII])) ELSE (0)
Cd_harvested_hay_for_silage[Field6,Barley] =
0*Uptaken_Cd[Field6,Barley]*Harvest_time
Cd_harvested_hay_for_silage[Field6,Potato] =
0*Uptaken_Cd[Field6,Potato]*Harvest_time
Cd_Sum_runoff_2[Field](t) = Cd_Sum_runoff_2[Field](t - dt) +
(Cd_runoff_2[Field] - Cd_Empt_sum_runoff_2[Field]) * dt
INIT Cd_Sum_runoff_2[Field] = 0
Cd_runoff_2[Field] = ARRAYSUM(Cd_runoff_crop_rotation[Field,*])
Cd_Empt_sum_runoff_2[Field] = IF(Time_for_emptying_of_bought_and_sold_Cd>0)
THEN (PULSE(Cd_Sum_runoff_2[Field])) ELSE (0)
Cd_Sum_seeds[Field](t) = Cd_Sum_seeds[Field](t - dt) + (Cd_seeds_2[Field] -
Cd_Empt_seeds[Field]) * dt
INIT Cd_Sum_seeds[Field] = 0
Cd_seeds_2[Field] = ARRAYSUM(Cd_Seeds[Field,*])
Cd_Empt_seeds[Field] = IF(Time_for_emptying_of_bought_and_sold_Cd>0) THEN
(PULSE(Cd_Sum_seeds[Field])) ELSE (0)
Cd_Urine_tank(t) = Cd_Urine_tank(t - dt) + (Cd_in_urine -
Emptying_of_Cd_urine_tank) * dt
INIT Cd_Urine_tank = 0.02*39
Cd_in_urine = (Urine_amount*cCd_conc_urine*Cows)+(0*Cd_in_slaughter)
Emptying_of_Cd_urine_tank = IF(Time_for_manure_application>0) THEN
(PULSE(Cd_Urine_tank)) ELSE (0)
Cows(t) = Cows(t - dt) + (Heifers_csubsoiles +
Extra_heifers_at_roughage_surplus - Cows_sold -
Cows_sold_at_roughage_deficit) * dt
INIT Cows = 42
Heifers_csubsoiles = Heifers
Extra_heifers_at_roughage_surplus = IF
(Compare_storage_to_requirements>1.1) THEN (Cows*0.15) ELSE (0)
Cows_sold = (Cows/3)+(Limited_size_of_cowshed)
Cows_sold_at_roughage_deficit = IF(Compare_storage_to_requirements<0.2)THEN
(Cows*0.1) ELSE (0)
Export_of__P(t) = Export_of__P(t - dt) + (P_Exports -
Emptying_of_export_of_P) * dt
INIT Export_of__P = 0
P_Exports = P_Potato_export+P_in_csubsoiles+P_milk+P_in_Slaughter
```

```
Emptying_of_export_of_P =
IF(Time_for_emptying_of_imports_and_exports_of_P>0) THEN
(PULSE(Export_of__P)) ELSE (0)
Halmlager1_Cd[Field,Crop](t) = Halmlager1_Cd[Field,Crop](t - dt) +
(Halm_per_ha_to_total[Field,Crop]) * dt
INIT Halmlager1_Cd[Field,Crop] = 0
Halm_per_ha_to_total[Field1,Oats&pea] =
Proportion_Cd_i_barleystraw*Cd_Harvested_Barley_and_straw[Field1,Oats&pea]*
5.82
Halm_per_ha_to_total[Field1,LeyI] =
Proportion_Cd_i_barleystraw*Cd_Harvested_Barley_and_straw[Field1,LeyI]*5.82
Halm_per_ha_to_total[Field1,LeyII] =
Proportion_Cd_i_barleystraw*Cd_Harvested_Barley_and_straw[Field1,LeyII]*5.8
2
Halm_per_ha_to_total[Field1,LeyIII] =
Proportion_Cd_i_barleystraw*Cd_Harvested_Barley_and_straw[Field1,LeyIII]*5.
82
Halm_per_ha_to_total[Field1,Barley] =
Proportion_Cd_i_barleystraw*Cd_Harvested_Barley_and_straw[Field1,Barley]*5.
82
Halm_per_ha_to_total[Field1,Potato] =
Proportion_Cd_i_barleystraw*Cd_Harvested_Barley_and_straw[Field1,Potato]*5.
82
Halm_per_ha_to_total[Field2,Oats&pea] =
Proportion_Cd_i_barleystraw*Cd_Harvested_Barley_and_straw[Field2,Oats&pea]*
6.22
Halm_per_ha_to_total[Field2,LeyI] =
Proportion_Cd_i_barleystraw*Cd_Harvested_Barley_and_straw[Field2,LeyI]*6.22
Halm_per_ha_to_total[Field2,LeyII] =
Proportion_Cd_i_barleystraw*Cd_Harvested_Barley_and_straw[Field2,LeyII]*6.2
2
Halm_per_ha_to_total[Field2,LeyIII] =
Proportion_Cd_i_barleystraw*Cd_Harvested_Barley_and_straw[Field2,LeyIII]*6.
22
Halm_per_ha_to_total[Field2,Barley] =
Proportion_Cd_i_barleystraw*Cd_Harvested_Barley_and_straw[Field2,Barley]*6.
22
Halm_per_ha_to_total[Field2,Potato] =
Proportion_Cd_i_barleystraw*Cd_Harvested_Barley_and_straw[Field2,Potato]*6.
22
Halm_per_ha_to_total[Field3,Oats&pea] =
Proportion_Cd_i_barleystraw*Cd_Harvested_Barley_and_straw[Field3,Oats&pea]*
7.75
Halm_per_ha_to_total[Field3,LeyI] =
Proportion_Cd_i_barleystraw*Cd_Harvested_Barley_and_straw[Field3,LeyI]*7.75
Halm_per_ha_to_total[Field3,LeyII] =
Proportion_Cd_i_barleystraw*Cd_Harvested_Barley_and_straw[Field3,LeyII]*7.7
5
Halm_per_ha_to_total[Field3,LeyIII] =
Proportion_Cd_i_barleystraw*Cd_Harvested_Barley_and_straw[Field3,LeyIII]*7.
```

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75
Halm_per_ha_to_total[Field3,Barley] =
Proportion_Cd_i_barleystraw*Cd_Harvested_Barley_and_straw[Field3,Barley]*7.
75
Halm_per_ha_to_total[Field3,Potato] =
Proportion_Cd_i_barleystraw*Cd_Harvested_Barley_and_straw[Field3,Potato]*7.
75
Halm_per_ha_to_total[Field4,Oats&pea] =
Proportion_Cd_i_barleystraw*Cd_Harvested_Barley_and_straw[Field4,Oats&pea]*
6.3
Halm_per_ha_to_total[Field4,LeyI] =
Proportion_Cd_i_barleystraw*Cd_Harvested_Barley_and_straw[Field4,LeyI]*6.3
Halm_per_ha_to_total[Field4,LeyII] =
Proportion_Cd_i_barleystraw*Cd_Harvested_Barley_and_straw[Field4,LeyII]*6.3
Halm_per_ha_to_total[Field4,LeyIII] =
Proportion_Cd_i_barleystraw*Cd_Harvested_Barley_and_straw[Field4,LeyIII]*6.
3
Halm_per_ha_to_total[Field4,Barley] =
Proportion_Cd_i_barleystraw*Cd_Harvested_Barley_and_straw[Field4,Barley]*6.
3
Halm_per_ha_to_total[Field4,Potato] =
Proportion_Cd_i_barleystraw*Cd_Harvested_Barley_and_straw[Field4,Potato]*6.
3
Halm_per_ha_to_total[Field5,Oats&pea] =
Proportion_Cd_i_barleystraw*Cd_Harvested_Barley_and_straw[Field5,Oats&pea]*
7.35
Halm_per_ha_to_total[Field5,LeyI] =
Proportion_Cd_i_barleystraw*Cd_Harvested_Barley_and_straw[Field5,LeyI]*7.35
Halm_per_ha_to_total[Field5,LeyII] =
Proportion_Cd_i_barleystraw*Cd_Harvested_Barley_and_straw[Field5,LeyII]*7.3
5
Halm_per_ha_to_total[Field5,LeyIII] =
Proportion_Cd_i_barleystraw*Cd_Harvested_Barley_and_straw[Field5,LeyIII]*7.
35
Halm_per_ha_to_total[Field5,Barley] =
Proportion_Cd_i_barleystraw*Cd_Harvested_Barley_and_straw[Field5,Barley]*7.
35
Halm_per_ha_to_total[Field5,Potato] =
Proportion_Cd_i_barleystraw*Cd_Harvested_Barley_and_straw[Field5,Potato]*7.
35
Halm_per_ha_to_total[Field6,Oats&pea] =
Proportion_Cd_i_barleystraw*Cd_Harvested_Barley_and_straw[Field6,Oats&pea]*
5.38
Halm_per_ha_to_total[Field6,LeyI] =
Proportion_Cd_i_barleystraw*Cd_Harvested_Barley_and_straw[Field6,LeyI]*5.38
Halm_per_ha_to_total[Field6,LeyII] =
Proportion_Cd_i_barleystraw*Cd_Harvested_Barley_and_straw[Field6,LeyII]*5.3
8
Halm_per_ha_to_total[Field6,LeyIII] =
Proportion_Cd_i_barleystraw*Cd_Harvested_Barley_and_straw[Field6,LeyIII]*5.
```

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38
Halm_per_ha_to_total[Field6,Barley] =
Proportion_Cd_i_barleystraw*Cd_Harvested_Barley_and_straw[Field6,Barley]*5.
38
Halm_per_ha_to_total[Field6,Potato] =
Proportion_Cd_i_barleystraw*Cd_Harvested_Barley_and_straw[Field6,Potato]*5.
38
Halmlager2_Cd(t) = Halmlager2_Cd(t - dt) + (Hemproducerad_halm -
Homegrown_straw) * dt
INIT Halmlager2_Cd = 0.032
Hemproducerad_halm = Summerad_array_halm
Homegrown_straw = Halmlager2_Cd
Heifers(t) = Heifers(t - dt) + (Bought_heifers - Heifers_csubsoiles) * dt
INIT Heifers = 14
Bought_heifers = Cows_sold
Heifers_csubsoiles = Heifers
Import_of__P(t) = Import_of__P(t - dt) + (P_Imports -
Emptying_of_Import_of_P) * dt
INIT Import_of__P = 0
P_Imports =
P_Beetpulp+P_Minerals_and_concentrates+P_Simulated_barley_import+P_in_heife
rs+P_Sawdust+P_Sum_of_seeds_Total+P_Total_use_of_mineral_fertiliser_on_farm
Emptying_of_Import_of_P =
IF(Time_for_emptying_of_imports_and_exports_of_P>0) THEN
(PULSE(Import_of__P)) ELSE (0)
Inköpt_Zn(t) = Inköpt_Zn(t - dt) + (Inflöden_av_Zn - Emptying
ofav_inköpt_Zn) * dt
INIT Inköpt_Zn = 0
Inflöden_av_Zn =
Zn_Beetpulp+Zn_Minerals_and_concentrates+Zn_Simulated_barley_import+Zn_in_h
eifers+Zn_Sawdust+Sum_of_Zn_seeds_Total+Summerad_konstgödselanvändning_Zn+Z
n_Summerad_Pesticidanvändning+Zn_Summerad_Limeanvändning
Emptying ofav_inköpt_Zn =
IF(Time_for_emptying_of_import_and_export_of_Zn>0) THEN (PULSE(Inköpt_Zn))
ELSE (0)
O&Ponpotatofield_storage_1_P[Field,Crop](t) =
O&Ponpotatofield_storage_1_P[Field,Crop](t - dt) +
(PO&Ponpotatofield[Field,Crop]) * dt
INIT O&Ponpotatofield_storage_1_P[Field,Crop] = 0
PO&Ponpotatofield[Field1,Oats&pea] =
P_harvested_potato[Field1,Oats&pea]*(5.82-4)
PO&Ponpotatofield[Field1,LeyI] = P_harvested_potato[Field1,LeyI]*(5.82-4)
PO&Ponpotatofield[Field1,LeyII] = P_harvested_potato[Field1,LeyII]*(5.82-4)
PO&Ponpotatofield[Field1,LeyIII] = P_harvested_potato[Field1,LeyIII]*(5.82
-4)
PO&Ponpotatofield[Field1,Barley] = P_harvested_potato[Field1,Barley]*(5.82
-4)
PO&Ponpotatofield[Field1,Potato] = P_harvested_potato[Field1,Potato]*(5.82
-4)
PO&Ponpotatofield[Field2,Oats&pea] =
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P_harvested_potato[Field2,Oats&pea]*(6.22-4)
PO&Ponpotatofield[Field2,LeyI] = P_harvested_potato[Field2,LeyI]*(6.22-4)
PO&Ponpotatofield[Field2,LeyII] = P_harvested_potato[Field2,LeyII]*(6.22-4)
PO&Ponpotatofield[Field2,LeyIII] = P_harvested_potato[Field2,LeyIII]*(6.22
-4)
PO&Ponpotatofield[Field2,Barley] = P_harvested_potato[Field2,Barley]*(6.22
-4)
PO&Ponpotatofield[Field2,Potato] = P_harvested_potato[Field2,Potato]*(6.22
-4)
PO&Ponpotatofield[Field3,Oats&pea] =
P_harvested_potato[Field3,Oats&pea]*(7.75-4)
PO&Ponpotatofield[Field3,LeyI] = P_harvested_potato[Field3,LeyI]*(7.75-4)
PO&Ponpotatofield[Field3,LeyII] = P_harvested_potato[Field3,LeyII]*(7.75-4)
PO&Ponpotatofield[Field3,LeyIII] = P_harvested_potato[Field3,LeyIII]*(7.75
-4)
PO&Ponpotatofield[Field3,Barley] = P_harvested_potato[Field3,Barley]*(7.75
-4)
PO&Ponpotatofield[Field3,Potato] = P_harvested_potato[Field3,Potato]*(7.75
-4)
PO&Ponpotatofield[Field4,Oats&pea] =
P_harvested_potato[Field4,Oats&pea]*(6.3-4)
PO&Ponpotatofield[Field4,LeyI] = P_harvested_potato[Field4,LeyI]*(6.3-4)
PO&Ponpotatofield[Field4,LeyII] = P_harvested_potato[Field4,LeyII]*(6.3-4)
PO&Ponpotatofield[Field4,LeyIII] = P_harvested_potato[Field4,LeyIII]*(6.3
-4)
PO&Ponpotatofield[Field4,Barley] = P_harvested_potato[Field4,Barley]*(6.3
-4)
PO&Ponpotatofield[Field4,Potato] = P_harvested_potato[Field4,Potato]*(6.3
-4)
PO&Ponpotatofield[Field5,Oats&pea] =
P_harvested_potato[Field5,Oats&pea]*(7.35-4)
PO&Ponpotatofield[Field5,LeyI] = P_harvested_potato[Field5,LeyI]*(7.35-4)
PO&Ponpotatofield[Field5,LeyII] = P_harvested_potato[Field5,LeyII]*(7.35-4)
PO&Ponpotatofield[Field5,LeyIII] = P_harvested_potato[Field5,LeyIII]*(7.35
-4)
PO&Ponpotatofield[Field5,Barley] = P_harvested_potato[Field5,Barley]*(7.35
-4)
PO&Ponpotatofield[Field5,Potato] = P_harvested_potato[Field5,Potato]*(7.35
-4)
PO&Ponpotatofield[Field6,Oats&pea] =
P_harvested_potato[Field6,Oats&pea]*(5.38-4)
PO&Ponpotatofield[Field6,LeyI] = P_harvested_potato[Field6,LeyI]*(5.38-4)
PO&Ponpotatofield[Field6,LeyII] = P_harvested_potato[Field6,LeyII]*(5.38-4)
PO&Ponpotatofield[Field6,LeyIII] = P_harvested_potato[Field6,LeyIII]*(5.38
-4)
PO&Ponpotatofield[Field6,Barley] = P_harvested_potato[Field6,Barley]*(5.38
-4)
PO&Ponpotatofield[Field6,Potato] = P_harvested_potato[Field6,Potato]*(5.38
-4)
Oast&pea_storage_1_P[Field,Crop](t) = Oast&pea_storage_1_P[Field,Crop](t -
```

```
dt) + (Oats&Peas_per_ha_to_total_P[Field,Crop]) * dt
INIT Oast&pea_storage_1_P[Field,Crop] = 0
Oats&Peas_per_ha_to_total_P[Field1,Oats&pea] =
P_harvested_oats&peas[Field1,Oats&pea]*5.82
Oats&Peas_per_ha_to_total_P[Field1,LeyI] =
P_harvested_oats&peas[Field1,LeyI]*5.82
Oats&Peas_per_ha_to_total_P[Field1,LeyII] =
P_harvested_oats&peas[Field1,LeyII]*5.82
Oats&Peas_per_ha_to_total_P[Field1,LeyIII] =
P_harvested_oats&peas[Field1,LeyIII]*5.82
Oats&Peas_per_ha_to_total_P[Field1,Barley] =
P_harvested_oats&peas[Field1,Barley]*5.82
Oats&Peas_per_ha_to_total_P[Field1,Potato] =
P_harvested_oats&peas[Field1,Potato]*5.82
Oats&Peas_per_ha_to_total_P[Field2,Oats&pea] =
P_harvested_oats&peas[Field2,Oats&pea]*6.22
Oats&Peas_per_ha_to_total_P[Field2,LeyI] =
P_harvested_oats&peas[Field2,LeyI]*6.22
Oats&Peas_per_ha_to_total_P[Field2,LeyII] =
P_harvested_oats&peas[Field2,LeyII]*6.22
Oats&Peas_per_ha_to_total_P[Field2,LeyIII] =
P_harvested_oats&peas[Field2,LeyIII]*6.22
Oats&Peas_per_ha_to_total_P[Field2,Barley] =
P_harvested_oats&peas[Field2,Barley]*6.22
Oats&Peas_per_ha_to_total_P[Field2,Potato] =
P_harvested_oats&peas[Field2,Potato]*6.22
Oats&Peas_per_ha_to_total_P[Field3,Oats&pea] =
P_harvested_oats&peas[Field3,Oats&pea]*7.75
Oats&Peas_per_ha_to_total_P[Field3,LeyI] =
P_harvested_oats&peas[Field3,LeyI]*7.75
Oats&Peas_per_ha_to_total_P[Field3,LeyII] =
P_harvested_oats&peas[Field3,LeyII]*7.75
Oats&Peas_per_ha_to_total_P[Field3,LeyIII] =
P_harvested_oats&peas[Field3,LeyIII]*7.75
Oats&Peas_per_ha_to_total_P[Field3,Barley] =
P_harvested_oats&peas[Field3,Barley]*7.75
Oats&Peas_per_ha_to_total_P[Field3,Potato] =
P_harvested_oats&peas[Field3,Potato]*7.75
Oats&Peas_per_ha_to_total_P[Field4,Oats&pea] =
P_harvested_oats&peas[Field4,Oats&pea]*6.3
Oats&Peas_per_ha_to_total_P[Field4,LeyI] =
P_harvested_oats&peas[Field4,LeyI]*6.3
Oats&Peas_per_ha_to_total_P[Field4,LeyII] =
P_harvested_oats&peas[Field4,LeyII]*6.3
Oats&Peas_per_ha_to_total_P[Field4,LeyIII] =
P_harvested_oats&peas[Field4,LeyIII]*6.3
Oats&Peas_per_ha_to_total_P[Field4,Barley] =
P_harvested_oats&peas[Field4,Barley]*6.3
Oats&Peas_per_ha_to_total_P[Field4,Potato] =
P_harvested_oats&peas[Field4,Potato]*6.3
```

```
Oats&Peas_per_ha_to_total_P[Field5,Oats&pea] =
P_harvested_oats&peas[Field5,Oats&pea]*7.35
Oats&Peas_per_ha_to_total_P[Field5,LeyI] =
P_harvested_oats&peas[Field5,LeyI]*7.35
Oats&Peas_per_ha_to_total_P[Field5,LeyII] =
P_harvested_oats&peas[Field5,LeyII]*7.35
Oats&Peas_per_ha_to_total_P[Field5,LeyIII] =
P_harvested_oats&peas[Field5,LeyIII]*7.35
Oats&Peas_per_ha_to_total_P[Field5,Barley] =
P_harvested_oats&peas[Field5,Barley]*7.35
Oats&Peas_per_ha_to_total_P[Field5,Potato] =
P_harvested_oats&peas[Field5,Potato]*7.35
Oats&Peas_per_ha_to_total_P[Field6,Oats&pea] =
P_harvested_oats&peas[Field6,Oats&pea]*5.38
Oats&Peas_per_ha_to_total_P[Field6,LeyI] =
P_harvested_oats&peas[Field6,LeyI]*5.38
Oats&Peas_per_ha_to_total_P[Field6,LeyII] =
P_harvested_oats&peas[Field6,LeyII]*5.38
Oats&Peas_per_ha_to_total_P[Field6,LeyIII] =
P_harvested_oats&peas[Field6,LeyIII]*5.38
Oats&Peas_per_ha_to_total_P[Field6,Barley] =
P_harvested_oats&peas[Field6,Barley]*5.38
Oats&Peas_per_ha_to_total_P[Field6,Potato] =
P_harvested_oats&peas[Field6,Potato]*5.38
Pesticide_use[Field,Crop](t) = Pesticide_use[Field,Crop](t - dt) +
(Cd_Pesticide_use_per_ha_times_ha[Field,Crop] -
Emptying_of_Cd_pesticide_storage[Field,Crop]) * dt
INIT Pesticide_use[Field,Crop] = 0
Cd_Pesticide_use_per_ha_times_ha[Field1,Oats&pea] =
Cd_Pesticid[Field1,Oats&pea]*5.82
Cd_Pesticide_use_per_ha_times_ha[Field1,LeyI] =
Cd_Pesticid[Field1,LeyI]*5.82
Cd_Pesticide_use_per_ha_times_ha[Field1,LeyII] =
Cd_Pesticid[Field1,LeyII]*5.82
Cd_Pesticide_use_per_ha_times_ha[Field1,LeyIII] =
Cd_Pesticid[Field1,LeyIII]*5.82
Cd_Pesticide_use_per_ha_times_ha[Field1,Barley] =
Cd_Pesticid[Field1,Barley]*5.82
Cd_Pesticide_use_per_ha_times_ha[Field1,Potato] =
Cd_Pesticid[Field1,Potato]*5.82
Cd_Pesticide_use_per_ha_times_ha[Field2,Oats&pea] =
Cd_Pesticid[Field2,Oats&pea]*6.22
Cd_Pesticide_use_per_ha_times_ha[Field2,LeyI] =
Cd_Pesticid[Field2,LeyI]*6.22
Cd_Pesticide_use_per_ha_times_ha[Field2,LeyII] =
Cd_Pesticid[Field2,LeyII]*6.22
Cd_Pesticide_use_per_ha_times_ha[Field2,LeyIII] =
Cd_Pesticid[Field2,LeyIII]*6.22
Cd_Pesticide_use_per_ha_times_ha[Field2,Barley] =
Cd_Pesticid[Field2,Barley]*6.22
```

```
Cd_Pesticide_use_per_ha_times_ha[Field2,Potato] =
Cd_Pesticid[Field2,Potato]*6.22
Cd_Pesticide_use_per_ha_times_ha[Field3,Oats&pea] =
Cd_Pesticid[Field3,Oats&pea]*7.75
Cd_Pesticide_use_per_ha_times_ha[Field3,LeyI] =
Cd_Pesticid[Field3,LeyI]*7.75
Cd_Pesticide_use_per_ha_times_ha[Field3,LeyII] =
Cd_Pesticid[Field3,LeyII]*7.75
Cd_Pesticide_use_per_ha_times_ha[Field3,LeyIII] =
Cd_Pesticid[Field3,LeyIII]*7.75
Cd_Pesticide_use_per_ha_times_ha[Field3,Barley] =
Cd_Pesticid[Field3,Barley]*7.75
Cd_Pesticide_use_per_ha_times_ha[Field3,Potato] =
Cd_Pesticid[Field3,Potato]*7.75
Cd_Pesticide_use_per_ha_times_ha[Field4,Oats&pea] =
Cd_Pesticid[Field4,Oats&pea]*6.3
Cd_Pesticide_use_per_ha_times_ha[Field4,LeyI] =
Cd_Pesticid[Field4,LeyI]*6.3
Cd_Pesticide_use_per_ha_times_ha[Field4,LeyII] =
Cd_Pesticid[Field4,LeyII]*6.3
Cd_Pesticide_use_per_ha_times_ha[Field4,LeyIII] =
Cd_Pesticid[Field4,LeyIII]*6.3
Cd_Pesticide_use_per_ha_times_ha[Field4,Barley] =
Cd_Pesticid[Field4,Barley]*6.3
Cd_Pesticide_use_per_ha_times_ha[Field4,Potato] =
Cd_Pesticid[Field4,Potato]*6.3
Cd_Pesticide_use_per_ha_times_ha[Field5,Oats&pea] =
Cd_Pesticid[Field5,Oats&pea]*7.35
Cd_Pesticide_use_per_ha_times_ha[Field5,LeyI] =
Cd_Pesticid[Field5,LeyI]*7.35
Cd_Pesticide_use_per_ha_times_ha[Field5,LeyII] =
Cd_Pesticid[Field5,LeyII]*7.35
Cd_Pesticide_use_per_ha_times_ha[Field5,LeyIII] =
Cd_Pesticid[Field5,LeyIII]*7.35
Cd_Pesticide_use_per_ha_times_ha[Field5,Barley] =
Cd_Pesticid[Field5,Barley]*7.35
Cd_Pesticide_use_per_ha_times_ha[Field5,Potato] =
Cd_Pesticid[Field5,Potato]*7.35
Cd_Pesticide_use_per_ha_times_ha[Field6,Oats&pea] =
Cd_Pesticid[Field6,Oats&pea]*5.38
Cd_Pesticide_use_per_ha_times_ha[Field6,LeyI] =
Cd_Pesticid[Field6,LeyI]*5.38
Cd_Pesticide_use_per_ha_times_ha[Field6,LeyII] =
Cd_Pesticid[Field6,LeyII]*5.38
Cd_Pesticide_use_per_ha_times_ha[Field6,LeyIII] =
Cd_Pesticid[Field6,LeyIII]*5.38
Cd_Pesticide_use_per_ha_times_ha[Field6,Barley] =
Cd_Pesticid[Field6,Barley]*5.38
Cd_Pesticide_use_per_ha_times_ha[Field6,Potato] =
Cd_Pesticid[Field6,Potato]*5.38
```

```
Emptying_of_Cd_pesticide_storage[Field,Crop] =
IF(Time_for_emptying_of_bought_and_sold_Cd>0) THEN
(PULSE(Pesticide_use[Field,Crop])) ELSE (0)
P_Barley_Storage(t) = P_Barley_Storage(t - dt) + (P_Simulated_barley_import
+ P_Homegrown_barley - P_in_Barley) * dt
INIT P_Barley_Storage = Cows*1644*3.9
P_Simulated_barley_import = (Total_requirements_of_barley_P-
P_Barley_Storage)
P_Homegrown_barley = Sum_array_barley_P
P_in_Barley = Total_requirements_of_barley_P
P_Barley_storage_I[Field,Crop](t) = P_Barley_storage_I[Field,Crop](t - dt)
+ (P_Barley_per_ha_to_total[Field,Crop]) * dt
INIT P_Barley_storage_I[Field,Crop] = 0
P_Barley_per_ha_to_total[Field1,Oats&pea] = (1-
Proportion_P_in_barley_straw)*P_harvested_barley_and_straw[Field1,Oats&pea]
*5.82
P_Barley_per_ha_to_total[Field1,LeyI] = (1-
Proportion_P_in_barley_straw)*P_harvested_barley_and_straw[Field1,LeyI]*5.8
2
P_Barley_per_ha_to_total[Field1,LeyII] = (1-
Proportion_P_in_barley_straw)*P_harvested_barley_and_straw[Field1,LeyII]*5.
82
P_Barley_per_ha_to_total[Field1,LeyIII] = (1-
Proportion_P_in_barley_straw)*P_harvested_barley_and_straw[Field1,LeyIII]*5
.82
P_Barley_per_ha_to_total[Field1,Barley] = (1-
Proportion_P_in_barley_straw)*P_harvested_barley_and_straw[Field1,Barley]*5
.82
P_Barley_per_ha_to_total[Field1,Potato] = (1-
Proportion_P_in_barley_straw)*P_harvested_barley_and_straw[Field1,Potato]*5
.82
P_Barley_per_ha_to_total[Field2,Oats&pea] = (1-
Proportion_P_in_barley_straw)*P_harvested_barley_and_straw[Field2,Oats&pea]
*6.22
P_Barley_per_ha_to_total[Field2,LeyI] = (1-
Proportion_P_in_barley_straw)*P_harvested_barley_and_straw[Field2,LeyI]*6.2
2
P_Barley_per_ha_to_total[Field2,LeyII] = (1-
Proportion_P_in_barley_straw)*P_harvested_barley_and_straw[Field2,LeyII]*6.
22
P_Barley_per_ha_to_total[Field2,LeyIII] = (1-
Proportion_P_in_barley_straw)*P_harvested_barley_and_straw[Field2,LeyIII]*6
.22
P_Barley_per_ha_to_total[Field2,Barley] = (1-
Proportion_P_in_barley_straw)*P_harvested_barley_and_straw[Field2,Barley]*6
.22
P_Barley_per_ha_to_total[Field2,Potato] = (1-
Proportion_P_in_barley_straw)*P_harvested_barley_and_straw[Field2,Potato]*6
.22
P_Barley_per_ha_to_total[Field3,Oats&pea] = (1-
```

```
Proportion_P_in_barley_straw)*P_harvested_barley_and_straw[Field3,Oats&pea]
*7.75
P_Barley_per_ha_to_total[Field3,LeyI] = (1-
Proportion_P_in_barley_straw)*P_harvested_barley_and_straw[Field3,LeyI]*7.7
5
P_Barley_per_ha_to_total[Field3,LeyII] = (1-
Proportion_P_in_barley_straw)*P_harvested_barley_and_straw[Field3,LeyII]*7.
75
P_Barley_per_ha_to_total[Field3,LeyIII] = (1-
Proportion_P_in_barley_straw)*P_harvested_barley_and_straw[Field3,LeyIII]*7
.75
P_Barley_per_ha_to_total[Field3,Barley] = (1-
Proportion_P_in_barley_straw)*P_harvested_barley_and_straw[Field3,Barley]*7
.75
P_Barley_per_ha_to_total[Field3,Potato] = (1-
Proportion_P_in_barley_straw)*P_harvested_barley_and_straw[Field3,Potato]*7
.75
P_Barley_per_ha_to_total[Field4,Oats&pea] = (1-
Proportion_P_in_barley_straw)*P_harvested_barley_and_straw[Field4,Oats&pea]
*6.3
P_Barley_per_ha_to_total[Field4,LeyI] = (1-
Proportion_P_in_barley_straw)*P_harvested_barley_and_straw[Field4,LeyI]*6.3
P_Barley_per_ha_to_total[Field4,LeyII] = (1-
Proportion_P_in_barley_straw)*P_harvested_barley_and_straw[Field4,LeyII]*6.
3
P_Barley_per_ha_to_total[Field4,LeyIII] = (1-
Proportion_P_in_barley_straw)*P_harvested_barley_and_straw[Field4,LeyIII]*6
.3
P_Barley_per_ha_to_total[Field4,Barley] = (1-
Proportion_P_in_barley_straw)*P_harvested_barley_and_straw[Field4,Barley]*6
.3
P_Barley_per_ha_to_total[Field4,Potato] = (1-
Proportion_P_in_barley_straw)*P_harvested_barley_and_straw[Field4,Potato]*6
.3
P_Barley_per_ha_to_total[Field5,Oats&pea] = (1-
Proportion_P_in_barley_straw)*P_harvested_barley_and_straw[Field5,Oats&pea]
*7.35
P_Barley_per_ha_to_total[Field5,LeyI] = (1-
Proportion_P_in_barley_straw)*P_harvested_barley_and_straw[Field5,LeyI]*7.3
5
P_Barley_per_ha_to_total[Field5,LeyII] = (1-
Proportion_P_in_barley_straw)*P_harvested_barley_and_straw[Field5,LeyII]*7.
35
P_Barley_per_ha_to_total[Field5,LeyIII] = (1-
Proportion_P_in_barley_straw)*P_harvested_barley_and_straw[Field5,LeyIII]*7
.35
P_Barley_per_ha_to_total[Field5,Barley] = (1-
Proportion_P_in_barley_straw)*P_harvested_barley_and_straw[Field5,Barley]*7
.35
P_Barley_per_ha_to_total[Field5,Potato] = (1-
```

```
Proportion_P_in_barley_straw)*P_harvested_barley_and_straw[Field5,Potato]*7
.35
P_Barley_per_ha_to_total[Field6,Oats&pea] = (1-
Proportion_P_in_barley_straw)*P_harvested_barley_and_straw[Field6,Oats&pea]
*5.38
P_Barley_per_ha_to_total[Field6,LeyI] = (1-
Proportion_P_in_barley_straw)*P_harvested_barley_and_straw[Field6,LeyI]*5.3
8
P_Barley_per_ha_to_total[Field6,LeyII] = (1-
Proportion_P_in_barley_straw)*P_harvested_barley_and_straw[Field6,LeyII]*5.
38
P_Barley_per_ha_to_total[Field6,LeyIII] = (1-
Proportion_P_in_barley_straw)*P_harvested_barley_and_straw[Field6,LeyIII]*5
.38
P_Barley_per_ha_to_total[Field6,Barley] = (1-
Proportion_P_in_barley_straw)*P_harvested_barley_and_straw[Field6,Barley]*5
.38
P_Barley_per_ha_to_total[Field6,Potato] = (1-
Proportion_P_in_barley_straw)*P_harvested_barley_and_straw[Field6,Potato]*5
.38
P_Fast_subsoil[Field1](t) = P_Fast_subsoil[Field1](t - dt) +
(P_binidng_fast_subsoil[Field1] -
P_release_fast_subsoil_to_solution[Field1]) * dt
INIT P_Fast_subsoil[Field1] = 192665+544529
P_Fast_subsoil[Field2](t) = P_Fast_subsoil[Field2](t - dt) +
(P_binidng_fast_subsoil[Field2] -
P_release_fast_subsoil_to_solution[Field2]) * dt
INIT P_Fast_subsoil[Field2] = 207220+141511
P_Fast_subsoil[Field3](t) = P_Fast_subsoil[Field3](t - dt) +
(P_binidng_fast_subsoil[Field3] -
P_release_fast_subsoil_to_solution[Field3]) * dt
INIT P_Fast_subsoil[Field3] = 191166+99238
P_Fast_subsoil[Field4](t) = P_Fast_subsoil[Field4](t - dt) +
(P_binidng_fast_subsoil[Field4] -
P_release_fast_subsoil_to_solution[Field4]) * dt
INIT P_Fast_subsoil[Field4] = 168535+162018
P_Fast_subsoil[Field5](t) = P_Fast_subsoil[Field5](t - dt) +
(P_binidng_fast_subsoil[Field5] -
P_release_fast_subsoil_to_solution[Field5]) * dt
INIT P_Fast_subsoil[Field5] = 195816+135302
P_Fast_subsoil[Field6](t) = P_Fast_subsoil[Field6](t - dt) +
(P_binidng_fast_subsoil[Field6] -
P_release_fast_subsoil_to_solution[Field6]) * dt
INIT P_Fast_subsoil[Field6] = 222021+178142
P_binidng_fast_subsoil[Field] = P_Fast_binidng_subsoil[Field]
P_release_fast_subsoil_to_solution[Field] =
P_Fast_subsoil[Field]*P_release_coeff_fast_subsoil*Uptake_activity_Subsoil
P_Fast_topsoil[Field1](t) = P_Fast_topsoil[Field1](t - dt) +
(P_binding_to_fast_topsoil[Field1] + Inflows_to_P_fast_topsoil[Field1] -
P_release_fast_topsoil_to_solution[Field1] -
```

```
P_Erosion_losses_fast_pool_topsoil[Field1]) * dt
INIT P_Fast_topsoil[Field1] = 247123
P_Fast_topsoil[Field2](t) = P_Fast_topsoil[Field2](t - dt) +
(P_binding_to_fast_topsoil[Field2] + Inflows_to_P_fast_topsoil[Field2] -
P_release_fast_topsoil_to_solution[Field2] -
P_Erosion_losses_fast_pool_topsoil[Field2]) * dt
INIT P_Fast_topsoil[Field2] = 244261
P_Fast_topsoil[Field3](t) = P_Fast_topsoil[Field3](t - dt) +
(P_binding_to_fast_topsoil[Field3] + Inflows_to_P_fast_topsoil[Field3] -
P_release_fast_topsoil_to_solution[Field3] -
P_Erosion_losses_fast_pool_topsoil[Field3]) * dt
INIT P_Fast_topsoil[Field3] = 277557
P_Fast_topsoil[Field4](t) = P_Fast_topsoil[Field4](t - dt) +
(P_binding_to_fast_topsoil[Field4] + Inflows_to_P_fast_topsoil[Field4] -
P_release_fast_topsoil_to_solution[Field4] -
P_Erosion_losses_fast_pool_topsoil[Field4]) * dt
INIT P_Fast_topsoil[Field4] = 343994
P_Fast_topsoil[Field5](t) = P_Fast_topsoil[Field5](t - dt) +
(P_binding_to_fast_topsoil[Field5] + Inflows_to_P_fast_topsoil[Field5] -
P_release_fast_topsoil_to_solution[Field5] -
P_Erosion_losses_fast_pool_topsoil[Field5]) * dt
INIT P_Fast_topsoil[Field5] = 265235
P_Fast_topsoil[Field6](t) = P_Fast_topsoil[Field6](t - dt) +
(P_binding_to_fast_topsoil[Field6] + Inflows_to_P_fast_topsoil[Field6] -
P_release_fast_topsoil_to_solution[Field6] -
P_Erosion_losses_fast_pool_topsoil[Field6]) * dt
INIT P_Fast_topsoil[Field6] = 299089
P_binding_to_fast_topsoil[Field] = P_fast_binding_topsoil[Field]
Inflows_to_P_fast_topsoil[Field] =
P_Gödsel_Utsäde_Deposition_Fieldvis[Field]
P_release_fast_topsoil_to_solution[Field] =
P_Fast_topsoil[Field]*P_release_coeff_fast_topsoil*Uptake_activity_Topsoil
P_Erosion_losses_fast_pool_topsoil[Field] =  (IF(Runoff>970) THEN
(Runoff*P_Fast_topsoil[Field]*P_erosion_coeff_fast) ELSE
(0))+(0*P_release_fast_topsoil_to_solution[Field])
P_Fertilisation_I[Field,Crop](t) = P_Fertilisation_I[Field,Crop](t - dt) +
(P_Manure_application_per_ha[Field,Crop] + P_seeds[Field,Crop] +
P_Deposition_flow[Field,Crop]) * dt
INIT P_Fertilisation_I[Field,Crop] = 0
P_Manure_application_per_ha[Field1,Oats&pea] =
P_Fertilisation_matrix[Field1,Oats&pea]/5.82
P_Manure_application_per_ha[Field1,LeyI] =
P_Fertilisation_matrix[Field1,LeyI]/5.82
P_Manure_application_per_ha[Field1,LeyII] =
P_Fertilisation_matrix[Field1,LeyII]/5.82
P_Manure_application_per_ha[Field1,LeyIII] =
P_Fertilisation_matrix[Field1,LeyIII]/5.82
P_Manure_application_per_ha[Field1,Barley] =
P_Fertilisation_matrix[Field1,Barley]/5.82
P_Manure_application_per_ha[Field1,Potato] =
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```
P_Fertilisation_matrix[Field1,Potato]/5.82
P_Manure_application_per_ha[Field2,Oats&pea] =
P_Fertilisation_matrix[Field2,Oats&pea]/6.22
P_Manure_application_per_ha[Field2,LeyI] =
P_Fertilisation_matrix[Field2,LeyI]/6.22
P_Manure_application_per_ha[Field2,LeyII] =
P_Fertilisation_matrix[Field2,LeyII]/6.22
P_Manure_application_per_ha[Field2,LeyIII] =
P_Fertilisation_matrix[Field2,LeyIII]/6.22
P_Manure_application_per_ha[Field2,Barley] =
P_Fertilisation_matrix[Field2,Barley]/6.22
P_Manure_application_per_ha[Field2,Potato] =
P_Fertilisation_matrix[Field2,Potato]/6.22
P_Manure_application_per_ha[Field3,Oats&pea] =
P_Fertilisation_matrix[Field3,Oats&pea]/7.75
P_Manure_application_per_ha[Field3,LeyI] =
P_Fertilisation_matrix[Field3,LeyI]/7.75
P_Manure_application_per_ha[Field3,LeyII] =
P_Fertilisation_matrix[Field3,LeyII]/7.75
P_Manure_application_per_ha[Field3,LeyIII] =
P_Fertilisation_matrix[Field3,LeyIII]/7.75
P_Manure_application_per_ha[Field3,Barley] =
P_Fertilisation_matrix[Field3,Barley]/7.75
P_Manure_application_per_ha[Field3,Potato] =
P_Fertilisation_matrix[Field3,Potato]/7.75
P_Manure_application_per_ha[Field4,Oats&pea] =
P_Fertilisation_matrix[Field4,Oats&pea]/6.3
P_Manure_application_per_ha[Field4,LeyI] =
P_Fertilisation_matrix[Field4,LeyI]/6.3
P_Manure_application_per_ha[Field4,LeyII] =
P_Fertilisation_matrix[Field4,LeyII]/6.3
P_Manure_application_per_ha[Field4,LeyIII] =
P_Fertilisation_matrix[Field4,LeyIII]/6.3
P_Manure_application_per_ha[Field4,Barley] =
P_Fertilisation_matrix[Field4,Barley]/6.3
P_Manure_application_per_ha[Field4,Potato] =
P_Fertilisation_matrix[Field4,Potato]/6.3
P_Manure_application_per_ha[Field5,Oats&pea] =
P_Fertilisation_matrix[Field5,Oats&pea]/7.35
P_Manure_application_per_ha[Field5,LeyI] =
P_Fertilisation_matrix[Field5,LeyI]/7.35
P_Manure_application_per_ha[Field5,LeyII] =
P_Fertilisation_matrix[Field5,LeyII]/7.35
P_Manure_application_per_ha[Field5,LeyIII] =
P_Fertilisation_matrix[Field5,LeyIII]/7.35
P_Manure_application_per_ha[Field5,Barley] =
P_Fertilisation_matrix[Field5,Barley]/7.35
P_Manure_application_per_ha[Field5,Potato] =
P_Fertilisation_matrix[Field5,Potato]/7.35
P_Manure_application_per_ha[Field6,Oats&pea] =
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```
P_Fertilisation_matrix[Field6,Oats&pea]/5.38
P_Manure_application_per_ha[Field6,LeyI] =
P_Fertilisation_matrix[Field6,LeyI]/5.38
P_Manure_application_per_ha[Field6,LeyII] =
P_Fertilisation_matrix[Field6,LeyII]/5.38
P_Manure_application_per_ha[Field6,LeyIII] =
P_Fertilisation_matrix[Field6,LeyIII]/5.38
P_Manure_application_per_ha[Field6,Barley] =
P_Fertilisation_matrix[Field6,Barley]/5.38
P_Manure_application_per_ha[Field6,Potato] =
P_Fertilisation_matrix[Field6,Potato]/5.38
P_seeds[Field,Crop] =
Amount_of_Seeds[Field,Crop]*P_conc_crop[Field,Crop]*Crop_rotation_6_years[F
ield,Crop]
P_Deposition_flow[Field,Crop] = P_Deposition[Field,Crop]
P_Fertilisation_II[Field,Crop](t) = P_Fertilisation_II[Field,Crop](t - dt)
+ (P_Urine_spreading_per_ha[Field,Crop] +
P_Mineral_fertiliser_flow[Field,Crop]) * dt
INIT P_Fertilisation_II[Field,Crop] = 0
P_Urine_spreading_per_ha[Field1,Oats&pea] =
P_Urine_matrix[Field1,Oats&pea]/5.82
P_Urine_spreading_per_ha[Field1,LeyI] = P_Urine_matrix[Field1,LeyI]/5.82
P_Urine_spreading_per_ha[Field1,LeyII] = P_Urine_matrix[Field1,LeyII]/5.82
P_Urine_spreading_per_ha[Field1,LeyIII] = P_Urine_matrix[Field1,LeyIII]/
5.82
P_Urine_spreading_per_ha[Field1,Barley] = P_Urine_matrix[Field1,Barley]/
5.82
P_Urine_spreading_per_ha[Field1,Potato] = P_Urine_matrix[Field1,Potato]/
5.82
P_Urine_spreading_per_ha[Field2,Oats&pea] =
P_Urine_matrix[Field2,Oats&pea]/6.22
P_Urine_spreading_per_ha[Field2,LeyI] = P_Urine_matrix[Field2,LeyI]/6.22
P_Urine_spreading_per_ha[Field2,LeyII] = P_Urine_matrix[Field2,LeyII]/6.22
P_Urine_spreading_per_ha[Field2,LeyIII] = P_Urine_matrix[Field2,LeyIII]/
6.22
P_Urine_spreading_per_ha[Field2,Barley] = P_Urine_matrix[Field2,Barley]/
6.22
P_Urine_spreading_per_ha[Field2,Potato] = P_Urine_matrix[Field2,Potato]/
6.22
P_Urine_spreading_per_ha[Field3,Oats&pea] =
P_Urine_matrix[Field3,Oats&pea]/7.75
P_Urine_spreading_per_ha[Field3,LeyI] = P_Urine_matrix[Field3,LeyI]/7.75
P_Urine_spreading_per_ha[Field3,LeyII] = P_Urine_matrix[Field3,LeyII]/7.75
P_Urine_spreading_per_ha[Field3,LeyIII] = P_Urine_matrix[Field3,LeyIII]/
7.75
P_Urine_spreading_per_ha[Field3,Barley] = P_Urine_matrix[Field3,Barley]/
7.75
P_Urine_spreading_per_ha[Field3,Potato] = P_Urine_matrix[Field3,Potato]/
7.75
P_Urine_spreading_per_ha[Field4,Oats&pea] =
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P_Urine_matrix[Field4,Oats&pea]/6.3
P_Urine_spreading_per_ha[Field4,LeyI] = P_Urine_matrix[Field4,LeyI]/6.3
P_Urine_spreading_per_ha[Field4,LeyII] = P_Urine_matrix[Field4,LeyII]/6.3
P_Urine_spreading_per_ha[Field4,LeyIII] = P_Urine_matrix[Field4,LeyIII]/6.3
P_Urine_spreading_per_ha[Field4,Barley] = P_Urine_matrix[Field4,Barley]/6.3
P_Urine_spreading_per_ha[Field4,Potato] = P_Urine_matrix[Field4,Potato]/6.3
P_Urine_spreading_per_ha[Field5,Oats&pea] =
P_Urine_matrix[Field5,Oats&pea]/7.35
P_Urine_spreading_per_ha[Field5,LeyI] = P_Urine_matrix[Field5,LeyI]/7.35
P_Urine_spreading_per_ha[Field5,LeyII] = P_Urine_matrix[Field5,LeyII]/7.35
P_Urine_spreading_per_ha[Field5,LeyIII] = P_Urine_matrix[Field5,LeyIII]/
7.35
P_Urine_spreading_per_ha[Field5,Barley] = P_Urine_matrix[Field5,Barley]/
7.35
P_Urine_spreading_per_ha[Field5,Potato] = P_Urine_matrix[Field5,Potato]/
7.35
P_Urine_spreading_per_ha[Field6,Oats&pea] =
P_Urine_matrix[Field6,Oats&pea]/5.38
P_Urine_spreading_per_ha[Field6,LeyI] = P_Urine_matrix[Field6,LeyI]/5.38
P_Urine_spreading_per_ha[Field6,LeyII] = P_Urine_matrix[Field6,LeyII]/5.38
P_Urine_spreading_per_ha[Field6,LeyIII] = P_Urine_matrix[Field6,LeyIII]/
5.38
P_Urine_spreading_per_ha[Field6,Barley] = P_Urine_matrix[Field6,Barley]/
5.38
P_Urine_spreading_per_ha[Field6,Potato] = P_Urine_matrix[Field6,Potato]/
5.38
P_Mineral_fertiliser_flow[Field,Crop] = IF(Time_for_manure_application>0)
THEN (P_Mineral_fertiliser_matrix[Field,Crop]) ELSE (0)
P_Hay_storage_1[Field,Crop](t) = P_Hay_storage_1[Field,Crop](t - dt) +
(P_Hay_per_ha_to_total[Field,Crop]) * dt
INIT P_Hay_storage_1[Field,Crop] = 0
P_Hay_per_ha_to_total[Field1,Oats&pea] =
P_Harvested_hay_for_silage[Field1,Oats&pea]*5.82
P_Hay_per_ha_to_total[Field1,LeyI] =
P_Harvested_hay_for_silage[Field1,LeyI]*5.82
P_Hay_per_ha_to_total[Field1,LeyII] =
P_Harvested_hay_for_silage[Field1,LeyII]*5.82
P_Hay_per_ha_to_total[Field1,LeyIII] =
P_Harvested_hay_for_silage[Field1,LeyIII]*5.82
P_Hay_per_ha_to_total[Field1,Barley] =
P_Harvested_hay_for_silage[Field1,Barley]*5.82
P_Hay_per_ha_to_total[Field1,Potato] =
P_Harvested_hay_for_silage[Field1,Potato]*5.82
P_Hay_per_ha_to_total[Field2,Oats&pea] =
P_Harvested_hay_for_silage[Field2,Oats&pea]*6.22
P_Hay_per_ha_to_total[Field2,LeyI] =
P_Harvested_hay_for_silage[Field2,LeyI]*6.22
P_Hay_per_ha_to_total[Field2,LeyII] =
P_Harvested_hay_for_silage[Field2,LeyII]*6.22
P_Hay_per_ha_to_total[Field2,LeyIII] =
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P_Harvested_hay_for_silage[Field2,LeyIII]*6.22
P_Hay_per_ha_to_total[Field2,Barley] =
P_Harvested_hay_for_silage[Field2,Barley]*6.22
P_Hay_per_ha_to_total[Field2,Potato] =
P_Harvested_hay_for_silage[Field2,Potato]*6.22
P_Hay_per_ha_to_total[Field3,Oats&pea] =
P_Harvested_hay_for_silage[Field3,Oats&pea]*7.75
P_Hay_per_ha_to_total[Field3,LeyI] =
P_Harvested_hay_for_silage[Field3,LeyI]*7.75
P_Hay_per_ha_to_total[Field3,LeyII] =
P_Harvested_hay_for_silage[Field3,LeyII]*7.75
P_Hay_per_ha_to_total[Field3,LeyIII] =
P_Harvested_hay_for_silage[Field3,LeyIII]*7.75
P_Hay_per_ha_to_total[Field3,Barley] =
P_Harvested_hay_for_silage[Field3,Barley]*7.75
P_Hay_per_ha_to_total[Field3,Potato] =
P_Harvested_hay_for_silage[Field3,Potato]*7.75
P_Hay_per_ha_to_total[Field4,Oats&pea] =
P_Harvested_hay_for_silage[Field4,Oats&pea]*6.3
P_Hay_per_ha_to_total[Field4,LeyI] =
P_Harvested_hay_for_silage[Field4,LeyI]*6.3
P_Hay_per_ha_to_total[Field4,LeyII] =
P_Harvested_hay_for_silage[Field4,LeyII]*6.3
P_Hay_per_ha_to_total[Field4,LeyIII] =
P_Harvested_hay_for_silage[Field4,LeyIII]*6.3
P_Hay_per_ha_to_total[Field4,Barley] =
P_Harvested_hay_for_silage[Field4,Barley]*6.3
P_Hay_per_ha_to_total[Field4,Potato] =
P_Harvested_hay_for_silage[Field4,Potato]*6.3
P_Hay_per_ha_to_total[Field5,Oats&pea] =
P_Harvested_hay_for_silage[Field5,Oats&pea]*7.35
P_Hay_per_ha_to_total[Field5,LeyI] =
P_Harvested_hay_for_silage[Field5,LeyI]*7.35
P_Hay_per_ha_to_total[Field5,LeyII] =
P_Harvested_hay_for_silage[Field5,LeyII]*7.35
P_Hay_per_ha_to_total[Field5,LeyIII] =
P_Harvested_hay_for_silage[Field5,LeyIII]*7.35
P_Hay_per_ha_to_total[Field5,Barley] =
P_Harvested_hay_for_silage[Field5,Barley]*7.35
P_Hay_per_ha_to_total[Field5,Potato] =
P_Harvested_hay_for_silage[Field5,Potato]*7.35
P_Hay_per_ha_to_total[Field6,Oats&pea] =
P_Harvested_hay_for_silage[Field6,Oats&pea]*5.38
P_Hay_per_ha_to_total[Field6,LeyI] =
P_Harvested_hay_for_silage[Field6,LeyI]*5.38
P_Hay_per_ha_to_total[Field6,LeyII] =
P_Harvested_hay_for_silage[Field6,LeyII]*5.38
P_Hay_per_ha_to_total[Field6,LeyIII] =
P_Harvested_hay_for_silage[Field6,LeyIII]*5.38
P_Hay_per_ha_to_total[Field6,Barley] =
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P_Harvested_hay_for_silage[Field6,Barley]*5.38
P_Hay_per_ha_to_total[Field6,Potato] =
P_Harvested_hay_for_silage[Field6,Potato]*5.38
P_in_herd(t) = P_in_herd(t - dt) + (P_in_Barley + P_silage_fed + P_Beetpulp
+ P_in_heifers + P_Minerals_and_concentrates + P_Water_Cow - P_in_urine -
P_in_manure - P_in_csubsoiles - P_milk - P_in_Slaughter) * dt
INIT P_in_herd =  670*10*42
P_in_Barley = Total_requirements_of_barley_P
P_silage_fed = P_Fed_in_Silage
P_Beetpulp = Cows*Feeding_of_beetpulp*P_conc_beetpulp
P_in_heifers =
(Bought_heifers+Extra_heifers_at_roughage_surplus)*Average_weight_haifer*P_
conc_liveweight
P_Minerals_and_concentrates =
Cows*Feeding_of_mineral_concentrates*P_conc_minerals&concentrates
P_Water_Cow = Cows*Water_use_per_cow*P_conc_water
P_in_urine = (Urine_amount*P_conc_urine*Cows)+(0*P_in_Slaughter)
P_in_manure =
P_silage_fed+P_Beetpulp+P_in_Barley+P_Minerals_and_concentrates+P_in_heifer
s+P_Water_Cow-P_in_csubsoiles-P_milk-P_in_Slaughter-
P_in_urine+(0*P_in_urine)
P_in_csubsoiles =
Average_weight_csubsoiles*Csubsoiles_sold*P_conc_liveweight
P_milk = (Milk_production*Cows*P_conc_milk)+(0*P_in_csubsoiles)
P_in_Slaughter =
((Cows_sold+Cows_sold_at_roughage_deficit)*Average_weight_cow*P_conc_livewe
ight)+(0*P_milk)
P_Manure_pad(t) = P_Manure_pad(t - dt) + (P_in_manure + P_Water +
P_straw_flow + P_Sawdust - P_Emptying_of_manure_pad) * dt
INIT P_Manure_pad = 100000
P_in_manure =
P_silage_fed+P_Beetpulp+P_in_Barley+P_Minerals_and_concentrates+P_in_heifer
s+P_Water_Cow-P_in_csubsoiles-P_milk-P_in_Slaughter-
P_in_urine+(0*P_in_urine)
P_Water = Water_use_per_cow_in_stable*Cows*P_conc_water
P_straw_flow = P_Homegrown_straw
P_Sawdust = Import_sawdust*P_conc_sawdust
P_Emptying_of_manure_pad = IF(Time_for_manure_application>0) THEN
(PULSE(P_Manure_pad)) ELSE (0)
P_Potato_storage_I[Field,Crop](t) = P_Potato_storage_I[Field,Crop](t - dt)
+ (P_Potato_per_ha_to_total[Field,Crop]) * dt
INIT P_Potato_storage_I[Field,Crop] = 0
P_Potato_per_ha_to_total[Field,Crop] = P_harvested_potato[Field,Crop]*4
P_Potato_storage_II(t) = P_Potato_storage_II(t - dt) + (P_Homegrown_potato
- P_Potato_export) * dt
INIT P_Potato_storage_II = 0
P_Homegrown_potato = Sum_array_potato_P
P_Potato_export = P_Potato_storage_II
P_Seeds_Storage[Field,Crop](t) = P_Seeds_Storage[Field,Crop](t - dt) +
(P_seeds_per_ha_to_total[Field,Crop] -
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P_Emptying_of_seeds_storage[Field,Crop]) * dt
INIT P_Seeds_Storage[Field,Crop] = 0
P_seeds_per_ha_to_total[Field1,Oats&pea] = P_seeds[Field1,Oats&pea]*5.82
P_seeds_per_ha_to_total[Field1,LeyI] = P_seeds[Field1,LeyI]*5.82
P_seeds_per_ha_to_total[Field1,LeyII] = P_seeds[Field1,LeyII]*5.82
P_seeds_per_ha_to_total[Field1,LeyIII] = P_seeds[Field1,LeyIII]*5.82
P_seeds_per_ha_to_total[Field1,Barley] = P_seeds[Field1,Barley]*5.82
P_seeds_per_ha_to_total[Field1,Potato] = P_seeds[Field1,Potato]*5.82
P_seeds_per_ha_to_total[Field2,Oats&pea] = P_seeds[Field2,Oats&pea]*6.22
P_seeds_per_ha_to_total[Field2,LeyI] = P_seeds[Field2,LeyI]*6.22
P_seeds_per_ha_to_total[Field2,LeyII] = P_seeds[Field2,LeyII]*6.22
P_seeds_per_ha_to_total[Field2,LeyIII] = P_seeds[Field2,LeyIII]*6.22
P_seeds_per_ha_to_total[Field2,Barley] = P_seeds[Field2,Barley]*6.22
P_seeds_per_ha_to_total[Field2,Potato] = P_seeds[Field2,Potato]*6.22
P_seeds_per_ha_to_total[Field3,Oats&pea] = P_seeds[Field3,Oats&pea]*7.75
P_seeds_per_ha_to_total[Field3,LeyI] = P_seeds[Field3,LeyI]*7.75
P_seeds_per_ha_to_total[Field3,LeyII] = P_seeds[Field3,LeyII]*7.75
P_seeds_per_ha_to_total[Field3,LeyIII] = P_seeds[Field3,LeyIII]*7.75
P_seeds_per_ha_to_total[Field3,Barley] = P_seeds[Field3,Barley]*7.75
P_seeds_per_ha_to_total[Field3,Potato] = P_seeds[Field3,Potato]*7.75
P_seeds_per_ha_to_total[Field4,Oats&pea] = P_seeds[Field4,Oats&pea]*6.3
P_seeds_per_ha_to_total[Field4,LeyI] = P_seeds[Field4,LeyI]*6.3
P_seeds_per_ha_to_total[Field4,LeyII] = P_seeds[Field4,LeyII]*6.3
P_seeds_per_ha_to_total[Field4,LeyIII] = P_seeds[Field4,LeyIII]*6.3
P_seeds_per_ha_to_total[Field4,Barley] = P_seeds[Field4,Barley]*6.3
P_seeds_per_ha_to_total[Field4,Potato] = P_seeds[Field4,Potato]*6.3
P_seeds_per_ha_to_total[Field5,Oats&pea] = P_seeds[Field5,Oats&pea]*7.35
P_seeds_per_ha_to_total[Field5,LeyI] = P_seeds[Field5,LeyI]*7.35
P_seeds_per_ha_to_total[Field5,LeyII] = P_seeds[Field5,LeyII]*7.35
P_seeds_per_ha_to_total[Field5,LeyIII] = P_seeds[Field5,LeyIII]*7.35
P_seeds_per_ha_to_total[Field5,Barley] = P_seeds[Field5,Barley]*7.35
P_seeds_per_ha_to_total[Field5,Potato] = P_seeds[Field5,Potato]*7.35
P_seeds_per_ha_to_total[Field6,Oats&pea] = P_seeds[Field6,Oats&pea]*5.38
P_seeds_per_ha_to_total[Field6,LeyI] = P_seeds[Field6,LeyI]*5.38
P_seeds_per_ha_to_total[Field6,LeyII] = P_seeds[Field6,LeyII]*5.38
P_seeds_per_ha_to_total[Field6,LeyIII] = P_seeds[Field6,LeyIII]*5.38
P_seeds_per_ha_to_total[Field6,Barley] = P_seeds[Field6,Barley]*5.38
P_seeds_per_ha_to_total[Field6,Potato] = P_seeds[Field6,Potato]*5.38
P_Emptying_of_seeds_storage[Field,Crop] =
IF(Time_for_emptying_of_imports_and_exports_of_P>0) THEN
(PULSE(P_Seeds_Storage[Field,Crop])) ELSE (0)
P_Silage_tower(t) = P_Silage_tower(t - dt) + (P_Silage_production -
P_silage_fed) * dt
INIT P_Silage_tower = Cows*4059*3
P_Silage_production = Sum_of_inflows_to_P_silage_tower
P_silage_fed = P_Fed_in_Silage
P_Slow_subsoil[Field1](t) = P_Slow_subsoil[Field1](t - dt) +
(P_binding_to_slow_subsoil[Field1] -
P_release_slow_subsoil_to_solution[Field1]) * dt
INIT P_Slow_subsoil[Field1] = 3591400+3521300
```

```
P_Slow_subsoil[Field2](t) = P_Slow_subsoil[Field2](t - dt) +
(P_binding_to_slow_subsoil[Field2] -
P_release_slow_subsoil_to_solution[Field2]) * dt
INIT P_Slow_subsoil[Field2] = 3402800+2718500
P_Slow_subsoil[Field3](t) = P_Slow_subsoil[Field3](t - dt) +
(P_binding_to_slow_subsoil[Field3] -
P_release_slow_subsoil_to_solution[Field3]) * dt
INIT P_Slow_subsoil[Field3] = 3637700+3271200
P_Slow_subsoil[Field4](t) = P_Slow_subsoil[Field4](t - dt) +
(P_binding_to_slow_subsoil[Field4] -
P_release_slow_subsoil_to_solution[Field4]) * dt
INIT P_Slow_subsoil[Field4] = 2256900+2844300
P_Slow_subsoil[Field5](t) = P_Slow_subsoil[Field5](t - dt) +
(P_binding_to_slow_subsoil[Field5] -
P_release_slow_subsoil_to_solution[Field5]) * dt
INIT P_Slow_subsoil[Field5] = 2752000+2918700
P_Slow_subsoil[Field6](t) = P_Slow_subsoil[Field6](t - dt) +
(P_binding_to_slow_subsoil[Field6] -
P_release_slow_subsoil_to_solution[Field6]) * dt
INIT P_Slow_subsoil[Field6] = 2112400+2765900
P_binding_to_slow_subsoil[Field] = P_binding_slow_subsoil[Field]
P_release_slow_subsoil_to_solution[Field] =
P_Slow_subsoil[Field]*P_Release_coeff_slow_subsoil*Uptake_activity_Subsoil
P_Slow_topsoil[Field1](t) = P_Slow_topsoil[Field1](t - dt) +
(P_binidng_slow_topsoil[Field1] -
P_release_slow_to_solution_topsoil[Field1] -
P_Erosion_losses_slow_pool_topsoil[Field1]) * dt
INIT P_Slow_topsoil[Field1] = 2574200
P_Slow_topsoil[Field2](t) = P_Slow_topsoil[Field2](t - dt) +
(P_binidng_slow_topsoil[Field2] -
P_release_slow_to_solution_topsoil[Field2] -
P_Erosion_losses_slow_pool_topsoil[Field2]) * dt
INIT P_Slow_topsoil[Field2] = 2415500
P_Slow_topsoil[Field3](t) = P_Slow_topsoil[Field3](t - dt) +
(P_binidng_slow_topsoil[Field3] -
P_release_slow_to_solution_topsoil[Field3] -
P_Erosion_losses_slow_pool_topsoil[Field3]) * dt
INIT P_Slow_topsoil[Field3] = 1878800
P_Slow_topsoil[Field4](t) = P_Slow_topsoil[Field4](t - dt) +
(P_binidng_slow_topsoil[Field4] -
P_release_slow_to_solution_topsoil[Field4] -
P_Erosion_losses_slow_pool_topsoil[Field4]) * dt
INIT P_Slow_topsoil[Field4] = 2476800
P_Slow_topsoil[Field5](t) = P_Slow_topsoil[Field5](t - dt) +
(P_binidng_slow_topsoil[Field5] -
P_release_slow_to_solution_topsoil[Field5] -
P_Erosion_losses_slow_pool_topsoil[Field5]) * dt
INIT P_Slow_topsoil[Field5] = 2776700
P_Slow_topsoil[Field6](t) = P_Slow_topsoil[Field6](t - dt) +
(P_binidng_slow_topsoil[Field6] -
```

```
P_release_slow_to_solution_topsoil[Field6] -
P_Erosion_losses_slow_pool_topsoil[Field6]) * dt
INIT P_Slow_topsoil[Field6] = 2123500
P_binidng_slow_topsoil[Field] = P_binding_slow_topsoil[Field]
P_release_slow_to_solution_topsoil[Field] =
P_Slow_topsoil[Field]*Uptake_activity_Topsoil*P_release_coeff_slow_topsoil
P_Erosion_losses_slow_pool_topsoil[Field] = IF (Runoff>970) THEN
(Runoff*P_Slow_topsoil[Field]*P_erosion_coeff_slow) ELSE (0)
P_soil_solution_subsoil[Field](t) = P_soil_solution_subsoil[Field](t - dt)
+ (P_inflows_to_soil_solution_subsoil[Field] +
P_leaching_from_topsoil_to_subsoil[Field] - P_Leaching_Subsoiol[Field] -
P_Uptake_subsoil[Field,Crop] - P_Fast_binidng_subsoil[Field] -
P_binding_slow_subsoil[Field]) * dt
INIT P_soil_solution_subsoil[Field] = 100
P_inflows_to_soil_solution_subsoil[Field] =
P_release_fast_subsoil_to_solution[Field]+P_release_slow_subsoil_to_solutio
n[Field]
P_leaching_from_topsoil_to_subsoil[Field] =
(Percolation_topsoil_to_subsoil*P_topsoil_conc_g_per_m3[Field])+(0*P_bindin
g_slow_topsoil[Field])
P_Leaching_Subsoiol[Field] =
(Water_flow_from_subsoil*P_subsoil_conc_g_per_m3[Field])+(0*P_binding_slow_
subsoil[Field])
P_Uptake_subsoil[Field,Crop] =
IF((P_Uptake_topsoil[Field,Crop]<P_Ideal_uptake[Field,Crop])AND(P_subsoil_c
onc_g_per_m3[Field]>0.03))THEN(P_Uptake_drive[Field,Crop]*Uptake_activity_S
ubsoil*Cropping_period*(P_Ideal_uptake[Field,Crop]-
P_Uptake_topsoil[Field,Crop]))ELSE(0)
P_Fast_binidng_subsoil[Field] =
(P_subsoil_conc_g_per_m3[Field]*P_coeff_binindg_fast_subsoil*P_Switch_bindi
ng_subsoil[Field])+(0*P_Uptake_subsoil_per_field[Field])
P_binding_slow_subsoil[Field] =
(P_coeff_binidng_slow_subsoil*P_subsoil_conc_g_per_m3[Field]*P_Switch_bindi
ng_subsoil[Field])+(0*P_Fast_binidng_subsoil[Field])
P_Soil_solution_toposoil[Field](t) = P_Soil_solution_toposoil[Field](t -
dt) + (P_inflows_to_topsoil_soil_solution[Field] -
P_fast_binding_topsoil[Field] - P_Uptake_topsoil[Field,Crop] -
P_leaching_from_topsoil_to_subsoil[Field] - P_binding_slow_topsoil[Field] -
P_loss_Runoff[Field]) * dt
INIT P_Soil_solution_toposoil[Field] = 200
P_inflows_to_topsoil_soil_solution[Field] = Sum_of_P_inflows_topsoil[Field]
P_fast_binding_topsoil[Field] =
(P_coeff__binding_fast_topsoil*P_topsoil_conc_g_per_m3[Field]*P_Switch_bind
ing_topsoil[Field])+(0*P_uptake_topsoil_per_field[Field])
P_Uptake_topsoil[Field,Crop] =
P_Uptake_drive[Field,Crop]*P_Ideal_uptake[Field,Crop]*Uptake_activity_Topso
il*Cropping_period
P_leaching_from_topsoil_to_subsoil[Field] =
(Percolation_topsoil_to_subsoil*P_topsoil_conc_g_per_m3[Field])+(0*P_bindin
g_slow_topsoil[Field])
```

```
P_binding_slow_topsoil[Field] =
(P_coeff_binding_slow_topsoil*P_topsoil_conc_g_per_m3[Field]*P_Switch_bindi
ng_topsoil[Field])+(0*P_fast_binding_topsoil[Field])+(0*P_fast_binding_tops
oil[Field])
P_loss_Runoff[Field] =
(P_topsoil_conc_g_per_m3[Field]*Runoff)+(0*P_leaching_from_topsoil_to_subso
il[Field])
P_soil_solution_topsoil[Field](t) = P_soil_solution_topsoil[Field](t - dt)
INIT P_soil_solution_topsoil[Field] = 200
P_Straw_storage_I[Field,Crop](t) = P_Straw_storage_I[Field,Crop](t - dt) +
(P_Straw_per_ha_to_total[Field,Crop]) * dt
INIT P_Straw_storage_I[Field,Crop] = 0
P_Straw_per_ha_to_total[Field1,Oats&pea] =
Proportion_P_in_barley_straw*P_harvested_barley_and_straw[Field1,Oats&pea]*
5.82
P_Straw_per_ha_to_total[Field1,LeyI] =
Proportion_P_in_barley_straw*P_harvested_barley_and_straw[Field1,LeyI]*5.82
P_Straw_per_ha_to_total[Field1,LeyII] =
Proportion_P_in_barley_straw*P_harvested_barley_and_straw[Field1,LeyII]*5.8
2
P_Straw_per_ha_to_total[Field1,LeyIII] =
Proportion_P_in_barley_straw*P_harvested_barley_and_straw[Field1,LeyIII]*5.
82
P_Straw_per_ha_to_total[Field1,Barley] =
Proportion_P_in_barley_straw*P_harvested_barley_and_straw[Field1,Barley]*5.
82
P_Straw_per_ha_to_total[Field1,Potato] =
Proportion_P_in_barley_straw*P_harvested_barley_and_straw[Field1,Potato]*5.
82
P_Straw_per_ha_to_total[Field2,Oats&pea] =
Proportion_P_in_barley_straw*P_harvested_barley_and_straw[Field2,Oats&pea]*
6.22
P_Straw_per_ha_to_total[Field2,LeyI] =
Proportion_P_in_barley_straw*P_harvested_barley_and_straw[Field2,LeyI]*6.22
P_Straw_per_ha_to_total[Field2,LeyII] =
Proportion_P_in_barley_straw*P_harvested_barley_and_straw[Field2,LeyII]*6.2
2
P_Straw_per_ha_to_total[Field2,LeyIII] =
Proportion_P_in_barley_straw*P_harvested_barley_and_straw[Field2,LeyIII]*6.
22
P_Straw_per_ha_to_total[Field2,Barley] =
Proportion_P_in_barley_straw*P_harvested_barley_and_straw[Field2,Barley]*6.
22
P_Straw_per_ha_to_total[Field2,Potato] =
Proportion_P_in_barley_straw*P_harvested_barley_and_straw[Field2,Potato]*6.
22
P_Straw_per_ha_to_total[Field3,Oats&pea] =
Proportion_P_in_barley_straw*P_harvested_barley_and_straw[Field3,Oats&pea]*
7.75
P_Straw_per_ha_to_total[Field3,LeyI] =
```

```
Proportion_P_in_barley_straw*P_harvested_barley_and_straw[Field3,LeyI]*7.75
P_Straw_per_ha_to_total[Field3,LeyII] =
Proportion_P_in_barley_straw*P_harvested_barley_and_straw[Field3,LeyII]*7.7
5
P_Straw_per_ha_to_total[Field3,LeyIII] =
Proportion_P_in_barley_straw*P_harvested_barley_and_straw[Field3,LeyIII]*7.
75
P_Straw_per_ha_to_total[Field3,Barley] =
Proportion_P_in_barley_straw*P_harvested_barley_and_straw[Field3,Barley]*7.
75
P_Straw_per_ha_to_total[Field3,Potato] =
Proportion_P_in_barley_straw*P_harvested_barley_and_straw[Field3,Potato]*7.
75
P_Straw_per_ha_to_total[Field4,Oats&pea] =
Proportion_P_in_barley_straw*P_harvested_barley_and_straw[Field4,Oats&pea]*
6.3
P_Straw_per_ha_to_total[Field4,LeyI] =
Proportion_P_in_barley_straw*P_harvested_barley_and_straw[Field4,LeyI]*6.3
P_Straw_per_ha_to_total[Field4,LeyII] =
Proportion_P_in_barley_straw*P_harvested_barley_and_straw[Field4,LeyII]*6.3
P_Straw_per_ha_to_total[Field4,LeyIII] =
Proportion_P_in_barley_straw*P_harvested_barley_and_straw[Field4,LeyIII]*6.
3
P_Straw_per_ha_to_total[Field4,Barley] =
Proportion_P_in_barley_straw*P_harvested_barley_and_straw[Field4,Barley]*6.
3
P_Straw_per_ha_to_total[Field4,Potato] =
Proportion_P_in_barley_straw*P_harvested_barley_and_straw[Field4,Potato]*6.
3
P_Straw_per_ha_to_total[Field5,Oats&pea] =
Proportion_P_in_barley_straw*P_harvested_barley_and_straw[Field5,Oats&pea]*
7.35
P_Straw_per_ha_to_total[Field5,LeyI] =
Proportion_P_in_barley_straw*P_harvested_barley_and_straw[Field5,LeyI]*7.35
P_Straw_per_ha_to_total[Field5,LeyII] =
Proportion_P_in_barley_straw*P_harvested_barley_and_straw[Field5,LeyII]*7.3
5
P_Straw_per_ha_to_total[Field5,LeyIII] =
Proportion_P_in_barley_straw*P_harvested_barley_and_straw[Field5,LeyIII]*7.
35
P_Straw_per_ha_to_total[Field5,Barley] =
Proportion_P_in_barley_straw*P_harvested_barley_and_straw[Field5,Barley]*7.
35
P_Straw_per_ha_to_total[Field5,Potato] =
Proportion_P_in_barley_straw*P_harvested_barley_and_straw[Field5,Potato]*7.
35
P_Straw_per_ha_to_total[Field6,Oats&pea] =
Proportion_P_in_barley_straw*P_harvested_barley_and_straw[Field6,Oats&pea]*
5.38
P_Straw_per_ha_to_total[Field6,LeyI] =
```

```
Proportion_P_in_barley_straw*P_harvested_barley_and_straw[Field6,LeyI]*5.38
P_Straw_per_ha_to_total[Field6,LeyII] =
Proportion_P_in_barley_straw*P_harvested_barley_and_straw[Field6,LeyII]*5.3
8
P_Straw_per_ha_to_total[Field6,LeyIII] =
Proportion_P_in_barley_straw*P_harvested_barley_and_straw[Field6,LeyIII]*5.
38
P_Straw_per_ha_to_total[Field6,Barley] =
Proportion_P_in_barley_straw*P_harvested_barley_and_straw[Field6,Barley]*5.
38
P_Straw_per_ha_to_total[Field6,Potato] =
Proportion_P_in_barley_straw*P_harvested_barley_and_straw[Field6,Potato]*5.
38
P_straw_storage_II(t) = P_straw_storage_II(t - dt) +
(P_Homegrown_straw_to_storage_II - P_Homegrown_straw) * dt
INIT P_straw_storage_II = 22458
P_Homegrown_straw_to_storage_II = Sum_array_straw_P
P_Homegrown_straw = P_straw_storage_II
P_Sum_dep[Field](t) = P_Sum_dep[Field](t - dt) + (P_dep_2[Field] -
P_Empt_sum_dep[Field]) * dt
INIT P_Sum_dep[Field] = 0
P_dep_2[Field] = ARRAYSUM(P_Deposition_flow[Field,*])
P_Empt_sum_dep[Field] = IF(Time_for_emptying_of_imports_and_exports_of_P>0)
THEN (PULSE(P_Sum_dep[Field])) ELSE (0)
P_Sum_harvest[Field](t) = P_Sum_harvest[Field](t - dt) +
(P_harvest_2[Field] - P_Empt_sum_harvest[Field]) * dt
INIT P_Sum_harvest[Field] = 0
P_harvest_2[Field] = P_uptake_fieldwise[Field]
P_Empt_sum_harvest[Field] =
IF(Time_for_emptying_of_imports_and_exports_of_P>0) THEN
(PULSE(P_Sum_harvest[Field])) ELSE (0)
P_Sum_losses[Field](t) = P_Sum_losses[Field](t - dt) + (P_losses_2[Field] -
P_Empt_sum_losses[Field]) * dt
INIT P_Sum_losses[Field] = 0
P_losses_2[Field] = ARRAYSUM(P_förluster_växtföljd[Field,*])
P_Empt_sum_losses[Field] =
IF(Time_for_emptying_of_imports_and_exports_of_P>0) THEN
(PULSE(P_Sum_losses[Field])) ELSE (0)
P_Sum_manure[Field](t) = P_Sum_manure[Field](t - dt) + (P_manure_2[Field] -
P_Empt_sum_manure[Field]) * dt
INIT P_Sum_manure[Field] = 0
P_manure_2[Field] = ARRAYSUM(P_Manure_application_per_ha[Field,*])
P_Empt_sum_manure[Field] =
IF(Time_for_emptying_of_imports_and_exports_of_P>0) THEN
(PULSE(P_Sum_manure[Field])) ELSE (0)
P_Sum_minfert[Field](t) = P_Sum_minfert[Field](t - dt) +
(P_minfert_2[Field] - P_Empt_sum_minfert[Field]) * dt
INIT P_Sum_minfert[Field] = 0
P_minfert_2[Field] = ARRAYSUM(P_Mineral_fertiliser_flow[Field,*])
P_Empt_sum_minfert[Field] =
```

```
IF(Time_for_emptying_of_imports_and_exports_of_P>0) THEN
(PULSE(P_Sum_minfert[Field])) ELSE (0)
P_sum_of_erosion_slow_topsoil[Field](t) =
P_sum_of_erosion_slow_topsoil[Field](t - dt) +
(P_Erosion_losses_slow_pool_topsoil[Field] -
P_emptying_of_sum_of_erosion_slow_pool[Field]) * dt
INIT P_sum_of_erosion_slow_topsoil[Field] = 0
P_Erosion_losses_slow_pool_topsoil[Field] = IF (Runoff>970) THEN
(Runoff*P_Slow_topsoil[Field]*P_erosion_coeff_slow) ELSE (0)
P_emptying_of_sum_of_erosion_slow_pool[Field] =
IF(Time_for_emptying_of_imports_and_exports_of_P>0) THEN
(PULSE(P_sum_of_erosion_slow_topsoil[Field])) ELSE (0)
P_Sum_of_fertilisation[Field,Crop](t) =
P_Sum_of_fertilisation[Field,Crop](t - dt) +
(P_fertiisatiion_per_hectare[Field,Crop] -
P_Emptying_of_sum__of_fertilisation[Field,Crop]) * dt
INIT P_Sum_of_fertilisation[Field,Crop] = 0
P_fertiisatiion_per_hectare[Field,Crop] =
P_Manure_application_per_ha[Field,Crop]+P_Urine_spreading_per_ha[Field,Crop
]
P_Emptying_of_sum__of_fertilisation[Field,Crop] =
IF(Time_for_emptying_of_imports_and_exports_of_P>0) THEN
(PULSE(P_Sum_of_fertilisation[Field,Crop])) ELSE (0)
P_Sum_of_harvested_barley[Field,Crop](t) =
P_Sum_of_harvested_barley[Field,Crop](t - dt) +
(P_harvested_barley_and_straw[Field,Crop]) * dt
INIT P_Sum_of_harvested_barley[Field,Crop] = 0
P_harvested_barley_and_straw[Field1,Oats&pea] =
0*Upptaget_P[Field1,Oats&pea]*Harvest_time
P_harvested_barley_and_straw[Field1,LeyI] =
0*Upptaget_P[Field1,LeyI]*Harvest_time
P_harvested_barley_and_straw[Field1,LeyII] =
0*Upptaget_P[Field1,LeyII]*Harvest_time
P_harvested_barley_and_straw[Field1,LeyIII] =
0*Upptaget_P[Field1,LeyIII]*Harvest_time
P_harvested_barley_and_straw[Field1,Barley] = IF(Harvest_time>0)
THEN(PULSE(Upptaget_P[Field1,Barley]))ELSE(0)
P_harvested_barley_and_straw[Field1,Potato] =
0*Upptaget_P[Field1,Potato]*Harvest_time
P_harvested_barley_and_straw[Field2,Oats&pea] =
0*Upptaget_P[Field2,Oats&pea]*Harvest_time
P_harvested_barley_and_straw[Field2,LeyI] =
0*Upptaget_P[Field2,LeyI]*Harvest_time
P_harvested_barley_and_straw[Field2,LeyII] =
0*Upptaget_P[Field2,LeyII]*Harvest_time
P_harvested_barley_and_straw[Field2,LeyIII] =
0*Upptaget_P[Field2,LeyIII]*Harvest_time
P_harvested_barley_and_straw[Field2,Barley] = IF(Harvest_time>0)
THEN(PULSE(Upptaget_P[Field2,Barley]))ELSE(0)
P_harvested_barley_and_straw[Field2,Potato] =
```

```
0*Upptaget_P[Field2,Potato]*Harvest_time
P_harvested_barley_and_straw[Field3,Oats&pea] =
0*Upptaget_P[Field3,Oats&pea]*Harvest_time
P_harvested_barley_and_straw[Field3,LeyI] =
0*Upptaget_P[Field3,LeyI]*Harvest_time
P_harvested_barley_and_straw[Field3,LeyII] =
0*Upptaget_P[Field3,LeyII]*Harvest_time
P_harvested_barley_and_straw[Field3,LeyIII] =
0*Upptaget_P[Field3,LeyIII]*Harvest_time
P_harvested_barley_and_straw[Field3,Barley] = IF(Harvest_time>0)
THEN(PULSE(Upptaget_P[Field3,Barley]))ELSE(0)
P_harvested_barley_and_straw[Field3,Potato] =
0*Upptaget_P[Field3,Potato]*Harvest_time
P_harvested_barley_and_straw[Field4,Oats&pea] =
0*Upptaget_P[Field4,Oats&pea]*Harvest_time
P_harvested_barley_and_straw[Field4,LeyI] =
0*Upptaget_P[Field4,LeyI]*Harvest_time
P_harvested_barley_and_straw[Field4,LeyII] =
0*Upptaget_P[Field4,LeyII]*Harvest_time
P_harvested_barley_and_straw[Field4,LeyIII] =
0*Upptaget_P[Field4,LeyIII]*Harvest_time
P_harvested_barley_and_straw[Field4,Barley] = IF(Harvest_time>0)
THEN(PULSE(Upptaget_P[Field4,Barley]))ELSE(0)
P_harvested_barley_and_straw[Field4,Potato] =
0*Upptaget_P[Field4,Potato]*Harvest_time
P_harvested_barley_and_straw[Field5,Oats&pea] =
0*Upptaget_P[Field5,Oats&pea]*Harvest_time
P_harvested_barley_and_straw[Field5,LeyI] =
0*Upptaget_P[Field5,LeyI]*Harvest_time
P_harvested_barley_and_straw[Field5,LeyII] =
0*Upptaget_P[Field5,LeyII]*Harvest_time
P_harvested_barley_and_straw[Field5,LeyIII] =
0*Upptaget_P[Field5,LeyIII]*Harvest_time
P_harvested_barley_and_straw[Field5,Barley] = IF(Harvest_time>0)
THEN(PULSE(Upptaget_P[Field5,Barley]))ELSE(0)
P_harvested_barley_and_straw[Field5,Potato] =
0*Upptaget_P[Field5,Potato]*Harvest_time
P_harvested_barley_and_straw[Field6,Oats&pea] =
0*Upptaget_P[Field6,Oats&pea]*Harvest_time
P_harvested_barley_and_straw[Field6,LeyI] =
0*Upptaget_P[Field6,LeyI]*Harvest_time
P_harvested_barley_and_straw[Field6,LeyII] =
0*Upptaget_P[Field6,LeyII]*Harvest_time
P_harvested_barley_and_straw[Field6,LeyIII] =
0*Upptaget_P[Field6,LeyIII]*Harvest_time
P_harvested_barley_and_straw[Field6,Barley] = IF(Harvest_time>0)
THEN(PULSE(Upptaget_P[Field6,Barley]))ELSE(0)
P_harvested_barley_and_straw[Field6,Potato] =
0*Upptaget_P[Field6,Potato]*Harvest_time
P_Sum_of_harvested_oats&peas[Field,Crop](t) =
```

```
P_Sum_of_harvested_oats&peas[Field,Crop](t - dt) +
(P_harvested_oats&peas[Field,Crop]) * dt
INIT P_Sum_of_harvested_oats&peas[Field,Crop] = 0
P_harvested_oats&peas[Field1,Oats&pea] = IF (Harvest_time>0) THEN
(PULSE(Upptaget_P[Field1,Oats&pea])) ELSE (0)
P_harvested_oats&peas[Field1,LeyI] = 0*Upptaget_P[Field1,LeyI]*Harvest_time
P_harvested_oats&peas[Field1,LeyII] =
0*Upptaget_P[Field1,LeyII]*Harvest_time
P_harvested_oats&peas[Field1,LeyIII] =
0*Upptaget_P[Field1,LeyIII]*Harvest_time
P_harvested_oats&peas[Field1,Barley] =
0*Upptaget_P[Field1,Barley]*Harvest_time
P_harvested_oats&peas[Field1,Potato] =
0*Upptaget_P[Field1,Potato]*Harvest_time
P_harvested_oats&peas[Field2,Oats&pea] = IF (Harvest_time>0) THEN
(PULSE(Upptaget_P[Field2,Oats&pea])) ELSE (0)
P_harvested_oats&peas[Field2,LeyI] = 0*Upptaget_P[Field2,LeyI]*Harvest_time
P_harvested_oats&peas[Field2,LeyII] =
0*Upptaget_P[Field2,LeyII]*Harvest_time
P_harvested_oats&peas[Field2,LeyIII] =
0*Upptaget_P[Field2,LeyIII]*Harvest_time
P_harvested_oats&peas[Field2,Barley] =
0*Upptaget_P[Field2,Barley]*Harvest_time
P_harvested_oats&peas[Field2,Potato] =
0*Upptaget_P[Field2,Potato]*Harvest_time
P_harvested_oats&peas[Field3,Oats&pea] = IF (Harvest_time>0) THEN
(PULSE(Upptaget_P[Field3,Oats&pea])) ELSE (0)
P_harvested_oats&peas[Field3,LeyI] = 0*Upptaget_P[Field3,LeyI]*Harvest_time
P_harvested_oats&peas[Field3,LeyII] =
0*Upptaget_P[Field3,LeyII]*Harvest_time
P_harvested_oats&peas[Field3,LeyIII] =
0*Upptaget_P[Field3,LeyIII]*Harvest_time
P_harvested_oats&peas[Field3,Barley] =
0*Upptaget_P[Field3,Barley]*Harvest_time
P_harvested_oats&peas[Field3,Potato] =
0*Upptaget_P[Field3,Potato]*Harvest_time
P_harvested_oats&peas[Field4,Oats&pea] = IF (Harvest_time>0) THEN
(PULSE(Upptaget_P[Field4,Oats&pea])) ELSE (0)
P_harvested_oats&peas[Field4,LeyI] = 0*Upptaget_P[Field4,LeyI]*Harvest_time
P_harvested_oats&peas[Field4,LeyII] =
0*Upptaget_P[Field4,LeyII]*Harvest_time
P_harvested_oats&peas[Field4,LeyIII] =
0*Upptaget_P[Field4,LeyIII]*Harvest_time
P_harvested_oats&peas[Field4,Barley] =
0*Upptaget_P[Field4,Barley]*Harvest_time
P_harvested_oats&peas[Field4,Potato] =
0*Upptaget_P[Field4,Potato]*Harvest_time
P_harvested_oats&peas[Field5,Oats&pea] = IF (Harvest_time>0) THEN
(PULSE(Upptaget_P[Field5,Oats&pea])) ELSE (0)
P_harvested_oats&peas[Field5,LeyI] = 0*Upptaget_P[Field5,LeyI]*Harvest_time
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P_harvested_oats&peas[Field5,LeyII] =
0*Upptaget_P[Field5,LeyII]*Harvest_time
P_harvested_oats&peas[Field5,LeyIII] =
0*Upptaget_P[Field5,LeyIII]*Harvest_time
P_harvested_oats&peas[Field5,Barley] =
0*Upptaget_P[Field5,Barley]*Harvest_time
P_harvested_oats&peas[Field5,Potato] =
0*Upptaget_P[Field5,Potato]*Harvest_time
P_harvested_oats&peas[Field6,Oats&pea] = IF (Harvest_time>0) THEN
(PULSE(Upptaget_P[Field6,Oats&pea])) ELSE (0)
P_harvested_oats&peas[Field6,LeyI] = 0*Upptaget_P[Field6,LeyI]*Harvest_time
P_harvested_oats&peas[Field6,LeyII] =
0*Upptaget_P[Field6,LeyII]*Harvest_time
P_harvested_oats&peas[Field6,LeyIII] =
0*Upptaget_P[Field6,LeyIII]*Harvest_time
P_harvested_oats&peas[Field6,Barley] =
0*Upptaget_P[Field6,Barley]*Harvest_time
P_harvested_oats&peas[Field6,Potato] =
0*Upptaget_P[Field6,Potato]*Harvest_time
P_Sum_of_harvested_potato[Field,Crop](t) =
P_Sum_of_harvested_potato[Field,Crop](t - dt) +
(P_harvested_potato[Field,Crop]) * dt
INIT P_Sum_of_harvested_potato[Field,Crop] = 0
P_harvested_potato[Field1,Oats&pea] =
0*Upptaget_P[Field1,Oats&pea]*Harvest_time
P_harvested_potato[Field1,LeyI] = 0*Upptaget_P[Field1,LeyI]*Harvest_time
P_harvested_potato[Field1,LeyII] = 0*Upptaget_P[Field1,LeyII]*Harvest_time
P_harvested_potato[Field1,LeyIII] =
0*Upptaget_P[Field1,LeyIII]*Harvest_time
P_harvested_potato[Field1,Barley] =
0*Upptaget_P[Field1,Barley]*Harvest_time
P_harvested_potato[Field1,Potato] = IF (Harvest_time>0) THEN
(PULSE(Upptaget_P[Field1,Potato])) ELSE (0)
P_harvested_potato[Field2,Oats&pea] =
0*Upptaget_P[Field2,Oats&pea]*Harvest_time
P_harvested_potato[Field2,LeyI] = 0*Upptaget_P[Field2,LeyI]*Harvest_time
P_harvested_potato[Field2,LeyII] = 0*Upptaget_P[Field2,LeyII]*Harvest_time
P_harvested_potato[Field2,LeyIII] =
0*Upptaget_P[Field2,LeyIII]*Harvest_time
P_harvested_potato[Field2,Barley] =
0*Upptaget_P[Field2,Barley]*Harvest_time
P_harvested_potato[Field2,Potato] = IF (Harvest_time>0) THEN
(PULSE(Upptaget_P[Field2,Potato])) ELSE (0)
P_harvested_potato[Field3,Oats&pea] =
0*Upptaget_P[Field3,Oats&pea]*Harvest_time
P_harvested_potato[Field3,LeyI] = 0*Upptaget_P[Field3,LeyI]*Harvest_time
P_harvested_potato[Field3,LeyII] = 0*Upptaget_P[Field3,LeyII]*Harvest_time
P_harvested_potato[Field3,LeyIII] =
0*Upptaget_P[Field3,LeyIII]*Harvest_time
P_harvested_potato[Field3,Barley] =
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0*Upptaget_P[Field3,Barley]*Harvest_time
P_harvested_potato[Field3,Potato] = IF (Harvest_time>0) THEN
(PULSE(Upptaget_P[Field3,Potato])) ELSE (0)
P_harvested_potato[Field4,Oats&pea] =
0*Upptaget_P[Field4,Oats&pea]*Harvest_time
P_harvested_potato[Field4,LeyI] = 0*Upptaget_P[Field4,LeyI]*Harvest_time
P_harvested_potato[Field4,LeyII] = 0*Upptaget_P[Field4,LeyII]*Harvest_time
P_harvested_potato[Field4,LeyIII] =
0*Upptaget_P[Field4,LeyIII]*Harvest_time
P_harvested_potato[Field4,Barley] =
0*Upptaget_P[Field4,Barley]*Harvest_time
P_harvested_potato[Field4,Potato] = IF (Harvest_time>0) THEN
(PULSE(Upptaget_P[Field4,Potato])) ELSE (0)
P_harvested_potato[Field5,Oats&pea] =
0*Upptaget_P[Field5,Oats&pea]*Harvest_time
P_harvested_potato[Field5,LeyI] = 0*Upptaget_P[Field5,LeyI]*Harvest_time
P_harvested_potato[Field5,LeyII] = 0*Upptaget_P[Field5,LeyII]*Harvest_time
P_harvested_potato[Field5,LeyIII] =
0*Upptaget_P[Field5,LeyIII]*Harvest_time
P_harvested_potato[Field5,Barley] =
0*Upptaget_P[Field5,Barley]*Harvest_time
P_harvested_potato[Field5,Potato] = IF (Harvest_time>0) THEN
(PULSE(Upptaget_P[Field5,Potato])) ELSE (0)
P_harvested_potato[Field6,Oats&pea] =
0*Upptaget_P[Field6,Oats&pea]*Harvest_time
P_harvested_potato[Field6,LeyI] = 0*Upptaget_P[Field6,LeyI]*Harvest_time
P_harvested_potato[Field6,LeyII] = 0*Upptaget_P[Field6,LeyII]*Harvest_time
P_harvested_potato[Field6,LeyIII] =
0*Upptaget_P[Field6,LeyIII]*Harvest_time
P_harvested_potato[Field6,Barley] =
0*Upptaget_P[Field6,Barley]*Harvest_time
P_harvested_potato[Field6,Potato] = IF (Harvest_time>0) THEN
(PULSE(Upptaget_P[Field6,Potato])) ELSE (0)
P_Sum_of_harvested_silage[Field,Crop](t) =
P_Sum_of_harvested_silage[Field,Crop](t - dt) +
(P_Harvested_hay_for_silage[Field,Crop]) * dt
INIT P_Sum_of_harvested_silage[Field,Crop] = 0
P_Harvested_hay_for_silage[Field1,Oats&pea] =
0*Upptaget_P[Field1,Oats&pea]*Harvest_time
P_Harvested_hay_for_silage[Field1,LeyI] = IF(Harvest_time>0) THEN
(PULSE(Upptaget_P[Field1,LeyI])) ELSE (0)
P_Harvested_hay_for_silage[Field1,LeyII] = IF (Harvest_time>0) THEN
(PULSE(Upptaget_P[Field1,LeyII])) ELSE (0)
P_Harvested_hay_for_silage[Field1,LeyIII] = IF (Harvest_time>0) THEN
(PULSE(Upptaget_P[Field1,LeyIII])) ELSE (0)
P_Harvested_hay_for_silage[Field1,Barley] =
0*Upptaget_P[Field1,Barley]*Harvest_time
P_Harvested_hay_for_silage[Field1,Potato] =
0*Upptaget_P[Field1,Potato]*Harvest_time
P_Harvested_hay_for_silage[Field2,Oats&pea] =
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0*Upptaget_P[Field2,Oats&pea]*Harvest_time
P_Harvested_hay_for_silage[Field2,LeyI] = IF(Harvest_time>0) THEN
(PULSE(Upptaget_P[Field2,LeyI])) ELSE (0)
P_Harvested_hay_for_silage[Field2,LeyII] = IF (Harvest_time>0) THEN
(PULSE(Upptaget_P[Field2,LeyII])) ELSE (0)
P_Harvested_hay_for_silage[Field2,LeyIII] = IF (Harvest_time>0) THEN
(PULSE(Upptaget_P[Field2,LeyIII])) ELSE (0)
P_Harvested_hay_for_silage[Field2,Barley] =
0*Upptaget_P[Field2,Barley]*Harvest_time
P_Harvested_hay_for_silage[Field2,Potato] =
0*Upptaget_P[Field2,Potato]*Harvest_time
P_Harvested_hay_for_silage[Field3,Oats&pea] =
0*Upptaget_P[Field3,Oats&pea]*Harvest_time
P_Harvested_hay_for_silage[Field3,LeyI] = IF(Harvest_time>0) THEN
(PULSE(Upptaget_P[Field3,LeyI])) ELSE (0)
P_Harvested_hay_for_silage[Field3,LeyII] = IF (Harvest_time>0) THEN
(PULSE(Upptaget_P[Field3,LeyII])) ELSE (0)
P_Harvested_hay_for_silage[Field3,LeyIII] = IF (Harvest_time>0) THEN
(PULSE(Upptaget_P[Field3,LeyIII])) ELSE (0)
P_Harvested_hay_for_silage[Field3,Barley] =
0*Upptaget_P[Field3,Barley]*Harvest_time
P_Harvested_hay_for_silage[Field3,Potato] =
0*Upptaget_P[Field3,Potato]*Harvest_time
P_Harvested_hay_for_silage[Field4,Oats&pea] =
0*Upptaget_P[Field4,Oats&pea]*Harvest_time
P_Harvested_hay_for_silage[Field4,LeyI] = IF(Harvest_time>0) THEN
(PULSE(Upptaget_P[Field4,LeyI])) ELSE (0)
P_Harvested_hay_for_silage[Field4,LeyII] = IF (Harvest_time>0) THEN
(PULSE(Upptaget_P[Field4,LeyII])) ELSE (0)
P_Harvested_hay_for_silage[Field4,LeyIII] = IF (Harvest_time>0) THEN
(PULSE(Upptaget_P[Field4,LeyIII])) ELSE (0)
P_Harvested_hay_for_silage[Field4,Barley] =
0*Upptaget_P[Field4,Barley]*Harvest_time
P_Harvested_hay_for_silage[Field4,Potato] =
0*Upptaget_P[Field4,Potato]*Harvest_time
P_Harvested_hay_for_silage[Field5,Oats&pea] =
0*Upptaget_P[Field5,Oats&pea]*Harvest_time
P_Harvested_hay_for_silage[Field5,LeyI] = IF(Harvest_time>0) THEN
(PULSE(Upptaget_P[Field5,LeyI])) ELSE (0)
P_Harvested_hay_for_silage[Field5,LeyII] = IF (Harvest_time>0) THEN
(PULSE(Upptaget_P[Field5,LeyII])) ELSE (0)
P_Harvested_hay_for_silage[Field5,LeyIII] = IF (Harvest_time>0) THEN
(PULSE(Upptaget_P[Field5,LeyIII])) ELSE (0)
P_Harvested_hay_for_silage[Field5,Barley] =
0*Upptaget_P[Field5,Barley]*Harvest_time
P_Harvested_hay_for_silage[Field5,Potato] =
0*Upptaget_P[Field5,Potato]*Harvest_time
P_Harvested_hay_for_silage[Field6,Oats&pea] =
0*Upptaget_P[Field6,Oats&pea]*Harvest_time
P_Harvested_hay_for_silage[Field6,LeyI] = IF(Harvest_time>0) THEN
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(PULSE(Upptaget_P[Field6,LeyI])) ELSE (0)
P_Harvested_hay_for_silage[Field6,LeyII] = IF (Harvest_time>0) THEN
(PULSE(Upptaget_P[Field6,LeyII])) ELSE (0)
P_Harvested_hay_for_silage[Field6,LeyIII] = IF (Harvest_time>0) THEN
(PULSE(Upptaget_P[Field6,LeyIII])) ELSE (0)
P_Harvested_hay_for_silage[Field6,Barley] =
0*Upptaget_P[Field6,Barley]*Harvest_time
P_Harvested_hay_for_silage[Field6,Potato] =
0*Upptaget_P[Field6,Potato]*Harvest_time
P_Sum_of_Inflows_to_cropbalances[Field,Crop](t) =
P_Sum_of_Inflows_to_cropbalances[Field,Crop](t - dt) +
(P_Manure_Urine_Dep_Minfert_Seeds[Field,Crop] -
P_Emptying_of_sum_of_inflows_to_cropbalances[Field,Crop]) * dt
INIT P_Sum_of_Inflows_to_cropbalances[Field,Crop] = 0
P_Manure_Urine_Dep_Minfert_Seeds[Field,Crop] =
P_Deposition_flow[Field,Crop]+P_Manure_application_per_ha[Field,Crop]+P_see
ds[Field,Crop]+P_Urine_spreading_per_ha[Field,Crop]+P_Mineral_fertiliser_fl
ow[Field,Crop]
P_Emptying_of_sum_of_inflows_to_cropbalances[Field,Crop] =
IF(Time_for_emptying_of_imports_and_exports_of_P>0) THEN
(PULSE(P_Sum_of_Inflows_to_cropbalances[Field,Crop])) ELSE (0)
P_Sum_of_manure(t) = P_Sum_of_manure(t - dt) + (P_Manure_flow_2 -
P_Emptying_of_sum_manure) * dt
INIT P_Sum_of_manure = 0
P_Manure_flow_2 = P_in_manure
P_Emptying_of_sum_manure =
IF(Time_for_emptying_of_imports_and_exports_of_P>0) THEN
(PULSE(P_Sum_of_manure)) ELSE(0)
P_Sum_of_Outflows_cropbalances[Field,Crop](t) =
P_Sum_of_Outflows_cropbalances[Field,Crop](t - dt) + (Harvest_P[Field,Crop]
- P_Emptying_of_sum_of_outflows__cropbalances[Field,Crop]) * dt
INIT P_Sum_of_Outflows_cropbalances[Field,Crop] = 0
Harvest_P[Field,Crop] = P_uptake_fieldwise[Field]
P_Emptying_of_sum_of_outflows__cropbalances[Field,Crop] =
IF(Time_for_emptying_of_imports_and_exports_of_P>0) THEN
(PULSE(P_Sum_of_Outflows_cropbalances[Field,Crop])) ELSE (0)
P_Sum_of_Outflows_field_balances[Field,Crop](t) =
P_Sum_of_Outflows_field_balances[Field,Crop](t - dt) +
(P_harvest_and_losses[Field,Crop] - Emptying
ofav_utflöden__P_Fieldbalanser[Field,Crop]) * dt
INIT P_Sum_of_Outflows_field_balances[Field,Crop] = 0
P_harvest_and_losses[Field,Crop] =
P_förluster_växtföljd[Field,Crop]+P_uptake_fieldwise[Field]
Emptying ofav_utflöden__P_Fieldbalanser[Field,Crop] =
IF(Time_for_emptying_of_imports_and_exports_of_P>0) THEN
(PULSE(P_Sum_of_Outflows_field_balances[Field,Crop])) ELSE (0)
P_Sum_seeds[Field](t) = P_Sum_seeds[Field](t - dt) + (P_seeds_2[Field] -
P_Empt_sum_seeds[Field]) * dt
INIT P_Sum_seeds[Field] = 0
P_seeds_2[Field] = ARRAYSUM(P_seeds[Field,*])
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P_Empt_sum_seeds[Field] =
IF(Time_for_emptying_of_imports_and_exports_of_P>0) THEN
(PULSE(P_Sum_seeds[Field])) ELSE (0)
P_Sum_urine[Field](t) = P_Sum_urine[Field](t - dt) + (P_urine_2[Field] -
P_Empt_sum_urine[Field]) * dt
INIT P_Sum_urine[Field] = 0
P_urine_2[Field] = ARRAYSUM(P_Urine_spreading_per_ha[Field,*])
P_Empt_sum_urine[Field] =
IF(Time_for_emptying_of_imports_and_exports_of_P>0) THEN
(PULSE(P_Sum_urine[Field])) ELSE (0)
P_Urine_tank(t) = P_Urine_tank(t - dt) + (P_in_urine -
Emptying_of_P_urine_tank_P) * dt
INIT P_Urine_tank = 38000
P_in_urine = (Urine_amount*P_conc_urine*Cows)+(0*P_in_Slaughter)
Emptying_of_P_urine_tank_P = IF(Time_for_manure_application>0) THEN
(PULSE(P_Urine_tank)) ELSE (0)
P_Växttogängligt_Subsoil[Field](t) = P_Växttogängligt_Subsoil[Field](t -
dt)
INIT P_Växttogängligt_Subsoil[Field] = 100
Sålt_Zn(t) = Sålt_Zn(t - dt) + (Utflöden_av_Zn - Emptying ofav_sålt_Zn) *
dt
INIT Sålt_Zn = 0
Utflöden_av_Zn =
Zn_potato_export+Zn_in_csubsoiles+Zn_in_milk+Zn_in_exported_animals
Emptying ofav_sålt_Zn = IF(Time_for_emptying_of_import_and_export_of_Zn>0)
THEN (PULSE(Sålt_Zn)) ELSE (0)
Sold_Cd(t) = Sold_Cd(t - dt) + (Outflow_of_Cd - Emptying_of_sold_Cd) * dt
INIT Sold_Cd = 0
Outflow_of_Cd =
Cd_Potato_Export+Cd_in_csubsoiles+Cd_in_milk+Cd_in_slaughter
Emptying_of_sold_Cd = IF(Time_for_emptying_of_bought_and_sold_Cd>0) THEN
(PULSE(Sold_Cd)) ELSE (0)
Sum_Cd_leaching_2[Field](t) = Sum_Cd_leaching_2[Field](t - dt) +
(Cd_leaching_2[Field] - Empt_Cd_leaching_2[Field]) * dt
INIT Sum_Cd_leaching_2[Field] = 0
Cd_leaching_2[Field] = ARRAYSUM(Cd_leaching_crop_rotation[Field,*])
Empt_Cd_leaching_2[Field] = IF(Time_for_emptying_of_bought_and_sold_Cd>0)
THEN (PULSE(Sum_Cd_leaching_2[Field])) ELSE (0)
Sum_Cd_manure[Field](t) = Sum_Cd_manure[Field](t - dt) +
(Cd_manure_2[Field] - Empt__Cd_manure[Field]) * dt
INIT Sum_Cd_manure[Field] = 0
Cd_manure_2[Field] = ARRAYSUM(Cd_Solid_manure_application_per_ha[Field,*])
Empt__Cd_manure[Field] = IF(Time_for_emptying_of_bought_and_sold_Cd>0) THEN
(PULSE(Sum_Cd_manure[Field])) ELSE (0)
Sum_Cd_urine[Field](t) = Sum_Cd_urine[Field](t - dt) + (Cd_urine_2[Field] -
Empt_Cd_urine[Field]) * dt
INIT Sum_Cd_urine[Field] = 0
Cd_urine_2[Field] = ARRAYSUM(Cd_Urine_spreadning_per_ha[Field,*])
Empt_Cd_urine[Field] = IF(Time_for_emptying_of_bought_and_sold_Cd>0) THEN
(PULSE(Sum_Cd_urine[Field])) ELSE (0)
```

```
Sum_of_Cd_Loss[Field](t) = Sum_of_Cd_Loss[Field](t - dt) +
(Cd_Leaching_Subsoil[Field] - Emptying_of_Sum_of_Cd_loss[Field]) * dt
INIT Sum_of_Cd_Loss[Field] = 0
Cd_Leaching_Subsoil[Field] =
(Water_flow_from_subsoil*Cd_Subsoil_Conc_g_per_dm3[Field]*1000)
Emptying_of_Sum_of_Cd_loss[Field] =
IF(Time_for_emptying_of_bought_and_sold_Cd>0) THEN
(PULSE(Sum_of_Cd_Loss[Field])) ELSE (0)
Sum_of_Cd_manure(t) = Sum_of_Cd_manure(t - dt) + (Manure_Cd_flow -
Emptying_of_sum_of_Cd_manure) * dt
INIT Sum_of_Cd_manure = 0
Manure_Cd_flow = Cd_in_manure
Emptying_of_sum_of_Cd_manure =
IF(Time_for_emptying_of_bought_and_sold_Cd>0) THEN
(PULSE(Sum_of_Cd_manure)) ELSE(0)
Sum_of_Cd_milk(t) = Sum_of_Cd_milk(t - dt) + (MilkCd_flow -
Emptying_of_sum_of_Cd_milk) * dt
INIT Sum_of_Cd_milk = 0
MilkCd_flow = Cd_in_milk
Emptying_of_sum_of_Cd_milk = IF(Time_for_emptying_of_bought_and_sold_Cd>0)
THEN (PULSE(Sum_of_Cd_milk)) ELSE (0)
Sum_of_P_erosion_fast[Field](t) = Sum_of_P_erosion_fast[Field](t - dt) +
(P_Erosion_losses_fast_pool_topsoil[Field] -
P_Emptying_of_sum_of_erosion_fast[Field]) * dt
INIT Sum_of_P_erosion_fast[Field] = 0
P_Erosion_losses_fast_pool_topsoil[Field] =  (IF(Runoff>970) THEN
(Runoff*P_Fast_topsoil[Field]*P_erosion_coeff_fast) ELSE
(0))+(0*P_release_fast_topsoil_to_solution[Field])
P_Emptying_of_sum_of_erosion_fast[Field] =
IF(Time_for_emptying_of_imports_and_exports_of_P>0) THEN
(PULSE(Sum_of_P_erosion_fast[Field])) ELSE (0)
Sum_of_P_in_milk(t) = Sum_of_P_in_milk(t - dt) + (P_flow_in_milk -
Emptying_of_sum_of_P_in_milk) * dt
INIT Sum_of_P_in_milk = 0
P_flow_in_milk = P_milk
Emptying_of_sum_of_P_in_milk =
IF(Time_for_emptying_of_imports_and_exports_of_P>0) THEN
(PULSE(Sum_of_P_in_milk)) ELSE (0)
Sum_of_P_leaching[Field](t) = Sum_of_P_leaching[Field](t - dt) +
(P_Leaching_Subsoiol[Field] - Emptying_of_sum_of_P_leaching[Field]) * dt
INIT Sum_of_P_leaching[Field] = 0
P_Leaching_Subsoiol[Field] =
(Water_flow_from_subsoil*P_subsoil_conc_g_per_m3[Field])+(0*P_binding_slow_
subsoil[Field])
Emptying_of_sum_of_P_leaching[Field] =
IF(Time_for_emptying_of_imports_and_exports_of_P>0) THEN
(PULSE(Sum_of_P_leaching[Field])) ELSE (0)
Sum_of_runoff_Cd[Field](t) = Sum_of_runoff_Cd[Field](t - dt) +
(Cd_Loss_Runoff[Field] - Emptying_of_sum_of_runoff_Cd[Field]) * dt
INIT Sum_of_runoff_Cd[Field] = 0
```

```
Cd_Loss_Runoff[Field] = (Cd_Topsoil_Conc_g_per_dm3[Field]*Runoff*1000)
Emptying_of_sum_of_runoff_Cd[Field] =
IF(Time_for_emptying_of_bought_and_sold_Cd>0) THEN
(PULSE(Sum_of_runoff_Cd[Field])) ELSE (0)
Sum_of_runoff_P[Field](t) = Sum_of_runoff_P[Field](t - dt) +
(P_loss_Runoff[Field] - Emptying_of_sum_of_runoff_P[Field]) * dt
INIT Sum_of_runoff_P[Field] = 0
P_loss_Runoff[Field] =
(P_topsoil_conc_g_per_m3[Field]*Runoff)+(0*P_leaching_from_topsoil_to_subso
il[Field])
Emptying_of_sum_of_runoff_P[Field] =
IF(Time_for_emptying_of_imports_and_exports_of_P>0) THEN
(PULSE(Sum_of_runoff_P[Field])) ELSE (0)
Sum_of_Zn_in_manure(t) = Sum_of_Zn_in_manure(t - dt) + (Manure_Zn_flow -
Emptying_of_Sum_of_Zn_in_manure) * dt
INIT Sum_of_Zn_in_manure = 0
Manure_Zn_flow = Zn_in_m_anure
Emptying_of_Sum_of_Zn_in_manure =
IF(Time_for_emptying_of_import_and_export_of_Zn>0) THEN
(PULSE(Sum_of_Zn_in_manure)) ELSE(0)
Sum_of_Zn__in_milk(t) = Sum_of_Zn__in_milk(t - dt) + (Milk_Zn_flow -
Emptying_of_Sum_of_Zn_in_milk) * dt
INIT Sum_of_Zn__in_milk = 0
Milk_Zn_flow = Zn_in_milk
Emptying_of_Sum_of_Zn_in_milk =
IF(Time_for_emptying_of_import_and_export_of_Zn>0) THEN
(PULSE(Sum_of_Zn__in_milk)) ELSE (0)
Sum_Zn_harvest[Field](t) = Sum_Zn_harvest[Field](t - dt) +
(Zn_harvest_2[Field] - Zn_emptying_of_sum_of_Zn_harvest[Field]) * dt
INIT Sum_Zn_harvest[Field] = 0
Zn_harvest_2[Field] = ARRAYSUM(Zn_Sum_uptake[Field,*])
Zn_emptying_of_sum_of_Zn_harvest[Field] =
IF(Time_for_emptying_of_import_and_export_of_Zn>0)
THEN(PULSE(Sum_Zn_harvest[Field])) ELSE(0)
Sum_Zn_harvest_oats&pea[Field,Crop](t) =
Sum_Zn_harvest_oats&pea[Field,Crop](t - dt) +
(Zn_harvested_oats&pea[Field,Crop]) * dt
INIT Sum_Zn_harvest_oats&pea[Field,Crop] = 0
Zn_harvested_oats&pea[Field1,Oats&pea] = IF (Harvest_time>0) THEN
(PULSE(Zn_Uptake[Field1,Oats&pea])) ELSE (0)
Zn_harvested_oats&pea[Field1,LeyI] = 0*Zn_Uptake[Field1,LeyI]*Harvest_time
Zn_harvested_oats&pea[Field1,LeyII] =
0*Zn_Uptake[Field1,LeyII]*Harvest_time
Zn_harvested_oats&pea[Field1,LeyIII] =
0*Zn_Uptake[Field1,LeyIII]*Harvest_time
Zn_harvested_oats&pea[Field1,Barley] =
0*Zn_Uptake[Field1,Barley]*Harvest_time
Zn_harvested_oats&pea[Field1,Potato] =
0*Zn_Uptake[Field1,Potato]*Harvest_time
Zn_harvested_oats&pea[Field2,Oats&pea] = IF (Harvest_time>0) THEN
```

```
(PULSE(Zn_Uptake[Field2,Oats&pea])) ELSE (0)
Zn_harvested_oats&pea[Field2,LeyI] = 0*Zn_Uptake[Field2,LeyI]*Harvest_time
Zn_harvested_oats&pea[Field2,LeyII] =
0*Zn_Uptake[Field2,LeyII]*Harvest_time
Zn_harvested_oats&pea[Field2,LeyIII] =
0*Zn_Uptake[Field2,LeyIII]*Harvest_time
Zn_harvested_oats&pea[Field2,Barley] =
0*Zn_Uptake[Field2,Barley]*Harvest_time
Zn_harvested_oats&pea[Field2,Potato] =
0*Zn_Uptake[Field2,Potato]*Harvest_time
Zn_harvested_oats&pea[Field3,Oats&pea] = IF (Harvest_time>0) THEN
(PULSE(Zn_Uptake[Field3,Oats&pea])) ELSE (0)
Zn_harvested_oats&pea[Field3,LeyI] = 0*Zn_Uptake[Field3,LeyI]*Harvest_time
Zn_harvested_oats&pea[Field3,LeyII] =
0*Zn_Uptake[Field3,LeyII]*Harvest_time
Zn_harvested_oats&pea[Field3,LeyIII] =
0*Zn_Uptake[Field3,LeyIII]*Harvest_time
Zn_harvested_oats&pea[Field3,Barley] =
0*Zn_Uptake[Field3,Barley]*Harvest_time
Zn_harvested_oats&pea[Field3,Potato] =
0*Zn_Uptake[Field3,Potato]*Harvest_time
Zn_harvested_oats&pea[Field4,Oats&pea] = IF (Harvest_time>0) THEN
(PULSE(Zn_Uptake[Field4,Oats&pea])) ELSE (0)
Zn_harvested_oats&pea[Field4,LeyI] = 0*Zn_Uptake[Field4,LeyI]*Harvest_time
Zn_harvested_oats&pea[Field4,LeyII] =
0*Zn_Uptake[Field4,LeyII]*Harvest_time
Zn_harvested_oats&pea[Field4,LeyIII] =
0*Zn_Uptake[Field4,LeyIII]*Harvest_time
Zn_harvested_oats&pea[Field4,Barley] =
0*Zn_Uptake[Field4,Barley]*Harvest_time
Zn_harvested_oats&pea[Field4,Potato] =
0*Zn_Uptake[Field4,Potato]*Harvest_time
Zn_harvested_oats&pea[Field5,Oats&pea] = IF (Harvest_time>0) THEN
(PULSE(Zn_Uptake[Field5,Oats&pea])) ELSE (0)
Zn_harvested_oats&pea[Field5,LeyI] = 0*Zn_Uptake[Field5,LeyI]*Harvest_time
Zn_harvested_oats&pea[Field5,LeyII] =
0*Zn_Uptake[Field5,LeyII]*Harvest_time
Zn_harvested_oats&pea[Field5,LeyIII] =
0*Zn_Uptake[Field5,LeyIII]*Harvest_time
Zn_harvested_oats&pea[Field5,Barley] =
0*Zn_Uptake[Field5,Barley]*Harvest_time
Zn_harvested_oats&pea[Field5,Potato] =
0*Zn_Uptake[Field5,Potato]*Harvest_time
Zn_harvested_oats&pea[Field6,Oats&pea] = IF (Harvest_time>0) THEN
(PULSE(Zn_Uptake[Field6,Oats&pea])) ELSE (0)
Zn_harvested_oats&pea[Field6,LeyI] = 0*Zn_Uptake[Field6,LeyI]*Harvest_time
Zn_harvested_oats&pea[Field6,LeyII] =
0*Zn_Uptake[Field6,LeyII]*Harvest_time
Zn_harvested_oats&pea[Field6,LeyIII] =
0*Zn_Uptake[Field6,LeyIII]*Harvest_time
```

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Zn_harvested_oats&pea[Field6,Barley] =
0*Zn_Uptake[Field6,Barley]*Harvest_time
Zn_harvested_oats&pea[Field6,Potato] =
0*Zn_Uptake[Field6,Potato]*Harvest_time
Sum_Zn_losses[Field](t) = Sum_Zn_losses[Field](t - dt) +
(Zn_losses_2[Field] - Zn_Emptying_of_sum_of_losses[Field]) * dt
INIT Sum_Zn_losses[Field] = 0
Zn_losses_2[Field] = ARRAYSUM(Zn_losses_crop_rotation[Field,*])
Zn_Emptying_of_sum_of_losses[Field] =
IF(Time_for_emptying_of_import_and_export_of_Zn>0)
THEN(PULSE(Sum_Zn_losses[Field])) ELSE(0)
Upptaget_P[Field,Crop](t) = Upptaget_P[Field,Crop](t - dt) +
(P_Uptake_topsoil[Field,Crop] + P_Uptake_subsoil[Field,Crop] -
P_harvested_oats&peas[Field,Crop] - P_Harvested_hay_for_silage[Field,Crop]
- P_harvested_barley_and_straw[Field,Crop] -
P_harvested_potato[Field,Crop]) * dt
INIT Upptaget_P[Field,Crop] = 0
P_Uptake_topsoil[Field,Crop] =
P_Uptake_drive[Field,Crop]*P_Ideal_uptake[Field,Crop]*Uptake_activity_Topso
il*Cropping_period
P_Uptake_subsoil[Field,Crop] =
IF((P_Uptake_topsoil[Field,Crop]<P_Ideal_uptake[Field,Crop])AND(P_subsoil_c
onc_g_per_m3[Field]>0.03))THEN(P_Uptake_drive[Field,Crop]*Uptake_activity_S
ubsoil*Cropping_period*(P_Ideal_uptake[Field,Crop]-
P_Uptake_topsoil[Field,Crop]))ELSE(0)
P_harvested_oats&peas[Field1,Oats&pea] = IF (Harvest_time>0) THEN
(PULSE(Upptaget_P[Field1,Oats&pea])) ELSE (0)
P_harvested_oats&peas[Field1,LeyI] = 0*Upptaget_P[Field1,LeyI]*Harvest_time
P_harvested_oats&peas[Field1,LeyII] =
0*Upptaget_P[Field1,LeyII]*Harvest_time
P_harvested_oats&peas[Field1,LeyIII] =
0*Upptaget_P[Field1,LeyIII]*Harvest_time
P_harvested_oats&peas[Field1,Barley] =
0*Upptaget_P[Field1,Barley]*Harvest_time
P_harvested_oats&peas[Field1,Potato] =
0*Upptaget_P[Field1,Potato]*Harvest_time
P_harvested_oats&peas[Field2,Oats&pea] = IF (Harvest_time>0) THEN
(PULSE(Upptaget_P[Field2,Oats&pea])) ELSE (0)
P_harvested_oats&peas[Field2,LeyI] = 0*Upptaget_P[Field2,LeyI]*Harvest_time
P_harvested_oats&peas[Field2,LeyII] =
0*Upptaget_P[Field2,LeyII]*Harvest_time
P_harvested_oats&peas[Field2,LeyIII] =
0*Upptaget_P[Field2,LeyIII]*Harvest_time
P_harvested_oats&peas[Field2,Barley] =
0*Upptaget_P[Field2,Barley]*Harvest_time
P_harvested_oats&peas[Field2,Potato] =
0*Upptaget_P[Field2,Potato]*Harvest_time
P_harvested_oats&peas[Field3,Oats&pea] = IF (Harvest_time>0) THEN
(PULSE(Upptaget_P[Field3,Oats&pea])) ELSE (0)
P_harvested_oats&peas[Field3,LeyI] = 0*Upptaget_P[Field3,LeyI]*Harvest_time
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P_harvested_oats&peas[Field3,LeyII] =
0*Upptaget_P[Field3,LeyII]*Harvest_time
P_harvested_oats&peas[Field3,LeyIII] =
0*Upptaget_P[Field3,LeyIII]*Harvest_time
P_harvested_oats&peas[Field3,Barley] =
0*Upptaget_P[Field3,Barley]*Harvest_time
P_harvested_oats&peas[Field3,Potato] =
0*Upptaget_P[Field3,Potato]*Harvest_time
P_harvested_oats&peas[Field4,Oats&pea] = IF (Harvest_time>0) THEN
(PULSE(Upptaget_P[Field4,Oats&pea])) ELSE (0)
P_harvested_oats&peas[Field4,LeyI] = 0*Upptaget_P[Field4,LeyI]*Harvest_time
P_harvested_oats&peas[Field4,LeyII] =
0*Upptaget_P[Field4,LeyII]*Harvest_time
P_harvested_oats&peas[Field4,LeyIII] =
0*Upptaget_P[Field4,LeyIII]*Harvest_time
P_harvested_oats&peas[Field4,Barley] =
0*Upptaget_P[Field4,Barley]*Harvest_time
P_harvested_oats&peas[Field4,Potato] =
0*Upptaget_P[Field4,Potato]*Harvest_time
P_harvested_oats&peas[Field5,Oats&pea] = IF (Harvest_time>0) THEN
(PULSE(Upptaget_P[Field5,Oats&pea])) ELSE (0)
P_harvested_oats&peas[Field5,LeyI] = 0*Upptaget_P[Field5,LeyI]*Harvest_time
P_harvested_oats&peas[Field5,LeyII] =
0*Upptaget_P[Field5,LeyII]*Harvest_time
P_harvested_oats&peas[Field5,LeyIII] =
0*Upptaget_P[Field5,LeyIII]*Harvest_time
P_harvested_oats&peas[Field5,Barley] =
0*Upptaget_P[Field5,Barley]*Harvest_time
P_harvested_oats&peas[Field5,Potato] =
0*Upptaget_P[Field5,Potato]*Harvest_time
P_harvested_oats&peas[Field6,Oats&pea] = IF (Harvest_time>0) THEN
(PULSE(Upptaget_P[Field6,Oats&pea])) ELSE (0)
P_harvested_oats&peas[Field6,LeyI] = 0*Upptaget_P[Field6,LeyI]*Harvest_time
P_harvested_oats&peas[Field6,LeyII] =
0*Upptaget_P[Field6,LeyII]*Harvest_time
P_harvested_oats&peas[Field6,LeyIII] =
0*Upptaget_P[Field6,LeyIII]*Harvest_time
P_harvested_oats&peas[Field6,Barley] =
0*Upptaget_P[Field6,Barley]*Harvest_time
P_harvested_oats&peas[Field6,Potato] =
0*Upptaget_P[Field6,Potato]*Harvest_time
P_Harvested_hay_for_silage[Field1,Oats&pea] =
0*Upptaget_P[Field1,Oats&pea]*Harvest_time
P_Harvested_hay_for_silage[Field1,LeyI] = IF(Harvest_time>0) THEN
(PULSE(Upptaget_P[Field1,LeyI])) ELSE (0)
P_Harvested_hay_for_silage[Field1,LeyII] = IF (Harvest_time>0) THEN
(PULSE(Upptaget_P[Field1,LeyII])) ELSE (0)
P_Harvested_hay_for_silage[Field1,LeyIII] = IF (Harvest_time>0) THEN
(PULSE(Upptaget_P[Field1,LeyIII])) ELSE (0)
P_Harvested_hay_for_silage[Field1,Barley] =
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0*Upptaget_P[Field1,Barley]*Harvest_time
P_Harvested_hay_for_silage[Field1,Potato] =
0*Upptaget_P[Field1,Potato]*Harvest_time
P_Harvested_hay_for_silage[Field2,Oats&pea] =
0*Upptaget_P[Field2,Oats&pea]*Harvest_time
P_Harvested_hay_for_silage[Field2,LeyI] = IF(Harvest_time>0) THEN
(PULSE(Upptaget_P[Field2,LeyI])) ELSE (0)
P_Harvested_hay_for_silage[Field2,LeyII] = IF (Harvest_time>0) THEN
(PULSE(Upptaget_P[Field2,LeyII])) ELSE (0)
P_Harvested_hay_for_silage[Field2,LeyIII] = IF (Harvest_time>0) THEN
(PULSE(Upptaget_P[Field2,LeyIII])) ELSE (0)
P_Harvested_hay_for_silage[Field2,Barley] =
0*Upptaget_P[Field2,Barley]*Harvest_time
P_Harvested_hay_for_silage[Field2,Potato] =
0*Upptaget_P[Field2,Potato]*Harvest_time
P_Harvested_hay_for_silage[Field3,Oats&pea] =
0*Upptaget_P[Field3,Oats&pea]*Harvest_time
P_Harvested_hay_for_silage[Field3,LeyI] = IF(Harvest_time>0) THEN
(PULSE(Upptaget_P[Field3,LeyI])) ELSE (0)
P_Harvested_hay_for_silage[Field3,LeyII] = IF (Harvest_time>0) THEN
(PULSE(Upptaget_P[Field3,LeyII])) ELSE (0)
P_Harvested_hay_for_silage[Field3,LeyIII] = IF (Harvest_time>0) THEN
(PULSE(Upptaget_P[Field3,LeyIII])) ELSE (0)
P_Harvested_hay_for_silage[Field3,Barley] =
0*Upptaget_P[Field3,Barley]*Harvest_time
P_Harvested_hay_for_silage[Field3,Potato] =
0*Upptaget_P[Field3,Potato]*Harvest_time
P_Harvested_hay_for_silage[Field4,Oats&pea] =
0*Upptaget_P[Field4,Oats&pea]*Harvest_time
P_Harvested_hay_for_silage[Field4,LeyI] = IF(Harvest_time>0) THEN
(PULSE(Upptaget_P[Field4,LeyI])) ELSE (0)
P_Harvested_hay_for_silage[Field4,LeyII] = IF (Harvest_time>0) THEN
(PULSE(Upptaget_P[Field4,LeyII])) ELSE (0)
P_Harvested_hay_for_silage[Field4,LeyIII] = IF (Harvest_time>0) THEN
(PULSE(Upptaget_P[Field4,LeyIII])) ELSE (0)
P_Harvested_hay_for_silage[Field4,Barley] =
0*Upptaget_P[Field4,Barley]*Harvest_time
P_Harvested_hay_for_silage[Field4,Potato] =
0*Upptaget_P[Field4,Potato]*Harvest_time
P_Harvested_hay_for_silage[Field5,Oats&pea] =
0*Upptaget_P[Field5,Oats&pea]*Harvest_time
P_Harvested_hay_for_silage[Field5,LeyI] = IF(Harvest_time>0) THEN
(PULSE(Upptaget_P[Field5,LeyI])) ELSE (0)
P_Harvested_hay_for_silage[Field5,LeyII] = IF (Harvest_time>0) THEN
(PULSE(Upptaget_P[Field5,LeyII])) ELSE (0)
P_Harvested_hay_for_silage[Field5,LeyIII] = IF (Harvest_time>0) THEN
(PULSE(Upptaget_P[Field5,LeyIII])) ELSE (0)
P_Harvested_hay_for_silage[Field5,Barley] =
0*Upptaget_P[Field5,Barley]*Harvest_time
P_Harvested_hay_for_silage[Field5,Potato] =
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0*Upptaget_P[Field5,Potato]*Harvest_time
P_Harvested_hay_for_silage[Field6,Oats&pea] =
0*Upptaget_P[Field6,Oats&pea]*Harvest_time
P_Harvested_hay_for_silage[Field6,LeyI] = IF(Harvest_time>0) THEN
(PULSE(Upptaget_P[Field6,LeyI])) ELSE (0)
P_Harvested_hay_for_silage[Field6,LeyII] = IF (Harvest_time>0) THEN
(PULSE(Upptaget_P[Field6,LeyII])) ELSE (0)
P_Harvested_hay_for_silage[Field6,LeyIII] = IF (Harvest_time>0) THEN
(PULSE(Upptaget_P[Field6,LeyIII])) ELSE (0)
P_Harvested_hay_for_silage[Field6,Barley] =
0*Upptaget_P[Field6,Barley]*Harvest_time
P_Harvested_hay_for_silage[Field6,Potato] =
0*Upptaget_P[Field6,Potato]*Harvest_time
P_harvested_barley_and_straw[Field1,Oats&pea] =
0*Upptaget_P[Field1,Oats&pea]*Harvest_time
P_harvested_barley_and_straw[Field1,LeyI] =
0*Upptaget_P[Field1,LeyI]*Harvest_time
P_harvested_barley_and_straw[Field1,LeyII] =
0*Upptaget_P[Field1,LeyII]*Harvest_time
P_harvested_barley_and_straw[Field1,LeyIII] =
0*Upptaget_P[Field1,LeyIII]*Harvest_time
P_harvested_barley_and_straw[Field1,Barley] = IF(Harvest_time>0)
THEN(PULSE(Upptaget_P[Field1,Barley]))ELSE(0)
P_harvested_barley_and_straw[Field1,Potato] =
0*Upptaget_P[Field1,Potato]*Harvest_time
P_harvested_barley_and_straw[Field2,Oats&pea] =
0*Upptaget_P[Field2,Oats&pea]*Harvest_time
P_harvested_barley_and_straw[Field2,LeyI] =
0*Upptaget_P[Field2,LeyI]*Harvest_time
P_harvested_barley_and_straw[Field2,LeyII] =
0*Upptaget_P[Field2,LeyII]*Harvest_time
P_harvested_barley_and_straw[Field2,LeyIII] =
0*Upptaget_P[Field2,LeyIII]*Harvest_time
P_harvested_barley_and_straw[Field2,Barley] = IF(Harvest_time>0)
THEN(PULSE(Upptaget_P[Field2,Barley]))ELSE(0)
P_harvested_barley_and_straw[Field2,Potato] =
0*Upptaget_P[Field2,Potato]*Harvest_time
P_harvested_barley_and_straw[Field3,Oats&pea] =
0*Upptaget_P[Field3,Oats&pea]*Harvest_time
P_harvested_barley_and_straw[Field3,LeyI] =
0*Upptaget_P[Field3,LeyI]*Harvest_time
P_harvested_barley_and_straw[Field3,LeyII] =
0*Upptaget_P[Field3,LeyII]*Harvest_time
P_harvested_barley_and_straw[Field3,LeyIII] =
0*Upptaget_P[Field3,LeyIII]*Harvest_time
P_harvested_barley_and_straw[Field3,Barley] = IF(Harvest_time>0)
THEN(PULSE(Upptaget_P[Field3,Barley]))ELSE(0)
P_harvested_barley_and_straw[Field3,Potato] =
0*Upptaget_P[Field3,Potato]*Harvest_time
P_harvested_barley_and_straw[Field4,Oats&pea] =
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0*Upptaget_P[Field4,Oats&pea]*Harvest_time
P_harvested_barley_and_straw[Field4,LeyI] =
0*Upptaget_P[Field4,LeyI]*Harvest_time
P_harvested_barley_and_straw[Field4,LeyII] =
0*Upptaget_P[Field4,LeyII]*Harvest_time
P_harvested_barley_and_straw[Field4,LeyIII] =
0*Upptaget_P[Field4,LeyIII]*Harvest_time
P_harvested_barley_and_straw[Field4,Barley] = IF(Harvest_time>0)
THEN(PULSE(Upptaget_P[Field4,Barley]))ELSE(0)
P_harvested_barley_and_straw[Field4,Potato] =
0*Upptaget_P[Field4,Potato]*Harvest_time
P_harvested_barley_and_straw[Field5,Oats&pea] =
0*Upptaget_P[Field5,Oats&pea]*Harvest_time
P_harvested_barley_and_straw[Field5,LeyI] =
0*Upptaget_P[Field5,LeyI]*Harvest_time
P_harvested_barley_and_straw[Field5,LeyII] =
0*Upptaget_P[Field5,LeyII]*Harvest_time
P_harvested_barley_and_straw[Field5,LeyIII] =
0*Upptaget_P[Field5,LeyIII]*Harvest_time
P_harvested_barley_and_straw[Field5,Barley] = IF(Harvest_time>0)
THEN(PULSE(Upptaget_P[Field5,Barley]))ELSE(0)
P_harvested_barley_and_straw[Field5,Potato] =
0*Upptaget_P[Field5,Potato]*Harvest_time
P_harvested_barley_and_straw[Field6,Oats&pea] =
0*Upptaget_P[Field6,Oats&pea]*Harvest_time
P_harvested_barley_and_straw[Field6,LeyI] =
0*Upptaget_P[Field6,LeyI]*Harvest_time
P_harvested_barley_and_straw[Field6,LeyII] =
0*Upptaget_P[Field6,LeyII]*Harvest_time
P_harvested_barley_and_straw[Field6,LeyIII] =
0*Upptaget_P[Field6,LeyIII]*Harvest_time
P_harvested_barley_and_straw[Field6,Barley] = IF(Harvest_time>0)
THEN(PULSE(Upptaget_P[Field6,Barley]))ELSE(0)
P_harvested_barley_and_straw[Field6,Potato] =
0*Upptaget_P[Field6,Potato]*Harvest_time
P_harvested_potato[Field1,Oats&pea] =
0*Upptaget_P[Field1,Oats&pea]*Harvest_time
P_harvested_potato[Field1,LeyI] = 0*Upptaget_P[Field1,LeyI]*Harvest_time
P_harvested_potato[Field1,LeyII] = 0*Upptaget_P[Field1,LeyII]*Harvest_time
P_harvested_potato[Field1,LeyIII] =
0*Upptaget_P[Field1,LeyIII]*Harvest_time
P_harvested_potato[Field1,Barley] =
0*Upptaget_P[Field1,Barley]*Harvest_time
P_harvested_potato[Field1,Potato] = IF (Harvest_time>0) THEN
(PULSE(Upptaget_P[Field1,Potato])) ELSE (0)
P_harvested_potato[Field2,Oats&pea] =
0*Upptaget_P[Field2,Oats&pea]*Harvest_time
P_harvested_potato[Field2,LeyI] = 0*Upptaget_P[Field2,LeyI]*Harvest_time
P_harvested_potato[Field2,LeyII] = 0*Upptaget_P[Field2,LeyII]*Harvest_time
P_harvested_potato[Field2,LeyIII] =
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0*Upptaget_P[Field2,LeyIII]*Harvest_time
P_harvested_potato[Field2,Barley] =
0*Upptaget_P[Field2,Barley]*Harvest_time
P_harvested_potato[Field2,Potato] = IF (Harvest_time>0) THEN
(PULSE(Upptaget_P[Field2,Potato])) ELSE (0)
P_harvested_potato[Field3,Oats&pea] =
0*Upptaget_P[Field3,Oats&pea]*Harvest_time
P_harvested_potato[Field3,LeyI] = 0*Upptaget_P[Field3,LeyI]*Harvest_time
P_harvested_potato[Field3,LeyII] = 0*Upptaget_P[Field3,LeyII]*Harvest_time
P_harvested_potato[Field3,LeyIII] =
0*Upptaget_P[Field3,LeyIII]*Harvest_time
P_harvested_potato[Field3,Barley] =
0*Upptaget_P[Field3,Barley]*Harvest_time
P_harvested_potato[Field3,Potato] = IF (Harvest_time>0) THEN
(PULSE(Upptaget_P[Field3,Potato])) ELSE (0)
P_harvested_potato[Field4,Oats&pea] =
0*Upptaget_P[Field4,Oats&pea]*Harvest_time
P_harvested_potato[Field4,LeyI] = 0*Upptaget_P[Field4,LeyI]*Harvest_time
P_harvested_potato[Field4,LeyII] = 0*Upptaget_P[Field4,LeyII]*Harvest_time
P_harvested_potato[Field4,LeyIII] =
0*Upptaget_P[Field4,LeyIII]*Harvest_time
P_harvested_potato[Field4,Barley] =
0*Upptaget_P[Field4,Barley]*Harvest_time
P_harvested_potato[Field4,Potato] = IF (Harvest_time>0) THEN
(PULSE(Upptaget_P[Field4,Potato])) ELSE (0)
P_harvested_potato[Field5,Oats&pea] =
0*Upptaget_P[Field5,Oats&pea]*Harvest_time
P_harvested_potato[Field5,LeyI] = 0*Upptaget_P[Field5,LeyI]*Harvest_time
P_harvested_potato[Field5,LeyII] = 0*Upptaget_P[Field5,LeyII]*Harvest_time
P_harvested_potato[Field5,LeyIII] =
0*Upptaget_P[Field5,LeyIII]*Harvest_time
P_harvested_potato[Field5,Barley] =
0*Upptaget_P[Field5,Barley]*Harvest_time
P_harvested_potato[Field5,Potato] = IF (Harvest_time>0) THEN
(PULSE(Upptaget_P[Field5,Potato])) ELSE (0)
P_harvested_potato[Field6,Oats&pea] =
0*Upptaget_P[Field6,Oats&pea]*Harvest_time
P_harvested_potato[Field6,LeyI] = 0*Upptaget_P[Field6,LeyI]*Harvest_time
P_harvested_potato[Field6,LeyII] = 0*Upptaget_P[Field6,LeyII]*Harvest_time
P_harvested_potato[Field6,LeyIII] =
0*Upptaget_P[Field6,LeyIII]*Harvest_time
P_harvested_potato[Field6,Barley] =
0*Upptaget_P[Field6,Barley]*Harvest_time
P_harvested_potato[Field6,Potato] = IF (Harvest_time>0) THEN
(PULSE(Upptaget_P[Field6,Potato])) ELSE (0)
Uptaken_Cd[Field,Crop](t) = Uptaken_Cd[Field,Crop](t - dt) +
(Cd_Uptake_Topsoil[Field,Crop] + Cd_Uptake_Subsoil[Field,Crop] -
Cd_Harvested_oats&peas[Field,Crop] -
Cd_harvested_hay_for_silage[Field,Crop] -
Cd_Harvested_Barley_and_straw[Field,Crop] -
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Cd_Harvested_potato[Field,Crop]) * dt
INIT Uptaken_Cd[Field,Crop] = 0
Cd_Uptake_Topsoil[Field,Crop] =
Cd_UptakeDrive[Field,Crop]*Cd_Ideal_uptake[Field,Crop]*Uptake_activity_Tops
oil*Cropping_period
Cd_Uptake_Subsoil[Field,Crop] =
IF(Cd_Uptake_Topsoil[Field,Crop]<Cd_Ideal_uptake[Field,Crop])THEN(Cd_Uptake
Drive[Field,Crop]*Uptake_activity_Subsoil*Cropping_period*(Cd_Ideal_uptake[
Field,Crop]-Cd_Uptake_Topsoil[Field,Crop]))ELSE(0)
Cd_Harvested_oats&peas[Field1,Oats&pea] = IF (Harvest_time>0) THEN
(PULSE(Uptaken_Cd[Field1,Oats&pea])) ELSE (0)
Cd_Harvested_oats&peas[Field1,LeyI] =
0*Uptaken_Cd[Field1,LeyI]*Harvest_time
Cd_Harvested_oats&peas[Field1,LeyII] =
0*Uptaken_Cd[Field1,LeyII]*Harvest_time
Cd_Harvested_oats&peas[Field1,LeyIII] =
0*Uptaken_Cd[Field1,LeyIII]*Harvest_time
Cd_Harvested_oats&peas[Field1,Barley] =
0*Uptaken_Cd[Field1,Barley]*Harvest_time
Cd_Harvested_oats&peas[Field1,Potato] =
0*Uptaken_Cd[Field1,Potato]*Harvest_time
Cd_Harvested_oats&peas[Field2,Oats&pea] = IF (Harvest_time>0) THEN
(PULSE(Uptaken_Cd[Field2,Oats&pea])) ELSE (0)
Cd_Harvested_oats&peas[Field2,LeyI] =
0*Uptaken_Cd[Field2,LeyI]*Harvest_time
Cd_Harvested_oats&peas[Field2,LeyII] =
0*Uptaken_Cd[Field2,LeyII]*Harvest_time
Cd_Harvested_oats&peas[Field2,LeyIII] =
0*Uptaken_Cd[Field2,LeyIII]*Harvest_time
Cd_Harvested_oats&peas[Field2,Barley] =
0*Uptaken_Cd[Field2,Barley]*Harvest_time
Cd_Harvested_oats&peas[Field2,Potato] =
0*Uptaken_Cd[Field2,Potato]*Harvest_time
Cd_Harvested_oats&peas[Field3,Oats&pea] = IF (Harvest_time>0) THEN
(PULSE(Uptaken_Cd[Field3,Oats&pea])) ELSE (0)
Cd_Harvested_oats&peas[Field3,LeyI] =
0*Uptaken_Cd[Field3,LeyI]*Harvest_time
Cd_Harvested_oats&peas[Field3,LeyII] =
0*Uptaken_Cd[Field3,LeyII]*Harvest_time
Cd_Harvested_oats&peas[Field3,LeyIII] =
0*Uptaken_Cd[Field3,LeyIII]*Harvest_time
Cd_Harvested_oats&peas[Field3,Barley] =
0*Uptaken_Cd[Field3,Barley]*Harvest_time
Cd_Harvested_oats&peas[Field3,Potato] =
0*Uptaken_Cd[Field3,Potato]*Harvest_time
Cd_Harvested_oats&peas[Field4,Oats&pea] = IF (Harvest_time>0) THEN
(PULSE(Uptaken_Cd[Field4,Oats&pea])) ELSE (0)
Cd_Harvested_oats&peas[Field4,LeyI] =
0*Uptaken_Cd[Field4,LeyI]*Harvest_time
Cd_Harvested_oats&peas[Field4,LeyII] =
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0*Uptaken_Cd[Field4,LeyII]*Harvest_time
Cd_Harvested_oats&peas[Field4,LeyIII] =
0*Uptaken_Cd[Field4,LeyIII]*Harvest_time
Cd_Harvested_oats&peas[Field4,Barley] =
0*Uptaken_Cd[Field4,Barley]*Harvest_time
Cd_Harvested_oats&peas[Field4,Potato] =
0*Uptaken_Cd[Field4,Potato]*Harvest_time
Cd_Harvested_oats&peas[Field5,Oats&pea] = IF (Harvest_time>0) THEN
(PULSE(Uptaken_Cd[Field5,Oats&pea])) ELSE (0)
Cd_Harvested_oats&peas[Field5,LeyI] =
0*Uptaken_Cd[Field5,LeyI]*Harvest_time
Cd_Harvested_oats&peas[Field5,LeyII] =
0*Uptaken_Cd[Field5,LeyII]*Harvest_time
Cd_Harvested_oats&peas[Field5,LeyIII] =
0*Uptaken_Cd[Field5,LeyIII]*Harvest_time
Cd_Harvested_oats&peas[Field5,Barley] =
0*Uptaken_Cd[Field5,Barley]*Harvest_time
Cd_Harvested_oats&peas[Field5,Potato] =
0*Uptaken_Cd[Field5,Potato]*Harvest_time
Cd_Harvested_oats&peas[Field6,Oats&pea] = IF (Harvest_time>0) THEN
(PULSE(Uptaken_Cd[Field6,Oats&pea])) ELSE (0)
Cd_Harvested_oats&peas[Field6,LeyI] =
0*Uptaken_Cd[Field6,LeyI]*Harvest_time
Cd_Harvested_oats&peas[Field6,LeyII] =
0*Uptaken_Cd[Field6,LeyII]*Harvest_time
Cd_Harvested_oats&peas[Field6,LeyIII] =
0*Uptaken_Cd[Field6,LeyIII]*Harvest_time
Cd_Harvested_oats&peas[Field6,Barley] =
0*Uptaken_Cd[Field6,Barley]*Harvest_time
Cd_Harvested_oats&peas[Field6,Potato] =
0*Uptaken_Cd[Field6,Potato]*Harvest_time
Cd_harvested_hay_for_silage[Field1,Oats&pea] =
0*Uptaken_Cd[Field1,Oats&pea]*Harvest_time
Cd_harvested_hay_for_silage[Field1,LeyI] = IF(Harvest_time>0) THEN
(PULSE(Uptaken_Cd[Field1,LeyI])) ELSE (0)
Cd_harvested_hay_for_silage[Field1,LeyII] = IF (Harvest_time>0) THEN
(PULSE(Uptaken_Cd[Field1,LeyII])) ELSE (0)
Cd_harvested_hay_for_silage[Field1,LeyIII] = IF (Harvest_time>0) THEN
(PULSE(Uptaken_Cd[Field1,LeyIII])) ELSE (0)
Cd_harvested_hay_for_silage[Field1,Barley] =
0*Uptaken_Cd[Field1,Barley]*Harvest_time
Cd_harvested_hay_for_silage[Field1,Potato] =
0*Uptaken_Cd[Field1,Potato]*Harvest_time
Cd_harvested_hay_for_silage[Field2,Oats&pea] =
0*Uptaken_Cd[Field2,Oats&pea]*Harvest_time
Cd_harvested_hay_for_silage[Field2,LeyI] = IF(Harvest_time>0) THEN
(PULSE(Uptaken_Cd[Field2,LeyI])) ELSE (0)
Cd_harvested_hay_for_silage[Field2,LeyII] = IF (Harvest_time>0) THEN
(PULSE(Uptaken_Cd[Field2,LeyII])) ELSE (0)
Cd_harvested_hay_for_silage[Field2,LeyIII] = IF (Harvest_time>0) THEN
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(PULSE(Uptaken_Cd[Field2,LeyIII])) ELSE (0)
Cd_harvested_hay_for_silage[Field2,Barley] =
0*Uptaken_Cd[Field2,Barley]*Harvest_time
Cd_harvested_hay_for_silage[Field2,Potato] =
0*Uptaken_Cd[Field2,Potato]*Harvest_time
Cd_harvested_hay_for_silage[Field3,Oats&pea] =
0*Uptaken_Cd[Field3,Oats&pea]*Harvest_time
Cd_harvested_hay_for_silage[Field3,LeyI] = IF(Harvest_time>0) THEN
(PULSE(Uptaken_Cd[Field3,LeyI])) ELSE (0)
Cd_harvested_hay_for_silage[Field3,LeyII] = IF (Harvest_time>0) THEN
(PULSE(Uptaken_Cd[Field3,LeyII])) ELSE (0)
Cd_harvested_hay_for_silage[Field3,LeyIII] = IF (Harvest_time>0) THEN
(PULSE(Uptaken_Cd[Field3,LeyIII])) ELSE (0)
Cd_harvested_hay_for_silage[Field3,Barley] =
0*Uptaken_Cd[Field3,Barley]*Harvest_time
Cd_harvested_hay_for_silage[Field3,Potato] =
0*Uptaken_Cd[Field3,Potato]*Harvest_time
Cd_harvested_hay_for_silage[Field4,Oats&pea] =
0*Uptaken_Cd[Field4,Oats&pea]*Harvest_time
Cd_harvested_hay_for_silage[Field4,LeyI] = IF(Harvest_time>0) THEN
(PULSE(Uptaken_Cd[Field4,LeyI])) ELSE (0)
Cd_harvested_hay_for_silage[Field4,LeyII] = IF (Harvest_time>0) THEN
(PULSE(Uptaken_Cd[Field4,LeyII])) ELSE (0)
Cd_harvested_hay_for_silage[Field4,LeyIII] = IF (Harvest_time>0) THEN
(PULSE(Uptaken_Cd[Field4,LeyIII])) ELSE (0)
Cd_harvested_hay_for_silage[Field4,Barley] =
0*Uptaken_Cd[Field4,Barley]*Harvest_time
Cd_harvested_hay_for_silage[Field4,Potato] =
0*Uptaken_Cd[Field4,Potato]*Harvest_time
Cd_harvested_hay_for_silage[Field5,Oats&pea] =
0*Uptaken_Cd[Field5,Oats&pea]*Harvest_time
Cd_harvested_hay_for_silage[Field5,LeyI] = IF(Harvest_time>0) THEN
(PULSE(Uptaken_Cd[Field5,LeyI])) ELSE (0)
Cd_harvested_hay_for_silage[Field5,LeyII] = IF (Harvest_time>0) THEN
(PULSE(Uptaken_Cd[Field5,LeyII])) ELSE (0)
Cd_harvested_hay_for_silage[Field5,LeyIII] = IF (Harvest_time>0) THEN
(PULSE(Uptaken_Cd[Field5,LeyIII])) ELSE (0)
Cd_harvested_hay_for_silage[Field5,Barley] =
0*Uptaken_Cd[Field5,Barley]*Harvest_time
Cd_harvested_hay_for_silage[Field5,Potato] =
0*Uptaken_Cd[Field5,Potato]*Harvest_time
Cd_harvested_hay_for_silage[Field6,Oats&pea] =
0*Uptaken_Cd[Field6,Oats&pea]*Harvest_time
Cd_harvested_hay_for_silage[Field6,LeyI] = IF(Harvest_time>0) THEN
(PULSE(Uptaken_Cd[Field6,LeyI])) ELSE (0)
Cd_harvested_hay_for_silage[Field6,LeyII] = IF (Harvest_time>0) THEN
(PULSE(Uptaken_Cd[Field6,LeyII])) ELSE (0)
Cd_harvested_hay_for_silage[Field6,LeyIII] = IF (Harvest_time>0) THEN
(PULSE(Uptaken_Cd[Field6,LeyIII])) ELSE (0)
Cd_harvested_hay_for_silage[Field6,Barley] =
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0*Uptaken_Cd[Field6,Barley]*Harvest_time
Cd_harvested_hay_for_silage[Field6,Potato] =
0*Uptaken_Cd[Field6,Potato]*Harvest_time
Cd_Harvested_Barley_and_straw[Field1,Oats&pea] =
0*Uptaken_Cd[Field1,Oats&pea]*Harvest_time
Cd_Harvested_Barley_and_straw[Field1,LeyI] =
0*Uptaken_Cd[Field1,LeyI]*Harvest_time
Cd_Harvested_Barley_and_straw[Field1,LeyII] =
0*Uptaken_Cd[Field1,LeyII]*Harvest_time
Cd_Harvested_Barley_and_straw[Field1,LeyIII] =
0*Uptaken_Cd[Field1,LeyIII]*Harvest_time
Cd_Harvested_Barley_and_straw[Field1,Barley] = IF(Harvest_time>0)
THEN(PULSE(Uptaken_Cd[Field1,Barley]))ELSE(0)
Cd_Harvested_Barley_and_straw[Field1,Potato] =
0*Uptaken_Cd[Field1,Potato]*Harvest_time
Cd_Harvested_Barley_and_straw[Field2,Oats&pea] =
0*Uptaken_Cd[Field2,Oats&pea]*Harvest_time
Cd_Harvested_Barley_and_straw[Field2,LeyI] =
0*Uptaken_Cd[Field2,LeyI]*Harvest_time
Cd_Harvested_Barley_and_straw[Field2,LeyII] =
0*Uptaken_Cd[Field2,LeyII]*Harvest_time
Cd_Harvested_Barley_and_straw[Field2,LeyIII] =
0*Uptaken_Cd[Field2,LeyIII]*Harvest_time
Cd_Harvested_Barley_and_straw[Field2,Barley] = IF(Harvest_time>0)
THEN(PULSE(Uptaken_Cd[Field2,Barley]))ELSE(0)
Cd_Harvested_Barley_and_straw[Field2,Potato] =
0*Uptaken_Cd[Field2,Potato]*Harvest_time
Cd_Harvested_Barley_and_straw[Field3,Oats&pea] =
0*Uptaken_Cd[Field3,Oats&pea]*Harvest_time
Cd_Harvested_Barley_and_straw[Field3,LeyI] =
0*Uptaken_Cd[Field3,LeyI]*Harvest_time
Cd_Harvested_Barley_and_straw[Field3,LeyII] =
0*Uptaken_Cd[Field3,LeyII]*Harvest_time
Cd_Harvested_Barley_and_straw[Field3,LeyIII] =
0*Uptaken_Cd[Field3,LeyIII]*Harvest_time
Cd_Harvested_Barley_and_straw[Field3,Barley] = IF(Harvest_time>0)
THEN(PULSE(Uptaken_Cd[Field3,Barley]))ELSE(0)
Cd_Harvested_Barley_and_straw[Field3,Potato] =
0*Uptaken_Cd[Field3,Potato]*Harvest_time
Cd_Harvested_Barley_and_straw[Field4,Oats&pea] =
0*Uptaken_Cd[Field4,Oats&pea]*Harvest_time
Cd_Harvested_Barley_and_straw[Field4,LeyI] =
0*Uptaken_Cd[Field4,LeyI]*Harvest_time
Cd_Harvested_Barley_and_straw[Field4,LeyII] =
0*Uptaken_Cd[Field4,LeyII]*Harvest_time
Cd_Harvested_Barley_and_straw[Field4,LeyIII] =
0*Uptaken_Cd[Field4,LeyIII]*Harvest_time
Cd_Harvested_Barley_and_straw[Field4,Barley] = IF(Harvest_time>0)
THEN(PULSE(Uptaken_Cd[Field4,Barley]))ELSE(0)
Cd_Harvested_Barley_and_straw[Field4,Potato] =
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0*Uptaken_Cd[Field4,Potato]*Harvest_time
Cd_Harvested_Barley_and_straw[Field5,Oats&pea] =
0*Uptaken_Cd[Field5,Oats&pea]*Harvest_time
Cd_Harvested_Barley_and_straw[Field5,LeyI] =
0*Uptaken_Cd[Field5,LeyI]*Harvest_time
Cd_Harvested_Barley_and_straw[Field5,LeyII] =
0*Uptaken_Cd[Field5,LeyII]*Harvest_time
Cd_Harvested_Barley_and_straw[Field5,LeyIII] =
0*Uptaken_Cd[Field5,LeyIII]*Harvest_time
Cd_Harvested_Barley_and_straw[Field5,Barley] = IF(Harvest_time>0)
THEN(PULSE(Uptaken_Cd[Field5,Barley]))ELSE(0)
Cd_Harvested_Barley_and_straw[Field5,Potato] =
0*Uptaken_Cd[Field5,Potato]*Harvest_time
Cd_Harvested_Barley_and_straw[Field6,Oats&pea] =
0*Uptaken_Cd[Field6,Oats&pea]*Harvest_time
Cd_Harvested_Barley_and_straw[Field6,LeyI] =
0*Uptaken_Cd[Field6,LeyI]*Harvest_time
Cd_Harvested_Barley_and_straw[Field6,LeyII] =
0*Uptaken_Cd[Field6,LeyII]*Harvest_time
Cd_Harvested_Barley_and_straw[Field6,LeyIII] =
0*Uptaken_Cd[Field6,LeyIII]*Harvest_time
Cd_Harvested_Barley_and_straw[Field6,Barley] = IF(Harvest_time>0)
THEN(PULSE(Uptaken_Cd[Field6,Barley]))ELSE(0)
Cd_Harvested_Barley_and_straw[Field6,Potato] =
0*Uptaken_Cd[Field6,Potato]*Harvest_time
Cd_Harvested_potato[Field1,Oats&pea] =
0*Uptaken_Cd[Field1,Oats&pea]*Harvest_time
Cd_Harvested_potato[Field1,LeyI] = 0*Uptaken_Cd[Field1,LeyI]*Harvest_time
Cd_Harvested_potato[Field1,LeyII] = 0*Uptaken_Cd[Field1,LeyII]*Harvest_time
Cd_Harvested_potato[Field1,LeyIII] =
0*Uptaken_Cd[Field1,LeyIII]*Harvest_time
Cd_Harvested_potato[Field1,Barley] =
0*Uptaken_Cd[Field1,Barley]*Harvest_time
Cd_Harvested_potato[Field1,Potato] = IF (Harvest_time>0) THEN
(PULSE(Uptaken_Cd[Field1,Potato])) ELSE (0)
Cd_Harvested_potato[Field2,Oats&pea] =
0*Uptaken_Cd[Field2,Oats&pea]*Harvest_time
Cd_Harvested_potato[Field2,LeyI] = 0*Uptaken_Cd[Field2,LeyI]*Harvest_time
Cd_Harvested_potato[Field2,LeyII] = 0*Uptaken_Cd[Field2,LeyII]*Harvest_time
Cd_Harvested_potato[Field2,LeyIII] =
0*Uptaken_Cd[Field2,LeyIII]*Harvest_time
Cd_Harvested_potato[Field2,Barley] =
0*Uptaken_Cd[Field2,Barley]*Harvest_time
Cd_Harvested_potato[Field2,Potato] = IF (Harvest_time>0) THEN
(PULSE(Uptaken_Cd[Field2,Potato])) ELSE (0)
Cd_Harvested_potato[Field3,Oats&pea] =
0*Uptaken_Cd[Field3,Oats&pea]*Harvest_time
Cd_Harvested_potato[Field3,LeyI] = 0*Uptaken_Cd[Field3,LeyI]*Harvest_time
Cd_Harvested_potato[Field3,LeyII] = 0*Uptaken_Cd[Field3,LeyII]*Harvest_time
Cd_Harvested_potato[Field3,LeyIII] =
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```
0*Uptaken_Cd[Field3,LeyIII]*Harvest_time
Cd_Harvested_potato[Field3,Barley] =
0*Uptaken_Cd[Field3,Barley]*Harvest_time
Cd_Harvested_potato[Field3,Potato] = IF (Harvest_time>0) THEN
(PULSE(Uptaken_Cd[Field3,Potato])) ELSE (0)
Cd_Harvested_potato[Field4,Oats&pea] =
0*Uptaken_Cd[Field4,Oats&pea]*Harvest_time
Cd_Harvested_potato[Field4,LeyI] = 0*Uptaken_Cd[Field4,LeyI]*Harvest_time
Cd_Harvested_potato[Field4,LeyII] = 0*Uptaken_Cd[Field4,LeyII]*Harvest_time
Cd_Harvested_potato[Field4,LeyIII] =
0*Uptaken_Cd[Field4,LeyIII]*Harvest_time
Cd_Harvested_potato[Field4,Barley] =
0*Uptaken_Cd[Field4,Barley]*Harvest_time
Cd_Harvested_potato[Field4,Potato] = IF (Harvest_time>0) THEN
(PULSE(Uptaken_Cd[Field4,Potato])) ELSE (0)
Cd_Harvested_potato[Field5,Oats&pea] =
0*Uptaken_Cd[Field5,Oats&pea]*Harvest_time
Cd_Harvested_potato[Field5,LeyI] = 0*Uptaken_Cd[Field5,LeyI]*Harvest_time
Cd_Harvested_potato[Field5,LeyII] = 0*Uptaken_Cd[Field5,LeyII]*Harvest_time
Cd_Harvested_potato[Field5,LeyIII] =
0*Uptaken_Cd[Field5,LeyIII]*Harvest_time
Cd_Harvested_potato[Field5,Barley] =
0*Uptaken_Cd[Field5,Barley]*Harvest_time
Cd_Harvested_potato[Field5,Potato] = IF (Harvest_time>0) THEN
(PULSE(Uptaken_Cd[Field5,Potato])) ELSE (0)
Cd_Harvested_potato[Field6,Oats&pea] =
0*Uptaken_Cd[Field6,Oats&pea]*Harvest_time
Cd_Harvested_potato[Field6,LeyI] = 0*Uptaken_Cd[Field6,LeyI]*Harvest_time
Cd_Harvested_potato[Field6,LeyII] = 0*Uptaken_Cd[Field6,LeyII]*Harvest_time
Cd_Harvested_potato[Field6,LeyIII] =
0*Uptaken_Cd[Field6,LeyIII]*Harvest_time
Cd_Harvested_potato[Field6,Barley] =
0*Uptaken_Cd[Field6,Barley]*Harvest_time
Cd_Harvested_potato[Field6,Potato] = IF (Harvest_time>0) THEN
(PULSE(Uptaken_Cd[Field6,Potato])) ELSE (0)
Utgödsling_I[Field,Crop](t) = Utgödsling_I[Field,Crop](t - dt) +
(Cd_Solid_manure_application_per_ha[Field,Crop] + Cd_Seeds[Field,Crop] +
Cd_atm_deposition[Field,Crop] + Cd_Pesticid[Field,Crop] +
Cd_Lime[Field,Crop]) * dt
INIT Utgödsling_I[Field,Crop] = 0
Cd_Solid_manure_application_per_ha[Field1,Oats&pea] =
Cd_Manure_Matrix[Field1,Oats&pea]/5.82
Cd_Solid_manure_application_per_ha[Field1,LeyI] =
Cd_Manure_Matrix[Field1,LeyI]/5.82
Cd_Solid_manure_application_per_ha[Field1,LeyII] =
Cd_Manure_Matrix[Field1,LeyII]/5.82
Cd_Solid_manure_application_per_ha[Field1,LeyIII] =
Cd_Manure_Matrix[Field1,LeyIII]/5.82
Cd_Solid_manure_application_per_ha[Field1,Barley] =
Cd_Manure_Matrix[Field1,Barley]/5.82
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```
Cd_Solid_manure_application_per_ha[Field1,Potato] =
Cd_Manure_Matrix[Field1,Potato]/5.82
Cd_Solid_manure_application_per_ha[Field2,Oats&pea] =
Cd_Manure_Matrix[Field2,Oats&pea]/6.22
Cd_Solid_manure_application_per_ha[Field2,LeyI] =
Cd_Manure_Matrix[Field2,LeyI]/6.22
Cd_Solid_manure_application_per_ha[Field2,LeyII] =
Cd_Manure_Matrix[Field2,LeyII]/6.22
Cd_Solid_manure_application_per_ha[Field2,LeyIII] =
Cd_Manure_Matrix[Field2,LeyIII]/6.22
Cd_Solid_manure_application_per_ha[Field2,Barley] =
Cd_Manure_Matrix[Field2,Barley]/6.22
Cd_Solid_manure_application_per_ha[Field2,Potato] =
Cd_Manure_Matrix[Field2,Potato]/6.22
Cd_Solid_manure_application_per_ha[Field3,Oats&pea] =
Cd_Manure_Matrix[Field3,Oats&pea]/7.75
Cd_Solid_manure_application_per_ha[Field3,LeyI] =
Cd_Manure_Matrix[Field3,LeyI]/7.75
Cd_Solid_manure_application_per_ha[Field3,LeyII] =
Cd_Manure_Matrix[Field3,LeyII]/7.75
Cd_Solid_manure_application_per_ha[Field3,LeyIII] =
Cd_Manure_Matrix[Field3,LeyIII]/7.75
Cd_Solid_manure_application_per_ha[Field3,Barley] =
Cd_Manure_Matrix[Field3,Barley]/7.75
Cd_Solid_manure_application_per_ha[Field3,Potato] =
Cd_Manure_Matrix[Field3,Potato]/7.75
Cd_Solid_manure_application_per_ha[Field4,Oats&pea] =
Cd_Manure_Matrix[Field4,Oats&pea]/6.3
Cd_Solid_manure_application_per_ha[Field4,LeyI] =
Cd_Manure_Matrix[Field4,LeyI]/6.3
Cd_Solid_manure_application_per_ha[Field4,LeyII] =
Cd_Manure_Matrix[Field4,LeyII]/6.3
Cd_Solid_manure_application_per_ha[Field4,LeyIII] =
Cd_Manure_Matrix[Field4,LeyIII]/6.3
Cd_Solid_manure_application_per_ha[Field4,Barley] =
Cd_Manure_Matrix[Field4,Barley]/6.3
Cd_Solid_manure_application_per_ha[Field4,Potato] =
Cd_Manure_Matrix[Field4,Potato]/6.3
Cd_Solid_manure_application_per_ha[Field5,Oats&pea] =
Cd_Manure_Matrix[Field5,Oats&pea]/7.35
Cd_Solid_manure_application_per_ha[Field5,LeyI] =
Cd_Manure_Matrix[Field5,LeyI]/7.35
Cd_Solid_manure_application_per_ha[Field5,LeyII] =
Cd_Manure_Matrix[Field5,LeyII]/7.35
Cd_Solid_manure_application_per_ha[Field5,LeyIII] =
Cd_Manure_Matrix[Field5,LeyIII]/7.35
Cd_Solid_manure_application_per_ha[Field5,Barley] =
Cd_Manure_Matrix[Field5,Barley]/7.35
Cd_Solid_manure_application_per_ha[Field5,Potato] =
Cd_Manure_Matrix[Field5,Potato]/7.35
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```
Cd_Solid_manure_application_per_ha[Field6,Oats&pea] =
Cd_Manure_Matrix[Field6,Oats&pea]/5.38
Cd_Solid_manure_application_per_ha[Field6,LeyI] =
Cd_Manure_Matrix[Field6,LeyI]/5.38
Cd_Solid_manure_application_per_ha[Field6,LeyII] =
Cd_Manure_Matrix[Field6,LeyII]/5.38
Cd_Solid_manure_application_per_ha[Field6,LeyIII] =
Cd_Manure_Matrix[Field6,LeyIII]/5.38
Cd_Solid_manure_application_per_ha[Field6,Barley] =
Cd_Manure_Matrix[Field6,Barley]/5.38
Cd_Solid_manure_application_per_ha[Field6,Potato] =
Cd_Manure_Matrix[Field6,Potato]/5.38
Cd_Seeds[Field,Crop] =
Cd_conc_crop[Field,Crop]*Amount_of_Seeds[Field,Crop]*Crop_rotation_6_years[
Field,Crop]
Cd_atm_deposition[Field,Crop] = Cd_Deposition[Field,Crop]
Cd_Pesticid[Field,Crop] = Cd_Besprutningsstrategi[Field,Crop]
Cd_Lime[Field,Crop] =
Cd_conc_Lime*Lime_amount[Field,Crop]*Crop_rotation_6_years[Field,Crop]
Utgödsling_I_Zn[Field,Crop](t) = Utgödsling_I_Zn[Field,Crop](t - dt) +
(Zn_Manure_spreading_per_ha[Field,Crop] + Zn_seeds[Field,Crop] +
Zn_Deposition_flow[Field,Crop] + Zn_Pesticide[Field,Crop] +
Zn_Lime[Field,Crop]) * dt
INIT Utgödsling_I_Zn[Field,Crop] = 0
Zn_Manure_spreading_per_ha[Field1,Oats&pea] =
Zn_Fertilisation_matrix[Field1,Oats&pea]/5.82
Zn_Manure_spreading_per_ha[Field1,LeyI] =
Zn_Fertilisation_matrix[Field1,LeyI]/5.82
Zn_Manure_spreading_per_ha[Field1,LeyII] =
Zn_Fertilisation_matrix[Field1,LeyII]/5.82
Zn_Manure_spreading_per_ha[Field1,LeyIII] =
Zn_Fertilisation_matrix[Field1,LeyIII]/5.82
Zn_Manure_spreading_per_ha[Field1,Barley] =
Zn_Fertilisation_matrix[Field1,Barley]/5.82
Zn_Manure_spreading_per_ha[Field1,Potato] =
Zn_Fertilisation_matrix[Field1,Potato]/5.82
Zn_Manure_spreading_per_ha[Field2,Oats&pea] =
Zn_Fertilisation_matrix[Field2,Oats&pea]/6.22
Zn_Manure_spreading_per_ha[Field2,LeyI] =
Zn_Fertilisation_matrix[Field2,LeyI]/6.22
Zn_Manure_spreading_per_ha[Field2,LeyII] =
Zn_Fertilisation_matrix[Field2,LeyII]/6.22
Zn_Manure_spreading_per_ha[Field2,LeyIII] =
Zn_Fertilisation_matrix[Field2,LeyIII]/6.22
Zn_Manure_spreading_per_ha[Field2,Barley] =
Zn_Fertilisation_matrix[Field2,Barley]/6.22
Zn_Manure_spreading_per_ha[Field2,Potato] =
Zn_Fertilisation_matrix[Field2,Potato]/6.22
Zn_Manure_spreading_per_ha[Field3,Oats&pea] =
Zn_Fertilisation_matrix[Field3,Oats&pea]/7.75
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```
Zn_Manure_spreading_per_ha[Field3,LeyI] =
Zn_Fertilisation_matrix[Field3,LeyI]/7.75
Zn_Manure_spreading_per_ha[Field3,LeyII] =
Zn_Fertilisation_matrix[Field3,LeyII]/7.75
Zn_Manure_spreading_per_ha[Field3,LeyIII] =
Zn_Fertilisation_matrix[Field3,LeyIII]/7.75
Zn_Manure_spreading_per_ha[Field3,Barley] =
Zn_Fertilisation_matrix[Field3,Barley]/7.75
Zn_Manure_spreading_per_ha[Field3,Potato] =
Zn_Fertilisation_matrix[Field3,Potato]/7.75
Zn_Manure_spreading_per_ha[Field4,Oats&pea] =
Zn_Fertilisation_matrix[Field4,Oats&pea]/6.3
Zn_Manure_spreading_per_ha[Field4,LeyI] =
Zn_Fertilisation_matrix[Field4,LeyI]/6.3
Zn_Manure_spreading_per_ha[Field4,LeyII] =
Zn_Fertilisation_matrix[Field4,LeyII]/6.3
Zn_Manure_spreading_per_ha[Field4,LeyIII] =
Zn_Fertilisation_matrix[Field4,LeyIII]/6.3
Zn_Manure_spreading_per_ha[Field4,Barley] =
Zn_Fertilisation_matrix[Field4,Barley]/6.3
Zn_Manure_spreading_per_ha[Field4,Potato] =
Zn_Fertilisation_matrix[Field4,Potato]/6.3
Zn_Manure_spreading_per_ha[Field5,Oats&pea] =
Zn_Fertilisation_matrix[Field5,Oats&pea]/7.35
Zn_Manure_spreading_per_ha[Field5,LeyI] =
Zn_Fertilisation_matrix[Field5,LeyI]/7.35
Zn_Manure_spreading_per_ha[Field5,LeyII] =
Zn_Fertilisation_matrix[Field5,LeyII]/7.35
Zn_Manure_spreading_per_ha[Field5,LeyIII] =
Zn_Fertilisation_matrix[Field5,LeyIII]/7.35
Zn_Manure_spreading_per_ha[Field5,Barley] =
Zn_Fertilisation_matrix[Field5,Barley]/7.35
Zn_Manure_spreading_per_ha[Field5,Potato] =
Zn_Fertilisation_matrix[Field5,Potato]/7.35
Zn_Manure_spreading_per_ha[Field6,Oats&pea] =
Zn_Fertilisation_matrix[Field6,Oats&pea]/5.38
Zn_Manure_spreading_per_ha[Field6,LeyI] =
Zn_Fertilisation_matrix[Field6,LeyI]/5.38
Zn_Manure_spreading_per_ha[Field6,LeyII] =
Zn_Fertilisation_matrix[Field6,LeyII]/5.38
Zn_Manure_spreading_per_ha[Field6,LeyIII] =
Zn_Fertilisation_matrix[Field6,LeyIII]/5.38
Zn_Manure_spreading_per_ha[Field6,Barley] =
Zn_Fertilisation_matrix[Field6,Barley]/5.38
Zn_Manure_spreading_per_ha[Field6,Potato] =
Zn_Fertilisation_matrix[Field6,Potato]/5.38
Zn_seeds[Field,Crop] =
Amount_of_Seeds[Field,Crop]*Crop_rotation_6_years[Field,Crop]*Zn_conc_crop[
Field,Crop]
Zn_Deposition_flow[Field,Crop] = Zn_Deposition[Field,Crop]
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```
Zn_Pesticide[Field,Crop] = Zn_Pesticide_use_strategy[Field,Crop]
Zn_Lime[Field,Crop] = Zn_Lime_strategi[Field,Crop]
Water_in_subsoil(t) = Water_in_subsoil(t - dt) +
(Percolation_topsoil_to_subsoil - Water_flow_from_subsoil) * dt
INIT Water_in_subsoil = 1200
Percolation_topsoil_to_subsoil = (Säsongsvariation*PercTopsoil)+(0*Runoff)
Water_flow_from_subsoil = perkSubsoil*Säsongsvariation
Water_in_topsoil(t) = Water_in_topsoil(t - dt) + (Infiltration -
Percolation_topsoil_to_subsoil - Runoff - EvapTopsoil) * dt
INIT Water_in_topsoil = 750
Infiltration = pulse((Regnvolym/26),(1/26),(1/26))*Nederbördsvariation
Percolation_topsoil_to_subsoil = (Säsongsvariation*PercTopsoil)+(0*Runoff)
Runoff = RunoffKurva*Säsongsvariation
EvapTopsoil = 2*EvapVariation*Water_in_topsoil
ZnSoil_solution_subsoil[Field](t) = ZnSoil_solution_subsoil[Field](t - dt)
+ (Zn_leaching_from_topsoil_to_subsoil[Field] - Zn_leaching_subsoil[Field]
- Zn_Upptag_Subsoil[Field,Crop] - Zn_Subsoil_Ads_Des[Field]) * dt
INIT ZnSoil_solution_subsoil[Field] = 12.9
Zn_leaching_from_topsoil_to_subsoil[Field] =
(Percolation_topsoil_to_subsoil*1000*Zn_topsoil_conc_g_per_dm3[Field])+(0*Z
n_loss_Runoff[Field])
Zn_leaching_subsoil[Field] =
(Water_flow_from_subsoil*Zn_subsoil_conc_g_per_dm3[Field]*1000)
Zn_Upptag_Subsoil[Field,Crop] =
IF(Zn_Upptake_Topsoil[Field,Crop]<Zn_Ideal_uptake[Field,Crop])THEN(Zn_Uptak
e_drive[Field,Crop]*Uptake_activity_Subsoil*Cropping_period*(Zn_Ideal_uptak
e[Field,Crop]-Zn_Upptake_Topsoil[Field,Crop]))ELSE(0)
Zn_Subsoil_Ads_Des[Field] = -0.001*((Zn_Ads_subsoil_g_per_kg_soil[Field]-
(Zn_Kd_Subsoil*Zn_subsoil_conc_g_per_dm3[Field])))*Bulkdensity[Field]+(0*Zn
_Upptag_subsoil_per_Field[Field])
Zn_Adsorbed_subsoil[Field1](t) = Zn_Adsorbed_subsoil[Field1](t - dt) +
(Zn_Subsoil_Ads_Des[Field1]) * dt
INIT Zn_Adsorbed_subsoil[Field1] = (132000+116000)
Zn_Adsorbed_subsoil[Field2](t) = Zn_Adsorbed_subsoil[Field2](t - dt) +
(Zn_Subsoil_Ads_Des[Field2]) * dt
INIT Zn_Adsorbed_subsoil[Field2] = (116000+96000)
Zn_Adsorbed_subsoil[Field3](t) = Zn_Adsorbed_subsoil[Field3](t - dt) +
(Zn_Subsoil_Ads_Des[Field3]) * dt
INIT Zn_Adsorbed_subsoil[Field3] = (128908+126241)
Zn_Adsorbed_subsoil[Field4](t) = Zn_Adsorbed_subsoil[Field4](t - dt) +
(Zn_Subsoil_Ads_Des[Field4]) * dt
INIT Zn_Adsorbed_subsoil[Field4] = (99000+91000)
Zn_Adsorbed_subsoil[Field5](t) = Zn_Adsorbed_subsoil[Field5](t - dt) +
(Zn_Subsoil_Ads_Des[Field5]) * dt
INIT Zn_Adsorbed_subsoil[Field5] = (163838+206873)
Zn_Adsorbed_subsoil[Field6](t) = Zn_Adsorbed_subsoil[Field6](t - dt) +
(Zn_Subsoil_Ads_Des[Field6]) * dt
INIT Zn_Adsorbed_subsoil[Field6] = (78000+96000)
Zn_Subsoil_Ads_Des[Field] = -0.001*((Zn_Ads_subsoil_g_per_kg_soil[Field]-
(Zn_Kd_Subsoil*Zn_subsoil_conc_g_per_dm3[Field])))*Bulkdensity[Field]+(0*Zn
```

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_Upptag_subsoil_per_Field[Field])
Zn_Barley_storage_I[Field,Crop](t) = Zn_Barley_storage_I[Field,Crop](t -
dt) + (Zn_Barley_per_ha_to_total[Field,Crop]) * dt
INIT Zn_Barley_storage_I[Field,Crop] = 0
Zn_Barley_per_ha_to_total[Field1,Oats&pea] = (1-
Proportion_Zn_in_straw)*Zn_harvested_barley_and_straw[Field1,Oats&pea]*5.82
Zn_Barley_per_ha_to_total[Field1,LeyI] = (1-
Proportion_Zn_in_straw)*Zn_harvested_barley_and_straw[Field1,LeyI]*5.82
Zn_Barley_per_ha_to_total[Field1,LeyII] = (1-
Proportion_Zn_in_straw)*Zn_harvested_barley_and_straw[Field1,LeyII]*5.82
Zn_Barley_per_ha_to_total[Field1,LeyIII] = (1-
Proportion_Zn_in_straw)*Zn_harvested_barley_and_straw[Field1,LeyIII]*5.82
Zn_Barley_per_ha_to_total[Field1,Barley] = (1-
Proportion_Zn_in_straw)*Zn_harvested_barley_and_straw[Field1,Barley]*5.82
Zn_Barley_per_ha_to_total[Field1,Potato] = (1-
Proportion_Zn_in_straw)*Zn_harvested_barley_and_straw[Field1,Potato]*5.82
Zn_Barley_per_ha_to_total[Field2,Oats&pea] = (1-
Proportion_Zn_in_straw)*Zn_harvested_barley_and_straw[Field2,Oats&pea]*6.22
Zn_Barley_per_ha_to_total[Field2,LeyI] = (1-
Proportion_Zn_in_straw)*Zn_harvested_barley_and_straw[Field2,LeyI]*6.22
Zn_Barley_per_ha_to_total[Field2,LeyII] = (1-
Proportion_Zn_in_straw)*Zn_harvested_barley_and_straw[Field2,LeyII]*6.22
Zn_Barley_per_ha_to_total[Field2,LeyIII] = (1-
Proportion_Zn_in_straw)*Zn_harvested_barley_and_straw[Field2,LeyIII]*6.22
Zn_Barley_per_ha_to_total[Field2,Barley] = (1-
Proportion_Zn_in_straw)*Zn_harvested_barley_and_straw[Field2,Barley]*6.22
Zn_Barley_per_ha_to_total[Field2,Potato] = (1-
Proportion_Zn_in_straw)*Zn_harvested_barley_and_straw[Field2,Potato]*6.22
Zn_Barley_per_ha_to_total[Field3,Oats&pea] = (1-
Proportion_Zn_in_straw)*Zn_harvested_barley_and_straw[Field3,Oats&pea]*7.75
Zn_Barley_per_ha_to_total[Field3,LeyI] = (1-
Proportion_Zn_in_straw)*Zn_harvested_barley_and_straw[Field3,LeyI]*7.75
Zn_Barley_per_ha_to_total[Field3,LeyII] = (1-
Proportion_Zn_in_straw)*Zn_harvested_barley_and_straw[Field3,LeyII]*7.75
Zn_Barley_per_ha_to_total[Field3,LeyIII] = (1-
Proportion_Zn_in_straw)*Zn_harvested_barley_and_straw[Field3,LeyIII]*7.75
Zn_Barley_per_ha_to_total[Field3,Barley] = (1-
Proportion_Zn_in_straw)*Zn_harvested_barley_and_straw[Field3,Barley]*7.75
Zn_Barley_per_ha_to_total[Field3,Potato] = (1-
Proportion_Zn_in_straw)*Zn_harvested_barley_and_straw[Field3,Potato]*7.75
Zn_Barley_per_ha_to_total[Field4,Oats&pea] = (1-
Proportion_Zn_in_straw)*Zn_harvested_barley_and_straw[Field4,Oats&pea]*6.3
Zn_Barley_per_ha_to_total[Field4,LeyI] = (1-
Proportion_Zn_in_straw)*Zn_harvested_barley_and_straw[Field4,LeyI]*6.3
Zn_Barley_per_ha_to_total[Field4,LeyII] = (1-
Proportion_Zn_in_straw)*Zn_harvested_barley_and_straw[Field4,LeyII]*6.3
Zn_Barley_per_ha_to_total[Field4,LeyIII] = (1-
Proportion_Zn_in_straw)*Zn_harvested_barley_and_straw[Field4,LeyIII]*6.3
Zn_Barley_per_ha_to_total[Field4,Barley] = (1-
Proportion_Zn_in_straw)*Zn_harvested_barley_and_straw[Field4,Barley]*6.3
```

```
Zn_Barley_per_ha_to_total[Field4,Potato] = (1-
Proportion_Zn_in_straw)*Zn_harvested_barley_and_straw[Field4,Potato]*6.3
Zn_Barley_per_ha_to_total[Field5,Oats&pea] = (1-
Proportion_Zn_in_straw)*Zn_harvested_barley_and_straw[Field5,Oats&pea]*7.35
Zn_Barley_per_ha_to_total[Field5,LeyI] = (1-
Proportion_Zn_in_straw)*Zn_harvested_barley_and_straw[Field5,LeyI]*7.35
Zn_Barley_per_ha_to_total[Field5,LeyII] = (1-
Proportion_Zn_in_straw)*Zn_harvested_barley_and_straw[Field5,LeyII]*7.35
Zn_Barley_per_ha_to_total[Field5,LeyIII] = (1-
Proportion_Zn_in_straw)*Zn_harvested_barley_and_straw[Field5,LeyIII]*7.35
Zn_Barley_per_ha_to_total[Field5,Barley] = (1-
Proportion_Zn_in_straw)*Zn_harvested_barley_and_straw[Field5,Barley]*7.35
Zn_Barley_per_ha_to_total[Field5,Potato] = (1-
Proportion_Zn_in_straw)*Zn_harvested_barley_and_straw[Field5,Potato]*7.35
Zn_Barley_per_ha_to_total[Field6,Oats&pea] = (1-
Proportion_Zn_in_straw)*Zn_harvested_barley_and_straw[Field6,Oats&pea]*5.38
Zn_Barley_per_ha_to_total[Field6,LeyI] = (1-
Proportion_Zn_in_straw)*Zn_harvested_barley_and_straw[Field6,LeyI]*5.38
Zn_Barley_per_ha_to_total[Field6,LeyII] = (1-
Proportion_Zn_in_straw)*Zn_harvested_barley_and_straw[Field6,LeyII]*5.38
Zn_Barley_per_ha_to_total[Field6,LeyIII] = (1-
Proportion_Zn_in_straw)*Zn_harvested_barley_and_straw[Field6,LeyIII]*5.38
Zn_Barley_per_ha_to_total[Field6,Barley] = (1-
Proportion_Zn_in_straw)*Zn_harvested_barley_and_straw[Field6,Barley]*5.38
Zn_Barley_per_ha_to_total[Field6,Potato] = (1-
Proportion_Zn_in_straw)*Zn_harvested_barley_and_straw[Field6,Potato]*5.38
Zn_Barley_storage_II(t) = Zn_Barley_storage_II(t - dt) +
(Zn_Simulated_barley_import + Zn_homegrown_barley - Zn_barley) * dt
INIT Zn_Barley_storage_II = Cows*0.039*1644
Zn_Simulated_barley_import = (Zn_Total_barley_requirements-
Zn_Barley_storage_II)
Zn_homegrown_barley = Zn_Sum_array_barley
Zn_barley = Zn_Total_barley_requirements
Zn_Fertilisation_II[Field,Crop](t) = Zn_Fertilisation_II[Field,Crop](t -
dt) + (Zn_Urine_per_ha[Field,Crop] +
Zn_Mineral_fertiliser_flow[Field,Crop]) * dt
INIT Zn_Fertilisation_II[Field,Crop] = 0
Zn_Urine_per_ha[Field1,Oats&pea] = Zn_Urinematris[Field1,Oats&pea]/5.82
Zn_Urine_per_ha[Field1,LeyI] = Zn_Urinematris[Field1,LeyI]/5.82
Zn_Urine_per_ha[Field1,LeyII] = Zn_Urinematris[Field1,LeyII]/5.82
Zn_Urine_per_ha[Field1,LeyIII] = Zn_Urinematris[Field1,LeyIII]/5.82
Zn_Urine_per_ha[Field1,Barley] = Zn_Urinematris[Field1,Barley]/5.82
Zn_Urine_per_ha[Field1,Potato] = Zn_Urinematris[Field1,Potato]/5.82
Zn_Urine_per_ha[Field2,Oats&pea] = Zn_Urinematris[Field2,Oats&pea]/6.22
Zn_Urine_per_ha[Field2,LeyI] = Zn_Urinematris[Field2,LeyI]/6.22
Zn_Urine_per_ha[Field2,LeyII] = Zn_Urinematris[Field2,LeyII]/6.22
Zn_Urine_per_ha[Field2,LeyIII] = Zn_Urinematris[Field2,LeyIII]/6.22
Zn_Urine_per_ha[Field2,Barley] = Zn_Urinematris[Field2,Barley]/6.22
Zn_Urine_per_ha[Field2,Potato] = Zn_Urinematris[Field2,Potato]/6.22
Zn_Urine_per_ha[Field3,Oats&pea] = Zn_Urinematris[Field3,Oats&pea]/7.75
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Zn_Urine_per_ha[Field3,LeyI] = Zn_Urinematris[Field3,LeyI]/7.75
Zn_Urine_per_ha[Field3,LeyII] = Zn_Urinematris[Field3,LeyII]/7.75
Zn_Urine_per_ha[Field3,LeyIII] = Zn_Urinematris[Field3,LeyIII]/7.75
Zn_Urine_per_ha[Field3,Barley] = Zn_Urinematris[Field3,Barley]/7.75
Zn_Urine_per_ha[Field3,Potato] = Zn_Urinematris[Field3,Potato]/7.75
Zn_Urine_per_ha[Field4,Oats&pea] = Zn_Urinematris[Field4,Oats&pea]/6.3
Zn_Urine_per_ha[Field4,LeyI] = Zn_Urinematris[Field4,LeyI]/6.3
Zn_Urine_per_ha[Field4,LeyII] = Zn_Urinematris[Field4,LeyII]/6.3
Zn_Urine_per_ha[Field4,LeyIII] = Zn_Urinematris[Field4,LeyIII]/6.3
Zn_Urine_per_ha[Field4,Barley] = Zn_Urinematris[Field4,Barley]/6.3
Zn_Urine_per_ha[Field4,Potato] = Zn_Urinematris[Field4,Potato]/6.3
Zn_Urine_per_ha[Field5,Oats&pea] = Zn_Urinematris[Field5,Oats&pea]/7.35
Zn_Urine_per_ha[Field5,LeyI] = Zn_Urinematris[Field5,LeyI]/7.35
Zn_Urine_per_ha[Field5,LeyII] = Zn_Urinematris[Field5,LeyII]/7.35
Zn_Urine_per_ha[Field5,LeyIII] = Zn_Urinematris[Field5,LeyIII]/7.35
Zn_Urine_per_ha[Field5,Barley] = Zn_Urinematris[Field5,Barley]/7.35
Zn_Urine_per_ha[Field5,Potato] = Zn_Urinematris[Field5,Potato]/7.35
Zn_Urine_per_ha[Field6,Oats&pea] = Zn_Urinematris[Field6,Oats&pea]/5.38
Zn_Urine_per_ha[Field6,LeyI] = Zn_Urinematris[Field6,LeyI]/5.38
Zn_Urine_per_ha[Field6,LeyII] = Zn_Urinematris[Field6,LeyII]/5.38
Zn_Urine_per_ha[Field6,LeyIII] = Zn_Urinematris[Field6,LeyIII]/5.38
Zn_Urine_per_ha[Field6,Barley] = Zn_Urinematris[Field6,Barley]/5.38
Zn_Urine_per_ha[Field6,Potato] = Zn_Urinematris[Field6,Potato]/5.38
Zn_Mineral_fertiliser_flow[Field,Crop] = IF(Time_for_manure_application>0)
THEN (Zn_Mineral_fertiliser_matrix[Field,Crop]) ELSE (0)
Zn_in_herd_of_cows(t) = Zn_in_herd_of_cows(t - dt) + (Zn_barley + Zn_silage
+ Zn_Beetpulp + Zn_in_heifers + Zn_Minerals_and_concentrates +
Zn_in_water_for_cows + Zn_corrosion_in_cowshed - Zn_i_urine - Zn_in_m_anure
- Zn_in_csubsoiles - Zn_in_milk - Zn_in_exported_animals) * dt
INIT Zn_in_herd_of_cows =  670*10*42
Zn_barley = Zn_Total_barley_requirements
Zn_silage = Cows*Feeding_of_silage*Zn_conc_ensilage
Zn_Beetpulp = Cows*Feeding_of_beetpulp*Zn_conc_beetpulp
Zn_in_heifers =
(Bought_heifers+Extra_heifers_at_roughage_surplus)*Average_weight_haifer*Zn
_conc_liveweight
Zn_Minerals_and_concentrates =
Cows*Feeding_of_mineral_concentrates*Zn_conc_mineralsconcentrates
Zn_in_water_for_cows = Cows*Water_use_per_cow*Zn_conc_water
Zn_corrosion_in_cowshed = 4777
Zn_i_urine = (Urine_amount*Zn_conc_urine*Cows)+(0*Zn_in_exported_animals)
Zn_in_m_anure =
Zn_silage+Zn_Beetpulp+Zn_barley+Zn_Minerals_and_concentrates+Zn_in_heifers+
Zn_in_water_for_cows+Zn_corrosion_in_cowshed-Zn_in_csubsoiles-Zn_in_milk-
Zn_in_exported_animals-Zn_i_urine+(0*Zn_i_urine)
Zn_in_csubsoiles =
Average_weight_csubsoiles*Csubsoiles_sold*Zn_conc_liveweight
Zn_in_milk = (Milk_production*Cows*Zn_conc_milk)+(0*Zn_in_csubsoiles)
Zn_in_exported_animals =
((Cows_sold+Cows_sold_at_roughage_deficit)*Average_weight_cow*Zn_conc_livew
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eight)+(0*Zn_in_milk)
Zn_Limeanvändning[Field,Crop](t) = Zn_Limeanvändning[Field,Crop](t - dt) +
(Zn_Lime_use_per_ha_times_ha[Field,Crop] - Annual_Emptying
ofav_Limeförråd_Zn[Field,Crop]) * dt
INIT Zn_Limeanvändning[Field,Crop] = 0
Zn_Lime_use_per_ha_times_ha[Field1,Oats&pea] =
Zn_Lime[Field1,Oats&pea]*5.82
Zn_Lime_use_per_ha_times_ha[Field1,LeyI] = Zn_Lime[Field1,LeyI]*5.82
Zn_Lime_use_per_ha_times_ha[Field1,LeyII] = Zn_Lime[Field1,LeyII]*5.82
Zn_Lime_use_per_ha_times_ha[Field1,LeyIII] = Zn_Lime[Field1,LeyIII]*5.82
Zn_Lime_use_per_ha_times_ha[Field1,Barley] = Zn_Lime[Field1,Barley]*5.82
Zn_Lime_use_per_ha_times_ha[Field1,Potato] = Zn_Lime[Field1,Potato]*5.82
Zn_Lime_use_per_ha_times_ha[Field2,Oats&pea] =
Zn_Lime[Field2,Oats&pea]*6.22
Zn_Lime_use_per_ha_times_ha[Field2,LeyI] = Zn_Lime[Field2,LeyI]*6.22
Zn_Lime_use_per_ha_times_ha[Field2,LeyII] = Zn_Lime[Field2,LeyII]*6.22
Zn_Lime_use_per_ha_times_ha[Field2,LeyIII] = Zn_Lime[Field2,LeyIII]*6.22
Zn_Lime_use_per_ha_times_ha[Field2,Barley] = Zn_Lime[Field2,Barley]*6.22
Zn_Lime_use_per_ha_times_ha[Field2,Potato] = Zn_Lime[Field2,Potato]*6.22
Zn_Lime_use_per_ha_times_ha[Field3,Oats&pea] =
Zn_Lime[Field3,Oats&pea]*7.75
Zn_Lime_use_per_ha_times_ha[Field3,LeyI] = Zn_Lime[Field3,LeyI]*7.75
Zn_Lime_use_per_ha_times_ha[Field3,LeyII] = Zn_Lime[Field3,LeyII]*7.75
Zn_Lime_use_per_ha_times_ha[Field3,LeyIII] = Zn_Lime[Field3,LeyIII]*7.75
Zn_Lime_use_per_ha_times_ha[Field3,Barley] = Zn_Lime[Field3,Barley]*7.75
Zn_Lime_use_per_ha_times_ha[Field3,Potato] = Zn_Lime[Field3,Potato]*7.75
Zn_Lime_use_per_ha_times_ha[Field4,Oats&pea] = Zn_Lime[Field4,Oats&pea]*6.3
Zn_Lime_use_per_ha_times_ha[Field4,LeyI] = Zn_Lime[Field4,LeyI]*6.3
Zn_Lime_use_per_ha_times_ha[Field4,LeyII] = Zn_Lime[Field4,LeyII]*6.3
Zn_Lime_use_per_ha_times_ha[Field4,LeyIII] = Zn_Lime[Field4,LeyIII]*6.3
Zn_Lime_use_per_ha_times_ha[Field4,Barley] = Zn_Lime[Field4,Barley]*6.3
Zn_Lime_use_per_ha_times_ha[Field4,Potato] = Zn_Lime[Field4,Potato]*6.3
Zn_Lime_use_per_ha_times_ha[Field5,Oats&pea] =
Zn_Lime[Field5,Oats&pea]*7.35
Zn_Lime_use_per_ha_times_ha[Field5,LeyI] = Zn_Lime[Field5,LeyI]*7.35
Zn_Lime_use_per_ha_times_ha[Field5,LeyII] = Zn_Lime[Field5,LeyII]*7.35
Zn_Lime_use_per_ha_times_ha[Field5,LeyIII] = Zn_Lime[Field5,LeyIII]*7.35
Zn_Lime_use_per_ha_times_ha[Field5,Barley] = Zn_Lime[Field5,Barley]*7.35
Zn_Lime_use_per_ha_times_ha[Field5,Potato] = Zn_Lime[Field5,Potato]*7.35
Zn_Lime_use_per_ha_times_ha[Field6,Oats&pea] =
Zn_Lime[Field6,Oats&pea]*5.38
Zn_Lime_use_per_ha_times_ha[Field6,LeyI] = Zn_Lime[Field6,LeyI]*5.38
Zn_Lime_use_per_ha_times_ha[Field6,LeyII] = Zn_Lime[Field6,LeyII]*5.38
Zn_Lime_use_per_ha_times_ha[Field6,LeyIII] = Zn_Lime[Field6,LeyIII]*5.38
Zn_Lime_use_per_ha_times_ha[Field6,Barley] = Zn_Lime[Field6,Barley]*5.38
Zn_Lime_use_per_ha_times_ha[Field6,Potato] = Zn_Lime[Field6,Potato]*5.38
Annual_Emptying ofav_Limeförråd_Zn[Field,Crop] =
IF(Time_for_emptying_of_import_and_export_of_Zn>0) THEN
(PULSE(Zn_Limeanvändning[Field,Crop])) ELSE (0)
Zn_Manure_pad(t) = Zn_Manure_pad(t - dt) + (Zn_in_m_anure + Zn_Water +
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Zn_Straw + Zn_Sawdust - Zn_emptying_of_Zn_Manure_pad) * dt
INIT Zn_Manure_pad = 1000
Zn_in_m_anure =
Zn_silage+Zn_Beetpulp+Zn_barley+Zn_Minerals_and_concentrates+Zn_in_heifers+
Zn_in_water_for_cows+Zn_corrosion_in_cowshed-Zn_in_csubsoiles-Zn_in_milk-
Zn_in_exported_animals-Zn_i_urine+(0*Zn_i_urine)
Zn_Water = Water_use_per_cow_in_stable*Cows*Zn_conc_water
Zn_Straw = Zn_Homegrown_straw
Zn_Sawdust = Import_sawdust*Zn_conc_sawdust
Zn_emptying_of_Zn_Manure_pad = IF(Time_for_manure_application>0) THEN
(PULSE(Zn_Manure_pad)) ELSE (0)
Zn_Mineral_fertiliser_use[Field,Crop](t) =
Zn_Mineral_fertiliser_use[Field,Crop](t - dt) +
(Zn_Mineral_fertiliser_per_ha_times_ha[Field,Crop] - Annual_Emptying
ofav_summerat_konstgödsel_Zn[Field,Crop]) * dt
INIT Zn_Mineral_fertiliser_use[Field,Crop] = 0
Zn_Mineral_fertiliser_per_ha_times_ha[Field1,Oats&pea] =
Zn_Mineral_fertiliser_matrix[Field1,Oats&pea]*5.82
Zn_Mineral_fertiliser_per_ha_times_ha[Field1,LeyI] =
Zn_Mineral_fertiliser_matrix[Field1,LeyI]*5.82
Zn_Mineral_fertiliser_per_ha_times_ha[Field1,LeyII] =
Zn_Mineral_fertiliser_matrix[Field1,LeyII]*5.82
Zn_Mineral_fertiliser_per_ha_times_ha[Field1,LeyIII] =
Zn_Mineral_fertiliser_matrix[Field1,LeyIII]*5.82
Zn_Mineral_fertiliser_per_ha_times_ha[Field1,Barley] =
Zn_Mineral_fertiliser_matrix[Field1,Barley]*5.82
Zn_Mineral_fertiliser_per_ha_times_ha[Field1,Potato] =
Zn_Mineral_fertiliser_matrix[Field1,Potato]*5.82
Zn_Mineral_fertiliser_per_ha_times_ha[Field2,Oats&pea] =
Zn_Mineral_fertiliser_matrix[Field2,Oats&pea]*6.22
Zn_Mineral_fertiliser_per_ha_times_ha[Field2,LeyI] =
Zn_Mineral_fertiliser_matrix[Field2,LeyI]*6.22
Zn_Mineral_fertiliser_per_ha_times_ha[Field2,LeyII] =
Zn_Mineral_fertiliser_matrix[Field2,LeyII]*6.22
Zn_Mineral_fertiliser_per_ha_times_ha[Field2,LeyIII] =
Zn_Mineral_fertiliser_matrix[Field2,LeyIII]*6.22
Zn_Mineral_fertiliser_per_ha_times_ha[Field2,Barley] =
Zn_Mineral_fertiliser_matrix[Field2,Barley]*6.22
Zn_Mineral_fertiliser_per_ha_times_ha[Field2,Potato] =
Zn_Mineral_fertiliser_matrix[Field2,Potato]*6.22
Zn_Mineral_fertiliser_per_ha_times_ha[Field3,Oats&pea] =
Zn_Mineral_fertiliser_matrix[Field3,Oats&pea]*7.75
Zn_Mineral_fertiliser_per_ha_times_ha[Field3,LeyI] =
Zn_Mineral_fertiliser_matrix[Field3,LeyI]*7.75
Zn_Mineral_fertiliser_per_ha_times_ha[Field3,LeyII] =
Zn_Mineral_fertiliser_matrix[Field3,LeyII]*7.75
Zn_Mineral_fertiliser_per_ha_times_ha[Field3,LeyIII] =
Zn_Mineral_fertiliser_matrix[Field3,LeyIII]*7.75
Zn_Mineral_fertiliser_per_ha_times_ha[Field3,Barley] =
Zn_Mineral_fertiliser_matrix[Field3,Barley]*7.75
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Zn_Mineral_fertiliser_per_ha_times_ha[Field3,Potato] =
Zn_Mineral_fertiliser_matrix[Field3,Potato]*7.75
Zn_Mineral_fertiliser_per_ha_times_ha[Field4,Oats&pea] =
Zn_Mineral_fertiliser_matrix[Field4,Oats&pea]*6.3
Zn_Mineral_fertiliser_per_ha_times_ha[Field4,LeyI] =
Zn_Mineral_fertiliser_matrix[Field4,LeyI]*6.3
Zn_Mineral_fertiliser_per_ha_times_ha[Field4,LeyII] =
Zn_Mineral_fertiliser_matrix[Field4,LeyII]*6.3
Zn_Mineral_fertiliser_per_ha_times_ha[Field4,LeyIII] =
Zn_Mineral_fertiliser_matrix[Field4,LeyIII]*6.3
Zn_Mineral_fertiliser_per_ha_times_ha[Field4,Barley] =
Zn_Mineral_fertiliser_matrix[Field4,Barley]*6.3
Zn_Mineral_fertiliser_per_ha_times_ha[Field4,Potato] =
Zn_Mineral_fertiliser_matrix[Field4,Potato]*6.3
Zn_Mineral_fertiliser_per_ha_times_ha[Field5,Oats&pea] =
Zn_Mineral_fertiliser_matrix[Field5,Oats&pea]*7.35
Zn_Mineral_fertiliser_per_ha_times_ha[Field5,LeyI] =
Zn_Mineral_fertiliser_matrix[Field5,LeyI]*7.35
Zn_Mineral_fertiliser_per_ha_times_ha[Field5,LeyII] =
Zn_Mineral_fertiliser_matrix[Field5,LeyII]*7.35
Zn_Mineral_fertiliser_per_ha_times_ha[Field5,LeyIII] =
Zn_Mineral_fertiliser_matrix[Field5,LeyIII]*7.35
Zn_Mineral_fertiliser_per_ha_times_ha[Field5,Barley] =
Zn_Mineral_fertiliser_matrix[Field5,Barley]*7.35
Zn_Mineral_fertiliser_per_ha_times_ha[Field5,Potato] =
Zn_Mineral_fertiliser_matrix[Field5,Potato]*7.35
Zn_Mineral_fertiliser_per_ha_times_ha[Field6,Oats&pea] =
Zn_Mineral_fertiliser_matrix[Field6,Oats&pea]*5.38
Zn_Mineral_fertiliser_per_ha_times_ha[Field6,LeyI] =
Zn_Mineral_fertiliser_matrix[Field6,LeyI]*5.38
Zn_Mineral_fertiliser_per_ha_times_ha[Field6,LeyII] =
Zn_Mineral_fertiliser_matrix[Field6,LeyII]*5.38
Zn_Mineral_fertiliser_per_ha_times_ha[Field6,LeyIII] =
Zn_Mineral_fertiliser_matrix[Field6,LeyIII]*5.38
Zn_Mineral_fertiliser_per_ha_times_ha[Field6,Barley] =
Zn_Mineral_fertiliser_matrix[Field6,Barley]*5.38
Zn_Mineral_fertiliser_per_ha_times_ha[Field6,Potato] =
Zn_Mineral_fertiliser_matrix[Field6,Potato]*5.38
Annual_Emptying ofav_summerat_konstgödsel_Zn[Field,Crop] =
IF(Time_for_emptying_of_import_and_export_of_Zn>0) THEN
(PULSE(Zn_Mineral_fertiliser_use[Field,Crop])) ELSE (0)
Zn_Oats&pea_storage_I[Field,Crop](t) = Zn_Oats&pea_storage_I[Field,Crop](t
- dt) + (Zn_Oats&pea_per_ha_to_total[Field,Crop]) * dt
INIT Zn_Oats&pea_storage_I[Field,Crop] = 0
Zn_Oats&pea_per_ha_to_total[Field1,Oats&pea] =
Zn_harvested_oats&pea[Field1,Oats&pea]*5.82
Zn_Oats&pea_per_ha_to_total[Field1,LeyI] =
Zn_harvested_oats&pea[Field1,LeyI]*5.82
Zn_Oats&pea_per_ha_to_total[Field1,LeyII] =
Zn_harvested_oats&pea[Field1,LeyII]*5.82
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Zn_Oats&pea_per_ha_to_total[Field1,LeyIII] =
Zn_harvested_oats&pea[Field1,LeyIII]*5.82
Zn_Oats&pea_per_ha_to_total[Field1,Barley] =
Zn_harvested_oats&pea[Field1,Barley]*5.82
Zn_Oats&pea_per_ha_to_total[Field1,Potato] =
Zn_harvested_oats&pea[Field1,Potato]*5.82
Zn_Oats&pea_per_ha_to_total[Field2,Oats&pea] =
Zn_harvested_oats&pea[Field2,Oats&pea]*6.22
Zn_Oats&pea_per_ha_to_total[Field2,LeyI] =
Zn_harvested_oats&pea[Field2,LeyI]*6.22
Zn_Oats&pea_per_ha_to_total[Field2,LeyII] =
Zn_harvested_oats&pea[Field2,LeyII]*6.22
Zn_Oats&pea_per_ha_to_total[Field2,LeyIII] =
Zn_harvested_oats&pea[Field2,LeyIII]*6.22
Zn_Oats&pea_per_ha_to_total[Field2,Barley] =
Zn_harvested_oats&pea[Field2,Barley]*6.22
Zn_Oats&pea_per_ha_to_total[Field2,Potato] =
Zn_harvested_oats&pea[Field2,Potato]*6.22
Zn_Oats&pea_per_ha_to_total[Field3,Oats&pea] =
Zn_harvested_oats&pea[Field3,Oats&pea]*7.75
Zn_Oats&pea_per_ha_to_total[Field3,LeyI] =
Zn_harvested_oats&pea[Field3,LeyI]*7.75
Zn_Oats&pea_per_ha_to_total[Field3,LeyII] =
Zn_harvested_oats&pea[Field3,LeyII]*7.75
Zn_Oats&pea_per_ha_to_total[Field3,LeyIII] =
Zn_harvested_oats&pea[Field3,LeyIII]*7.75
Zn_Oats&pea_per_ha_to_total[Field3,Barley] =
Zn_harvested_oats&pea[Field3,Barley]*7.75
Zn_Oats&pea_per_ha_to_total[Field3,Potato] =
Zn_harvested_oats&pea[Field3,Potato]*7.75
Zn_Oats&pea_per_ha_to_total[Field4,Oats&pea] =
Zn_harvested_oats&pea[Field4,Oats&pea]*6.3
Zn_Oats&pea_per_ha_to_total[Field4,LeyI] =
Zn_harvested_oats&pea[Field4,LeyI]*6.3
Zn_Oats&pea_per_ha_to_total[Field4,LeyII] =
Zn_harvested_oats&pea[Field4,LeyII]*6.3
Zn_Oats&pea_per_ha_to_total[Field4,LeyIII] =
Zn_harvested_oats&pea[Field4,LeyIII]*6.3
Zn_Oats&pea_per_ha_to_total[Field4,Barley] =
Zn_harvested_oats&pea[Field4,Barley]*6.3
Zn_Oats&pea_per_ha_to_total[Field4,Potato] =
Zn_harvested_oats&pea[Field4,Potato]*6.3
Zn_Oats&pea_per_ha_to_total[Field5,Oats&pea] =
Zn_harvested_oats&pea[Field5,Oats&pea]*7.35
Zn_Oats&pea_per_ha_to_total[Field5,LeyI] =
Zn_harvested_oats&pea[Field5,LeyI]*7.35
Zn_Oats&pea_per_ha_to_total[Field5,LeyII] =
Zn_harvested_oats&pea[Field5,LeyII]*7.35
Zn_Oats&pea_per_ha_to_total[Field5,LeyIII] =
Zn_harvested_oats&pea[Field5,LeyIII]*7.35
```

```
Zn_Oats&pea_per_ha_to_total[Field5,Barley] =
Zn_harvested_oats&pea[Field5,Barley]*7.35
Zn_Oats&pea_per_ha_to_total[Field5,Potato] =
Zn_harvested_oats&pea[Field5,Potato]*7.35
Zn_Oats&pea_per_ha_to_total[Field6,Oats&pea] =
Zn_harvested_oats&pea[Field6,Oats&pea]*5.38
Zn_Oats&pea_per_ha_to_total[Field6,LeyI] =
Zn_harvested_oats&pea[Field6,LeyI]*5.38
Zn_Oats&pea_per_ha_to_total[Field6,LeyII] =
Zn_harvested_oats&pea[Field6,LeyII]*5.38
Zn_Oats&pea_per_ha_to_total[Field6,LeyIII] =
Zn_harvested_oats&pea[Field6,LeyIII]*5.38
Zn_Oats&pea_per_ha_to_total[Field6,Barley] =
Zn_harvested_oats&pea[Field6,Barley]*5.38
Zn_Oats&pea_per_ha_to_total[Field6,Potato] =
Zn_harvested_oats&pea[Field6,Potato]*5.38
Zn_oatsonpotatofield_storage_I[Field,Crop](t) =
Zn_oatsonpotatofield_storage_I[Field,Crop](t - dt) +
(Zn_oatsonpotatofield_per_ha_to_total[Field,Crop]) * dt
INIT Zn_oatsonpotatofield_storage_I[Field,Crop] = 0
Zn_oatsonpotatofield_per_ha_to_total[Field1,Oats&pea] =
Zn_harvested_potato[Field1,Oats&pea]*(5.82-4)
Zn_oatsonpotatofield_per_ha_to_total[Field1,LeyI] =
Zn_harvested_potato[Field1,LeyI]*(5.82-4)
Zn_oatsonpotatofield_per_ha_to_total[Field1,LeyII] =
Zn_harvested_potato[Field1,LeyII]*(5.82-4)
Zn_oatsonpotatofield_per_ha_to_total[Field1,LeyIII] =
Zn_harvested_potato[Field1,LeyIII]*(5.82-4)
Zn_oatsonpotatofield_per_ha_to_total[Field1,Barley] =
Zn_harvested_potato[Field1,Barley]*(5.82-4)
Zn_oatsonpotatofield_per_ha_to_total[Field1,Potato] =
Zn_harvested_potato[Field1,Potato]*(5.82-4)
Zn_oatsonpotatofield_per_ha_to_total[Field2,Oats&pea] =
Zn_harvested_potato[Field2,Oats&pea]*(6.22-4)
Zn_oatsonpotatofield_per_ha_to_total[Field2,LeyI] =
Zn_harvested_potato[Field2,LeyI]*(6.22-4)
Zn_oatsonpotatofield_per_ha_to_total[Field2,LeyII] =
Zn_harvested_potato[Field2,LeyII]*(6.22-4)
Zn_oatsonpotatofield_per_ha_to_total[Field2,LeyIII] =
Zn_harvested_potato[Field2,LeyIII]*(6.22-4)
Zn_oatsonpotatofield_per_ha_to_total[Field2,Barley] =
Zn_harvested_potato[Field2,Barley]*(6.22-4)
Zn_oatsonpotatofield_per_ha_to_total[Field2,Potato] =
Zn_harvested_potato[Field2,Potato]*(6.22-4)
Zn_oatsonpotatofield_per_ha_to_total[Field3,Oats&pea] =
Zn_harvested_potato[Field3,Oats&pea]*(7.75-4)
Zn_oatsonpotatofield_per_ha_to_total[Field3,LeyI] =
Zn_harvested_potato[Field3,LeyI]*(7.75-4)
Zn_oatsonpotatofield_per_ha_to_total[Field3,LeyII] =
Zn_harvested_potato[Field3,LeyII]*(7.75-4)
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Zn_oatsonpotatofield_per_ha_to_total[Field3,LeyIII] =
Zn_harvested_potato[Field3,LeyIII]*(7.75-4)
Zn_oatsonpotatofield_per_ha_to_total[Field3,Barley] =
Zn_harvested_potato[Field3,Barley]*(7.75-4)
Zn_oatsonpotatofield_per_ha_to_total[Field3,Potato] =
Zn_harvested_potato[Field3,Potato]*(7.75-4)
Zn_oatsonpotatofield_per_ha_to_total[Field4,Oats&pea] =
Zn_harvested_potato[Field4,Oats&pea]*(6.3-4)
Zn_oatsonpotatofield_per_ha_to_total[Field4,LeyI] =
Zn_harvested_potato[Field4,LeyI]*(6.3-4)
Zn_oatsonpotatofield_per_ha_to_total[Field4,LeyII] =
Zn_harvested_potato[Field4,LeyII]*(6.3-4)
Zn_oatsonpotatofield_per_ha_to_total[Field4,LeyIII] =
Zn_harvested_potato[Field4,LeyIII]*(6.3-4)
Zn_oatsonpotatofield_per_ha_to_total[Field4,Barley] =
Zn_harvested_potato[Field4,Barley]*(6.3-4)
Zn_oatsonpotatofield_per_ha_to_total[Field4,Potato] =
Zn_harvested_potato[Field4,Potato]*(6.3-4)
Zn_oatsonpotatofield_per_ha_to_total[Field5,Oats&pea] =
Zn_harvested_potato[Field5,Oats&pea]*(7.35-4)
Zn_oatsonpotatofield_per_ha_to_total[Field5,LeyI] =
Zn_harvested_potato[Field5,LeyI]*(7.35-4)
Zn_oatsonpotatofield_per_ha_to_total[Field5,LeyII] =
Zn_harvested_potato[Field5,LeyII]*(7.35-4)
Zn_oatsonpotatofield_per_ha_to_total[Field5,LeyIII] =
Zn_harvested_potato[Field5,LeyIII]*(7.35-4)
Zn_oatsonpotatofield_per_ha_to_total[Field5,Barley] =
Zn_harvested_potato[Field5,Barley]*(7.35-4)
Zn_oatsonpotatofield_per_ha_to_total[Field5,Potato] =
Zn_harvested_potato[Field5,Potato]*(7.35-4)
Zn_oatsonpotatofield_per_ha_to_total[Field6,Oats&pea] =
Zn_harvested_potato[Field6,Oats&pea]*(5.38-4)
Zn_oatsonpotatofield_per_ha_to_total[Field6,LeyI] =
Zn_harvested_potato[Field6,LeyI]*(5.38-4)
Zn_oatsonpotatofield_per_ha_to_total[Field6,LeyII] =
Zn_harvested_potato[Field6,LeyII]*(5.38-4)
Zn_oatsonpotatofield_per_ha_to_total[Field6,LeyIII] =
Zn_harvested_potato[Field6,LeyIII]*(5.38-4)
Zn_oatsonpotatofield_per_ha_to_total[Field6,Barley] =
Zn_harvested_potato[Field6,Barley]*(5.38-4)
Zn_oatsonpotatofield_per_ha_to_total[Field6,Potato] =
Zn_harvested_potato[Field6,Potato]*(5.38-4)
Zn_Pesticidanvändning2[Field,Crop](t) =
Zn_Pesticidanvändning2[Field,Crop](t - dt) +
(Zn_Pesticidanvändning_per_ha_gånger_ha[Field,Crop] - Annual_Emptying
ofav_pesticidpool_Zn[Field,Crop]) * dt
INIT Zn_Pesticidanvändning2[Field,Crop] = 0
Zn_Pesticidanvändning_per_ha_gånger_ha[Field1,Oats&pea] =
Zn_Pesticide[Field1,Oats&pea]*5.82
Zn_Pesticidanvändning_per_ha_gånger_ha[Field1,LeyI] =
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Zn_Pesticide[Field1,LeyI]*5.82
Zn_Pesticidanvändning_per_ha_gånger_ha[Field1,LeyII] =
Zn_Pesticide[Field1,LeyII]*5.82
Zn_Pesticidanvändning_per_ha_gånger_ha[Field1,LeyIII] =
Zn_Pesticide[Field1,LeyIII]*5.82
Zn_Pesticidanvändning_per_ha_gånger_ha[Field1,Barley] =
Zn_Pesticide[Field1,Barley]*5.82
Zn_Pesticidanvändning_per_ha_gånger_ha[Field1,Potato] =
Zn_Pesticide[Field1,Potato]*5.82
Zn_Pesticidanvändning_per_ha_gånger_ha[Field2,Oats&pea] =
Zn_Pesticide[Field2,Oats&pea]*6.22
Zn_Pesticidanvändning_per_ha_gånger_ha[Field2,LeyI] =
Zn_Pesticide[Field2,LeyI]*6.22
Zn_Pesticidanvändning_per_ha_gånger_ha[Field2,LeyII] =
Zn_Pesticide[Field2,LeyII]*6.22
Zn_Pesticidanvändning_per_ha_gånger_ha[Field2,LeyIII] =
Zn_Pesticide[Field2,LeyIII]*6.22
Zn_Pesticidanvändning_per_ha_gånger_ha[Field2,Barley] =
Zn_Pesticide[Field2,Barley]*6.22
Zn_Pesticidanvändning_per_ha_gånger_ha[Field2,Potato] =
Zn_Pesticide[Field2,Potato]*6.22
Zn_Pesticidanvändning_per_ha_gånger_ha[Field3,Oats&pea] =
Zn_Pesticide[Field3,Oats&pea]*7.75
Zn_Pesticidanvändning_per_ha_gånger_ha[Field3,LeyI] =
Zn_Pesticide[Field3,LeyI]*7.75
Zn_Pesticidanvändning_per_ha_gånger_ha[Field3,LeyII] =
Zn_Pesticide[Field3,LeyII]*7.75
Zn_Pesticidanvändning_per_ha_gånger_ha[Field3,LeyIII] =
Zn_Pesticide[Field3,LeyIII]*7.75
Zn_Pesticidanvändning_per_ha_gånger_ha[Field3,Barley] =
Zn_Pesticide[Field3,Barley]*7.75
Zn_Pesticidanvändning_per_ha_gånger_ha[Field3,Potato] =
Zn_Pesticide[Field3,Potato]*7.75
Zn_Pesticidanvändning_per_ha_gånger_ha[Field4,Oats&pea] =
Zn_Pesticide[Field4,Oats&pea]*6.3
Zn_Pesticidanvändning_per_ha_gånger_ha[Field4,LeyI] =
Zn_Pesticide[Field4,LeyI]*6.3
Zn_Pesticidanvändning_per_ha_gånger_ha[Field4,LeyII] =
Zn_Pesticide[Field4,LeyII]*6.3
Zn_Pesticidanvändning_per_ha_gånger_ha[Field4,LeyIII] =
Zn_Pesticide[Field4,LeyIII]*6.3
Zn_Pesticidanvändning_per_ha_gånger_ha[Field4,Barley] =
Zn_Pesticide[Field4,Barley]*6.3
Zn_Pesticidanvändning_per_ha_gånger_ha[Field4,Potato] =
Zn_Pesticide[Field4,Potato]*6.3
Zn_Pesticidanvändning_per_ha_gånger_ha[Field5,Oats&pea] =
Zn_Pesticide[Field5,Oats&pea]*7.35
Zn_Pesticidanvändning_per_ha_gånger_ha[Field5,LeyI] =
Zn_Pesticide[Field5,LeyI]*7.35
Zn_Pesticidanvändning_per_ha_gånger_ha[Field5,LeyII] =
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Zn_Pesticide[Field5,LeyII]*7.35
Zn_Pesticidanvändning_per_ha_gånger_ha[Field5,LeyIII] =
Zn_Pesticide[Field5,LeyIII]*7.35
Zn_Pesticidanvändning_per_ha_gånger_ha[Field5,Barley] =
Zn_Pesticide[Field5,Barley]*7.35
Zn_Pesticidanvändning_per_ha_gånger_ha[Field5,Potato] =
Zn_Pesticide[Field5,Potato]*7.35
Zn_Pesticidanvändning_per_ha_gånger_ha[Field6,Oats&pea] =
Zn_Pesticide[Field6,Oats&pea]*5.38
Zn_Pesticidanvändning_per_ha_gånger_ha[Field6,LeyI] =
Zn_Pesticide[Field6,LeyI]*5.38
Zn_Pesticidanvändning_per_ha_gånger_ha[Field6,LeyII] =
Zn_Pesticide[Field6,LeyII]*5.38
Zn_Pesticidanvändning_per_ha_gånger_ha[Field6,LeyIII] =
Zn_Pesticide[Field6,LeyIII]*5.38
Zn_Pesticidanvändning_per_ha_gånger_ha[Field6,Barley] =
Zn_Pesticide[Field6,Barley]*5.38
Zn_Pesticidanvändning_per_ha_gånger_ha[Field6,Potato] =
Zn_Pesticide[Field6,Potato]*5.38
Annual_Emptying ofav_pesticidpool_Zn[Field,Crop] =
IF(Time_for_emptying_of_import_and_export_of_Zn>0) THEN
(PULSE(Zn_Pesticidanvändning2[Field,Crop])) ELSE (0)
Zn_potato_storage_I[Field,Crop](t) = Zn_potato_storage_I[Field,Crop](t -
dt) + (Zn_Potato_per_ha_to_total[Field,Crop]) * dt
INIT Zn_potato_storage_I[Field,Crop] = 0
Zn_Potato_per_ha_to_total[Field,Crop] = Zn_harvested_potato[Field,Crop]*4
Zn_potato_storage_II(t) = Zn_potato_storage_II(t - dt) +
(Zn_homegrown_potato - Zn_potato_export) * dt
INIT Zn_potato_storage_II = 0
Zn_homegrown_potato = Summerad_array_potato_2
Zn_potato_export = Zn_potato_storage_II
Zn_Seedstorage[Field,Crop](t) = Zn_Seedstorage[Field,Crop](t - dt) +
(Zn_seeds_per_ha_to_total[Field,Crop] -
Emptying_of_Zn_Seedstorage[Field,Crop]) * dt
INIT Zn_Seedstorage[Field,Crop] = 0
Zn_seeds_per_ha_to_total[Field1,Oats&pea] = Zn_seeds[Field1,Oats&pea]*5.82
Zn_seeds_per_ha_to_total[Field1,LeyI] = Zn_seeds[Field1,LeyI]*5.82
Zn_seeds_per_ha_to_total[Field1,LeyII] = Zn_seeds[Field1,LeyII]*5.82
Zn_seeds_per_ha_to_total[Field1,LeyIII] = Zn_seeds[Field1,LeyIII]*5.82
Zn_seeds_per_ha_to_total[Field1,Barley] = Zn_seeds[Field1,Barley]*5.82
Zn_seeds_per_ha_to_total[Field1,Potato] = Zn_seeds[Field1,Potato]*5.82
Zn_seeds_per_ha_to_total[Field2,Oats&pea] = Zn_seeds[Field2,Oats&pea]*6.22
Zn_seeds_per_ha_to_total[Field2,LeyI] = Zn_seeds[Field2,LeyI]*6.22
Zn_seeds_per_ha_to_total[Field2,LeyII] = Zn_seeds[Field2,LeyII]*6.22
Zn_seeds_per_ha_to_total[Field2,LeyIII] = Zn_seeds[Field2,LeyIII]*6.22
Zn_seeds_per_ha_to_total[Field2,Barley] = Zn_seeds[Field2,Barley]*6.22
Zn_seeds_per_ha_to_total[Field2,Potato] = Zn_seeds[Field2,Potato]*6.22
Zn_seeds_per_ha_to_total[Field3,Oats&pea] = Zn_seeds[Field3,Oats&pea]*7.75
Zn_seeds_per_ha_to_total[Field3,LeyI] = Zn_seeds[Field3,LeyI]*7.75
Zn_seeds_per_ha_to_total[Field3,LeyII] = Zn_seeds[Field3,LeyII]*7.75
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Zn_seeds_per_ha_to_total[Field3,LeyIII] = Zn_seeds[Field3,LeyIII]*7.75
Zn_seeds_per_ha_to_total[Field3,Barley] = Zn_seeds[Field3,Barley]*7.75
Zn_seeds_per_ha_to_total[Field3,Potato] = Zn_seeds[Field3,Potato]*7.75
Zn_seeds_per_ha_to_total[Field4,Oats&pea] = Zn_seeds[Field4,Oats&pea]*6.3
Zn_seeds_per_ha_to_total[Field4,LeyI] = Zn_seeds[Field4,LeyI]*6.3
Zn_seeds_per_ha_to_total[Field4,LeyII] = Zn_seeds[Field4,LeyII]*6.3
Zn_seeds_per_ha_to_total[Field4,LeyIII] = Zn_seeds[Field4,LeyIII]*6.3
Zn_seeds_per_ha_to_total[Field4,Barley] = Zn_seeds[Field4,Barley]*6.3
Zn_seeds_per_ha_to_total[Field4,Potato] = Zn_seeds[Field4,Potato]*6.3
Zn_seeds_per_ha_to_total[Field5,Oats&pea] = Zn_seeds[Field5,Oats&pea]*7.35
Zn_seeds_per_ha_to_total[Field5,LeyI] = Zn_seeds[Field5,LeyI]*7.35
Zn_seeds_per_ha_to_total[Field5,LeyII] = Zn_seeds[Field5,LeyII]*7.35
Zn_seeds_per_ha_to_total[Field5,LeyIII] = Zn_seeds[Field5,LeyIII]*7.35
Zn_seeds_per_ha_to_total[Field5,Barley] = Zn_seeds[Field5,Barley]*7.35
Zn_seeds_per_ha_to_total[Field5,Potato] = Zn_seeds[Field5,Potato]*7.35
Zn_seeds_per_ha_to_total[Field6,Oats&pea] = Zn_seeds[Field6,Oats&pea]*5.38
Zn_seeds_per_ha_to_total[Field6,LeyI] = Zn_seeds[Field6,LeyI]*5.38
Zn_seeds_per_ha_to_total[Field6,LeyII] = Zn_seeds[Field6,LeyII]*5.38
Zn_seeds_per_ha_to_total[Field6,LeyIII] = Zn_seeds[Field6,LeyIII]*5.38
Zn_seeds_per_ha_to_total[Field6,Barley] = Zn_seeds[Field6,Barley]*5.38
Zn_seeds_per_ha_to_total[Field6,Potato] = Zn_seeds[Field6,Potato]*5.38
Emptying_of_Zn_Seedstorage[Field,Crop] =
IF(Time_for_emptying_of_import_and_export_of_Zn>0) THEN
(PULSE(Zn_Seedstorage[Field,Crop])) ELSE (0)
Zn_Silage_storage_I[Field,Crop](t) = Zn_Silage_storage_I[Field,Crop](t -
dt) + (Zn_Hay_per_ha_to_total[Field,Crop]) * dt
INIT Zn_Silage_storage_I[Field,Crop] = 0
Zn_Hay_per_ha_to_total[Field1,Oats&pea] =
Zn_harvested_hay_for_silage[Field1,Oats&pea]*5.82
Zn_Hay_per_ha_to_total[Field1,LeyI] =
Zn_harvested_hay_for_silage[Field1,LeyI]*5.82
Zn_Hay_per_ha_to_total[Field1,LeyII] =
Zn_harvested_hay_for_silage[Field1,LeyII]*5.82
Zn_Hay_per_ha_to_total[Field1,LeyIII] =
Zn_harvested_hay_for_silage[Field1,LeyIII]*5.82
Zn_Hay_per_ha_to_total[Field1,Barley] =
Zn_harvested_hay_for_silage[Field1,Barley]*5.82
Zn_Hay_per_ha_to_total[Field1,Potato] =
Zn_harvested_hay_for_silage[Field1,Potato]*5.82
Zn_Hay_per_ha_to_total[Field2,Oats&pea] =
Zn_harvested_hay_for_silage[Field2,Oats&pea]*6.22
Zn_Hay_per_ha_to_total[Field2,LeyI] =
Zn_harvested_hay_for_silage[Field2,LeyI]*6.22
Zn_Hay_per_ha_to_total[Field2,LeyII] =
Zn_harvested_hay_for_silage[Field2,LeyII]*6.22
Zn_Hay_per_ha_to_total[Field2,LeyIII] =
Zn_harvested_hay_for_silage[Field2,LeyIII]*6.22
Zn_Hay_per_ha_to_total[Field2,Barley] =
Zn_harvested_hay_for_silage[Field2,Barley]*6.22
Zn_Hay_per_ha_to_total[Field2,Potato] =
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Zn_harvested_hay_for_silage[Field2,Potato]*6.22
Zn_Hay_per_ha_to_total[Field3,Oats&pea] =
Zn_harvested_hay_for_silage[Field3,Oats&pea]*7.75
Zn_Hay_per_ha_to_total[Field3,LeyI] =
Zn_harvested_hay_for_silage[Field3,LeyI]*7.75
Zn_Hay_per_ha_to_total[Field3,LeyII] =
Zn_harvested_hay_for_silage[Field3,LeyII]*7.75
Zn_Hay_per_ha_to_total[Field3,LeyIII] =
Zn_harvested_hay_for_silage[Field3,LeyIII]*7.75
Zn_Hay_per_ha_to_total[Field3,Barley] =
Zn_harvested_hay_for_silage[Field3,Barley]*7.75
Zn_Hay_per_ha_to_total[Field3,Potato] =
Zn_harvested_hay_for_silage[Field3,Potato]*7.75
Zn_Hay_per_ha_to_total[Field4,Oats&pea] =
Zn_harvested_hay_for_silage[Field4,Oats&pea]*6.3
Zn_Hay_per_ha_to_total[Field4,LeyI] =
Zn_harvested_hay_for_silage[Field4,LeyI]*6.3
Zn_Hay_per_ha_to_total[Field4,LeyII] =
Zn_harvested_hay_for_silage[Field4,LeyII]*6.3
Zn_Hay_per_ha_to_total[Field4,LeyIII] =
Zn_harvested_hay_for_silage[Field4,LeyIII]*6.3
Zn_Hay_per_ha_to_total[Field4,Barley] =
Zn_harvested_hay_for_silage[Field4,Barley]*6.3
Zn_Hay_per_ha_to_total[Field4,Potato] =
Zn_harvested_hay_for_silage[Field4,Potato]*6.3
Zn_Hay_per_ha_to_total[Field5,Oats&pea] =
Zn_harvested_hay_for_silage[Field5,Oats&pea]*7.35
Zn_Hay_per_ha_to_total[Field5,LeyI] =
Zn_harvested_hay_for_silage[Field5,LeyI]*7.35
Zn_Hay_per_ha_to_total[Field5,LeyII] =
Zn_harvested_hay_for_silage[Field5,LeyII]*7.35
Zn_Hay_per_ha_to_total[Field5,LeyIII] =
Zn_harvested_hay_for_silage[Field5,LeyIII]*7.35
Zn_Hay_per_ha_to_total[Field5,Barley] =
Zn_harvested_hay_for_silage[Field5,Barley]*7.35
Zn_Hay_per_ha_to_total[Field5,Potato] =
Zn_harvested_hay_for_silage[Field5,Potato]*7.35
Zn_Hay_per_ha_to_total[Field6,Oats&pea] =
Zn_harvested_hay_for_silage[Field6,Oats&pea]*5.38
Zn_Hay_per_ha_to_total[Field6,LeyI] =
Zn_harvested_hay_for_silage[Field6,LeyI]*5.38
Zn_Hay_per_ha_to_total[Field6,LeyII] =
Zn_harvested_hay_for_silage[Field6,LeyII]*5.38
Zn_Hay_per_ha_to_total[Field6,LeyIII] =
Zn_harvested_hay_for_silage[Field6,LeyIII]*5.38
Zn_Hay_per_ha_to_total[Field6,Barley] =
Zn_harvested_hay_for_silage[Field6,Barley]*5.38
Zn_Hay_per_ha_to_total[Field6,Potato] =
Zn_harvested_hay_for_silage[Field6,Potato]*5.38
Zn_Silage_tower(t) = Zn_Silage_tower(t - dt) + (Zn_Roughage_production -
```

```
Zn_silage) * dt
INIT Zn_Silage_tower = 122*Cows
Zn_Roughage_production = Zn_Sum_of_inflows_to_silage_tower
Zn_silage = Cows*Feeding_of_silage*Zn_conc_ensilage
Zn_Soil_solution_topsoil[Field](t) = Zn_Soil_solution_topsoil[Field](t -
dt) + (Zn_Inflöden_to_marklösn_topsoil[Field] -
Zn_Upptake_Topsoil[Field,Crop] - Zn_leaching_from_topsoil_to_subsoil[Field]
- Zn_loss_Runoff[Field] - Zn_topsoil_Ads_Des[Field]) * dt
INIT Zn_Soil_solution_topsoil[Field] = 7.125
Zn_Inflöden_to_marklösn_topsoil[Field] = Zn_Sum_inflows_topsoil[Field]
Zn_Upptake_Topsoil[Field,Crop] =
Zn_Uptake_drive[Field,Crop]*Zn_Ideal_uptake[Field,Crop]*Uptake_activity_Top
soil*Cropping_period
Zn_leaching_from_topsoil_to_subsoil[Field] =
(Percolation_topsoil_to_subsoil*1000*Zn_topsoil_conc_g_per_dm3[Field])+(0*Z
n_loss_Runoff[Field])
Zn_loss_Runoff[Field] = (Zn_topsoil_conc_g_per_dm3[Field]*Runoff*1000)
Zn_topsoil_Ads_Des[Field] = -0.01*((Zn_Ads_topsoil_g_Zn_per_kg_soil[Field]-
Zn_Kd_topsoil*Zn_topsoil_conc_g_per_dm3[Field])*Bulkdensity[Field])-
(0*Zn_Upptag_topsoil_per_Field[Field])
Zn_straw_storage_1[Field,Crop](t) = Zn_straw_storage_1[Field,Crop](t - dt)
+ (Zn_Straw_per_ha_to_total[Field,Crop]) * dt
INIT Zn_straw_storage_1[Field,Crop] = 0
Zn_Straw_per_ha_to_total[Field1,Oats&pea] =
Proportion_Zn_in_straw*Zn_harvested_barley_and_straw[Field1,Oats&pea]*5.82
Zn_Straw_per_ha_to_total[Field1,LeyI] =
Proportion_Zn_in_straw*Zn_harvested_barley_and_straw[Field1,LeyI]*5.82
Zn_Straw_per_ha_to_total[Field1,LeyII] =
Proportion_Zn_in_straw*Zn_harvested_barley_and_straw[Field1,LeyII]*5.82
Zn_Straw_per_ha_to_total[Field1,LeyIII] =
Proportion_Zn_in_straw*Zn_harvested_barley_and_straw[Field1,LeyIII]*5.82
Zn_Straw_per_ha_to_total[Field1,Barley] =
Proportion_Zn_in_straw*Zn_harvested_barley_and_straw[Field1,Barley]*5.82
Zn_Straw_per_ha_to_total[Field1,Potato] =
Proportion_Zn_in_straw*Zn_harvested_barley_and_straw[Field1,Potato]*5.82
Zn_Straw_per_ha_to_total[Field2,Oats&pea] =
Proportion_Zn_in_straw*Zn_harvested_barley_and_straw[Field2,Oats&pea]*6.22
Zn_Straw_per_ha_to_total[Field2,LeyI] =
Proportion_Zn_in_straw*Zn_harvested_barley_and_straw[Field2,LeyI]*6.22
Zn_Straw_per_ha_to_total[Field2,LeyII] =
Proportion_Zn_in_straw*Zn_harvested_barley_and_straw[Field2,LeyII]*6.22
Zn_Straw_per_ha_to_total[Field2,LeyIII] =
Proportion_Zn_in_straw*Zn_harvested_barley_and_straw[Field2,LeyIII]*6.22
Zn_Straw_per_ha_to_total[Field2,Barley] =
Proportion_Zn_in_straw*Zn_harvested_barley_and_straw[Field2,Barley]*6.22
Zn_Straw_per_ha_to_total[Field2,Potato] =
Proportion_Zn_in_straw*Zn_harvested_barley_and_straw[Field2,Potato]*6.22
Zn_Straw_per_ha_to_total[Field3,Oats&pea] =
Proportion_Zn_in_straw*Zn_harvested_barley_and_straw[Field3,Oats&pea]*7.75
Zn_Straw_per_ha_to_total[Field3,LeyI] =
```

```
Proportion_Zn_in_straw*Zn_harvested_barley_and_straw[Field3,LeyI]*7.75
Zn_Straw_per_ha_to_total[Field3,LeyII] =
Proportion_Zn_in_straw*Zn_harvested_barley_and_straw[Field3,LeyII]*7.75
Zn_Straw_per_ha_to_total[Field3,LeyIII] =
Proportion_Zn_in_straw*Zn_harvested_barley_and_straw[Field3,LeyIII]*7.75
Zn_Straw_per_ha_to_total[Field3,Barley] =
Proportion_Zn_in_straw*Zn_harvested_barley_and_straw[Field3,Barley]*7.75
Zn_Straw_per_ha_to_total[Field3,Potato] =
Proportion_Zn_in_straw*Zn_harvested_barley_and_straw[Field3,Potato]*7.75
Zn_Straw_per_ha_to_total[Field4,Oats&pea] =
Proportion_Zn_in_straw*Zn_harvested_barley_and_straw[Field4,Oats&pea]*6.3
Zn_Straw_per_ha_to_total[Field4,LeyI] =
Proportion_Zn_in_straw*Zn_harvested_barley_and_straw[Field4,LeyI]*6.3
Zn_Straw_per_ha_to_total[Field4,LeyII] =
Proportion_Zn_in_straw*Zn_harvested_barley_and_straw[Field4,LeyII]*6.3
Zn_Straw_per_ha_to_total[Field4,LeyIII] =
Proportion_Zn_in_straw*Zn_harvested_barley_and_straw[Field4,LeyIII]*6.3
Zn_Straw_per_ha_to_total[Field4,Barley] =
Proportion_Zn_in_straw*Zn_harvested_barley_and_straw[Field4,Barley]*6.3
Zn_Straw_per_ha_to_total[Field4,Potato] =
Proportion_Zn_in_straw*Zn_harvested_barley_and_straw[Field4,Potato]*6.3
Zn_Straw_per_ha_to_total[Field5,Oats&pea] =
Proportion_Zn_in_straw*Zn_harvested_barley_and_straw[Field5,Oats&pea]*7.35
Zn_Straw_per_ha_to_total[Field5,LeyI] =
Proportion_Zn_in_straw*Zn_harvested_barley_and_straw[Field5,LeyI]*7.35
Zn_Straw_per_ha_to_total[Field5,LeyII] =
Proportion_Zn_in_straw*Zn_harvested_barley_and_straw[Field5,LeyII]*7.35
Zn_Straw_per_ha_to_total[Field5,LeyIII] =
Proportion_Zn_in_straw*Zn_harvested_barley_and_straw[Field5,LeyIII]*7.35
Zn_Straw_per_ha_to_total[Field5,Barley] =
Proportion_Zn_in_straw*Zn_harvested_barley_and_straw[Field5,Barley]*7.35
Zn_Straw_per_ha_to_total[Field5,Potato] =
Proportion_Zn_in_straw*Zn_harvested_barley_and_straw[Field5,Potato]*7.35
Zn_Straw_per_ha_to_total[Field6,Oats&pea] =
Proportion_Zn_in_straw*Zn_harvested_barley_and_straw[Field6,Oats&pea]*5.38
Zn_Straw_per_ha_to_total[Field6,LeyI] =
Proportion_Zn_in_straw*Zn_harvested_barley_and_straw[Field6,LeyI]*5.38
Zn_Straw_per_ha_to_total[Field6,LeyII] =
Proportion_Zn_in_straw*Zn_harvested_barley_and_straw[Field6,LeyII]*5.38
Zn_Straw_per_ha_to_total[Field6,LeyIII] =
Proportion_Zn_in_straw*Zn_harvested_barley_and_straw[Field6,LeyIII]*5.38
Zn_Straw_per_ha_to_total[Field6,Barley] =
Proportion_Zn_in_straw*Zn_harvested_barley_and_straw[Field6,Barley]*5.38
Zn_Straw_per_ha_to_total[Field6,Potato] =
Proportion_Zn_in_straw*Zn_harvested_barley_and_straw[Field6,Potato]*5.38
Zn_straw_storage_II(t) = Zn_straw_storage_II(t - dt) +
(Zn_Homegrown_straw_I - Zn_Homegrown_straw) * dt
INIT Zn_straw_storage_II = 22458
Zn_Homegrown_straw_I = Zn_Sum_array_straw
Zn_Homegrown_straw = Zn_straw_storage_II
```

```
Zn_sum_dep[Field](t) = Zn_sum_dep[Field](t - dt) + (Zn_dep_2[Field] -
Zn_emtpying_of_sum_dep[Field]) * dt
INIT Zn_sum_dep[Field] = 0
Zn_dep_2[Field] = ARRAYSUM(Zn_Deposition_flow[Field,*])
Zn_emtpying_of_sum_dep[Field] =
IF(Time_for_emptying_of_import_and_export_of_Zn>0)
THEN(PULSE(Zn_sum_dep[Field])) ELSE(0)
Zn_Sum_harvest_potato[Field,Crop](t) = Zn_Sum_harvest_potato[Field,Crop](t
- dt) + (Zn_harvested_potato[Field,Crop]) * dt
INIT Zn_Sum_harvest_potato[Field,Crop] = 0
Zn_harvested_potato[Field1,Oats&pea] =
0*Zn_Uptake[Field1,Oats&pea]*Harvest_time
Zn_harvested_potato[Field1,LeyI] = 0*Zn_Uptake[Field1,LeyI]*Harvest_time
Zn_harvested_potato[Field1,LeyII] = 0*Zn_Uptake[Field1,LeyII]*Harvest_time
Zn_harvested_potato[Field1,LeyIII] =
0*Zn_Uptake[Field1,LeyIII]*Harvest_time
Zn_harvested_potato[Field1,Barley] =
0*Zn_Uptake[Field1,Barley]*Harvest_time
Zn_harvested_potato[Field1,Potato] = IF (Harvest_time>0) THEN
(PULSE(Zn_Uptake[Field1,Potato])) ELSE (0)
Zn_harvested_potato[Field2,Oats&pea] =
0*Zn_Uptake[Field2,Oats&pea]*Harvest_time
Zn_harvested_potato[Field2,LeyI] = 0*Zn_Uptake[Field2,LeyI]*Harvest_time
Zn_harvested_potato[Field2,LeyII] = 0*Zn_Uptake[Field2,LeyII]*Harvest_time
Zn_harvested_potato[Field2,LeyIII] =
0*Zn_Uptake[Field2,LeyIII]*Harvest_time
Zn_harvested_potato[Field2,Barley] =
0*Zn_Uptake[Field2,Barley]*Harvest_time
Zn_harvested_potato[Field2,Potato] = IF (Harvest_time>0) THEN
(PULSE(Zn_Uptake[Field2,Potato])) ELSE (0)
Zn_harvested_potato[Field3,Oats&pea] =
0*Zn_Uptake[Field3,Oats&pea]*Harvest_time
Zn_harvested_potato[Field3,LeyI] = 0*Zn_Uptake[Field3,LeyI]*Harvest_time
Zn_harvested_potato[Field3,LeyII] = 0*Zn_Uptake[Field3,LeyII]*Harvest_time
Zn_harvested_potato[Field3,LeyIII] =
0*Zn_Uptake[Field3,LeyIII]*Harvest_time
Zn_harvested_potato[Field3,Barley] =
0*Zn_Uptake[Field3,Barley]*Harvest_time
Zn_harvested_potato[Field3,Potato] = IF (Harvest_time>0) THEN
(PULSE(Zn_Uptake[Field3,Potato])) ELSE (0)
Zn_harvested_potato[Field4,Oats&pea] =
0*Zn_Uptake[Field4,Oats&pea]*Harvest_time
Zn_harvested_potato[Field4,LeyI] = 0*Zn_Uptake[Field4,LeyI]*Harvest_time
Zn_harvested_potato[Field4,LeyII] = 0*Zn_Uptake[Field4,LeyII]*Harvest_time
Zn_harvested_potato[Field4,LeyIII] =
0*Zn_Uptake[Field4,LeyIII]*Harvest_time
Zn_harvested_potato[Field4,Barley] =
0*Zn_Uptake[Field4,Barley]*Harvest_time
Zn_harvested_potato[Field4,Potato] = IF (Harvest_time>0) THEN
(PULSE(Zn_Uptake[Field4,Potato])) ELSE (0)
```

```
Zn_harvested_potato[Field5,Oats&pea] =
0*Zn_Uptake[Field5,Oats&pea]*Harvest_time
Zn_harvested_potato[Field5,LeyI] = 0*Zn_Uptake[Field5,LeyI]*Harvest_time
Zn_harvested_potato[Field5,LeyII] = 0*Zn_Uptake[Field5,LeyII]*Harvest_time
Zn_harvested_potato[Field5,LeyIII] =
0*Zn_Uptake[Field5,LeyIII]*Harvest_time
Zn_harvested_potato[Field5,Barley] =
0*Zn_Uptake[Field5,Barley]*Harvest_time
Zn_harvested_potato[Field5,Potato] = IF (Harvest_time>0) THEN
(PULSE(Zn_Uptake[Field5,Potato])) ELSE (0)
Zn_harvested_potato[Field6,Oats&pea] =
0*Zn_Uptake[Field6,Oats&pea]*Harvest_time
Zn_harvested_potato[Field6,LeyI] = 0*Zn_Uptake[Field6,LeyI]*Harvest_time
Zn_harvested_potato[Field6,LeyII] = 0*Zn_Uptake[Field6,LeyII]*Harvest_time
Zn_harvested_potato[Field6,LeyIII] =
0*Zn_Uptake[Field6,LeyIII]*Harvest_time
Zn_harvested_potato[Field6,Barley] =
0*Zn_Uptake[Field6,Barley]*Harvest_time
Zn_harvested_potato[Field6,Potato] = IF (Harvest_time>0) THEN
(PULSE(Zn_Uptake[Field6,Potato])) ELSE (0)
Zn_Sum_harvest_silage[Field,Crop](t) = Zn_Sum_harvest_silage[Field,Crop](t
- dt) + (Zn_harvested_hay_for_silage[Field,Crop]) * dt
INIT Zn_Sum_harvest_silage[Field,Crop] = 0
Zn_harvested_hay_for_silage[Field1,Oats&pea] =
0*Zn_Uptake[Field1,Oats&pea]*Harvest_time
Zn_harvested_hay_for_silage[Field1,LeyI] = IF(Harvest_time>0) THEN
(PULSE(Zn_Uptake[Field1,LeyI])) ELSE (0)
Zn_harvested_hay_for_silage[Field1,LeyII] = IF (Harvest_time>0) THEN
(PULSE(Zn_Uptake[Field1,LeyII])) ELSE (0)
Zn_harvested_hay_for_silage[Field1,LeyIII] = IF (Harvest_time>0) THEN
(PULSE(Zn_Uptake[Field1,LeyIII])) ELSE (0)
Zn_harvested_hay_for_silage[Field1,Barley] =
0*Zn_Uptake[Field1,Barley]*Harvest_time
Zn_harvested_hay_for_silage[Field1,Potato] =
0*Zn_Uptake[Field1,Potato]*Harvest_time
Zn_harvested_hay_for_silage[Field2,Oats&pea] =
0*Zn_Uptake[Field2,Oats&pea]*Harvest_time
Zn_harvested_hay_for_silage[Field2,LeyI] = IF(Harvest_time>0) THEN
(PULSE(Zn_Uptake[Field2,LeyI])) ELSE (0)
Zn_harvested_hay_for_silage[Field2,LeyII] = IF (Harvest_time>0) THEN
(PULSE(Zn_Uptake[Field2,LeyII])) ELSE (0)
Zn_harvested_hay_for_silage[Field2,LeyIII] = IF (Harvest_time>0) THEN
(PULSE(Zn_Uptake[Field2,LeyIII])) ELSE (0)
Zn_harvested_hay_for_silage[Field2,Barley] =
0*Zn_Uptake[Field2,Barley]*Harvest_time
Zn_harvested_hay_for_silage[Field2,Potato] =
0*Zn_Uptake[Field2,Potato]*Harvest_time
Zn_harvested_hay_for_silage[Field3,Oats&pea] =
0*Zn_Uptake[Field3,Oats&pea]*Harvest_time
Zn_harvested_hay_for_silage[Field3,LeyI] = IF(Harvest_time>0) THEN
```

```
(PULSE(Zn_Uptake[Field3,LeyI])) ELSE (0)
Zn_harvested_hay_for_silage[Field3,LeyII] = IF (Harvest_time>0) THEN
(PULSE(Zn_Uptake[Field3,LeyII])) ELSE (0)
Zn_harvested_hay_for_silage[Field3,LeyIII] = IF (Harvest_time>0) THEN
(PULSE(Zn_Uptake[Field3,LeyIII])) ELSE (0)
Zn_harvested_hay_for_silage[Field3,Barley] =
0*Zn_Uptake[Field3,Barley]*Harvest_time
Zn_harvested_hay_for_silage[Field3,Potato] =
0*Zn_Uptake[Field3,Potato]*Harvest_time
Zn_harvested_hay_for_silage[Field4,Oats&pea] =
0*Zn_Uptake[Field4,Oats&pea]*Harvest_time
Zn_harvested_hay_for_silage[Field4,LeyI] = IF(Harvest_time>0) THEN
(PULSE(Zn_Uptake[Field4,LeyI])) ELSE (0)
Zn_harvested_hay_for_silage[Field4,LeyII] = IF (Harvest_time>0) THEN
(PULSE(Zn_Uptake[Field4,LeyII])) ELSE (0)
Zn_harvested_hay_for_silage[Field4,LeyIII] = IF (Harvest_time>0) THEN
(PULSE(Zn_Uptake[Field4,LeyIII])) ELSE (0)
Zn_harvested_hay_for_silage[Field4,Barley] =
0*Zn_Uptake[Field4,Barley]*Harvest_time
Zn_harvested_hay_for_silage[Field4,Potato] =
0*Zn_Uptake[Field4,Potato]*Harvest_time
Zn_harvested_hay_for_silage[Field5,Oats&pea] =
0*Zn_Uptake[Field5,Oats&pea]*Harvest_time
Zn_harvested_hay_for_silage[Field5,LeyI] = IF(Harvest_time>0) THEN
(PULSE(Zn_Uptake[Field5,LeyI])) ELSE (0)
Zn_harvested_hay_for_silage[Field5,LeyII] = IF (Harvest_time>0) THEN
(PULSE(Zn_Uptake[Field5,LeyII])) ELSE (0)
Zn_harvested_hay_for_silage[Field5,LeyIII] = IF (Harvest_time>0) THEN
(PULSE(Zn_Uptake[Field5,LeyIII])) ELSE (0)
Zn_harvested_hay_for_silage[Field5,Barley] =
0*Zn_Uptake[Field5,Barley]*Harvest_time
Zn_harvested_hay_for_silage[Field5,Potato] =
0*Zn_Uptake[Field5,Potato]*Harvest_time
Zn_harvested_hay_for_silage[Field6,Oats&pea] =
0*Zn_Uptake[Field6,Oats&pea]*Harvest_time
Zn_harvested_hay_for_silage[Field6,LeyI] = IF(Harvest_time>0) THEN
(PULSE(Zn_Uptake[Field6,LeyI])) ELSE (0)
Zn_harvested_hay_for_silage[Field6,LeyII] = IF (Harvest_time>0) THEN
(PULSE(Zn_Uptake[Field6,LeyII])) ELSE (0)
Zn_harvested_hay_for_silage[Field6,LeyIII] = IF (Harvest_time>0) THEN
(PULSE(Zn_Uptake[Field6,LeyIII])) ELSE (0)
Zn_harvested_hay_for_silage[Field6,Barley] =
0*Zn_Uptake[Field6,Barley]*Harvest_time
Zn_harvested_hay_for_silage[Field6,Potato] =
0*Zn_Uptake[Field6,Potato]*Harvest_time
Zn_Sum_leaching[Field](t) = Zn_Sum_leaching[Field](t - dt) +
(Zn_leaching_subsoil[Field] - E_mptying_of_Zn_sum_leaching[Field]) * dt
INIT Zn_Sum_leaching[Field] = 0
Zn_leaching_subsoil[Field] =
(Water_flow_from_subsoil*Zn_subsoil_conc_g_per_dm3[Field]*1000)
```

```
E_mptying_of_Zn_sum_leaching[Field] =
IF(Time_for_emptying_of_import_and_export_of_Zn>0) THEN
(PULSE(Zn_Sum_leaching[Field])) ELSE (0)
Zn_sum_lime[Field](t) = Zn_sum_lime[Field](t - dt) + (Zn_lime_2[Field] -
Zn_emptying_of_sum_lime[Field]) * dt
INIT Zn_sum_lime[Field] = 0
Zn_lime_2[Field] = ARRAYSUM(Zn_Lime[Field,*])
Zn_emptying_of_sum_lime[Field] =
IF(Time_for_emptying_of_import_and_export_of_Zn>0)
THEN(PULSE(Zn_sum_lime[Field])) ELSE(0)
Zn_sum_manure[Field](t) = Zn_sum_manure[Field](t - dt) +
(Zn_manure_2[Field] - Zn_emptying_of_sum_manure[Field]) * dt
INIT Zn_sum_manure[Field] = 0
Zn_manure_2[Field] = ARRAYSUM(Zn_Manure_spreading_per_ha[Field,*])
Zn_emptying_of_sum_manure[Field] =
IF(Time_for_emptying_of_import_and_export_of_Zn>0)
THEN(PULSE(Zn_sum_manure[Field])) ELSE(0)
Zn_Sum_mineral_fertiliser[Field](t) = Zn_Sum_mineral_fertiliser[Field](t -
dt) + (Zn_mineral_fertiliser_2[Field] -
Zn_emptying_of_sum_mineral_fertiliser[Field]) * dt
INIT Zn_Sum_mineral_fertiliser[Field] = 0
Zn_mineral_fertiliser_2[Field] =
ARRAYSUM(Zn_Mineral_fertiliser_flow[Field,*])
Zn_emptying_of_sum_mineral_fertiliser[Field] =
IF(Time_for_emptying_of_import_and_export_of_Zn>0)
THEN(PULSE(Zn_Sum_mineral_fertiliser[Field])) ELSE(0)
Zn_Sum_of_fertilisation[Field,Crop](t) =
Zn_Sum_of_fertilisation[Field,Crop](t - dt) +
(Zn_Fertilisation_per_ha[Field,Crop] -
Zn_emptying_of_sum_of_fertilisation[Field,Crop]) * dt
INIT Zn_Sum_of_fertilisation[Field,Crop] = 0
Zn_Fertilisation_per_ha[Field,Crop] =
Zn_Manure_spreading_per_ha[Field,Crop]+Zn_Urine_per_ha[Field,Crop]
Zn_emptying_of_sum_of_fertilisation[Field,Crop] =
IF(Time_for_emptying_of_import_and_export_of_Zn>0) THEN
(PULSE(Zn_Sum_of_fertilisation[Field,Crop])) ELSE (0)
Zn_Sum_of_Inflows_to_crop_balances[Field,Crop](t) =
Zn_Sum_of_Inflows_to_crop_balances[Field,Crop](t - dt) +
(Zn_Inflows_to_crop_balances[Field,Crop] -
Zn_Emptying_of_sum_of_inflows_to_cropbalances[Field,Crop]) * dt
INIT Zn_Sum_of_Inflows_to_crop_balances[Field,Crop] = 0
Zn_Inflows_to_crop_balances[Field,Crop] =
Zn_Deposition_flow[Field,Crop]+Zn_Manure_spreading_per_ha[Field,Crop]+Zn_se
eds[Field,Crop]+Zn_Mineral_fertiliser_flow[Field,Crop]+Zn_Urine_per_ha[Fiel
d,Crop]+Zn_Pesticide[Field,Crop]+Zn_Lime[Field,Crop]
Zn_Emptying_of_sum_of_inflows_to_cropbalances[Field,Crop] =
IF(Time_for_emptying_of_import_and_export_of_Zn>0) THEN
(PULSE(Zn_Sum_of_Inflows_to_crop_balances[Field,Crop])) ELSE (0)
Zn_sum_of_outflows_of_crop_balances[Field,Crop](t) =
Zn_sum_of_outflows_of_crop_balances[Field,Crop](t - dt) +
```

```
(Zn_Harvest[Field,Crop] -
Zn_emptying_of_sum_of_Zn_outflows_crop_balances[Field,Crop]) * dt
INIT Zn_sum_of_outflows_of_crop_balances[Field,Crop] = 0
Zn_Harvest[Field,Crop] = Zn_Sum_uptake[Field,Crop]
Zn_emptying_of_sum_of_Zn_outflows_crop_balances[Field,Crop] =
IF(Time_for_emptying_of_import_and_export_of_Zn>0) THEN
(PULSE(Zn_sum_of_outflows_of_crop_balances[Field,Crop])) ELSE (0)
Zn_sum_of_outflows_of_field_balances[Field,Crop](t) =
Zn_sum_of_outflows_of_field_balances[Field,Crop](t - dt) +
(Zn_harvest_and_losses[Field,Crop] -
Zn_emptying_of_sum_of_outflows_of_fieldbalances[Field,Crop]) * dt
INIT Zn_sum_of_outflows_of_field_balances[Field,Crop] = 0
Zn_harvest_and_losses[Field,Crop] =
Zn_Sum_uptake[Field,Crop]+Zn_losses_crop_rotation[Field,Crop]
Zn_emptying_of_sum_of_outflows_of_fieldbalances[Field,Crop] =
IF(Time_for_emptying_of_import_and_export_of_Zn>0) THEN
(PULSE(Zn_sum_of_outflows_of_field_balances[Field,Crop])) ELSE (0)
Zn_Sum_of_runoff[Field](t) = Zn_Sum_of_runoff[Field](t - dt) +
(Zn_loss_Runoff[Field] - Emptying_of_Zn_sum_of_runoff[Field]) * dt
INIT Zn_Sum_of_runoff[Field] = 0
Zn_loss_Runoff[Field] = (Zn_topsoil_conc_g_per_dm3[Field]*Runoff*1000)
Emptying_of_Zn_sum_of_runoff[Field] =
IF(Time_for_emptying_of_import_and_export_of_Zn>0) THEN
(PULSE(Zn_Sum_of_runoff[Field])) ELSE (0)
Zn_sum_pesticide[Field](t) = Zn_sum_pesticide[Field](t - dt) +
(Zn_pesticide_2[Field] - Zn_emptying_of_sum_pesticide[Field]) * dt
INIT Zn_sum_pesticide[Field] = 0
Zn_pesticide_2[Field] = ARRAYSUM(Zn_Pesticide[Field,*])
Zn_emptying_of_sum_pesticide[Field] =
IF(Time_for_emptying_of_import_and_export_of_Zn>0)
THEN(PULSE(Zn_sum_pesticide[Field])) ELSE(0)
Zn_sum_seeds[Field](t) = Zn_sum_seeds[Field](t - dt) + (Zn_seeds_2[Field] -
Zn_emptying_of_sum_seeds[Field]) * dt
INIT Zn_sum_seeds[Field] = 0
Zn_seeds_2[Field] = ARRAYSUM(Zn_seeds[Field,*])
Zn_emptying_of_sum_seeds[Field] =
IF(Time_for_emptying_of_import_and_export_of_Zn>0)
THEN(PULSE(Zn_sum_seeds[Field])) ELSE(0)
Zn_sum_urine[Field](t) = Zn_sum_urine[Field](t - dt) + (Zn_urine_2[Field] -
Zn_emptying_of_sum_urine[Field]) * dt
INIT Zn_sum_urine[Field] = 0
Zn_urine_2[Field] = ARRAYSUM(Zn_Urine_per_ha[Field,*])
Zn_emptying_of_sum_urine[Field] =
IF(Time_for_emptying_of_import_and_export_of_Zn>0)
THEN(PULSE(Zn_sum_urine[Field])) ELSE(0)
Zn_Sum__harvest_barley[Field,Crop](t) =
Zn_Sum__harvest_barley[Field,Crop](t - dt) +
(Zn_harvested_barley_and_straw[Field,Crop]) * dt
INIT Zn_Sum__harvest_barley[Field,Crop] = 0
Zn_harvested_barley_and_straw[Field1,Oats&pea] =
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0*Zn_Uptake[Field1,Oats&pea]*Harvest_time
Zn_harvested_barley_and_straw[Field1,LeyI] =
0*Zn_Uptake[Field1,LeyI]*Harvest_time
Zn_harvested_barley_and_straw[Field1,LeyII] =
0*Zn_Uptake[Field1,LeyII]*Harvest_time
Zn_harvested_barley_and_straw[Field1,LeyIII] =
0*Zn_Uptake[Field1,LeyIII]*Harvest_time
Zn_harvested_barley_and_straw[Field1,Barley] = IF(Harvest_time>0)
THEN(PULSE(Zn_Uptake[Field1,Barley]))ELSE(0)
Zn_harvested_barley_and_straw[Field1,Potato] =
0*Zn_Uptake[Field1,Potato]*Harvest_time
Zn_harvested_barley_and_straw[Field2,Oats&pea] =
0*Zn_Uptake[Field2,Oats&pea]*Harvest_time
Zn_harvested_barley_and_straw[Field2,LeyI] =
0*Zn_Uptake[Field2,LeyI]*Harvest_time
Zn_harvested_barley_and_straw[Field2,LeyII] =
0*Zn_Uptake[Field2,LeyII]*Harvest_time
Zn_harvested_barley_and_straw[Field2,LeyIII] =
0*Zn_Uptake[Field2,LeyIII]*Harvest_time
Zn_harvested_barley_and_straw[Field2,Barley] = IF(Harvest_time>0)
THEN(PULSE(Zn_Uptake[Field2,Barley]))ELSE(0)
Zn_harvested_barley_and_straw[Field2,Potato] =
0*Zn_Uptake[Field2,Potato]*Harvest_time
Zn_harvested_barley_and_straw[Field3,Oats&pea] =
0*Zn_Uptake[Field3,Oats&pea]*Harvest_time
Zn_harvested_barley_and_straw[Field3,LeyI] =
0*Zn_Uptake[Field3,LeyI]*Harvest_time
Zn_harvested_barley_and_straw[Field3,LeyII] =
0*Zn_Uptake[Field3,LeyII]*Harvest_time
Zn_harvested_barley_and_straw[Field3,LeyIII] =
0*Zn_Uptake[Field3,LeyIII]*Harvest_time
Zn_harvested_barley_and_straw[Field3,Barley] = IF(Harvest_time>0)
THEN(PULSE(Zn_Uptake[Field3,Barley]))ELSE(0)
Zn_harvested_barley_and_straw[Field3,Potato] =
0*Zn_Uptake[Field3,Potato]*Harvest_time
Zn_harvested_barley_and_straw[Field4,Oats&pea] =
0*Zn_Uptake[Field4,Oats&pea]*Harvest_time
Zn_harvested_barley_and_straw[Field4,LeyI] =
0*Zn_Uptake[Field4,LeyI]*Harvest_time
Zn_harvested_barley_and_straw[Field4,LeyII] =
0*Zn_Uptake[Field4,LeyII]*Harvest_time
Zn_harvested_barley_and_straw[Field4,LeyIII] =
0*Zn_Uptake[Field4,LeyIII]*Harvest_time
Zn_harvested_barley_and_straw[Field4,Barley] = IF(Harvest_time>0)
THEN(PULSE(Zn_Uptake[Field4,Barley]))ELSE(0)
Zn_harvested_barley_and_straw[Field4,Potato] =
0*Zn_Uptake[Field4,Potato]*Harvest_time
Zn_harvested_barley_and_straw[Field5,Oats&pea] =
0*Zn_Uptake[Field5,Oats&pea]*Harvest_time
Zn_harvested_barley_and_straw[Field5,LeyI] =
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0*Zn_Uptake[Field5,LeyI]*Harvest_time
Zn_harvested_barley_and_straw[Field5,LeyII] =
0*Zn_Uptake[Field5,LeyII]*Harvest_time
Zn_harvested_barley_and_straw[Field5,LeyIII] =
0*Zn_Uptake[Field5,LeyIII]*Harvest_time
Zn_harvested_barley_and_straw[Field5,Barley] = IF(Harvest_time>0)
THEN(PULSE(Zn_Uptake[Field5,Barley]))ELSE(0)
Zn_harvested_barley_and_straw[Field5,Potato] =
0*Zn_Uptake[Field5,Potato]*Harvest_time
Zn_harvested_barley_and_straw[Field6,Oats&pea] =
0*Zn_Uptake[Field6,Oats&pea]*Harvest_time
Zn_harvested_barley_and_straw[Field6,LeyI] =
0*Zn_Uptake[Field6,LeyI]*Harvest_time
Zn_harvested_barley_and_straw[Field6,LeyII] =
0*Zn_Uptake[Field6,LeyII]*Harvest_time
Zn_harvested_barley_and_straw[Field6,LeyIII] =
0*Zn_Uptake[Field6,LeyIII]*Harvest_time
Zn_harvested_barley_and_straw[Field6,Barley] = IF(Harvest_time>0)
THEN(PULSE(Zn_Uptake[Field6,Barley]))ELSE(0)
Zn_harvested_barley_and_straw[Field6,Potato] =
0*Zn_Uptake[Field6,Potato]*Harvest_time
Zn_Uptake[Field,Crop](t) = Zn_Uptake[Field,Crop](t - dt) +
(Zn_Upptake_Topsoil[Field,Crop] + Zn_Upptag_Subsoil[Field,Crop] -
Zn_harvested_oats&pea[Field,Crop] - Zn_harvested_hay_for_silage[Field,Crop]
- Zn_harvested_barley_and_straw[Field,Crop] -
Zn_harvested_potato[Field,Crop]) * dt
INIT Zn_Uptake[Field,Crop] = 0
Zn_Upptake_Topsoil[Field,Crop] =
Zn_Uptake_drive[Field,Crop]*Zn_Ideal_uptake[Field,Crop]*Uptake_activity_Top
soil*Cropping_period
Zn_Upptag_Subsoil[Field,Crop] =
IF(Zn_Upptake_Topsoil[Field,Crop]<Zn_Ideal_uptake[Field,Crop])THEN(Zn_Uptak
e_drive[Field,Crop]*Uptake_activity_Subsoil*Cropping_period*(Zn_Ideal_uptak
e[Field,Crop]-Zn_Upptake_Topsoil[Field,Crop]))ELSE(0)
Zn_harvested_oats&pea[Field1,Oats&pea] = IF (Harvest_time>0) THEN
(PULSE(Zn_Uptake[Field1,Oats&pea])) ELSE (0)
Zn_harvested_oats&pea[Field1,LeyI] = 0*Zn_Uptake[Field1,LeyI]*Harvest_time
Zn_harvested_oats&pea[Field1,LeyII] =
0*Zn_Uptake[Field1,LeyII]*Harvest_time
Zn_harvested_oats&pea[Field1,LeyIII] =
0*Zn_Uptake[Field1,LeyIII]*Harvest_time
Zn_harvested_oats&pea[Field1,Barley] =
0*Zn_Uptake[Field1,Barley]*Harvest_time
Zn_harvested_oats&pea[Field1,Potato] =
0*Zn_Uptake[Field1,Potato]*Harvest_time
Zn_harvested_oats&pea[Field2,Oats&pea] = IF (Harvest_time>0) THEN
(PULSE(Zn_Uptake[Field2,Oats&pea])) ELSE (0)
Zn_harvested_oats&pea[Field2,LeyI] = 0*Zn_Uptake[Field2,LeyI]*Harvest_time
Zn_harvested_oats&pea[Field2,LeyII] =
0*Zn_Uptake[Field2,LeyII]*Harvest_time
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Zn_harvested_oats&pea[Field2,LeyIII] =
0*Zn_Uptake[Field2,LeyIII]*Harvest_time
Zn_harvested_oats&pea[Field2,Barley] =
0*Zn_Uptake[Field2,Barley]*Harvest_time
Zn_harvested_oats&pea[Field2,Potato] =
0*Zn_Uptake[Field2,Potato]*Harvest_time
Zn_harvested_oats&pea[Field3,Oats&pea] = IF (Harvest_time>0) THEN
(PULSE(Zn_Uptake[Field3,Oats&pea])) ELSE (0)
Zn_harvested_oats&pea[Field3,LeyI] = 0*Zn_Uptake[Field3,LeyI]*Harvest_time
Zn_harvested_oats&pea[Field3,LeyII] =
0*Zn_Uptake[Field3,LeyII]*Harvest_time
Zn_harvested_oats&pea[Field3,LeyIII] =
0*Zn_Uptake[Field3,LeyIII]*Harvest_time
Zn_harvested_oats&pea[Field3,Barley] =
0*Zn_Uptake[Field3,Barley]*Harvest_time
Zn_harvested_oats&pea[Field3,Potato] =
0*Zn_Uptake[Field3,Potato]*Harvest_time
Zn_harvested_oats&pea[Field4,Oats&pea] = IF (Harvest_time>0) THEN
(PULSE(Zn_Uptake[Field4,Oats&pea])) ELSE (0)
Zn_harvested_oats&pea[Field4,LeyI] = 0*Zn_Uptake[Field4,LeyI]*Harvest_time
Zn_harvested_oats&pea[Field4,LeyII] =
0*Zn_Uptake[Field4,LeyII]*Harvest_time
Zn_harvested_oats&pea[Field4,LeyIII] =
0*Zn_Uptake[Field4,LeyIII]*Harvest_time
Zn_harvested_oats&pea[Field4,Barley] =
0*Zn_Uptake[Field4,Barley]*Harvest_time
Zn_harvested_oats&pea[Field4,Potato] =
0*Zn_Uptake[Field4,Potato]*Harvest_time
Zn_harvested_oats&pea[Field5,Oats&pea] = IF (Harvest_time>0) THEN
(PULSE(Zn_Uptake[Field5,Oats&pea])) ELSE (0)
Zn_harvested_oats&pea[Field5,LeyI] = 0*Zn_Uptake[Field5,LeyI]*Harvest_time
Zn_harvested_oats&pea[Field5,LeyII] =
0*Zn_Uptake[Field5,LeyII]*Harvest_time
Zn_harvested_oats&pea[Field5,LeyIII] =
0*Zn_Uptake[Field5,LeyIII]*Harvest_time
Zn_harvested_oats&pea[Field5,Barley] =
0*Zn_Uptake[Field5,Barley]*Harvest_time
Zn_harvested_oats&pea[Field5,Potato] =
0*Zn_Uptake[Field5,Potato]*Harvest_time
Zn_harvested_oats&pea[Field6,Oats&pea] = IF (Harvest_time>0) THEN
(PULSE(Zn_Uptake[Field6,Oats&pea])) ELSE (0)
Zn_harvested_oats&pea[Field6,LeyI] = 0*Zn_Uptake[Field6,LeyI]*Harvest_time
Zn_harvested_oats&pea[Field6,LeyII] =
0*Zn_Uptake[Field6,LeyII]*Harvest_time
Zn_harvested_oats&pea[Field6,LeyIII] =
0*Zn_Uptake[Field6,LeyIII]*Harvest_time
Zn_harvested_oats&pea[Field6,Barley] =
0*Zn_Uptake[Field6,Barley]*Harvest_time
Zn_harvested_oats&pea[Field6,Potato] =
0*Zn_Uptake[Field6,Potato]*Harvest_time
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Zn_harvested_hay_for_silage[Field1,Oats&pea] =
0*Zn_Uptake[Field1,Oats&pea]*Harvest_time
Zn_harvested_hay_for_silage[Field1,LeyI] = IF(Harvest_time>0) THEN
(PULSE(Zn_Uptake[Field1,LeyI])) ELSE (0)
Zn_harvested_hay_for_silage[Field1,LeyII] = IF (Harvest_time>0) THEN
(PULSE(Zn_Uptake[Field1,LeyII])) ELSE (0)
Zn_harvested_hay_for_silage[Field1,LeyIII] = IF (Harvest_time>0) THEN
(PULSE(Zn_Uptake[Field1,LeyIII])) ELSE (0)
Zn_harvested_hay_for_silage[Field1,Barley] =
0*Zn_Uptake[Field1,Barley]*Harvest_time
Zn_harvested_hay_for_silage[Field1,Potato] =
0*Zn_Uptake[Field1,Potato]*Harvest_time
Zn_harvested_hay_for_silage[Field2,Oats&pea] =
0*Zn_Uptake[Field2,Oats&pea]*Harvest_time
Zn_harvested_hay_for_silage[Field2,LeyI] = IF(Harvest_time>0) THEN
(PULSE(Zn_Uptake[Field2,LeyI])) ELSE (0)
Zn_harvested_hay_for_silage[Field2,LeyII] = IF (Harvest_time>0) THEN
(PULSE(Zn_Uptake[Field2,LeyII])) ELSE (0)
Zn_harvested_hay_for_silage[Field2,LeyIII] = IF (Harvest_time>0) THEN
(PULSE(Zn_Uptake[Field2,LeyIII])) ELSE (0)
Zn_harvested_hay_for_silage[Field2,Barley] =
0*Zn_Uptake[Field2,Barley]*Harvest_time
Zn_harvested_hay_for_silage[Field2,Potato] =
0*Zn_Uptake[Field2,Potato]*Harvest_time
Zn_harvested_hay_for_silage[Field3,Oats&pea] =
0*Zn_Uptake[Field3,Oats&pea]*Harvest_time
Zn_harvested_hay_for_silage[Field3,LeyI] = IF(Harvest_time>0) THEN
(PULSE(Zn_Uptake[Field3,LeyI])) ELSE (0)
Zn_harvested_hay_for_silage[Field3,LeyII] = IF (Harvest_time>0) THEN
(PULSE(Zn_Uptake[Field3,LeyII])) ELSE (0)
Zn_harvested_hay_for_silage[Field3,LeyIII] = IF (Harvest_time>0) THEN
(PULSE(Zn_Uptake[Field3,LeyIII])) ELSE (0)
Zn_harvested_hay_for_silage[Field3,Barley] =
0*Zn_Uptake[Field3,Barley]*Harvest_time
Zn_harvested_hay_for_silage[Field3,Potato] =
0*Zn_Uptake[Field3,Potato]*Harvest_time
Zn_harvested_hay_for_silage[Field4,Oats&pea] =
0*Zn_Uptake[Field4,Oats&pea]*Harvest_time
Zn_harvested_hay_for_silage[Field4,LeyI] = IF(Harvest_time>0) THEN
(PULSE(Zn_Uptake[Field4,LeyI])) ELSE (0)
Zn_harvested_hay_for_silage[Field4,LeyII] = IF (Harvest_time>0) THEN
(PULSE(Zn_Uptake[Field4,LeyII])) ELSE (0)
Zn_harvested_hay_for_silage[Field4,LeyIII] = IF (Harvest_time>0) THEN
(PULSE(Zn_Uptake[Field4,LeyIII])) ELSE (0)
Zn_harvested_hay_for_silage[Field4,Barley] =
0*Zn_Uptake[Field4,Barley]*Harvest_time
Zn_harvested_hay_for_silage[Field4,Potato] =
0*Zn_Uptake[Field4,Potato]*Harvest_time
Zn_harvested_hay_for_silage[Field5,Oats&pea] =
0*Zn_Uptake[Field5,Oats&pea]*Harvest_time
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Zn_harvested_hay_for_silage[Field5,LeyI] = IF(Harvest_time>0) THEN
(PULSE(Zn_Uptake[Field5,LeyI])) ELSE (0)
Zn_harvested_hay_for_silage[Field5,LeyII] = IF (Harvest_time>0) THEN
(PULSE(Zn_Uptake[Field5,LeyII])) ELSE (0)
Zn_harvested_hay_for_silage[Field5,LeyIII] = IF (Harvest_time>0) THEN
(PULSE(Zn_Uptake[Field5,LeyIII])) ELSE (0)
Zn_harvested_hay_for_silage[Field5,Barley] =
0*Zn_Uptake[Field5,Barley]*Harvest_time
Zn_harvested_hay_for_silage[Field5,Potato] =
0*Zn_Uptake[Field5,Potato]*Harvest_time
Zn_harvested_hay_for_silage[Field6,Oats&pea] =
0*Zn_Uptake[Field6,Oats&pea]*Harvest_time
Zn_harvested_hay_for_silage[Field6,LeyI] = IF(Harvest_time>0) THEN
(PULSE(Zn_Uptake[Field6,LeyI])) ELSE (0)
Zn_harvested_hay_for_silage[Field6,LeyII] = IF (Harvest_time>0) THEN
(PULSE(Zn_Uptake[Field6,LeyII])) ELSE (0)
Zn_harvested_hay_for_silage[Field6,LeyIII] = IF (Harvest_time>0) THEN
(PULSE(Zn_Uptake[Field6,LeyIII])) ELSE (0)
Zn_harvested_hay_for_silage[Field6,Barley] =
0*Zn_Uptake[Field6,Barley]*Harvest_time
Zn_harvested_hay_for_silage[Field6,Potato] =
0*Zn_Uptake[Field6,Potato]*Harvest_time
Zn_harvested_barley_and_straw[Field1,Oats&pea] =
0*Zn_Uptake[Field1,Oats&pea]*Harvest_time
Zn_harvested_barley_and_straw[Field1,LeyI] =
0*Zn_Uptake[Field1,LeyI]*Harvest_time
Zn_harvested_barley_and_straw[Field1,LeyII] =
0*Zn_Uptake[Field1,LeyII]*Harvest_time
Zn_harvested_barley_and_straw[Field1,LeyIII] =
0*Zn_Uptake[Field1,LeyIII]*Harvest_time
Zn_harvested_barley_and_straw[Field1,Barley] = IF(Harvest_time>0)
THEN(PULSE(Zn_Uptake[Field1,Barley]))ELSE(0)
Zn_harvested_barley_and_straw[Field1,Potato] =
0*Zn_Uptake[Field1,Potato]*Harvest_time
Zn_harvested_barley_and_straw[Field2,Oats&pea] =
0*Zn_Uptake[Field2,Oats&pea]*Harvest_time
Zn_harvested_barley_and_straw[Field2,LeyI] =
0*Zn_Uptake[Field2,LeyI]*Harvest_time
Zn_harvested_barley_and_straw[Field2,LeyII] =
0*Zn_Uptake[Field2,LeyII]*Harvest_time
Zn_harvested_barley_and_straw[Field2,LeyIII] =
0*Zn_Uptake[Field2,LeyIII]*Harvest_time
Zn_harvested_barley_and_straw[Field2,Barley] = IF(Harvest_time>0)
THEN(PULSE(Zn_Uptake[Field2,Barley]))ELSE(0)
Zn_harvested_barley_and_straw[Field2,Potato] =
0*Zn_Uptake[Field2,Potato]*Harvest_time
Zn_harvested_barley_and_straw[Field3,Oats&pea] =
0*Zn_Uptake[Field3,Oats&pea]*Harvest_time
Zn_harvested_barley_and_straw[Field3,LeyI] =
0*Zn_Uptake[Field3,LeyI]*Harvest_time
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Zn_harvested_barley_and_straw[Field3,LeyII] =
0*Zn_Uptake[Field3,LeyII]*Harvest_time
Zn_harvested_barley_and_straw[Field3,LeyIII] =
0*Zn_Uptake[Field3,LeyIII]*Harvest_time
Zn_harvested_barley_and_straw[Field3,Barley] = IF(Harvest_time>0)
THEN(PULSE(Zn_Uptake[Field3,Barley]))ELSE(0)
Zn_harvested_barley_and_straw[Field3,Potato] =
0*Zn_Uptake[Field3,Potato]*Harvest_time
Zn_harvested_barley_and_straw[Field4,Oats&pea] =
0*Zn_Uptake[Field4,Oats&pea]*Harvest_time
Zn_harvested_barley_and_straw[Field4,LeyI] =
0*Zn_Uptake[Field4,LeyI]*Harvest_time
Zn_harvested_barley_and_straw[Field4,LeyII] =
0*Zn_Uptake[Field4,LeyII]*Harvest_time
Zn_harvested_barley_and_straw[Field4,LeyIII] =
0*Zn_Uptake[Field4,LeyIII]*Harvest_time
Zn_harvested_barley_and_straw[Field4,Barley] = IF(Harvest_time>0)
THEN(PULSE(Zn_Uptake[Field4,Barley]))ELSE(0)
Zn_harvested_barley_and_straw[Field4,Potato] =
0*Zn_Uptake[Field4,Potato]*Harvest_time
Zn_harvested_barley_and_straw[Field5,Oats&pea] =
0*Zn_Uptake[Field5,Oats&pea]*Harvest_time
Zn_harvested_barley_and_straw[Field5,LeyI] =
0*Zn_Uptake[Field5,LeyI]*Harvest_time
Zn_harvested_barley_and_straw[Field5,LeyII] =
0*Zn_Uptake[Field5,LeyII]*Harvest_time
Zn_harvested_barley_and_straw[Field5,LeyIII] =
0*Zn_Uptake[Field5,LeyIII]*Harvest_time
Zn_harvested_barley_and_straw[Field5,Barley] = IF(Harvest_time>0)
THEN(PULSE(Zn_Uptake[Field5,Barley]))ELSE(0)
Zn_harvested_barley_and_straw[Field5,Potato] =
0*Zn_Uptake[Field5,Potato]*Harvest_time
Zn_harvested_barley_and_straw[Field6,Oats&pea] =
0*Zn_Uptake[Field6,Oats&pea]*Harvest_time
Zn_harvested_barley_and_straw[Field6,LeyI] =
0*Zn_Uptake[Field6,LeyI]*Harvest_time
Zn_harvested_barley_and_straw[Field6,LeyII] =
0*Zn_Uptake[Field6,LeyII]*Harvest_time
Zn_harvested_barley_and_straw[Field6,LeyIII] =
0*Zn_Uptake[Field6,LeyIII]*Harvest_time
Zn_harvested_barley_and_straw[Field6,Barley] = IF(Harvest_time>0)
THEN(PULSE(Zn_Uptake[Field6,Barley]))ELSE(0)
Zn_harvested_barley_and_straw[Field6,Potato] =
0*Zn_Uptake[Field6,Potato]*Harvest_time
Zn_harvested_potato[Field1,Oats&pea] =
0*Zn_Uptake[Field1,Oats&pea]*Harvest_time
Zn_harvested_potato[Field1,LeyI] = 0*Zn_Uptake[Field1,LeyI]*Harvest_time
Zn_harvested_potato[Field1,LeyII] = 0*Zn_Uptake[Field1,LeyII]*Harvest_time
Zn_harvested_potato[Field1,LeyIII] =
0*Zn_Uptake[Field1,LeyIII]*Harvest_time
```

```
Zn_harvested_potato[Field1,Barley] =
0*Zn_Uptake[Field1,Barley]*Harvest_time
Zn_harvested_potato[Field1,Potato] = IF (Harvest_time>0) THEN
(PULSE(Zn_Uptake[Field1,Potato])) ELSE (0)
Zn_harvested_potato[Field2,Oats&pea] =
0*Zn_Uptake[Field2,Oats&pea]*Harvest_time
Zn_harvested_potato[Field2,LeyI] = 0*Zn_Uptake[Field2,LeyI]*Harvest_time
Zn_harvested_potato[Field2,LeyII] = 0*Zn_Uptake[Field2,LeyII]*Harvest_time
Zn_harvested_potato[Field2,LeyIII] =
0*Zn_Uptake[Field2,LeyIII]*Harvest_time
Zn_harvested_potato[Field2,Barley] =
0*Zn_Uptake[Field2,Barley]*Harvest_time
Zn_harvested_potato[Field2,Potato] = IF (Harvest_time>0) THEN
(PULSE(Zn_Uptake[Field2,Potato])) ELSE (0)
Zn_harvested_potato[Field3,Oats&pea] =
0*Zn_Uptake[Field3,Oats&pea]*Harvest_time
Zn_harvested_potato[Field3,LeyI] = 0*Zn_Uptake[Field3,LeyI]*Harvest_time
Zn_harvested_potato[Field3,LeyII] = 0*Zn_Uptake[Field3,LeyII]*Harvest_time
Zn_harvested_potato[Field3,LeyIII] =
0*Zn_Uptake[Field3,LeyIII]*Harvest_time
Zn_harvested_potato[Field3,Barley] =
0*Zn_Uptake[Field3,Barley]*Harvest_time
Zn_harvested_potato[Field3,Potato] = IF (Harvest_time>0) THEN
(PULSE(Zn_Uptake[Field3,Potato])) ELSE (0)
Zn_harvested_potato[Field4,Oats&pea] =
0*Zn_Uptake[Field4,Oats&pea]*Harvest_time
Zn_harvested_potato[Field4,LeyI] = 0*Zn_Uptake[Field4,LeyI]*Harvest_time
Zn_harvested_potato[Field4,LeyII] = 0*Zn_Uptake[Field4,LeyII]*Harvest_time
Zn_harvested_potato[Field4,LeyIII] =
0*Zn_Uptake[Field4,LeyIII]*Harvest_time
Zn_harvested_potato[Field4,Barley] =
0*Zn_Uptake[Field4,Barley]*Harvest_time
Zn_harvested_potato[Field4,Potato] = IF (Harvest_time>0) THEN
(PULSE(Zn_Uptake[Field4,Potato])) ELSE (0)
Zn_harvested_potato[Field5,Oats&pea] =
0*Zn_Uptake[Field5,Oats&pea]*Harvest_time
Zn_harvested_potato[Field5,LeyI] = 0*Zn_Uptake[Field5,LeyI]*Harvest_time
Zn_harvested_potato[Field5,LeyII] = 0*Zn_Uptake[Field5,LeyII]*Harvest_time
Zn_harvested_potato[Field5,LeyIII] =
0*Zn_Uptake[Field5,LeyIII]*Harvest_time
Zn_harvested_potato[Field5,Barley] =
0*Zn_Uptake[Field5,Barley]*Harvest_time
Zn_harvested_potato[Field5,Potato] = IF (Harvest_time>0) THEN
(PULSE(Zn_Uptake[Field5,Potato])) ELSE (0)
Zn_harvested_potato[Field6,Oats&pea] =
0*Zn_Uptake[Field6,Oats&pea]*Harvest_time
Zn_harvested_potato[Field6,LeyI] = 0*Zn_Uptake[Field6,LeyI]*Harvest_time
Zn_harvested_potato[Field6,LeyII] = 0*Zn_Uptake[Field6,LeyII]*Harvest_time
Zn_harvested_potato[Field6,LeyIII] =
0*Zn_Uptake[Field6,LeyIII]*Harvest_time
```

```
Zn_harvested_potato[Field6,Barley] =
0*Zn_Uptake[Field6,Barley]*Harvest_time
Zn_harvested_potato[Field6,Potato] = IF (Harvest_time>0) THEN
(PULSE(Zn_Uptake[Field6,Potato])) ELSE (0)
Zn_Urine_tank(t) = Zn_Urine_tank(t - dt) + (Zn_i_urine - Emptying
ofav_urine tank_Zn) * dt
INIT Zn_Urine_tank = 2500
Zn_i_urine = (Urine_amount*Zn_conc_urine*Cows)+(0*Zn_in_exported_animals)
Emptying ofav_urine tank_Zn = IF(Time_for_manure_application>0) THEN
(PULSE(Zn_Urine_tank)) ELSE (0)
Amount_of_Seeds[Field1,Oats&pea] = 229
Amount_of_Seeds[Field1,LeyI] = 30
Amount_of_Seeds[Field1,LeyII] = 0
Amount_of_Seeds[Field1,LeyIII] = 0
Amount_of_Seeds[Field1,Barley] = 143
Amount_of_Seeds[Field1,Potato] = 265
Amount_of_Seeds[Field2,Oats&pea] = 229
Amount_of_Seeds[Field2,LeyI] = 30
Amount_of_Seeds[Field2,LeyII] = 0
Amount_of_Seeds[Field2,LeyIII] = 0
Amount_of_Seeds[Field2,Barley] = 143
Amount_of_Seeds[Field2,Potato] = 265
Amount_of_Seeds[Field3,Oats&pea] = 229
Amount_of_Seeds[Field3,LeyI] = 30
Amount_of_Seeds[Field3,LeyII] = 0
Amount_of_Seeds[Field3,LeyIII] = 0
Amount_of_Seeds[Field3,Barley] = 143
Amount_of_Seeds[Field3,Potato] = 265
Amount_of_Seeds[Field4,Oats&pea] = 229
Amount_of_Seeds[Field4,LeyI] = 30
Amount_of_Seeds[Field4,LeyII] = 0
Amount_of_Seeds[Field4,LeyIII] = 0
Amount_of_Seeds[Field4,Barley] = 143
Amount_of_Seeds[Field4,Potato] = 265
Amount_of_Seeds[Field5,Oats&pea] = 229
Amount_of_Seeds[Field5,LeyI] = 30
Amount_of_Seeds[Field5,LeyII] = 0
Amount_of_Seeds[Field5,LeyIII] = 0
Amount_of_Seeds[Field5,Barley] = 143
Amount_of_Seeds[Field5,Potato] = 265
Amount_of_Seeds[Field6,Oats&pea] = 229
Amount_of_Seeds[Field6,LeyI] = 30
Amount_of_Seeds[Field6,LeyII] = 0
Amount_of_Seeds[Field6,LeyIII] = 0
Amount_of_Seeds[Field6,Barley] = 143
Amount_of_Seeds[Field6,Potato] = 265
Average_weight_csubsoiles = NORMAL(122,12)
Average_weight_cow = NORMAL(670,67)
Average_weight_haifer = NORMAL(520,52)
Barley_grain_Cd = Cows*0.005
```

```
Bulkdensity[Field1] = 2059362
Bulkdensity[Field2] = 2714015
Bulkdensity[Field3] = 2135054
Bulkdensity[Field4] = 2293291
Bulkdensity[Field5] = 2762859
Bulkdensity[Field6] = 2990889
Cashflowbalance_mg_Cd_per_ha = (Cashflow_balans/Total_acreage)*1000
Cashflowbalance_mg_Cd_per_ton_milk = (Cashflow_balans/
(Milk_production*Cows/1000))*1000
Cashflow_balans = IF (Tid_för_årsummering_av_Cd_flöden>0) THEN (Bought_Cd-
Sold_Cd) ELSE (0)
cCd_conc_urine = NORMAL(0.00005,0.00001)
Cd_accumulation_field_1 =
Adsorbed_Cd_Subsoil[Field1]+Adsorbed_Cd_Topsoil[Field1]+Cd_Plant_available_
Subsoil[Field1]+Cd_Plant_available_Topsoil[Field1]-0.2625-0.111-202-70-55
Cd_accumulation_field_2 =
Adsorbed_Cd_Subsoil[Field2]+Adsorbed_Cd_Topsoil[Field2]+Cd_Plant_available_
Subsoil[Field2]+Cd_Plant_available_Topsoil[Field2]-0.2625-0.111-261-123-84
Cd_accumulation_field_3 =
Adsorbed_Cd_Subsoil[Field3]+Adsorbed_Cd_Topsoil[Field3]+Cd_Plant_available_
Subsoil[Field3]+Cd_Plant_available_Topsoil[Field3]-0.2625-0.111-180-99-80
Cd_accumulation_field_4 =
Adsorbed_Cd_Subsoil[Field4]+Adsorbed_Cd_Topsoil[Field4]+Cd_Plant_available_
Subsoil[Field4]+Cd_Plant_available_Topsoil[Field4]-0.2625-0.111-263-144-89
Cd_accumulation_field_5 =
Adsorbed_Cd_Subsoil[Field5]+Adsorbed_Cd_Topsoil[Field5]+Cd_Plant_available_
Subsoil[Field5]+Cd_Plant_available_Topsoil[Field5]-0.2625-0.111-328-112-169
Cd_accumulation_field_6 =
Adsorbed_Cd_Subsoil[Field6]+Adsorbed_Cd_Topsoil[Field6]+Cd_Plant_available_
Subsoil[Field6]+Cd_Plant_available_Topsoil[Field6]-0.2625-0.111-239-100-113
Cd_Ack_Adsorbed_subsoil[Field1] = Adsorbed_Cd_Subsoil[Field1]-132000-116000
Cd_Ack_Adsorbed_subsoil[Field2] = Adsorbed_Cd_Subsoil[Field2]-116000-96000
Cd_Ack_Adsorbed_subsoil[Field3] = Adsorbed_Cd_Subsoil[Field3]-128908-126241
Cd_Ack_Adsorbed_subsoil[Field4] = Adsorbed_Cd_Subsoil[Field4]-99000-91000
Cd_Ack_Adsorbed_subsoil[Field5] = Adsorbed_Cd_Subsoil[Field5]-163838-206873
Cd_Ack_Adsorbed_subsoil[Field6] = Adsorbed_Cd_Subsoil[Field6]-78000-96000
Cd_Ack_Adsorbed_topsoil[Field1] = Adsorbed_Cd_Topsoil[Field1]-98000
Cd_Ack_Adsorbed_topsoil[Field2] = Adsorbed_Cd_Topsoil[Field2]-99000
Cd_Ack_Adsorbed_topsoil[Field3] = Adsorbed_Cd_Topsoil[Field3]-74160
Cd_Ack_Adsorbed_topsoil[Field4] = Adsorbed_Cd_Topsoil[Field4]-76000
Cd_Ack_Adsorbed_topsoil[Field5] = Adsorbed_Cd_Topsoil[Field5]-109100
Cd_Ack_Adsorbed_topsoil[Field6] = Adsorbed_Cd_Topsoil[Field6]-79000
Cd_Ack_Plant_available_subsoil[Field] = Cd_Plant_available_Subsoil[Field]-6
Cd_Ack_Plant_available_topsoil[Field] = Cd_Plant_available_Topsoil[Field]-4
Cd_AdsSubsoil_microg_per_kg_soil[Field] =
Cd_Ads_Subsoil_g_per_kg_soil[Field]*1000000
Cd_Ads_Subsoil_g_per_kg_soil[Field] = (Adsorbed_Cd_Subsoil[Field]/
Bulkdensity[Field])
Cd_Ads_Matj_g_per_kg_jord[Field] = (Adsorbed_Cd_Topsoil[Field]/
Bulkdensity[Field])
```

```
Cd_Ads_Matj_mikrog_per_kg_jord[Field] =
Cd_Ads_Matj_g_per_kg_jord[Field]*1000000
Cd_Besprutningsstrategi[Field1,Oats&pea] =
Crop_rotation_6_years[Field1,Oats&pea]*0
Cd_Besprutningsstrategi[Field1,LeyI] = Crop_rotation_6_years[Field1,LeyI]*0
Cd_Besprutningsstrategi[Field1,LeyII] =
Crop_rotation_6_years[Field1,LeyII]*0
Cd_Besprutningsstrategi[Field1,LeyIII] =
Crop_rotation_6_years[Field1,LeyIII]*0
Cd_Besprutningsstrategi[Field1,Barley] =
Crop_rotation_6_years[Field1,Barley]*0
Cd_Besprutningsstrategi[Field1,Potato] =
Crop_rotation_6_years[Field1,Potato]*0
Cd_Besprutningsstrategi[Field2,Oats&pea] =
Crop_rotation_6_years[Field2,Oats&pea]*0
Cd_Besprutningsstrategi[Field2,LeyI] = Crop_rotation_6_years[Field2,LeyI]*0
Cd_Besprutningsstrategi[Field2,LeyII] =
Crop_rotation_6_years[Field2,LeyII]*0
Cd_Besprutningsstrategi[Field2,LeyIII] =
Crop_rotation_6_years[Field2,LeyIII]*0
Cd_Besprutningsstrategi[Field2,Barley] =
Crop_rotation_6_years[Field2,Barley]*0
Cd_Besprutningsstrategi[Field2,Potato] =
Crop_rotation_6_years[Field2,Potato]*0
Cd_Besprutningsstrategi[Field3,Oats&pea] =
Crop_rotation_6_years[Field3,Oats&pea]*0
Cd_Besprutningsstrategi[Field3,LeyI] = Crop_rotation_6_years[Field3,LeyI]*0
Cd_Besprutningsstrategi[Field3,LeyII] =
Crop_rotation_6_years[Field3,LeyII]*0
Cd_Besprutningsstrategi[Field3,LeyIII] =
Crop_rotation_6_years[Field3,LeyIII]*0
Cd_Besprutningsstrategi[Field3,Barley] =
Crop_rotation_6_years[Field3,Barley]*0
Cd_Besprutningsstrategi[Field3,Potato] =
Crop_rotation_6_years[Field3,Potato]*0
Cd_Besprutningsstrategi[Field4,Oats&pea] =
Crop_rotation_6_years[Field4,Oats&pea]*0
Cd_Besprutningsstrategi[Field4,LeyI] = Crop_rotation_6_years[Field4,LeyI]*0
Cd_Besprutningsstrategi[Field4,LeyII] =
Crop_rotation_6_years[Field4,LeyII]*0
Cd_Besprutningsstrategi[Field4,LeyIII] =
Crop_rotation_6_years[Field4,LeyIII]*0
Cd_Besprutningsstrategi[Field4,Barley] =
Crop_rotation_6_years[Field4,Barley]*0
Cd_Besprutningsstrategi[Field4,Potato] =
Crop_rotation_6_years[Field4,Potato]*0
Cd_Besprutningsstrategi[Field5,Oats&pea] =
Crop_rotation_6_years[Field5,Oats&pea]*0
Cd_Besprutningsstrategi[Field5,LeyI] = Crop_rotation_6_years[Field5,LeyI]*0
Cd_Besprutningsstrategi[Field5,LeyII] =
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Crop_rotation_6_years[Field5,LeyII]*0
Cd_Besprutningsstrategi[Field5,LeyIII] =
Crop_rotation_6_years[Field5,LeyIII]*0
Cd_Besprutningsstrategi[Field5,Barley] =
Crop_rotation_6_years[Field5,Barley]*0
Cd_Besprutningsstrategi[Field5,Potato] =
Crop_rotation_6_years[Field5,Potato]*0
Cd_Besprutningsstrategi[Field6,Oats&pea] =
Crop_rotation_6_years[Field6,Oats&pea]*0
Cd_Besprutningsstrategi[Field6,LeyI] = Crop_rotation_6_years[Field6,LeyI]*0
Cd_Besprutningsstrategi[Field6,LeyII] =
Crop_rotation_6_years[Field6,LeyII]*0
Cd_Besprutningsstrategi[Field6,LeyIII] =
Crop_rotation_6_years[Field6,LeyIII]*0
Cd_Besprutningsstrategi[Field6,Barley] =
Crop_rotation_6_years[Field6,Barley]*0
Cd_Besprutningsstrategi[Field6,Potato] =
Crop_rotation_6_years[Field6,Potato]*0
Cd_conc_barley = NORMAL(0.00001,0.000001)
Cd_conc_beetpulp = NORMAL(0.000200,0.000020)
Cd_conc_crop[Field1,Oats&pea] = NORMAL(0.00003,0.00002)
Cd_conc_crop[Field1,LeyI] = NORMAL(0.00003,0.00001)
Cd_conc_crop[Field1,LeyII] = NORMAL(0.00003,0.00001)
Cd_conc_crop[Field1,LeyIII] = NORMAL(0.00004,0.00002)
Cd_conc_crop[Field1,Barley] = NORMAL(0.00001,0.000001)
Cd_conc_crop[Field1,Potato] = NORMAL(0.00005,0.00002)
Cd_conc_crop[Field2,Oats&pea] = NORMAL(0.00003,0.00002)
Cd_conc_crop[Field2,LeyI] = NORMAL(0.00003,0.00001)
Cd_conc_crop[Field2,LeyII] = NORMAL(0.00003,0.00001)
Cd_conc_crop[Field2,LeyIII] = NORMAL(0.00004,0.00002)
Cd_conc_crop[Field2,Barley] = NORMAL(0.00001,0.000001)
Cd_conc_crop[Field2,Potato] = NORMAL(0.00005,0.00002)
Cd_conc_crop[Field3,Oats&pea] = NORMAL(0.00003,0.00002)
Cd_conc_crop[Field3,LeyI] = NORMAL(0.00003,0.00001)
Cd_conc_crop[Field3,LeyII] = NORMAL(0.00003,0.00001)
Cd_conc_crop[Field3,LeyIII] = NORMAL(0.00004,0.00002)
Cd_conc_crop[Field3,Barley] = NORMAL(0.00001,0.000001)
Cd_conc_crop[Field3,Potato] = NORMAL(0.00005,0.00002)
Cd_conc_crop[Field4,Oats&pea] = NORMAL(0.00003,0.00002)
Cd_conc_crop[Field4,LeyI] = NORMAL(0.00003,0.00001)
Cd_conc_crop[Field4,LeyII] = NORMAL(0.00003,0.00001)
Cd_conc_crop[Field4,LeyIII] = NORMAL(0.00004,0.00002)
Cd_conc_crop[Field4,Barley] = NORMAL(0.00001,0.000001)
Cd_conc_crop[Field4,Potato] = NORMAL(0.00005,0.00002)
Cd_conc_crop[Field5,Oats&pea] = NORMAL(0.00003,0.00002)
Cd_conc_crop[Field5,LeyI] = NORMAL(0.00003,0.00001)
Cd_conc_crop[Field5,LeyII] = NORMAL(0.00003,0.00001)
Cd_conc_crop[Field5,LeyIII] = NORMAL(0.00004,0.00002)
Cd_conc_crop[Field5,Barley] = NORMAL(0.00001,0.000001)
Cd_conc_crop[Field5,Potato] = NORMAL(0.00005,0.00002)
```

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Cd_conc_crop[Field6,Oats&pea] = NORMAL(0.00003,0.00002)
Cd_conc_crop[Field6,LeyI] = NORMAL(0.00003,0.00001)
Cd_conc_crop[Field6,LeyII] = NORMAL(0.00003,0.00001)
Cd_conc_crop[Field6,LeyIII] = NORMAL(0.00004,0.00002)
Cd_conc_crop[Field6,Barley] = NORMAL(0.00001,0.000001)
Cd_conc_crop[Field6,Potato] = NORMAL(0.00005,0.00002)
Cd_conc_liveweight = NORMAL(0.00000066,0.000000066)
Cd_conc_milk = NORMAL(0.000001, 0.0000001)
Cd_conc_mineral_concentrate = NORMAL(0.000152,0.000015)
Cd_conc_N28 = NORMAL(0.0000225,0.0000175)
Cd_conc_NPK = NORMAL(0.000135,0.000005)
Cd_conc_sawdust = NORMAL(0.000050,0.0000025)
Cd_conc_silage = NORMAL(0.000035,0.000005)
Cd_conc_topsoil_microgram_per_liter[Field] =
Cd_Topsoil_Conc_g_per_dm3[Field]*1000000
Cd_conc_water = NORMAL(0.00000001,0.000000001)
Cd_Cropbalances_Cropwise[Crop] = ARRAYSUM(Cd_Field_balances[*,Crop])
Cd_Deposition[Field,Crop] =
Crop_rotation_6_years[Field,Crop]*Cd_deposition_per_ha
Cd_deposition_per_ha = NORMAL(0.34,0.04)
Cd_Deposition_total = Total_acreage*(NORMAL(0.34,0.04))
Cd_efficiency = Time_for_emptying_of_bought_and_sold_Cd*(Outflow_of_Cd/
Inflow_of_Cd)*100
Cd_Field1_urine_minfert =
ARRAYSUM(Cd_Urine_spreadning_per_ha[Field1,*])+ARRAYSUM(Cd_Mineral_Fertilis
er_Application[Field1,*])
Cd_Fieldbalances_Fieldwise[Field] = ARRAYSUM(Cd_Field_balances[Field,*])
Cd_Fieldwise_contribution_to_total_losses[Field] =
IF(Tid_för_årsummering_av_Cd_flöden>0) THEN
((Sum_of_Cd_losses_fieldwise_times_field_size[Field]/
Cd_Total_Losses_from_farm)*100)ELSE (0)
Cd_Fieldwise_Crop_balances[Field,Crop] =
IF(Tid_för_årsummering_av_Cd_flöden>0) THEN
(Cd_Inflows_to_crop_balances[Field,Crop]-
Cd_output_cropbalances[Field,Crop]) ELSE (0)
Cd_Fieldwise_fertilisation_per_ha_and_y[Field] =
IF(Tid_för_årsummering_av_Cd_flöden>0) THEN
(ARRAYSUM(Cd_Manure_Sum[Field,*])) ELSE (0)
Cd_Fieldwise_Uptake_Subsoil[Field] = ARRAYSUM(Cd_Uptake_Subsoil[Field,*])
Cd_Field_1_Manure_Seeds_Dep_Pesticide =
ARRAYSUM(Cd_Solid_manure_application_per_ha[Field1,*])+ARRAYSUM(Cd_Deposition[Field1,*])+ARRAYSUM(Cd_Seeds[Field1,*])+ARRAYSUM(Cd_Pesticid[Field1,*])+
ARRAYSUM(Cd_Lime[Field1,*])
Cd_Field_2_Manure_Seeds_Dep_Pesticide =
ARRAYSUM(Cd_Solid_manure_application_per_ha[Field2,*])+ARRAYSUM(Cd_Deposition[Field2,*])+ARRAYSUM(Cd_Seeds[Field2,*])+ARRAYSUM(Cd_Pesticid[Field2,*])+
ARRAYSUM(Cd_Lime[Field2,*])
Cd_Field_2_urine_minfert =
ARRAYSUM(Cd_Urine_spreadning_per_ha[Field2,*])+ARRAYSUM(Cd_Mineral_Fertilis
er_Application[Field2,*])
```

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Cd_Field_3_Manure_Seeds_Dep_Pesticide =
ARRAYSUM(Cd_Solid_manure_application_per_ha[Field3,*])+ARRAYSUM(Cd_Deposition[Field3,*])+ARRAYSUM(Cd_Seeds[Field3,*])+ARRAYSUM(Cd_Pesticid[Field3,*])+ARRAYSUM(Cd_Lime[Field3,*])
Cd_Field_3_urine_minfert =
ARRAYSUM(Cd_Urine_spreadning_per_ha[Field3,*])+ARRAYSUM(Cd_Mineral_Fertiliser_Application[Field3,*])
Cd_Field_4_Manure_Seeds_Dep_Pesticide =
ARRAYSUM(Cd_Solid_manure_application_per_ha[Field4,*])+ARRAYSUM(Cd_Deposition[Field4,*])+ARRAYSUM(Cd_Seeds[Field4,*])+ARRAYSUM(Cd_Pesticid[Field4,*])+ARRAYSUM(Cd_Lime[Field4,*])
Cd_Field_4_urine_minfert =
ARRAYSUM(Cd_Urine_spreadning_per_ha[Field4,*])+ARRAYSUM(Cd_Mineral_Fertiliser_Application[Field4,*])
Cd_Field_5_Manure_Utsäde_Dep_Pesticide =
ARRAYSUM(Cd_Solid_manure_application_per_ha[Field5,*])+ARRAYSUM(Cd_Deposition[Field5,*])+ARRAYSUM(Cd_Seeds[Field5,*])+ARRAYSUM(Cd_Pesticid[Field5,*])+ARRAYSUM(Cd_Lime[Field5,*])
Cd_Field_5_urine_minfert =
ARRAYSUM(Cd_Urine_spreadning_per_ha[Field5,*])+ARRAYSUM(Cd_Mineral_Fertiliser_Application[Field5,*])
Cd_Field_6_Manure_Seeds_Dep_Pesticide =
ARRAYSUM(Cd_Solid_manure_application_per_ha[Field6,*])+ARRAYSUM(Cd_Deposition[Field6,*])+ARRAYSUM(Cd_Seeds[Field6,*])+ARRAYSUM(Cd_Pesticid[Field6,*])+ARRAYSUM(Cd_Lime[Field6,*])
Cd_Field_6_urine_minfert =
ARRAYSUM(Cd_Urine_spreadning_per_ha[Field6,*])+ARRAYSUM(Cd_Mineral_Fertiliser_Application[Field6,*])
Cd_Field_balances[Field,Crop] = IF(Tid_för_årsummering_av_Cd_flöden>0) THEN (Cd_Inflows_to_crop_balances[Field,Crop]-
Cd_output_fieldbalances[Field,Crop]) ELSE (0)
Cd_Flows_passing_Farmgate =
Sum_of_Cd_Seeds_Total+Cd_Beetpulp+Cd_Potato_Export+Cd_Mineral_and_concentrate+Cd_Simulated_Barley_Import+Cd_in_csubsoiles+Cd_in_milk+Cd_in_slaughter+Cd_Sawdust+Sum_of_mineral_fertiliser_use+Cd_in_heifers+Sum_of_Cd_Pesticide_use+Sum_of_Cd_lime_use
Cd_homegrown_feeds = Cd_Total_barley_requirements-
Cd_Simulated_Barley_Import
Cd_Ideal_uptake[Field,Crop] =
Cd_target_uptake[Field,Crop]*Crop_rotation_6_years[Field,Crop]*2.3
Cd_internal_flows =
Cd_homegrown_feeds+Cd_silage+Cd_in_manure+Cd_in_urine+Cd_Deposition_total+Cd_Total_loss_from_all_fields+Cd_Straw
Cd_Kd_Subsoil = RANDOM(200,1000)
Cd_Kd_Topsoil = RANDOM(500,1700)
Cd_conc_Lime = NORMAL(0.000125,0.000025)
Cd_conc_subsoil_microgram_per_liter[Field] =
Cd_Subsoil_Conc_g_per_dm3[Field]*1000000
Cd_leaching_crop_rotation[Field,Crop] =
Cd_Leaching_Subsoil[Field]*Crop_rotation_6_years[Field,Crop]
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Cd_losses_crop_rotation[Field,Crop] =
Cd_Sum_of_losses[Field]*Crop_rotation_6_years[Field,Crop]
Cd_Manure_Matrix[Field,Crop] =
Crop_rotation_6_years[Field,Crop]*Fertilisation_strategy_manure_Cd[Crop]
Cd_Manure_Seeds_Deposition_Pesticide_Fieldwise[Field1] =
Cd_Field_1_Manure_Seeds_Dep_Pesticide+(0*Cd_Field_2_Manure_Seeds_Dep_Pestic
ide*Cd_Field_3_Manure_Seeds_Dep_Pesticide*Cd_Field_4_Manure_Seeds_Dep_Pesti
cide*Cd_Field_5_Manure_Utsäde_Dep_Pesticide*Cd_Field_6_Manure_Seeds_Dep_Pes
ticide)
Cd_Manure_Seeds_Deposition_Pesticide_Fieldwise[Field2] =
Cd_Field_2_Manure_Seeds_Dep_Pesticide+(0*Cd_Field_1_Manure_Seeds_Dep_Pestic
ide*Cd_Field_3_Manure_Seeds_Dep_Pesticide*Cd_Field_4_Manure_Seeds_Dep_Pesti
cide*Cd_Field_5_Manure_Utsäde_Dep_Pesticide*Cd_Field_6_Manure_Seeds_Dep_Pes
ticide)
Cd_Manure_Seeds_Deposition_Pesticide_Fieldwise[Field3] =
Cd_Field_3_Manure_Seeds_Dep_Pesticide+(0*Cd_Field_2_Manure_Seeds_Dep_Pestic
ide*Cd_Field_1_Manure_Seeds_Dep_Pesticide*Cd_Field_4_Manure_Seeds_Dep_Pesti
cide*Cd_Field_5_Manure_Utsäde_Dep_Pesticide*Cd_Field_6_Manure_Seeds_Dep_Pes
ticide)
Cd_Manure_Seeds_Deposition_Pesticide_Fieldwise[Field4] =
Cd_Field_4_Manure_Seeds_Dep_Pesticide+(0*Cd_Field_2_Manure_Seeds_Dep_Pestic
ide*Cd_Field_3_Manure_Seeds_Dep_Pesticide*Cd_Field_1_Manure_Seeds_Dep_Pesti
cide*Cd_Field_5_Manure_Utsäde_Dep_Pesticide*Cd_Field_6_Manure_Seeds_Dep_Pes
ticide)
Cd_Manure_Seeds_Deposition_Pesticide_Fieldwise[Field5] =
Cd_Field_5_Manure_Utsäde_Dep_Pesticide+(0*Cd_Field_2_Manure_Seeds_Dep_Pesti
cide*Cd_Field_3_Manure_Seeds_Dep_Pesticide*Cd_Field_4_Manure_Seeds_Dep_Pest
icide*Cd_Field_1_Manure_Seeds_Dep_Pesticide*Cd_Field_6_Manure_Seeds_Dep_Pes
ticide)
Cd_Manure_Seeds_Deposition_Pesticide_Fieldwise[Field6] =
Cd_Field_6_Manure_Seeds_Dep_Pesticide+(0*Cd_Field_2_Manure_Seeds_Dep_Pestic
ide*Cd_Field_3_Manure_Seeds_Dep_Pesticide*Cd_Field_4_Manure_Seeds_Dep_Pesti
cide*Cd_Field_5_Manure_Utsäde_Dep_Pesticide*Cd_Field_1_Manure_Seeds_Dep_Pes
ticide)
Cd_Medelförluster_per_hektar = IF(Tid_för_årsummering_av_Cd_flöden>0) THEN
(Cd_Total_Losses_from_farm/Total_acreage) ELSE (0)
Cd_mineral_fertilisation_matrix[Field1,Oats&pea] =
0*Mineral_fertiliser_application[Field1,Oats&pea]*Crop_rotation_6_years[Fie
ld1,Oats&pea]*Cd_conc_NPK*Cd_conc_N28
Cd_mineral_fertilisation_matrix[Field1,LeyI] =
(Mineral_fertiliser_application[Field1,LeyI]*Crop_rotation_6_years[Field1,L
eyI]*Cd_conc_N28)+(0*Cd_conc_NPK)
Cd_mineral_fertilisation_matrix[Field1,LeyII] =
(Mineral_fertiliser_application[Field1,LeyII]*Crop_rotation_6_years[Field1,
LeyII]*Cd_conc_N28)+(0*Cd_conc_NPK)
Cd_mineral_fertilisation_matrix[Field1,LeyIII] =
(Mineral_fertiliser_application[Field1,LeyIII]*Crop_rotation_6_years[Field1
,LeyIII]*Cd_conc_N28)+(0*Cd_conc_NPK)
Cd_mineral_fertilisation_matrix[Field1,Barley] =
Mineral_fertiliser_application[Field1,Barley]*Crop_rotation_6_years[Field1,
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Barley]*Cd_conc_NPK*Cd_conc_N28
Cd_mineral_fertilisation_matrix[Field1,Potato] =
(Mineral_fertiliser_application[Field1,Potato]*Crop_rotation_6_years[Field1
,Potato]*Cd_conc_NPK)+(0*Cd_conc_N28)
Cd_mineral_fertilisation_matrix[Field2,Oats&pea] =
0*Mineral_fertiliser_application[Field2,Oats&pea]*Crop_rotation_6_years[Fie
ld2,Oats&pea]*Cd_conc_NPK*Cd_conc_N28
Cd_mineral_fertilisation_matrix[Field2,LeyI] =
(Mineral_fertiliser_application[Field2,LeyI]*Crop_rotation_6_years[Field2,L
eyI]*Cd_conc_N28)+(0*Cd_conc_NPK)
Cd_mineral_fertilisation_matrix[Field2,LeyII] =
(Mineral_fertiliser_application[Field2,LeyII]*Crop_rotation_6_years[Field2,
LeyII]*Cd_conc_N28)+(0*Cd_conc_NPK)
Cd_mineral_fertilisation_matrix[Field2,LeyIII] =
(Mineral_fertiliser_application[Field2,LeyIII]*Crop_rotation_6_years[Field2
,LeyIII]*Cd_conc_N28)+(0*Cd_conc_NPK)
Cd_mineral_fertilisation_matrix[Field2,Barley] =
Mineral_fertiliser_application[Field2,Barley]*Crop_rotation_6_years[Field2,
Barley]*Cd_conc_NPK*Cd_conc_N28
Cd_mineral_fertilisation_matrix[Field2,Potato] =
(Mineral_fertiliser_application[Field2,Potato]*Crop_rotation_6_years[Field2
,Potato]*Cd_conc_NPK)+(0*Cd_conc_N28)
Cd_mineral_fertilisation_matrix[Field3,Oats&pea] =
0*Mineral_fertiliser_application[Field3,Oats&pea]*Crop_rotation_6_years[Fie
ld3,Oats&pea]*Cd_conc_NPK*Cd_conc_N28
Cd_mineral_fertilisation_matrix[Field3,LeyI] =
(Mineral_fertiliser_application[Field3,LeyI]*Crop_rotation_6_years[Field3,L
eyI]*Cd_conc_N28)+(0*Cd_conc_NPK)
Cd_mineral_fertilisation_matrix[Field3,LeyII] =
(Mineral_fertiliser_application[Field3,LeyII]*Crop_rotation_6_years[Field3,
LeyII]*Cd_conc_N28)+(0*Cd_conc_NPK)
Cd_mineral_fertilisation_matrix[Field3,LeyIII] =
(Mineral_fertiliser_application[Field3,LeyIII]*Crop_rotation_6_years[Field3
,LeyIII]*Cd_conc_N28)+(0*Cd_conc_NPK)
Cd_mineral_fertilisation_matrix[Field3,Barley] =
Mineral_fertiliser_application[Field3,Barley]*Crop_rotation_6_years[Field3,
Barley]*Cd_conc_NPK*Cd_conc_N28
Cd_mineral_fertilisation_matrix[Field3,Potato] =
(Mineral_fertiliser_application[Field3,Potato]*Crop_rotation_6_years[Field3
,Potato]*Cd_conc_NPK)+(0*Cd_conc_N28)
Cd_mineral_fertilisation_matrix[Field4,Oats&pea] =
0*Mineral_fertiliser_application[Field4,Oats&pea]*Crop_rotation_6_years[Fie
ld4,Oats&pea]*Cd_conc_NPK*Cd_conc_N28
Cd_mineral_fertilisation_matrix[Field4,LeyI] =
(Mineral_fertiliser_application[Field4,LeyI]*Crop_rotation_6_years[Field4,L
eyI]*Cd_conc_N28)+(0*Cd_conc_NPK)
Cd_mineral_fertilisation_matrix[Field4,LeyII] =
(Mineral_fertiliser_application[Field4,LeyII]*Crop_rotation_6_years[Field4,
LeyII]*Cd_conc_N28)+(0*Cd_conc_NPK)
Cd_mineral_fertilisation_matrix[Field4,LeyIII] =
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(Mineral_fertiliser_application[Field4,LeyIII]*Crop_rotation_6_years[Field4
,LeyIII]*Cd_conc_N28)+(0*Cd_conc_NPK)
Cd_mineral_fertilisation_matrix[Field4,Barley] =
Mineral_fertiliser_application[Field4,Barley]*Crop_rotation_6_years[Field4,
Barley]*Cd_conc_NPK*Cd_conc_N28
Cd_mineral_fertilisation_matrix[Field4,Potato] =
(Mineral_fertiliser_application[Field4,Potato]*Crop_rotation_6_years[Field4
,Potato]*Cd_conc_NPK)+(0*Cd_conc_N28)
Cd_mineral_fertilisation_matrix[Field5,Oats&pea] =
0*Mineral_fertiliser_application[Field5,Oats&pea]*Crop_rotation_6_years[Fie
ld5,Oats&pea]*Cd_conc_NPK*Cd_conc_N28
Cd_mineral_fertilisation_matrix[Field5,LeyI] =
(Mineral_fertiliser_application[Field5,LeyI]*Crop_rotation_6_years[Field5,L
eyI]*Cd_conc_N28)+(0*Cd_conc_NPK)
Cd_mineral_fertilisation_matrix[Field5,LeyII] =
(Mineral_fertiliser_application[Field5,LeyII]*Crop_rotation_6_years[Field5,
LeyII]*Cd_conc_N28)+(0*Cd_conc_NPK)
Cd_mineral_fertilisation_matrix[Field5,LeyIII] =
(Mineral_fertiliser_application[Field5,LeyIII]*Crop_rotation_6_years[Field5
,LeyIII]*Cd_conc_N28)+(0*Cd_conc_NPK)
Cd_mineral_fertilisation_matrix[Field5,Barley] =
Mineral_fertiliser_application[Field5,Barley]*Crop_rotation_6_years[Field5,
Barley]*Cd_conc_NPK*Cd_conc_N28
Cd_mineral_fertilisation_matrix[Field5,Potato] =
(Mineral_fertiliser_application[Field5,Potato]*Crop_rotation_6_years[Field5
,Potato]*Cd_conc_NPK)+(0*Cd_conc_N28)
Cd_mineral_fertilisation_matrix[Field6,Oats&pea] =
0*Mineral_fertiliser_application[Field6,Oats&pea]*Crop_rotation_6_years[Fie
ld6,Oats&pea]*Cd_conc_NPK*Cd_conc_N28
Cd_mineral_fertilisation_matrix[Field6,LeyI] =
(Mineral_fertiliser_application[Field6,LeyI]*Crop_rotation_6_years[Field6,L
eyI]*Cd_conc_N28)+(0*Cd_conc_NPK)
Cd_mineral_fertilisation_matrix[Field6,LeyII] =
(Mineral_fertiliser_application[Field6,LeyII]*Crop_rotation_6_years[Field6,
LeyII]*Cd_conc_N28)+(0*Cd_conc_NPK)
Cd_mineral_fertilisation_matrix[Field6,LeyIII] =
(Mineral_fertiliser_application[Field6,LeyIII]*Crop_rotation_6_years[Field6
,LeyIII]*Cd_conc_N28)+(0*Cd_conc_NPK)
Cd_mineral_fertilisation_matrix[Field6,Barley] =
Mineral_fertiliser_application[Field6,Barley]*Crop_rotation_6_years[Field6,
Barley]*Cd_conc_NPK*Cd_conc_N28
Cd_mineral_fertilisation_matrix[Field6,Potato] =
(Mineral_fertiliser_application[Field6,Potato]*Crop_rotation_6_years[Field6
,Potato]*Cd_conc_NPK)+(0*Cd_conc_N28)
Cd_Mineral_Fertiliser_Application[Field,Crop] =
Cd_Mineral_fertiliser_flow[Field,Crop]
Cd_percent_internal_flows_compared_to_cashflows =
Time_for_emptying_of_bought_and_sold_Cd*(Cd_internal_flows/
(Cd_Flows_passing_Farmgate+Cd_internal_flows))*100
Cd_runoff_crop_rotation[Field,Crop] =
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Cd_Loss_Runoff[Field]*Crop_rotation_6_years[Field,Crop]
Cd_Subsoil_Conc_g_per_dm3[Field] = Cd_Plant_available_Subsoil[Field]/
(Water_in_subsoil*1000)
Cd_Sum_array_barley = ARRAYSUM(Cd_Barley_per_ha_to_total[*,*])
Cd_Sum_array_ley_1 = ARRAYSUM(Cd_Hay_per_ha_to_total[*,LeyI])
Cd_Sum_array_ley_2 = ARRAYSUM(Cd_Hay_per_ha_to_total[*,LeyII])
Cd_Sum_array_ley_3 = ARRAYSUM(Cd_Hay_per_ha_to_total[*,LeyIII])
Cd_Sum_array_oats&pea = ARRAYSUM(Cd_Oats&Peas_per_ha_to_total[*,Oats&pea])
Cd_Sum_array_oats&peaonpotatofield =
ARRAYSUM(Cd_oats&peaonpotatofield[*,Potato])
Cd_Sum_array_potato = ARRAYSUM(Potato_per_ha_to_total[*,*])
Cd_Sum_of_Fertilisation_I = ARRAYSUM(Utgödsling_I[*,*])
Cd_Sum_of_Fertilisation_II = ARRAYSUM(Cd_Fertilisation_II[*,*])
Cd_Sum_of_inflow_to_silage_tower =
Cd_Sum_array_oats&peaonpotatofield+Cd_Sum_array_oats&pea+Cd_Sum_array_ley_1
+Cd_Sum_array_ley_2+Cd_Sum_array_ley_3
Cd_Sum_of_losses[Field] = Cd_Leaching_Subsoil[Field]+Cd_Loss_Runoff[Field]
Cd_target_uptake[Field,Crop] =
Cd_conc_crop[Field,Crop]*Harvest_Crop[Field,Crop]
Cd_Topsoil_Conc_g_per_dm3[Field] = Cd_Plant_available_Topsoil[Field]/
(Water_in_topsoil*1000)
Cd_Total_loss_from_all_fields =
Total_acreage*ARRAYMEAN(Total_Cd_loss_g_per_field[*])
Cd_Total_ackumulation_per_tot_ha = IF(Tid_för_årsummering_av_Cd_flöden>0)
THEN
((Cd_Tot_ack_Field_1+Cd_Tot_ack_Field_2+Cd_Tot_ack_Field_3+Cd_Tot_ack_Field
_4+Cd_Tot_ack_Field_5+Cd_Tot_ack_Field_6)/Total_acreage) ELSE (0)
Cd_Total_barley_requirements = Feeding_of_barley*Cd_conc_barley*Cows
Cd_Total_Losses_from_farm =
ARRAYSUM(Sum_of_Cd_losses_fieldwise_times_field_size[*])
Cd_Tot_ack_Field_1 = Cd_accumulation_field_1*5.82
Cd_Tot_ack_Field_2 = Cd_accumulation_field_2*6.22
Cd_Tot_ack_Field_3 = Cd_accumulation_field_3*7.75
Cd_Tot_ack_Field_4 = Cd_accumulation_field_4*6.30
Cd_Tot_ack_Field_5 = Cd_accumulation_field_5*7.35
Cd_Tot_ack_Field_6 = Cd_accumulation_field_6*5.38
Cd_Upptag_subsoil_per_Field[Field1] =
Field_1_Uptake_Cd_subsoil+(0*Field_2_Uptake_Cd_subsoil*Field_3_Upptag_Cd_Su
bsoil*Field_4_Upptag_Cd_Subsoil*Field_5_Upptag_Cd_Subsoil*Field_6_Upptag_Cd
_Subsoil)
Cd_Upptag_subsoil_per_Field[Field2] =
Field_2_Uptake_Cd_subsoil+(0*Field_1_Uptake_Cd_subsoil*Field_3_Upptag_Cd_Su
bsoil*Field_4_Upptag_Cd_Subsoil*Field_5_Upptag_Cd_Subsoil*Field_6_Upptag_Cd
_Subsoil)
Cd_Upptag_subsoil_per_Field[Field3] =
Field_3_Upptag_Cd_Subsoil+(0*Field_1_Uptake_Cd_subsoil*Field_2_Uptake_Cd_su
bsoil*Field_4_Upptag_Cd_Subsoil*Field_5_Upptag_Cd_Subsoil*Field_6_Upptag_Cd
_Subsoil)
Cd_Upptag_subsoil_per_Field[Field4] =
Field_4_Upptag_Cd_Subsoil+(0*Field_1_Uptake_Cd_subsoil*Field_2_Uptake_Cd_su
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bsoil*Field_3_Upptag_Cd_Subsoil*Field_5_Upptag_Cd_Subsoil*Field_6_Upptag_Cd
_Subsoil)
Cd_Upptag_subsoil_per_Field[Field5] =
Field_5_Upptag_Cd_Subsoil+(0*Field_1_Uptake_Cd_subsoil*Field_2_Uptake_Cd_su
bsoil*Field_3_Upptag_Cd_Subsoil*Field_4_Upptag_Cd_Subsoil*Field_6_Upptag_Cd
_Subsoil)
Cd_Upptag_subsoil_per_Field[Field6] =
Field_6_Upptag_Cd_Subsoil+(0*Field_1_Uptake_Cd_subsoil*Field_2_Uptake_Cd_su
bsoil*Field_3_Upptag_Cd_Subsoil*Field_4_Upptag_Cd_Subsoil*Field_5_Upptag_Cd
_Subsoil)
Cd_upptag_Fieldvis[Field] =
Cd_Upptag_topsoil_per_Field[Field]+Cd_Upptag_subsoil_per_Field[Field]
Cd_Upptag_topsoil_per_Field[Field1] =
Field_1_Upptag_Cd_Topsoil+(0*Field_2_Upptag_Cd_Topsoil*Field_3_Upptag_Cd_To
psoil*Field_4_Upptag_Cd_Topsoil*Field_5_Upptag_Cd_Topsoil*Field_6_Upptag_Cd
_Topsoil)
Cd_Upptag_topsoil_per_Field[Field2] =
Field_2_Upptag_Cd_Topsoil+(0*Field_1_Upptag_Cd_Topsoil*Field_3_Upptag_Cd_To
psoil*Field_4_Upptag_Cd_Topsoil*Field_5_Upptag_Cd_Topsoil*Field_6_Upptag_Cd
_Topsoil)
Cd_Upptag_topsoil_per_Field[Field3] =
Field_3_Upptag_Cd_Topsoil+(0*Field_1_Upptag_Cd_Topsoil*Field_2_Upptag_Cd_To
psoil*Field_4_Upptag_Cd_Topsoil*Field_5_Upptag_Cd_Topsoil*Field_6_Upptag_Cd
_Topsoil)
Cd_Upptag_topsoil_per_Field[Field4] =
Field_4_Upptag_Cd_Topsoil+(0*Field_1_Upptag_Cd_Topsoil*Field_2_Upptag_Cd_To
psoil*Field_3_Upptag_Cd_Topsoil*Field_5_Upptag_Cd_Topsoil*Field_6_Upptag_Cd
_Topsoil)
Cd_Upptag_topsoil_per_Field[Field5] =
Field_5_Upptag_Cd_Topsoil+(0*Field_1_Upptag_Cd_Topsoil*Field_2_Upptag_Cd_To
psoil*Field_3_Upptag_Cd_Topsoil*Field_4_Upptag_Cd_Topsoil*Field_6_Upptag_Cd
_Topsoil)
Cd_Upptag_topsoil_per_Field[Field6] =
Field_6_Upptag_Cd_Topsoil+(0*Field_1_Upptag_Cd_Topsoil*Field_2_Upptag_Cd_To
psoil*Field_3_Upptag_Cd_Topsoil*Field_4_Upptag_Cd_Topsoil*Field_5_Upptag_Cd
_Topsoil)
Cd_UptakeDrive[Field,Crop] =
IF(Uptaken_Cd[Field,Crop]<Cd_target_uptake[Field,Crop]) THEN (1) ELSE (0)
Cd_Urinematris[Field,Crop] =
Crop_rotation_6_years[Field,Crop]*Fertilisation_strategy_Urine_Cd[Crop]
Cd_Urine_MinFert_Fieldwise[Field1] =
Cd_Field1_urine_minfert+(0*Cd_Field_2_urine_minfert*Cd_Field_3_urine_minfer
t*Cd_Field_4_urine_minfert*Cd_Field_5_urine_minfert*Cd_Field_6_urine_minfer
t)
Cd_Urine_MinFert_Fieldwise[Field2] =
Cd_Field_2_urine_minfert+(0*Cd_Field1_urine_minfert*Cd_Field_3_urine_minfer
t*Cd_Field_4_urine_minfert*Cd_Field_5_urine_minfert*Cd_Field_6_urine_minfer
t)
Cd_Urine_MinFert_Fieldwise[Field3] =
Cd_Field_3_urine_minfert+(0*Cd_Field_2_urine_minfert*Cd_Field1_urine_minfer
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t*Cd_Field_4_urine_minfert*Cd_Field_5_urine_minfert*Cd_Field_6_urine_minfer
t)
Cd_Urine_MinFert_Fieldwise[Field4] =
Cd_Field_4_urine_minfert+(0*Cd_Field1_urine_minfert*Cd_Field_2_urine_minfer
t*Cd_Field_3_urine_minfert*Cd_Field_5_urine_minfert*Cd_Field_6_urine_minfer
t)
Cd_Urine_MinFert_Fieldwise[Field5] =
Cd_Field_5_urine_minfert+(0*Cd_Field_2_urine_minfert*Cd_Field_3_urine_minfe
rt*Cd_Field_4_urine_minfert*Cd_Field1_urine_minfert*Cd_Field_6_urine_minfer
t)
Cd_Urine_MinFert_Fieldwise[Field6] =
Cd_Field_6_urine_minfert+(0*Cd_Field_2_urine_minfert*Cd_Field_3_urine_minfe
rt*Cd_Field_4_urine_minfert*Cd_Field_5_urine_minfert*Cd_Field1_urine_minfer
t)
Cd_var_dep[Field] = IF(Tid_för_årsummering_av_Cd_flöden>0) THEN
(1*Cd_Sum_deposition[Field]) ELSE (0)
Cd_var_harvest[Field] = IF(Tid_för_årsummering_av_Cd_flöden>0) THEN
(1*Cd_Sum_harvest[Field]) ELSE (0)
Cd_var_leaching[Field] = IF(Tid_för_årsummering_av_Cd_flöden>0) THEN
(1*Sum_Cd_leaching_2[Field]) ELSE (0)
Cd_var_lime[Field] = IF(Tid_för_årsummering_av_Cd_flöden>0) THEN
(1*Cd_Sum_lime[Field]) ELSE (0)
Cd_var_losses[Field] = IF(Tid_för_årsummering_av_Cd_flöden>0) THEN
(1*Cd_Sum_losses[Field]) ELSE (0)
Cd_var_manure[Field] = IF(Tid_för_årsummering_av_Cd_flöden>0) THEN
(1*Sum_Cd_manure[Field]) ELSE(0)
Cd_var_minfert[Field] = IF(Tid_för_årsummering_av_Cd_flöden>0) THEN
(1*Cd_Sum_minfert[Field]) ELSE (0)
Cd_var_runoff[Field] = IF(Tid_för_årsummering_av_Cd_flöden>0) THEN
(1*Cd_Sum_runoff_2[Field]) ELSE (0)
Cd_var_seeds[Field] = IF(Tid_för_årsummering_av_Cd_flöden>0) THEN
(1*Cd_Sum_seeds[Field]) ELSE (0)
Cd_var_urine[Field] = IF(Tid_för_årsummering_av_Cd_flöden>0) THEN
(1*Sum_Cd_urine[Field]) ELSE(0)
Compare_storage_to_requirements = (P_Silage_tower/P_Fed_in_Silage)
Crop_matrix_year_1[Field1,Oats&pea] = 1
Crop_matrix_year_1[Field1,LeyI] = 0
Crop_matrix_year_1[Field1,LeyII] = 0
Crop_matrix_year_1[Field1,LeyIII] = 0
Crop_matrix_year_1[Field1,Barley] = 0
Crop_matrix_year_1[Field1,Potato] = 0
Crop_matrix_year_1[Field2,Oats&pea] = 0
Crop_matrix_year_1[Field2,LeyI] = 0
Crop_matrix_year_1[Field2,LeyII] = 0
Crop_matrix_year_1[Field2,LeyIII] = 0
Crop_matrix_year_1[Field2,Barley] = 0
Crop_matrix_year_1[Field2,Potato] = 1
Crop_matrix_year_1[Field3,Oats&pea] = 0
Crop_matrix_year_1[Field3,LeyI] = 0
Crop_matrix_year_1[Field3,LeyII] = 0
```

```
Crop_matrix_year_1[Field3,LeyIII] = 0
Crop_matrix_year_1[Field3,Barley] = 1
Crop_matrix_year_1[Field3,Potato] = 0
Crop_matrix_year_1[Field4,Oats&pea] = 0
Crop_matrix_year_1[Field4,LeyI] = 0
Crop_matrix_year_1[Field4,LeyII] = 0
Crop_matrix_year_1[Field4,LeyIII] = 1
Crop_matrix_year_1[Field4,Barley] = 0
Crop_matrix_year_1[Field4,Potato] = 0
Crop_matrix_year_1[Field5,Oats&pea] = 0
Crop_matrix_year_1[Field5,LeyI] = 0
Crop_matrix_year_1[Field5,LeyII] = 1
Crop_matrix_year_1[Field5,LeyIII] = 0
Crop_matrix_year_1[Field5,Barley] = 0
Crop_matrix_year_1[Field5,Potato] = 0
Crop_matrix_year_1[Field6,Oats&pea] = 0
Crop_matrix_year_1[Field6,LeyI] = 1
Crop_matrix_year_1[Field6,LeyII] = 0
Crop_matrix_year_1[Field6,LeyIII] = 0
Crop_matrix_year_1[Field6,Barley] = 0
Crop_matrix_year_1[Field6,Potato] = 0
Crop_matrix_year_2[Field1,Oats&pea] = 0
Crop_matrix_year_2[Field1,LeyI] = 1
Crop_matrix_year_2[Field1,LeyII] = 0
Crop_matrix_year_2[Field1,LeyIII] = 0
Crop_matrix_year_2[Field1,Barley] = 0
Crop_matrix_year_2[Field1,Potato] = 0
Crop_matrix_year_2[Field2,Oats&pea] = 1
Crop_matrix_year_2[Field2,LeyI] = 0
Crop_matrix_year_2[Field2,LeyII] = 0
Crop_matrix_year_2[Field2,LeyIII] = 0
Crop_matrix_year_2[Field2,Barley] = 0
Crop_matrix_year_2[Field2,Potato] = 0
Crop_matrix_year_2[Field3,Oats&pea] = 0
Crop_matrix_year_2[Field3,LeyI] = 0
Crop_matrix_year_2[Field3,LeyII] = 0
Crop_matrix_year_2[Field3,LeyIII] = 0
Crop_matrix_year_2[Field3,Barley] = 0
Crop_matrix_year_2[Field3,Potato] = 1
Crop_matrix_year_2[Field4,Oats&pea] = 0
Crop_matrix_year_2[Field4,LeyI] = 0
Crop_matrix_year_2[Field4,LeyII] = 0
Crop_matrix_year_2[Field4,LeyIII] = 0
Crop_matrix_year_2[Field4,Barley] = 1
Crop_matrix_year_2[Field4,Potato] = 0
Crop_matrix_year_2[Field5,Oats&pea] = 0
Crop_matrix_year_2[Field5,LeyI] = 0
Crop_matrix_year_2[Field5,LeyII] = 0
Crop_matrix_year_2[Field5,LeyIII] = 1
Crop_matrix_year_2[Field5,Barley] = 0
```

```
Crop_matrix_year_2[Field5,Potato] = 0
Crop_matrix_year_2[Field6,Oats&pea] = 0
Crop_matrix_year_2[Field6,LeyI] = 0
Crop_matrix_year_2[Field6,LeyII] = 1
Crop_matrix_year_2[Field6,LeyIII] = 0
Crop_matrix_year_2[Field6,Barley] = 0
Crop_matrix_year_2[Field6,Potato] = 0
Crop_matrix_year_3[Field1,Oats&pea] = 0
Crop_matrix_year_3[Field1,LeyI] = 0
Crop_matrix_year_3[Field1,LeyII] = 1
Crop_matrix_year_3[Field1,LeyIII] = 0
Crop_matrix_year_3[Field1,Barley] = 0
Crop_matrix_year_3[Field1,Potato] = 0
Crop_matrix_year_3[Field2,Oats&pea] = 0
Crop_matrix_year_3[Field2,LeyI] = 1
Crop_matrix_year_3[Field2,LeyII] = 0
Crop_matrix_year_3[Field2,LeyIII] = 0
Crop_matrix_year_3[Field2,Barley] = 0
Crop_matrix_year_3[Field2,Potato] = 0
Crop_matrix_year_3[Field3,Oats&pea] = 1
Crop_matrix_year_3[Field3,LeyI] = 0
Crop_matrix_year_3[Field3,LeyII] = 0
Crop_matrix_year_3[Field3,LeyIII] = 0
Crop_matrix_year_3[Field3,Barley] = 0
Crop_matrix_year_3[Field3,Potato] = 0
Crop_matrix_year_3[Field4,Oats&pea] = 0
Crop_matrix_year_3[Field4,LeyI] = 0
Crop_matrix_year_3[Field4,LeyII] = 0
Crop_matrix_year_3[Field4,LeyIII] = 0
Crop_matrix_year_3[Field4,Barley] = 0
Crop_matrix_year_3[Field4,Potato] = 1
Crop_matrix_year_3[Field5,Oats&pea] = 0
Crop_matrix_year_3[Field5,LeyI] = 0
Crop_matrix_year_3[Field5,LeyII] = 0
Crop_matrix_year_3[Field5,LeyIII] = 0
Crop_matrix_year_3[Field5,Barley] = 1
Crop_matrix_year_3[Field5,Potato] = 0
Crop_matrix_year_3[Field6,Oats&pea] = 0
Crop_matrix_year_3[Field6,LeyI] = 0
Crop_matrix_year_3[Field6,LeyII] = 0
Crop_matrix_year_3[Field6,LeyIII] = 1
Crop_matrix_year_3[Field6,Barley] = 0
Crop_matrix_year_3[Field6,Potato] = 0
Crop_matrix_year_4[Field1,Oats&pea] = 0
Crop_matrix_year_4[Field1,LeyI] = 0
Crop_matrix_year_4[Field1,LeyII] = 0
Crop_matrix_year_4[Field1,LeyIII] = 1
Crop_matrix_year_4[Field1,Barley] = 0
Crop_matrix_year_4[Field1,Potato] = 0
Crop_matrix_year_4[Field2,Oats&pea] = 0
```

```
Crop_matrix_year_4[Field2,LeyI] = 0
Crop_matrix_year_4[Field2,LeyII] = 1
Crop_matrix_year_4[Field2,LeyIII] = 0
Crop_matrix_year_4[Field2,Barley] = 0
Crop_matrix_year_4[Field2,Potato] = 0
Crop_matrix_year_4[Field3,Oats&pea] = 0
Crop_matrix_year_4[Field3,LeyI] = 1
Crop_matrix_year_4[Field3,LeyII] = 0
Crop_matrix_year_4[Field3,LeyIII] = 0
Crop_matrix_year_4[Field3,Barley] = 0
Crop_matrix_year_4[Field3,Potato] = 0
Crop_matrix_year_4[Field4,Oats&pea] = 1
Crop_matrix_year_4[Field4,LeyI] = 0
Crop_matrix_year_4[Field4,LeyII] = 0
Crop_matrix_year_4[Field4,LeyIII] = 0
Crop_matrix_year_4[Field4,Barley] = 0
Crop_matrix_year_4[Field4,Potato] = 0
Crop_matrix_year_4[Field5,Oats&pea] = 0
Crop_matrix_year_4[Field5,LeyI] = 0
Crop_matrix_year_4[Field5,LeyII] = 0
Crop_matrix_year_4[Field5,LeyIII] = 0
Crop_matrix_year_4[Field5,Barley] = 0
Crop_matrix_year_4[Field5,Potato] = 1
Crop_matrix_year_4[Field6,Oats&pea] = 0
Crop_matrix_year_4[Field6,LeyI] = 0
Crop_matrix_year_4[Field6,LeyII] = 0
Crop_matrix_year_4[Field6,LeyIII] = 0
Crop_matrix_year_4[Field6,Barley] = 1
Crop_matrix_year_4[Field6,Potato] = 0
Crop_matrix_year_5[Field1,Oats&pea] = 0
Crop_matrix_year_5[Field1,LeyI] = 0
Crop_matrix_year_5[Field1,LeyII] = 0
Crop_matrix_year_5[Field1,LeyIII] = 0
Crop_matrix_year_5[Field1,Barley] = 1
Crop_matrix_year_5[Field1,Potato] = 0
Crop_matrix_year_5[Field2,Oats&pea] = 0
Crop_matrix_year_5[Field2,LeyI] = 0
Crop_matrix_year_5[Field2,LeyII] = 0
Crop_matrix_year_5[Field2,LeyIII] = 1
Crop_matrix_year_5[Field2,Barley] = 0
Crop_matrix_year_5[Field2,Potato] = 0
Crop_matrix_year_5[Field3,Oats&pea] = 0
Crop_matrix_year_5[Field3,LeyI] = 0
Crop_matrix_year_5[Field3,LeyII] = 1
Crop_matrix_year_5[Field3,LeyIII] = 0
Crop_matrix_year_5[Field3,Barley] = 0
Crop_matrix_year_5[Field3,Potato] = 0
Crop_matrix_year_5[Field4,Oats&pea] = 0
Crop_matrix_year_5[Field4,LeyI] = 1
Crop_matrix_year_5[Field4,LeyII] = 0
```

```
Crop_matrix_year_5[Field4,LeyIII] = 0
Crop_matrix_year_5[Field4,Barley] = 0
Crop_matrix_year_5[Field4,Potato] = 0
Crop_matrix_year_5[Field5,Oats&pea] = 1
Crop_matrix_year_5[Field5,LeyI] = 0
Crop_matrix_year_5[Field5,LeyII] = 0
Crop_matrix_year_5[Field5,LeyIII] = 0
Crop_matrix_year_5[Field5,Barley] = 0
Crop_matrix_year_5[Field5,Potato] = 0
Crop_matrix_year_5[Field6,Oats&pea] = 0
Crop_matrix_year_5[Field6,LeyI] = 0
Crop_matrix_year_5[Field6,LeyII] = 0
Crop_matrix_year_5[Field6,LeyIII] = 0
Crop_matrix_year_5[Field6,Barley] = 0
Crop_matrix_year_5[Field6,Potato] = 1
Crop_matrix_year_6[Field1,Oats&pea] = 0
Crop_matrix_year_6[Field1,LeyI] = 0
Crop_matrix_year_6[Field1,LeyII] = 0
Crop_matrix_year_6[Field1,LeyIII] = 0
Crop_matrix_year_6[Field1,Barley] = 0
Crop_matrix_year_6[Field1,Potato] = 1
Crop_matrix_year_6[Field2,Oats&pea] = 0
Crop_matrix_year_6[Field2,LeyI] = 0
Crop_matrix_year_6[Field2,LeyII] = 0
Crop_matrix_year_6[Field2,LeyIII] = 0
Crop_matrix_year_6[Field2,Barley] = 1
Crop_matrix_year_6[Field2,Potato] = 0
Crop_matrix_year_6[Field3,Oats&pea] = 0
Crop_matrix_year_6[Field3,LeyI] = 0
Crop_matrix_year_6[Field3,LeyII] = 0
Crop_matrix_year_6[Field3,LeyIII] = 1
Crop_matrix_year_6[Field3,Barley] = 0
Crop_matrix_year_6[Field3,Potato] = 0
Crop_matrix_year_6[Field4,Oats&pea] = 0
Crop_matrix_year_6[Field4,LeyI] = 0
Crop_matrix_year_6[Field4,LeyII] = 1
Crop_matrix_year_6[Field4,LeyIII] = 0
Crop_matrix_year_6[Field4,Barley] = 0
Crop_matrix_year_6[Field4,Potato] = 0
Crop_matrix_year_6[Field5,Oats&pea] = 0
Crop_matrix_year_6[Field5,LeyI] = 1
Crop_matrix_year_6[Field5,LeyII] = 0
Crop_matrix_year_6[Field5,LeyIII] = 0
Crop_matrix_year_6[Field5,Barley] = 0
Crop_matrix_year_6[Field5,Potato] = 0
Crop_matrix_year_6[Field6,Oats&pea] = 1
Crop_matrix_year_6[Field6,LeyI] = 0
Crop_matrix_year_6[Field6,LeyII] = 0
Crop_matrix_year_6[Field6,LeyIII] = 0
Crop_matrix_year_6[Field6,Barley] = 0
```

```
Crop_matrix_year_6[Field6,Potato] = 0
Crop_rotation_6_years[Field,Crop] =
Crop_rotation_part_1[Field,Crop]+Crop_rotation_part_2[Field,Crop]+Crop_rota
tion_part_3[Field,Crop]+Crop_rotation_part_4[Field,Crop]+Crop_rotation_part
_5[Field,Crop]+Crop_rotation_part_6[Field,Crop]
Crop_rotation_count = MOD(Timecount,6)
Crop_rotation_part_1[Field,Crop] = Year_1*Crop_matrix_year_1[Field,Crop]
Crop_rotation_part_2[Field,Crop] = Year_2*Crop_matrix_year_2[Field,Crop]
Crop_rotation_part_3[Field,Crop] = Year_3*Crop_matrix_year_3[Field,Crop]
Crop_rotation_part_4[Field,Crop] = Year_4*Crop_matrix_year_4[Field,Crop]
Crop_rotation_part_5[Field,Crop] = Year_5*Crop_matrix_year_5[Field,Crop]
Crop_rotation_part_6[Field,Crop] = Year_6*Crop_matrix_year_6[Field,Crop]
Fieldvisa_grödbalanser_Zn[Field,Crop] =
IF(Zn_Time_for_summing_up_annual_Zn_flows>0) THEN
(Zn_Sum_of_Inflows_to_crop_balances[Field,Crop]-
Zn_sum_of_outflows_of_crop_balances[Field,Crop]) ELSE (0)
Fieldvis_Zn_bidrag_to_tot_förlust[Field] =
IF(Zn_Time_for_summing_up_annual_Zn_flows>0) THEN
((Zn_Summerade_förluster_Fieldvis_gånger_storlek_på_Field[Field]/
Zn_Totala_förluster_för_gården)*100)ELSE(0)
Field_1_Upptag_Cd_Topsoil =  ARRAYSUM(Cd_Uptake_Topsoil[Field1, *])
Field_1_Upptag_Zn_Subsoil = ARRAYSUM(Zn_Upptag_Subsoil[Field1,*])
Field_1_Upptag_Zn_Topsoil =  ARRAYSUM(Zn_Upptake_Topsoil[Field1, *])
Field_2_Upptag_Cd_Topsoil = ARRAYSUM(Cd_Uptake_Topsoil[Field2,*])
Field_2_Upptag_Zn_Subsoil = ARRAYSUM(Zn_Upptag_Subsoil[Field2,*])
Field_2_Upptag_Zn_Topsoil = ARRAYSUM(Zn_Upptake_Topsoil[Field2,*])
Field_3_Upptag_Cd_Subsoil = ARRAYSUM(Cd_Uptake_Subsoil[Field3,*])
Field_3_Upptag_Cd_Topsoil =  ARRAYSUM(Cd_Uptake_Topsoil[Field3, *])
Field_3_Upptag_Zn_Subsoil = ARRAYSUM(Zn_Upptag_Subsoil[Field3,*])
Field_3_Upptag_Zn_Topsoil =  ARRAYSUM(Zn_Upptake_Topsoil[Field3, *])
Field_4_Upptag_Cd_Subsoil = ARRAYSUM(Cd_Uptake_Subsoil[Field4,*])
Field_4_Upptag_Cd_Topsoil =  ARRAYSUM(Cd_Uptake_Topsoil[Field4, *])
Field_4_Upptag_Zn_Subsoil = ARRAYSUM(Zn_Upptag_Subsoil[Field4,*])
Field_4_Upptag_Zn_Topsoil =  ARRAYSUM(Zn_Upptake_Topsoil[Field4, *])
Field_5_Upptag_Cd_Subsoil = ARRAYSUM(Cd_Uptake_Subsoil[Field5,*])
Field_5_Upptag_Cd_Topsoil =  ARRAYSUM(Cd_Uptake_Topsoil[Field5, *])
Field_5_Upptag_Zn_Subsoil = ARRAYSUM(Zn_Upptag_Subsoil[Field5,*])
Field_5_Upptag_Zn_Topsoil =  ARRAYSUM(Zn_Upptake_Topsoil[Field5, *])
Field_6_Upptag_Cd_Subsoil = ARRAYSUM(Cd_Uptake_Subsoil[Field6,*])
Field_6_Upptag_Cd_Topsoil =  ARRAYSUM(Cd_Uptake_Topsoil[Field6, *])
Field_6_Upptag_Zn_Subsoil = ARRAYSUM(Zn_Upptag_Subsoil[Field6,*])
Field_6_Upptag_Zn_Topsoil =  ARRAYSUM(Zn_Upptake_Topsoil[Field6, *])
Feeding_of_barley = NORMAL(1644,165)
Feeding_of_beetpulp = NORMAL(576,58)
Feeding_of_Cd_silage = Cows*Cd_conc_silage*Feeding_of_silage
Feeding_of_mineral_concentrates = NORMAL(1649,165)
Feeding_of_silage = NORMAL(4059,406)
Fertilisation_strategy_manure_Cd[Oats&pea] = ((1/3)*Emptying ofmanure pad)
Fertilisation_strategy_manure_Cd[LeyI] = 0*Emptying ofmanure pad
Fertilisation_strategy_manure_Cd[LeyII] = 0*Emptying ofmanure pad
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Fertilisation_strategy_manure_Cd[LeyIII] = 0*Emptying ofmanure pad
Fertilisation_strategy_manure_Cd[Barley] = ((1/3)*Emptying ofmanure pad)
Fertilisation_strategy_manure_Cd[Potato] = ((1/3)*Emptying ofmanure pad)
Fertilisation_strategy_Urine_Cd[Oats&pea] = 0.25*Emptying_of_Cd_urine_tank
Fertilisation_strategy_Urine_Cd[LeyI] = 0*Emptying_of_Cd_urine_tank
Fertilisation_strategy_Urine_Cd[LeyII] = 0.25*Emptying_of_Cd_urine_tank
Fertilisation_strategy_Urine_Cd[LeyIII] = 0.5*Emptying_of_Cd_urine_tank
Fertilisation_strategy_Urine_Cd[Barley] = 0*Emptying_of_Cd_urine_tank
Fertilisation_strategy_Urine_Cd[Potato] = 0*Emptying_of_Cd_urine_tank
Fertilisation_strategy_urine_P[Oats&pea] = 0.25*Emptying_of_P_urine_tank_P
Fertilisation_strategy_urine_P[LeyI] = 0*Emptying_of_P_urine_tank_P
Fertilisation_strategy_urine_P[LeyII] = 0.25*Emptying_of_P_urine_tank_P
Fertilisation_strategy_urine_P[LeyIII] = 0.5*Emptying_of_P_urine_tank_P
Fertilisation_strategy_urine_P[Barley] = 0*Emptying_of_P_urine_tank_P
Fertilisation_strategy_urine_P[Potato] = 0*Emptying_of_P_urine_tank_P
Field_1_Manure_Seeds_Dep_Pesticid_Zn =
ARRAYSUM(Zn_Manure_spreading_per_ha[Field1,*])+ARRAYSUM(Zn_Deposition[Field
1,*])+ARRAYSUM(Zn_seeds[Field1,*])+ARRAYSUM(Zn_Pesticide[Field1,*])+ARRAYSU
M(Zn_Lime[Field1,*])
Field_1_Uptake_Cd_subsoil = ARRAYSUM(Cd_Uptake_Subsoil[Field1,*])
Field_2_Manure_Seeds_Dep_Pesticid_Zn =
ARRAYSUM(Zn_Manure_spreading_per_ha[Field2,*])+ARRAYSUM(Zn_Deposition[Field
2,*])+ARRAYSUM(Zn_seeds[Field2,*])+ARRAYSUM(Zn_Pesticide[Field2,*])+ARRAYSU
M(Zn_Lime[Field2,*])
Field_2_Uptake_Cd_subsoil = ARRAYSUM(Cd_Uptake_Subsoil[Field2,*])
Field_3_Manure_Seeds_Dep__Pesticid_Zn =
ARRAYSUM(Zn_Manure_spreading_per_ha[Field3,*])+ARRAYSUM(Zn_Deposition[Field
3,*])+ARRAYSUM(Zn_seeds[Field3,*])+ARRAYSUM(Zn_Pesticide[Field3,*])+ARRAYSU
M(Zn_Lime[Field3,*])
Field_4_Manure_Seeds_DepPesticid_Zn =
ARRAYSUM(Zn_Manure_spreading_per_ha[Field4,*])+ARRAYSUM(Zn_Deposition[Field
4,*])+ARRAYSUM(Zn_seeds[Field4,*])+ARRAYSUM(Zn_Pesticide[Field4,*])+ARRAYSU
M(Zn_Lime[Field4,*])
Field_5_Manure_Seeds_Dep_Pesticid_Zn =
ARRAYSUM(Zn_Manure_spreading_per_ha[Field5,*])+ARRAYSUM(Zn_Deposition[Field
5,*])+ARRAYSUM(Zn_seeds[Field5,*])+ARRAYSUM(Zn_Pesticide[Field5,*])+ARRAYSU
M(Zn_Lime[Field5,*])
Field_6_Manure_Seeds_Dep_Pesticid_Zn =
ARRAYSUM(Zn_Manure_spreading_per_ha[Field6,*])+ARRAYSUM(Zn_Deposition[Field
6,*])+ARRAYSUM(Zn_seeds[Field6,*])+ARRAYSUM(Zn_Pesticide[Field6,*])+ARRAYSU
M(Zn_Lime[Field6,*])
Flöden_som_passerar_gårdsgrinden_3 =
Sum_of_Zn_seeds_Total+Zn_Beetpulp+Zn_potato_export+Zn_Minerals_and_concentr
ates+Zn_Simulated_barley_import+Zn_in_csubsoiles+Zn_in_milk+Zn_in_exported_
animals+Zn_Sawdust+Summerad_konstgödselanvändning_Zn+Zn_in_heifers+Zn_Summe
rad_Pesticidanvändning+Zn_Summerad_Limeanvändning
Harvest_Crop[Field1,Oats&pea] = NORMAL(3348,569)
Harvest_Crop[Field1,LeyI] = NORMAL(8850,1327)
Harvest_Crop[Field1,LeyII] = NORMAL(7822,1173)
Harvest_Crop[Field1,LeyIII] = NORMAL(6938,1041)
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```
Harvest_Crop[Field1,Barley] = NORMAL(3170,634)
Harvest_Crop[Field1,Potato] = NORMAL(3736,374)
Harvest_Crop[Field2,Oats&pea] = NORMAL(3348,569)
Harvest_Crop[Field2,LeyI] = NORMAL(8850,1327)
Harvest_Crop[Field2,LeyII] = NORMAL(7822,1173)
Harvest_Crop[Field2,LeyIII] = NORMAL(6938,1041)
Harvest_Crop[Field2,Barley] = NORMAL(3170,634)
Harvest_Crop[Field2,Potato] = NORMAL(3736,374)
Harvest_Crop[Field3,Oats&pea] = NORMAL(3348,569)
Harvest_Crop[Field3,LeyI] = NORMAL(8850,1327)
Harvest_Crop[Field3,LeyII] = NORMAL(7822,1173)
Harvest_Crop[Field3,LeyIII] = NORMAL(6938,1041)
Harvest_Crop[Field3,Barley] = NORMAL(3170,634)
Harvest_Crop[Field3,Potato] = NORMAL(3736,374)
Harvest_Crop[Field4,Oats&pea] = NORMAL(3348,569)
Harvest_Crop[Field4,LeyI] = NORMAL(8850,1327)
Harvest_Crop[Field4,LeyII] = NORMAL(7822,1173)
Harvest_Crop[Field4,LeyIII] = NORMAL(6938,1041)
Harvest_Crop[Field4,Barley] = NORMAL(3170,634)
Harvest_Crop[Field4,Potato] = NORMAL(3736,374)
Harvest_Crop[Field5,Oats&pea] = NORMAL(3348,569)
Harvest_Crop[Field5,LeyI] = NORMAL(8850,1327)
Harvest_Crop[Field5,LeyII] = NORMAL(7822,1173)
Harvest_Crop[Field5,LeyIII] = NORMAL(6938,1041)
Harvest_Crop[Field5,Barley] = NORMAL(3170,634)
Harvest_Crop[Field5,Potato] = NORMAL(3736,374)
Harvest_Crop[Field6,Oats&pea] = NORMAL(3348,569)
Harvest_Crop[Field6,LeyI] = NORMAL(8850,1327)
Harvest_Crop[Field6,LeyII] = NORMAL(7822,1173)
Harvest_Crop[Field6,LeyIII] = NORMAL(6938,1041)
Harvest_Crop[Field6,Barley] = NORMAL(3170,634)
Harvest_Crop[Field6,Potato] = NORMAL(3736,374)
Imported_grain_Cd = Cows*0.05
Importerat_foder_Zn = Cows*45
Import_sawdust = NORMAL(20000,2000)
Barley_to_barleya_Zn = Cows*12
Lime_amount[Field1,Oats&pea] = NORMAL(3400,340)
Lime_amount[Field1,LeyI] = 0
Lime_amount[Field1,LeyII] = 0
Lime_amount[Field1,LeyIII] = 0
Lime_amount[Field1,Barley] = 0
Lime_amount[Field1,Potato] = 0
Lime_amount[Field2,Oats&pea] = NORMAL(3400,340)
Lime_amount[Field2,LeyI] = 0
Lime_amount[Field2,LeyII] = 0
Lime_amount[Field2,LeyIII] = 0
Lime_amount[Field2,Barley] = 0
Lime_amount[Field2,Potato] = 0
Lime_amount[Field3,Oats&pea] = NORMAL(3400,340)
Lime_amount[Field3,LeyI] = 0
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Lime_amount[Field3,LeyII] = 0
Lime_amount[Field3,LeyIII] = 0
Lime_amount[Field3,Barley] = 0
Lime_amount[Field3,Potato] = 0
Lime_amount[Field4,Oats&pea] = NORMAL(3400,340)
Lime_amount[Field4,LeyI] = 0
Lime_amount[Field4,LeyII] = 0
Lime_amount[Field4,LeyIII] = 0
Lime_amount[Field4,Barley] = 0
Lime_amount[Field4,Potato] = 0
Lime_amount[Field5,Oats&pea] = NORMAL(3400,340)
Lime_amount[Field5,LeyI] = 0
Lime_amount[Field5,LeyII] = 0
Lime_amount[Field5,LeyIII] = 0
Lime_amount[Field5,Barley] = 0
Lime_amount[Field5,Potato] = 0
Lime_amount[Field6,Oats&pea] = NORMAL(3400,340)
Lime_amount[Field6,LeyI] = 0
Lime_amount[Field6,LeyII] = 0
Lime_amount[Field6,LeyIII] = 0
Lime_amount[Field6,Barley] = 0
Lime_amount[Field6,Potato] = 0
Milk_production = NORMAL(9334,933)
Mineral_fertiliser_application[Field1,Oats&pea] = 0
Mineral_fertiliser_application[Field1,LeyI] = NORMAL(571,57)
Mineral_fertiliser_application[Field1,LeyII] = NORMAL(441,41)
Mineral_fertiliser_application[Field1,LeyIII] = NORMAL(361,36)
Mineral_fertiliser_application[Field1,Barley] = 0
Mineral_fertiliser_application[Field1,Potato] = NORMAL(186,19)
Mineral_fertiliser_application[Field2,Oats&pea] = 0
Mineral_fertiliser_application[Field2,LeyI] = NORMAL(571,57)
Mineral_fertiliser_application[Field2,LeyII] = NORMAL(441,41)
Mineral_fertiliser_application[Field2,LeyIII] = NORMAL(361,36)
Mineral_fertiliser_application[Field2,Barley] = 0
Mineral_fertiliser_application[Field2,Potato] = NORMAL(186,19)
Mineral_fertiliser_application[Field3,Oats&pea] = 0
Mineral_fertiliser_application[Field3,LeyI] = NORMAL(571,57)
Mineral_fertiliser_application[Field3,LeyII] = NORMAL(441,41)
Mineral_fertiliser_application[Field3,LeyIII] = NORMAL(361,36)
Mineral_fertiliser_application[Field3,Barley] = 0
Mineral_fertiliser_application[Field3,Potato] = NORMAL(186,19)
Mineral_fertiliser_application[Field4,Oats&pea] = 0
Mineral_fertiliser_application[Field4,LeyI] = NORMAL(571,57)
Mineral_fertiliser_application[Field4,LeyII] = NORMAL(441,41)
Mineral_fertiliser_application[Field4,LeyIII] = NORMAL(361,36)
Mineral_fertiliser_application[Field4,Barley] = 0
Mineral_fertiliser_application[Field4,Potato] = NORMAL(186,19)
Mineral_fertiliser_application[Field5,Oats&pea] = 0
Mineral_fertiliser_application[Field5,LeyI] = NORMAL(571,57)
Mineral_fertiliser_application[Field5,LeyII] = NORMAL(441,41)
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Mineral_fertiliser_application[Field5,LeyIII] = NORMAL(361,36)
Mineral_fertiliser_application[Field5,Barley] = 0
Mineral_fertiliser_application[Field5,Potato] = NORMAL(186,19)
Mineral_fertiliser_application[Field6,Oats&pea] = 0
Mineral_fertiliser_application[Field6,LeyI] = NORMAL(571,57)
Mineral_fertiliser_application[Field6,LeyII] = NORMAL(441,41)
Mineral_fertiliser_application[Field6,LeyIII] = NORMAL(361,36)
Mineral_fertiliser_application[Field6,Barley] = 0
Mineral_fertiliser_application[Field6,Potato] = NORMAL(186,19)
NPK_Pfertilisationappl_per_ha = (NORMAL(186,19))*(NORMAL(70,7))
PAl_topsoil[Field1] = (P_Fast_topsoil[Field1]/2059362)/0.01
PAl_topsoil[Field2] = (P_Fast_topsoil[Field2]/2714015)/0.01
PAl_topsoil[Field3] = (P_Fast_topsoil[Field3]/2391590)/0.01
PAl_topsoil[Field4] = (P_Fast_topsoil[Field4]/2293291)/0.01
PAl_topsoil[Field5] = (P_Fast_topsoil[Field5]/2762859)/0.01
PAl_topsoil[Field6] = (P_Fast_topsoil[Field6]/2990889)/0.01
Percent_self_supply = Time_for_emptying_of_bought_and_sold_Cd*(1-
(Total_Feed_Import/Total_Cd_fed_to_herd))*100
Proportion_Cd_i_barleystraw = (3264*0.000015)/
((2747*0.00001)+(3264*0.000015))
Proportion_P_in_barley_straw = (3264*1.2)/((2747*3.9)+(3264*1.2))
Proportion_Zn_in_straw = (3264*1.2)/((2747*3.9)+(3264*1.2))
P_accumulation_field_1 =
P_Slow_subsoil[Field1]+P_Slow_topsoil[Field1]+P_Fast_subsoil[Field1]+P_Fast
_topsoil[Field1]+P_Växttogängligt_Subsoil[Field1]+P_soil_solution_topsoil[F
ield1]-247123-192665-544529-2574200-3591400-3521300-300
P_accumulation_field_2 =
P_Slow_subsoil[Field2]+P_Slow_topsoil[Field2]+P_Fast_subsoil[Field2]+P_Fast
_topsoil[Field2]+P_Växttogängligt_Subsoil[Field2]+P_soil_solution_topsoil[F
ield2]-244261-207220-141511-2415500-3402800-2718500-300
P_accumulation_field_3 =
P_Slow_subsoil[Field3]+P_Slow_topsoil[Field3]+P_Fast_subsoil[Field3]+P_Fast
_topsoil[Field3]+P_Växttogängligt_Subsoil[Field3]+P_soil_solution_topsoil[F
ield3]-277557-191166-99238-1878800-3637700-3271200-300
P_accumulation_field_4 =
P_Slow_subsoil[Field4]+P_Slow_topsoil[Field4]+P_Fast_subsoil[Field4]+P_Fast
_topsoil[Field4]+P_Växttogängligt_Subsoil[Field4]+P_soil_solution_topsoil[F
ield4]-343994-168535-162018-2476800-2256900-2844300-300
P_accumulation_field_5 =
P_Slow_subsoil[Field5]+P_Slow_topsoil[Field5]+P_Fast_subsoil[Field5]+P_Fast
_topsoil[Field5]+P_Växttogängligt_Subsoil[Field5]+P_soil_solution_topsoil[F
ield5]-265235-195816-135302-2776700-2752000-2918700-300
P_accumulation_field_6 =
P_Slow_subsoil[Field6]+P_Slow_topsoil[Field6]+P_Fast_subsoil[Field6]+P_Fast
_topsoil[Field6]+P_Växttogängligt_Subsoil[Field6]+P_soil_solution_topsoil[F
ield6]-299089-222021-178142-2123500-2112400-2765900-300
P_Acc_Slow_Subsoil[Field1] = P_Slow_subsoil[Field1]-3591400-3521300
P_Acc_Slow_Subsoil[Field2] = P_Slow_subsoil[Field2]-3402800-2718500
P_Acc_Slow_Subsoil[Field3] = P_Slow_subsoil[Field3]-3637700-3271200
P_Acc_Slow_Subsoil[Field4] = P_Slow_subsoil[Field4]-2256900-2844300
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P_Acc_Slow_Subsoil[Field5] = P_Slow_subsoil[Field5]-2752000-2918700
P_Acc_Slow_Subsoil[Field6] = P_Slow_subsoil[Field6]-2112400-2765900
P_Ack_fast_subsoil[Field1] = P_Fast_subsoil[Field1]-192665-544529
P_Ack_fast_subsoil[Field2] = P_Fast_subsoil[Field2]-207220-141511
P_Ack_fast_subsoil[Field3] = P_Fast_subsoil[Field3]-191166-99238
P_Ack_fast_subsoil[Field4] = P_Fast_subsoil[Field4]-168535-162018
P_Ack_fast_subsoil[Field5] = P_Fast_subsoil[Field5]-195816-135302
P_Ack_fast_subsoil[Field6] = P_Fast_subsoil[Field6]-222021-178142
P_Ack_fast_topsoil[Field1] = P_Fast_topsoil[Field1]-247123
P_Ack_fast_topsoil[Field2] = P_Fast_topsoil[Field2]-244261
P_Ack_fast_topsoil[Field3] = P_Fast_topsoil[Field3]-277557
P_Ack_fast_topsoil[Field4] = P_Fast_topsoil[Field4]-343994
P_Ack_fast_topsoil[Field5] = P_Fast_topsoil[Field5]-265235
P_Ack_fast_topsoil[Field6] = P_Fast_topsoil[Field6]-299089
P_Ack_slow_topsoil[Field1] = P_Slow_topsoil[Field1]-2574200
P_Ack_slow_topsoil[Field2] = P_Slow_topsoil[Field2]-2415500
P_Ack_slow_topsoil[Field3] = P_Slow_topsoil[Field3]-1878800
P_Ack_slow_topsoil[Field4] = P_Slow_topsoil[Field4]-2476800
P_Ack_slow_topsoil[Field5] = P_Slow_topsoil[Field5]-2776700
P_Ack_slow_topsoil[Field6] = P_Slow_topsoil[Field6]-2123500
P_Ack_soil_solution_subsoil[Field] = P_Växttogängligt_Subsoil[Field]-100
P_Ack_soil_solution_topsoil[Field] = P_soil_solution_topsoil[Field]-200
P_Barley_fed = Cows*1500
P_Cashflowbalance_kg_per_ha = P_Cashflow_balans/1000/Total_acreage
P_Cashflowbalans_g_per_ton_milk = P_Cashflow_balans/(Milk_production*Cows/
1000)
P_Cashflow_balans = IF (Time_for_summing_the_P_flows>0) THEN (Import_of__P-
Export_of__P) ELSE (0)
P_coeff_binding_slow_topsoil = NORMAL(1000,100)
P_coeff_binidng_slow_subsoil = NORMAL(500000,50000)
P_coeff_binindg_fast_subsoil = NORMAL(500000,50000)
P_coeff__binding_fast_topsoil = NORMAL(100000,10000)
P_conc_barley = NORMAL(3.9,1.1)
P_conc_beetpulp = NORMAL(0.7,0.1)
P_conc_crop[Field1,Oats&pea] = NORMAL(3.7,1)
P_conc_crop[Field1,LeyI] = NORMAL(2.8,0.2)
P_conc_crop[Field1,LeyII] = NORMAL(2.7,0.3)
P_conc_crop[Field1,LeyIII] = NORMAL(2.8,0.3)
P_conc_crop[Field1,Barley] = NORMAL(3.9,1.1)
P_conc_crop[Field1,Potato] = NORMAL(2.8,0.7)
P_conc_crop[Field2,Oats&pea] = NORMAL(3.7,1)
P_conc_crop[Field2,LeyI] = NORMAL(2.8,0.2)
P_conc_crop[Field2,LeyII] = NORMAL(2.7,0.3)
P_conc_crop[Field2,LeyIII] = NORMAL(2.8,0.3)
P_conc_crop[Field2,Barley] = NORMAL(3.9,1.1)
P_conc_crop[Field2,Potato] = NORMAL(2.8,0.7)
P_conc_crop[Field3,Oats&pea] = NORMAL(3.7,1)
P_conc_crop[Field3,LeyI] = NORMAL(2.8,0.2)
P_conc_crop[Field3,LeyII] = NORMAL(2.7,0.3)
P_conc_crop[Field3,LeyIII] = NORMAL(2.8,0.3)
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P_conc_crop[Field3,Barley] = NORMAL(3.9,1.1)
P_conc_crop[Field3,Potato] = NORMAL(2.8,0.7)
P_conc_crop[Field4,Oats&pea] = NORMAL(3.7,1)
P_conc_crop[Field4,LeyI] = NORMAL(2.8,0.2)
P_conc_crop[Field4,LeyII] = NORMAL(2.7,0.3)
P_conc_crop[Field4,LeyIII] = NORMAL(2.8,0.3)
P_conc_crop[Field4,Barley] = NORMAL(3.9,1.1)
P_conc_crop[Field4,Potato] = NORMAL(2.8,0.7)
P_conc_crop[Field5,Oats&pea] = NORMAL(3.7,1)
P_conc_crop[Field5,LeyI] = NORMAL(2.8,0.2)
P_conc_crop[Field5,LeyII] = NORMAL(2.7,0.3)
P_conc_crop[Field5,LeyIII] = NORMAL(2.8,0.3)
P_conc_crop[Field5,Barley] = NORMAL(3.9,1.1)
P_conc_crop[Field5,Potato] = NORMAL(2.8,0.7)
P_conc_crop[Field6,Oats&pea] = NORMAL(3.7,1)
P_conc_crop[Field6,LeyI] = NORMAL(2.8,0.2)
P_conc_crop[Field6,LeyII] = NORMAL(2.7,0.3)
P_conc_crop[Field6,LeyIII] = NORMAL(2.8,0.3)
P_conc_crop[Field6,Barley] = NORMAL(3.9,1.1)
P_conc_crop[Field6,Potato] = NORMAL(2.8,0.7)
P_conc_liveweight = NORMAL(10,1)
P_conc_milk = NORMAL(1,0.07)
P_conc_minerals&concentrates = NORMAL(5.5,0.2)
P_conc_mineral_fertiliser = NORMAL(70,7)
P_conc_sawdust = NORMAL(0.05,0)
P_conc_silage = NORMAL(3,0.3)
P_conc_urine = NORMAL(1.5,0.7)
P_conc_water = 0
P_cropbalances_cropwise[Crop] = ARRAYSUM(P_Fieldbalanser[*,Crop])
P_Deposition[Field,Crop] =
Crop_rotation_6_years[Field,Crop]*P_deposition_per_ha
P_deposition_per_ha = NORMAL(400,40)
P_Deposition_total = (NORMAL(400,40))*Total_acreage
P_efficiency = Time_for_emptying_of_imports_and_exports_of_P*(P_Exports/
P_Imports)*100
P_erosion_coeff_fast = NORMAL(0.000002,0.0000002)
P_erosion_coeff_slow = NORMAL(0.0000002,0.00000002)
P_Fieldbalanser[Field,Crop] = IF(Time_for_summing_the_P_flows>0) THEN
((P_Sum_of_Inflows_to_cropbalances[Field,Crop]-
P_Sum_of_Outflows_field_balances[Field,Crop])*Crop_rotation_6_years[Field,C
rop]) ELSE (0)
P_Fed_in_Silage = Cows*Feeding_of_silage*P_conc_silage
P_Fertilisation_matrix[Field,Crop] =
Crop_rotation_6_years[Field,Crop]*P_Manure_fertilisationstrategy[Crop]
P_fieldbalances_fieldwise[Field] = ARRAYSUM(P_Fieldbalanser[Field,*])
P_Fieldwise_Cropbalances[Field,Crop] = IF(Time_for_summing_the_P_flows>0)
THEN (P_Sum_of_Inflows_to_cropbalances[Field,Crop]-
P_Sum_of_Outflows_cropbalances[Field,Crop]) ELSE (0)
P_fieldwise_fertilisation_per_ha[Field] =
IF(Time_for_summing_the_P_flows>0) THEN
```

```
(ARRAYSUM(P_Sum_of_fertilisation[Field,*])) ELSE (0)
P_Field_1_Manure_Seeds_Deposition =
ARRAYSUM(P_Manure_application_per_ha[Field1,*])+ARRAYSUM(P_Deposition[Field
1,*])+ARRAYSUM(P_seeds[Field1,*])
P_Field_1_uptake_subsoil = ARRAYSUM(P_Uptake_subsoil[Field1,*])
P_Field_1_uptake_topsoil =  ARRAYSUM(P_Uptake_topsoil[Field1, *])
P_Field_1_urine_minfert =
ARRAYSUM(P_Urine_spreading_per_ha[Field1,*])+ARRAYSUM(P_Mineral_fertiliser_
application[Field1,*])
P_Field_2_Manure_Seeds_Deposition =
ARRAYSUM(P_Manure_application_per_ha[Field2,*])+ARRAYSUM(P_Deposition[Field
2,*])+ARRAYSUM(P_seeds[Field2,*])
P_Field_2_uptake_subsoil = ARRAYSUM(P_Uptake_subsoil[Field2,*])
P_Field_2_uptake_topsoil = ARRAYSUM(P_Uptake_topsoil[Field2,*])
P_Field_2_urine_minfert =
ARRAYSUM(P_Urine_spreading_per_ha[Field2,*])+ARRAYSUM(P_Mineral_fertiliser_
application[Field2,*])
P_Field_3_Manure_Seeds_Deposition =
ARRAYSUM(P_Manure_application_per_ha[Field3,*])+ARRAYSUM(P_Deposition[Field
3,*])+ARRAYSUM(P_seeds[Field3,*])
P_Field_3_uptake_subsoil = ARRAYSUM(P_Uptake_subsoil[Field3,*])
P_Field_3_uptake_topsoil =  ARRAYSUM(P_Uptake_topsoil[Field3, *])
P_Field_3_urine_minfert =
ARRAYSUM(P_Urine_spreading_per_ha[Field3,*])+ARRAYSUM(P_Mineral_fertiliser_
application[Field3,*])
P_Field_4_Manure_Seeds_Deposition =
ARRAYSUM(P_Manure_application_per_ha[Field4,*])+ARRAYSUM(P_Deposition[Field
4,*])+ARRAYSUM(P_seeds[Field4,*])
P_Field_4_uptake_subsoil = ARRAYSUM(P_Uptake_subsoil[Field4,*])
P_Field_4_uptake_topsoil =  ARRAYSUM(P_Uptake_topsoil[Field4, *])
P_Field_4_urine_minfert =
ARRAYSUM(P_Urine_spreading_per_ha[Field4,*])+ARRAYSUM(P_Mineral_fertiliser_
application[Field4,*])
P_Field_5_Manure_Seeds_Deposition =
ARRAYSUM(P_Manure_application_per_ha[Field5,*])+ARRAYSUM(P_Deposition[Field
5,*])+ARRAYSUM(P_seeds[Field5,*])
P_Field_5_uptake_subsoil = ARRAYSUM(P_Uptake_subsoil[Field5,*])
P_Field_5_uptake_topsoil =  ARRAYSUM(P_Uptake_topsoil[Field5, *])
P_Field_5_urine_minfert =
ARRAYSUM(P_Urine_spreading_per_ha[Field5,*])+ARRAYSUM(P_Mineral_fertiliser_
application[Field5,*])
P_Field_6_Manure_Seeds_Deposition =
ARRAYSUM(P_Manure_application_per_ha[Field6,*])+ARRAYSUM(P_Deposition[Field
6,*])+ARRAYSUM(P_seeds[Field6,*])
P_Field_6_uptake_subsoil = ARRAYSUM(P_Uptake_subsoil[Field6,*])
P_Field_6_uptake_topsoil =  ARRAYSUM(P_Uptake_topsoil[Field6, *])
P_Field_6_urine_minfert =
ARRAYSUM(P_Urine_spreading_per_ha[Field6,*])+ARRAYSUM(P_Mineral_fertiliser_
application[Field6,*])
P_flows_passing_farmgate =
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P_Sum_of_seeds_Total+P_Beetpulp+P_Potato_export+P_Minerals_and_concentrates
+P_Simulated_barley_import+P_in_csubsoiles+P_milk+P_in_Slaughter+P_Sawdust+
P_Total_use_of_mineral_fertiliser_on_farm+P_in_heifers
P_förluster_växtföljd[Field,Crop] =
P_Sum_of_Losses[Field]*Crop_rotation_6_years[Field,Crop]
P_Gödsel_Utsäde_Deposition_Fieldvis[Field1] =
P_Field_1_Manure_Seeds_Deposition+(0*P_Field_2_Manure_Seeds_Deposition*P_Fi
eld_3_Manure_Seeds_Deposition*P_Field_4_Manure_Seeds_Deposition*P_Field_5_M
anure_Seeds_Deposition*P_Field_6_Manure_Seeds_Deposition)
P_Gödsel_Utsäde_Deposition_Fieldvis[Field2] =
P_Field_2_Manure_Seeds_Deposition+(0*P_Field_1_Manure_Seeds_Deposition*P_Fi
eld_3_Manure_Seeds_Deposition*P_Field_4_Manure_Seeds_Deposition*P_Field_5_M
anure_Seeds_Deposition*P_Field_6_Manure_Seeds_Deposition)
P_Gödsel_Utsäde_Deposition_Fieldvis[Field3] =
P_Field_3_Manure_Seeds_Deposition+(0*P_Field_2_Manure_Seeds_Deposition*P_Fi
eld_1_Manure_Seeds_Deposition*P_Field_4_Manure_Seeds_Deposition*P_Field_5_M
anure_Seeds_Deposition*P_Field_6_Manure_Seeds_Deposition)
P_Gödsel_Utsäde_Deposition_Fieldvis[Field4] =
P_Field_4_Manure_Seeds_Deposition+(0*P_Field_2_Manure_Seeds_Deposition*P_Fi
eld_3_Manure_Seeds_Deposition*P_Field_1_Manure_Seeds_Deposition*P_Field_5_M
anure_Seeds_Deposition*P_Field_6_Manure_Seeds_Deposition)
P_Gödsel_Utsäde_Deposition_Fieldvis[Field5] =
P_Field_5_Manure_Seeds_Deposition+(0*P_Field_2_Manure_Seeds_Deposition*P_Fi
eld_3_Manure_Seeds_Deposition*P_Field_4_Manure_Seeds_Deposition*P_Field_1_M
anure_Seeds_Deposition*P_Field_6_Manure_Seeds_Deposition)
P_Gödsel_Utsäde_Deposition_Fieldvis[Field6] =
P_Field_6_Manure_Seeds_Deposition+(0*P_Field_2_Manure_Seeds_Deposition*P_Fi
eld_3_Manure_Seeds_Deposition*P_Field_4_Manure_Seeds_Deposition*P_Field_5_M
anure_Seeds_Deposition*P_Field_1_Manure_Seeds_Deposition)
P_Homegrown_feeds = Total_requirements_of_barley_P-
P_Simulated_barley_import
P_Ideal_uptake[Field,Crop] =
P_requirements_for_crop[Field,Crop]*Crop_rotation_6_years[Field,Crop]*2.5
P_Imported_feed = Cows*5000
P_Internal_flows =
P_Homegrown_feeds+P_Fed_in_Silage+P_in_manure+P_in_urine+P_Deposition_total
+P_Total_losses_from_all_fields+P_straw_flow
P_Manure_fertilisationstrategy[Oats&pea] = ((1/3)*P_Emptying_of_manure_pad)
P_Manure_fertilisationstrategy[LeyI] = 0*P_Emptying_of_manure_pad
P_Manure_fertilisationstrategy[LeyII] = 0*P_Emptying_of_manure_pad
P_Manure_fertilisationstrategy[LeyIII] = 0*P_Emptying_of_manure_pad
P_Manure_fertilisationstrategy[Barley] = ((1/3)*P_Emptying_of_manure_pad)
P_Manure_fertilisationstrategy[Potato] = ((1/3)*P_Emptying_of_manure_pad)
P_milk_divided_by_P_manure = IF(Time_for_summing_the_P_flows>0) THEN
((Sum_of_P_in_milk/P_Sum_of_manure)*100) ELSE (0)
P_Mineral_fertiliser_application[Field,Crop] =
P_Mineral_fertiliser_flow[Field,Crop]
P_Mineral_fertiliser_matrix[Field1,Oats&pea] =
Mineral_fertiliser_application[Field1,Oats&pea]*P_conc_mineral_fertiliser*C
rop_rotation_6_years[Field1,Oats&pea]
```

```
P_Mineral_fertiliser_matrix[Field1,LeyI] =
Mineral_fertiliser_application[Field1,LeyI]*P_conc_mineral_fertiliser*Crop_
rotation_6_years[Field1,LeyI]*0
P_Mineral_fertiliser_matrix[Field1,LeyII] =
Mineral_fertiliser_application[Field1,LeyII]*P_conc_mineral_fertiliser*Crop
_rotation_6_years[Field1,LeyII]*0
P_Mineral_fertiliser_matrix[Field1,LeyIII] =
Mineral_fertiliser_application[Field1,LeyIII]*P_conc_mineral_fertiliser*Cro
p_rotation_6_years[Field1,LeyIII]*0
P_Mineral_fertiliser_matrix[Field1,Barley] =
Mineral_fertiliser_application[Field1,Barley]*P_conc_mineral_fertiliser*Cro
p_rotation_6_years[Field1,Barley]
P_Mineral_fertiliser_matrix[Field1,Potato] =
Mineral_fertiliser_application[Field1,Potato]*P_conc_mineral_fertiliser*Cro
p_rotation_6_years[Field1,Potato]
P_Mineral_fertiliser_matrix[Field2,Oats&pea] =
Mineral_fertiliser_application[Field2,Oats&pea]*P_conc_mineral_fertiliser*C
rop_rotation_6_years[Field2,Oats&pea]
P_Mineral_fertiliser_matrix[Field2,LeyI] =
Mineral_fertiliser_application[Field2,LeyI]*P_conc_mineral_fertiliser*Crop_
rotation_6_years[Field2,LeyI]*0
P_Mineral_fertiliser_matrix[Field2,LeyII] =
Mineral_fertiliser_application[Field2,LeyII]*P_conc_mineral_fertiliser*Crop
_rotation_6_years[Field2,LeyII]*0
P_Mineral_fertiliser_matrix[Field2,LeyIII] =
Mineral_fertiliser_application[Field2,LeyIII]*P_conc_mineral_fertiliser*Cro
p_rotation_6_years[Field2,LeyIII]*0
P_Mineral_fertiliser_matrix[Field2,Barley] =
Mineral_fertiliser_application[Field2,Barley]*P_conc_mineral_fertiliser*Cro
p_rotation_6_years[Field2,Barley]
P_Mineral_fertiliser_matrix[Field2,Potato] =
Mineral_fertiliser_application[Field2,Potato]*P_conc_mineral_fertiliser*Cro
p_rotation_6_years[Field2,Potato]
P_Mineral_fertiliser_matrix[Field3,Oats&pea] =
Mineral_fertiliser_application[Field3,Oats&pea]*P_conc_mineral_fertiliser*C
rop_rotation_6_years[Field3,Oats&pea]
P_Mineral_fertiliser_matrix[Field3,LeyI] =
Mineral_fertiliser_application[Field3,LeyI]*P_conc_mineral_fertiliser*Crop_
rotation_6_years[Field3,LeyI]*0
P_Mineral_fertiliser_matrix[Field3,LeyII] =
Mineral_fertiliser_application[Field3,LeyII]*P_conc_mineral_fertiliser*Crop
_rotation_6_years[Field3,LeyII]*0
P_Mineral_fertiliser_matrix[Field3,LeyIII] =
Mineral_fertiliser_application[Field3,LeyIII]*P_conc_mineral_fertiliser*Cro
p_rotation_6_years[Field3,LeyIII]*0
P_Mineral_fertiliser_matrix[Field3,Barley] =
Mineral_fertiliser_application[Field3,Barley]*P_conc_mineral_fertiliser*Cro
p_rotation_6_years[Field3,Barley]
P_Mineral_fertiliser_matrix[Field3,Potato] =
Mineral_fertiliser_application[Field3,Potato]*P_conc_mineral_fertiliser*Cro
```

```
p_rotation_6_years[Field3,Potato]
P_Mineral_fertiliser_matrix[Field4,Oats&pea] =
Mineral_fertiliser_application[Field4,Oats&pea]*P_conc_mineral_fertiliser*C
rop_rotation_6_years[Field4,Oats&pea]
P_Mineral_fertiliser_matrix[Field4,LeyI] =
Mineral_fertiliser_application[Field4,LeyI]*P_conc_mineral_fertiliser*Crop_
rotation_6_years[Field4,LeyI]*0
P_Mineral_fertiliser_matrix[Field4,LeyII] =
Mineral_fertiliser_application[Field4,LeyII]*P_conc_mineral_fertiliser*Crop
_rotation_6_years[Field4,LeyII]*0
P_Mineral_fertiliser_matrix[Field4,LeyIII] =
Mineral_fertiliser_application[Field4,LeyIII]*P_conc_mineral_fertiliser*Cro
p_rotation_6_years[Field4,LeyIII]*0
P_Mineral_fertiliser_matrix[Field4,Barley] =
Mineral_fertiliser_application[Field4,Barley]*P_conc_mineral_fertiliser*Cro
p_rotation_6_years[Field4,Barley]
P_Mineral_fertiliser_matrix[Field4,Potato] =
Mineral_fertiliser_application[Field4,Potato]*P_conc_mineral_fertiliser*Cro
p_rotation_6_years[Field4,Potato]
P_Mineral_fertiliser_matrix[Field5,Oats&pea] =
Mineral_fertiliser_application[Field5,Oats&pea]*P_conc_mineral_fertiliser*C
rop_rotation_6_years[Field5,Oats&pea]
P_Mineral_fertiliser_matrix[Field5,LeyI] =
Mineral_fertiliser_application[Field5,LeyI]*P_conc_mineral_fertiliser*Crop_
rotation_6_years[Field5,LeyI]*0
P_Mineral_fertiliser_matrix[Field5,LeyII] =
Mineral_fertiliser_application[Field5,LeyII]*P_conc_mineral_fertiliser*Crop
_rotation_6_years[Field5,LeyII]*0
P_Mineral_fertiliser_matrix[Field5,LeyIII] =
Mineral_fertiliser_application[Field5,LeyIII]*P_conc_mineral_fertiliser*Cro
p_rotation_6_years[Field5,LeyIII]*0
P_Mineral_fertiliser_matrix[Field5,Barley] =
Mineral_fertiliser_application[Field5,Barley]*P_conc_mineral_fertiliser*Cro
p_rotation_6_years[Field5,Barley]
P_Mineral_fertiliser_matrix[Field5,Potato] =
Mineral_fertiliser_application[Field5,Potato]*P_conc_mineral_fertiliser*Cro
p_rotation_6_years[Field5,Potato]
P_Mineral_fertiliser_matrix[Field6,Oats&pea] =
Mineral_fertiliser_application[Field6,Oats&pea]*P_conc_mineral_fertiliser*C
rop_rotation_6_years[Field6,Oats&pea]
P_Mineral_fertiliser_matrix[Field6,LeyI] =
Mineral_fertiliser_application[Field6,LeyI]*P_conc_mineral_fertiliser*Crop_
rotation_6_years[Field6,LeyI]*0
P_Mineral_fertiliser_matrix[Field6,LeyII] =
Mineral_fertiliser_application[Field6,LeyII]*P_conc_mineral_fertiliser*Crop
_rotation_6_years[Field6,LeyII]*0
P_Mineral_fertiliser_matrix[Field6,LeyIII] =
Mineral_fertiliser_application[Field6,LeyIII]*P_conc_mineral_fertiliser*Cro
p_rotation_6_years[Field6,LeyIII]*0
P_Mineral_fertiliser_matrix[Field6,Barley] =
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Mineral_fertiliser_application[Field6,Barley]*P_conc_mineral_fertiliser*Cro
p_rotation_6_years[Field6,Barley]
P_Mineral_fertiliser_matrix[Field6,Potato] =
Mineral_fertiliser_application[Field6,Potato]*P_conc_mineral_fertiliser*Cro
p_rotation_6_years[Field6,Potato]
P_percent_internal_flows_compared_to_flows_passing_farm_gate =
Time_for_emptying_of_imports_and_exports_of_P*(P_Internal_flows/
(P_flows_passing_farmgate+P_Internal_flows))*100
P_release_coeff_fast_subsoil = NORMAL(0.1,0.01)
P_release_coeff_fast_topsoil = NORMAL(0.5,0.05)
P_Release_coeff_slow_subsoil = NORMAL(0.00001,0.000001)
P_release_coeff_slow_topsoil = NORMAL(0.00001,0.000001)
P_requirements_for_crop[Field,Crop] =
P_conc_crop[Field,Crop]*Harvest_Crop[Field,Crop]
P_subsoil_conc_g_per_m3[Field] = P_soil_solution_subsoil[Field]/
Water_in_subsoil
P_Sum_of_Losses[Field] =
P_Total_loss_g_per_field[Field]+Total_P_erosion[Field]
P_Sum_of_seeds_Total = ARRAYSUM(P_Seeds_Storage[*,*])
P_Switch_binding_subsoil[Field] = IF(P_subsoil_conc_g_per_m3[Field]>0.03)
THEN (1) ELSE (0)
P_Switch_binding_topsoil[Field] = IF(P_topsoil_conc_g_per_m3[Field]>0.03)
THEN (1) ELSE (0)
P_topsoil_conc_g_per_m3[Field] = P_Soil_solution_toposoil[Field]/
Water_in_topsoil
P_Total_losses_from_all_fields =
Total_acreage*ARRAYMEAN(P_Total_loss_g_per_field[*])
P_Total_loss_g_per_field[Field] =
Sum_of_runoff_P[Field]+Sum_of_P_leaching[Field]
P_Total_use_of_mineral_fertiliser_on_farm = NPK_Pfertilisationappl_per_ha*4
P_Uptake_drive[Field,Crop] =
IF((Upptaget_P[Field,Crop]<P_requirements_for_crop[Field,Crop])AND
(P_topsoil_conc_g_per_m3[Field]>0.03)) THEN (1) ELSE (0)
P_uptake_fieldwise[Field] =
P_uptake_topsoil_per_field[Field]+P_Uptake_subsoil_per_field[Field]
P_Uptake_subsoil_per_field[Field1] =
P_Field_1_uptake_subsoil+(0*P_Field_2_uptake_subsoil*P_Field_3_uptake_subso
il*P_Field_4_uptake_subsoil*P_Field_5_uptake_subsoil*P_Field_6_uptake_subso
il)
P_Uptake_subsoil_per_field[Field2] =
P_Field_2_uptake_subsoil+(0*P_Field_1_uptake_subsoil*P_Field_3_uptake_subso
il*P_Field_4_uptake_subsoil*P_Field_5_uptake_subsoil*P_Field_6_uptake_subso
il)
P_Uptake_subsoil_per_field[Field3] =
P_Field_3_uptake_subsoil+(0*P_Field_1_uptake_subsoil*P_Field_2_uptake_subso
il*P_Field_4_uptake_subsoil*P_Field_5_uptake_subsoil*P_Field_6_uptake_subso
il)
P_Uptake_subsoil_per_field[Field4] =
P_Field_4_uptake_subsoil+(0*P_Field_1_uptake_subsoil*P_Field_2_uptake_subso
il*P_Field_3_uptake_subsoil*P_Field_5_uptake_subsoil*P_Field_6_uptake_subso
```

```
il)
P_Uptake_subsoil_per_field[Field5] =
P_Field_5_uptake_subsoil+(0*P_Field_1_uptake_subsoil*P_Field_2_uptake_subso
il*P_Field_3_uptake_subsoil*P_Field_4_uptake_subsoil*P_Field_6_uptake_subso
il)
P_Uptake_subsoil_per_field[Field6] =
P_Field_6_uptake_subsoil+(0*P_Field_1_uptake_subsoil*P_Field_2_uptake_subso
il*P_Field_3_uptake_subsoil*P_Field_4_uptake_subsoil*P_Field_5_uptake_subso
il)
P_uptake_topsoil_per_field[Field1] =
P_Field_1_uptake_topsoil+(0*P_Field_2_uptake_topsoil*P_Field_3_uptake_topso
il*P_Field_4_uptake_topsoil*P_Field_5_uptake_topsoil*P_Field_6_uptake_topso
il)
P_uptake_topsoil_per_field[Field2] =
P_Field_2_uptake_topsoil+(0*P_Field_1_uptake_topsoil*P_Field_3_uptake_topso
il*P_Field_4_uptake_topsoil*P_Field_5_uptake_topsoil*P_Field_6_uptake_topso
il)
P_uptake_topsoil_per_field[Field3] =
P_Field_3_uptake_topsoil+(0*P_Field_1_uptake_topsoil*P_Field_2_uptake_topso
il*P_Field_4_uptake_topsoil*P_Field_5_uptake_topsoil*P_Field_6_uptake_topso
il)
P_uptake_topsoil_per_field[Field4] =
P_Field_4_uptake_topsoil+(0*P_Field_1_uptake_topsoil*P_Field_2_uptake_topso
il*P_Field_3_uptake_topsoil*P_Field_5_uptake_topsoil*P_Field_6_uptake_topso
il)
P_uptake_topsoil_per_field[Field5] =
P_Field_5_uptake_topsoil+(0*P_Field_1_uptake_topsoil*P_Field_2_uptake_topso
il*P_Field_3_uptake_topsoil*P_Field_4_uptake_topsoil*P_Field_6_uptake_topso
il)
P_uptake_topsoil_per_field[Field6] =
P_Field_6_uptake_topsoil+(0*P_Field_1_uptake_topsoil*P_Field_2_uptake_topso
il*P_Field_3_uptake_topsoil*P_Field_4_uptake_topsoil*P_Field_5_uptake_topso
il)
P_Urine_matrix[Field,Crop] =
Crop_rotation_6_years[Field,Crop]*Fertilisation_strategy_urine_P[Crop]
P_Urine_mineral_fertiliser_fieldwise[Field1] =
P_Field_1_urine_minfert+(0*P_Field_2_urine_minfert*P_Field_3_urine_minfert*
P_Field_4_urine_minfert*P_Field_5_urine_minfert*P_Field_6_urine_minfert)
P_Urine_mineral_fertiliser_fieldwise[Field2] =
P_Field_2_urine_minfert+(0*P_Field_1_urine_minfert*P_Field_3_urine_minfert*
P_Field_4_urine_minfert*P_Field_5_urine_minfert*P_Field_6_urine_minfert)
P_Urine_mineral_fertiliser_fieldwise[Field3] =
P_Field_3_urine_minfert+(0*P_Field_2_urine_minfert*P_Field_1_urine_minfert*
P_Field_4_urine_minfert*P_Field_5_urine_minfert*P_Field_6_urine_minfert)
P_Urine_mineral_fertiliser_fieldwise[Field4] =
P_Field_4_urine_minfert+(0*P_Field_1_urine_minfert*P_Field_2_urine_minfert*
P_Field_3_urine_minfert*P_Field_5_urine_minfert*P_Field_6_urine_minfert)
P_Urine_mineral_fertiliser_fieldwise[Field5] =
P_Field_5_urine_minfert+(0*P_Field_2_urine_minfert*P_Field_3_urine_minfert*
P_Field_4_urine_minfert*P_Field_1_urine_minfert*P_Field_6_urine_minfert)
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P_Urine_mineral_fertiliser_fieldwise[Field6] =
P_Field_6_urine_minfert+(0*P_Field_2_urine_minfert*P_Field_3_urine_minfert*
P_Field_4_urine_minfert*P_Field_5_urine_minfert*P_Field_1_urine_minfert)
P_vari_dep[Field] = IF(Time_for_summing_the_P_flows>0)
THEN(1*P_Sum_dep[Field]) ELSE (0)
P_vari_harvest[Field] = IF(Time_for_summing_the_P_flows>0)
THEN(1*P_Sum_harvest[Field]) ELSE (0)
P_vari_losses[Field] = IF(Time_for_summing_the_P_flows>0)
THEN(1*P_Sum_losses[Field]) ELSE (0)
P_vari_manure[Field] = IF(Time_for_summing_the_P_flows>0)
THEN(1*P_Sum_manure[Field]) ELSE (0)
P_vari_minfert[Field] = IF(Time_for_summing_the_P_flows>0)
THEN(1*P_Sum_minfert[Field]) ELSE (0)
P_vari_seeds[Field] = IF(Time_for_summing_the_P_flows>0)
THEN(1*P_Sum_seeds[Field]) ELSE (0)
P_vari_urine[Field] = IF(Time_for_summing_the_P_flows>0)
THEN(1*P_Sum_urine[Field]) ELSE (0)
Regnvolym = random((0.77*5000),5000,(1.55*5000))
Season = TIME-INT(TIME)
Soil_moisture_Subsoil = Water_in_subsoil/6000
Soil_moisture_Topsoil = Water_in_topsoil/2500
SummeradCd_applikation =
ARRAYSUM(Utgödsling_I[*,*])+ARRAYSUM(Cd_Fertilisation_II[*,*])
Summerad_array_halm = ARRAYSUM(Halm_per_ha_to_total[*,*])
Summerad_array_potato_2 = ARRAYSUM(Zn_Potato_per_ha_to_total[*,*])
Summerad_konstgödselanvändning_Zn =
ARRAYSUM(Zn_Mineral_fertiliser_use[*,*])
Summ_array_ley_I_P = ARRAYSUM(P_Hay_per_ha_to_total[*,LeyI])
Sum_array_barley_P = ARRAYSUM(P_Barley_per_ha_to_total[*,*])
Sum_array_ley_III_P = ARRAYSUM(P_Hay_per_ha_to_total[*,LeyIII])
Sum_array_ley_II_P = ARRAYSUM(P_Hay_per_ha_to_total[*,LeyII])
Sum_array_o&ponpotatofield_P = ARRAYSUM(PO&Ponpotatofield[*,Potato])
Sum_array_oats&peas_P = ARRAYSUM(Oats&Peas_per_ha_to_total_P[*,Oats&pea])
Sum_array_potato_P = ARRAYSUM(P_Potato_per_ha_to_total[*,*])
Sum_array_straw_P = ARRAYSUM(P_Straw_per_ha_to_total[*,*])
Sum_of_Cd_Inflows_Topsoil[Field] = Cd_Urine_MinFert_Fieldwise[Field]
Sum_of_Cd_lime_use = ARRAYSUM(Cd_Lime_use[*,*])
Sum_of_Cd_losses_fieldwise_times_field_size[Field1] =
Sum_of_Cd_per_hectare_loss_fieldwise[Field1]*5.82
Sum_of_Cd_losses_fieldwise_times_field_size[Field2] =
Sum_of_Cd_per_hectare_loss_fieldwise[Field2]*6.22
Sum_of_Cd_losses_fieldwise_times_field_size[Field3] =
Sum_of_Cd_per_hectare_loss_fieldwise[Field3]*7.75
Sum_of_Cd_losses_fieldwise_times_field_size[Field4] =
Sum_of_Cd_per_hectare_loss_fieldwise[Field4]*6.3
Sum_of_Cd_losses_fieldwise_times_field_size[Field5] =
Sum_of_Cd_per_hectare_loss_fieldwise[Field5]*7.35
Sum_of_Cd_losses_fieldwise_times_field_size[Field6] =
Sum_of_Cd_per_hectare_loss_fieldwise[Field6]*5.38
Sum_of_Cd_per_hectare_loss_fieldwise[Field] =
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Total_Cd_loss_g_per_field[Field]
Sum_of_Cd_Pesticide_use = ARRAYSUM(Pesticide_use[*,*])
Sum_of_Cd_Seeds_per_ha = ARRAYSUM(Cd_Seeds[*,*])
Sum_of_Cd_Seeds_Total = ARRAYSUM(Cd_Seeds_storage[*,*])
Sum_of_Cd_uptake[Field,Crop] =
Cd_Uptake_Subsoil[Field,Crop]+Cd_Uptake_Topsoil[Field,Crop]
Sum_of_Fertilisation_1_P = ARRAYSUM(P_Fertilisation_I[*,*])
Sum_of_harvested__P =
ARRAYSUM(P_Sum_of_harvested_silage[*,*])+ARRAYSUM(P_Sum_of_harvested_barley
[*,*])+ARRAYSUM(P_Sum_of_harvested_potato[*,*])+ARRAYSUM(P_Sum_of_harvested
_oats&peas[*,*])
Sum_of_inflows_to_P_silage_tower =
Sum_array_o&ponpotatofield_P+Sum_array_oats&peas_P+Summ_array_ley_I_P+Sum_a
rray_ley_II_P+Sum_array_ley_III_P
Sum_of_mineral_fertiliser_use = ARRAYSUM(Cd_mineral_fertiliser[*,*])
Sum_of_P_fertilisation_I_and_II =
ARRAYSUM(P_Fertilisation_I[*,*])+ARRAYSUM(P_Fertilisation_II[*,*])
Sum_of_P_inflows_topsoil[Field] =
P_Urine_mineral_fertiliser_fieldwise[Field]+P_release_fast_topsoil_to_solut
ion[Field]+P_release_slow_to_solution_topsoil[Field]
Sum_of_P_seeds_per_ha = ARRAYSUM(P_seeds[*,*])
Sum_of_P_uptake[Field,Crop] =
P_Uptake_subsoil[Field,Crop]+P_Uptake_topsoil[Field,Crop]
Sum_of_Zn_seeds_Total = ARRAYSUM(Zn_Seedstorage[*,*])
Sum_P_Fertilisation_II = ARRAYSUM(P_Fertilisation_II[*,*])
Sum_Zn_application =
ARRAYSUM(Utgödsling_I_Zn[*,*])+ARRAYSUM(Zn_Fertilisation_II[*,*])
Sum_Zn_seeds_per_ha = ARRAYSUM(Zn_seeds[*,*])
Timecount = INT(TIME)
Total_acreage = 5.38+7.35+6.3+7.75+6.22+5.82
Total_Cd_fed_to_herd =
Cd_Beetpulp+Cd_barley+Cd_Mineral_and_concentrate+Cd_silage
Total_Cd_loss_g_per_field[Field] =
Sum_of_runoff_Cd[Field]+Sum_of_Cd_Loss[Field]
Total_Feed_Import =
Cd_Simulated_Barley_Import+Cd_Beetpulp+Cd_Mineral_and_concentrate
Total_P_accumulation_per_tot_ha = IF(Time_for_summing_the_P_flows>0) THEN
((Tot_acc_field_1_P+Tot_acc_field_2_P+Tot_acc_field_3_P+Tot_acc_field_4_P+T
ot_acc_field_5_P+Tot_acc_field_6_P)/Total_acreage) ELSE (0)
Total_P_erosion[Field] =
P_sum_of_erosion_slow_topsoil[Field]+Sum_of_P_erosion_fast[Field]
Total_requirements_of_barley_P = Feeding_of_barley*P_conc_barley*Cows
Total_Zn_fed = Zn_Beetpulp+Zn_barley+Zn_Minerals_and_concentrates+Zn_silage
Total_Zn_loss_g_Zn_per_field[Field] =
Zn_Sum_of_runoff[Field]+Zn_Sum_leaching[Field]
Tot_acc_field_1_P = P_accumulation_field_1*5.82
Tot_acc_field_2_P = P_accumulation_field_2*6.22
Tot_acc_field_3_P = P_accumulation_field_3*7.75
Tot_acc_field_4_P = P_accumulation_field_4*6.30
Tot_acc_field_5_P = P_accumulation_field_5*7.35
```

```
Tot_acc_field_6_P = P_accumulation_field_6*5.38
Tot_ack_field_1_Zn = Zn_accumulation_field_1*5.82
Tot_ack_field_2_Zn = Zn_accumulation_field_2*6.22
Tot_ack_field_3_Zn = Zn_accumulation_field_3*7.75
Tot_ack_field_4_Zn = Zn_accumulation_field_4*6.30
Tot_ack_field_5_Zn = Zn_accumulation_field_5*7.35
Tot_ack_field_6_Zn = Zn_accumulation_field_6*5.38
Urine_amount = NORMAL(626,94)
Water_use_per_cow = NORMAL(26500,2650)
Water_use_per_cow_in_stable = NORMAL(4817,482)
Year_1 = IF(Crop_rotation_count=0) THEN (1) ELSE (0)
Year_2 = IF(Crop_rotation_count=1) THEN (1) ELSE (0)
Year_3 = IF (Crop_rotation_count=2) THEN (1) ELSE (0)
Year_4 = IF (Crop_rotation_count=3) THEN (1) ELSE (0)
Year_5 = IF(Crop_rotation_count=4) THEN (1) ELSE (0)
Year_6 = IF(Crop_rotation_count=5) THEN (1) ELSE (0)
Zn_accumulation_field_1 =
Zn_Adsorbed_subsoil[Field1]+Adsorbed_Zn_topsoil[Field1]+ZnSoil_solution_sub
soil[Field1]+Zn_Soil_solution_topsoil[Field1]-12.9-7.125-98000-132000
-116000
Zn_accumulation_field_2 =
Zn_Adsorbed_subsoil[Field2]+Adsorbed_Zn_topsoil[Field2]+ZnSoil_solution_sub
soil[Field2]+Zn_Soil_solution_topsoil[Field2]-12.9-7.125-99000-116000-96000
Zn_accumulation_field_3 =
Zn_Adsorbed_subsoil[Field3]+Adsorbed_Zn_topsoil[Field3]+ZnSoil_solution_sub
soil[Field3]+Zn_Soil_solution_topsoil[Field3]-12.9-7.125-74160-128908
-126241
Zn_accumulation_field_4 =
Zn_Adsorbed_subsoil[Field4]+Adsorbed_Zn_topsoil[Field4]+ZnSoil_solution_sub
soil[Field4]+Zn_Soil_solution_topsoil[Field4]-12.9-7.125-76000-99000-91000
Zn_accumulation_field_5 =
Zn_Adsorbed_subsoil[Field5]+Adsorbed_Zn_topsoil[Field5]+ZnSoil_solution_sub
soil[Field5]+Zn_Soil_solution_topsoil[Field5]-12.9-7.125-109100-163838
-206873
Zn_accumulation_field_6 =
Zn_Adsorbed_subsoil[Field6]+Adsorbed_Zn_topsoil[Field6]+ZnSoil_solution_sub
soil[Field6]+Zn_Soil_solution_topsoil[Field6]-15-24-79000-78000-96000
Zn_Ack_Adsorbed_subsoil[Field1] = Zn_Adsorbed_subsoil[Field1]-132000-116000
Zn_Ack_Adsorbed_subsoil[Field2] = Zn_Adsorbed_subsoil[Field2]-116000-96000
Zn_Ack_Adsorbed_subsoil[Field3] = Zn_Adsorbed_subsoil[Field3]-128908-126241
Zn_Ack_Adsorbed_subsoil[Field4] = Zn_Adsorbed_subsoil[Field4]-99000-91000
Zn_Ack_Adsorbed_subsoil[Field5] = Zn_Adsorbed_subsoil[Field5]-163838-206873
Zn_Ack_Adsorbed_subsoil[Field6] = Zn_Adsorbed_subsoil[Field6]-78000-96000
Zn_Ack_Adsorbed_topsoil[Field1] = Adsorbed_Zn_topsoil[Field1]-98000
Zn_Ack_Adsorbed_topsoil[Field2] = Adsorbed_Zn_topsoil[Field2]-99000
Zn_Ack_Adsorbed_topsoil[Field3] = Adsorbed_Zn_topsoil[Field3]-74160
Zn_Ack_Adsorbed_topsoil[Field4] = Adsorbed_Zn_topsoil[Field4]-76000
Zn_Ack_Adsorbed_topsoil[Field5] = Adsorbed_Zn_topsoil[Field5]-109100
Zn_Ack_Adsorbed_topsoil[Field6] = Adsorbed_Zn_topsoil[Field6]-79000
Zn_Ack_Soil_solution_subsoil[Field] = ZnSoil_solution_subsoil[Field]-6
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```
Zn_Ack_Soil_solution_topsoil[Field] = Zn_Soil_solution_topsoil[Field]-4
Zn_Ads_subsoil_g_per_kg_soil[Field] = (Zn_Adsorbed_subsoil[Field]/
Bulkdensity[Field])
Zn_Ads_topsoil_g_Zn_per_kg_soil[Field] = (Adsorbed_Zn_topsoil[Field]/
Bulkdensity[Field])
Zn_Cashflowbalance_g_per_ha = Zn_Cashflow_balans/Total_acreage
Zn_Cashflowbalance_g_per_ton_milk = Zn_Cashflow_balans/
(Milk_production*Cows/1000)
Zn_Cashflow_balans = IF (Zn_Time_for_summing_up_annual_Zn_flows>0) THEN
(Inköpt_Zn-Sålt_Zn) ELSE (0)
Zn_conc_barley = NORMAL(0.039,0.007)
Zn_conc_beetpulp = NORMAL(0.023,0.002)
Zn_conc_crop[Field1,Oats&pea] = NORMAL(0.035,0.01)
Zn_conc_crop[Field1,LeyI] = NORMAL(0.030,0.05)
Zn_conc_crop[Field1,LeyII] = NORMAL(0.027,0.05)
Zn_conc_crop[Field1,LeyIII] = NORMAL(0.031,0.07)
Zn_conc_crop[Field1,Barley] = NORMAL(0.039,0.07)
Zn_conc_crop[Field1,Potato] = NORMAL(0.015,0.05)
Zn_conc_crop[Field2,Oats&pea] = NORMAL(0.035,0.01)
Zn_conc_crop[Field2,LeyI] = NORMAL(0.030,0.05)
Zn_conc_crop[Field2,LeyII] = NORMAL(0.027,0.05)
Zn_conc_crop[Field2,LeyIII] = NORMAL(0.031,0.07)
Zn_conc_crop[Field2,Barley] = NORMAL(0.039,0.07)
Zn_conc_crop[Field2,Potato] = NORMAL(0.015,0.05)
Zn_conc_crop[Field3,Oats&pea] = NORMAL(0.035,0.01)
Zn_conc_crop[Field3,LeyI] = NORMAL(0.030,0.05)
Zn_conc_crop[Field3,LeyII] = NORMAL(0.027,0.05)
Zn_conc_crop[Field3,LeyIII] = NORMAL(0.031,0.07)
Zn_conc_crop[Field3,Barley] = NORMAL(0.039,0.07)
Zn_conc_crop[Field3,Potato] = NORMAL(0.015,0.05)
Zn_conc_crop[Field4,Oats&pea] = NORMAL(0.035,0.01)
Zn_conc_crop[Field4,LeyI] = NORMAL(0.030,0.05)
Zn_conc_crop[Field4,LeyII] = NORMAL(0.027,0.05)
Zn_conc_crop[Field4,LeyIII] = NORMAL(0.031,0.07)
Zn_conc_crop[Field4,Barley] = NORMAL(0.039,0.07)
Zn_conc_crop[Field4,Potato] = NORMAL(0.015,0.05)
Zn_conc_crop[Field5,Oats&pea] = NORMAL(0.035,0.01)
Zn_conc_crop[Field5,LeyI] = NORMAL(0.030,0.05)
Zn_conc_crop[Field5,LeyII] = NORMAL(0.027,0.05)
Zn_conc_crop[Field5,LeyIII] = NORMAL(0.031,0.07)
Zn_conc_crop[Field5,Barley] = NORMAL(0.039,0.07)
Zn_conc_crop[Field5,Potato] = NORMAL(0.015,0.05)
Zn_conc_crop[Field6,Oats&pea] = NORMAL(0.035,0.01)
Zn_conc_crop[Field6,LeyI] = NORMAL(0.030,0.05)
Zn_conc_crop[Field6,LeyII] = NORMAL(0.027,0.05)
Zn_conc_crop[Field6,LeyIII] = NORMAL(0.031,0.07)
Zn_conc_crop[Field6,Barley] = NORMAL(0.039,0.07)
Zn_conc_crop[Field6,Potato] = NORMAL(0.015,0.05)
Zn_conc_lime = NORMAL(0.0075,0.0025)
Zn_conc_liveweight = NORMAL(0.03,0.02)
```

```
Zn_conc_milk = NORMAL(0.0042,0.0005)
Zn_conc_mineralsconcentrates = NORMAL(0.137,0.012)
Zn_conc_N28 = NORMAL(0.004,0.001)
Zn_conc_NPK = NORMAL(0.285,0.005)
Zn_conc_sawdust = NORMAL(0.0084,0.00004)
Zn_conc_subsoil_mg_per_liter[Field] = Zn_subsoil_conc_g_per_dm3[Field]*1000
Zn_conc_topsoil_mg_per_liter[Field] = Zn_topsoil_conc_g_per_dm3[Field]*1000
Zn_conc_urine = NORMAL(0.082,0.018)
Zn_conc_water = NORMAL(0.001,0.0001)
Zn_crop_requirements[Field,Crop] =
Harvest_Crop[Field,Crop]*Zn_conc_crop[Field,Crop]
Zn_Deposition[Field,Crop] =
Crop_rotation_6_years[Field,Crop]*Zn_deposition_per_ha
Zn_deposition_per_ha = NORMAL(82,22)
Zn_Deposition_total = Total_acreage*(NORMAL(82,22))
Zn_effektivitet =
Time_for_emptying_of_import_and_export_of_Zn*(Utflöden_av_Zn/
Inflöden_av_Zn)*100
Zn_Fieldbalanser_Fieldvis[Field] = ARRAYSUM(Zn_Fieldbalances[Field,*])
Zn_Fieldvis_upptag_Subsoil[Field] = ARRAYSUM(Zn_Upptag_Subsoil[Field,*])
Zn_Fertilisation_matrix[Field,Crop] =
Crop_rotation_6_years[Field,Crop]*Zn_fertilisation_strategy_solid_manure[Cr
op]
Zn_fertilisation_strategy_solid_manure[Oats&pea] = ((1/
3)*Zn_emptying_of_Zn_Manure_pad)
Zn_fertilisation_strategy_solid_manure[LeyI] =
0*Zn_emptying_of_Zn_Manure_pad
Zn_fertilisation_strategy_solid_manure[LeyII] =
0*Zn_emptying_of_Zn_Manure_pad
Zn_fertilisation_strategy_solid_manure[LeyIII] =
0*Zn_emptying_of_Zn_Manure_pad
Zn_fertilisation_strategy_solid_manure[Barley] = ((1/
3)*Zn_emptying_of_Zn_Manure_pad)
Zn_fertilisation_strategy_solid_manure[Potato] = ((1/
3)*Zn_emptying_of_Zn_Manure_pad)
Zn_Fertilisation_strategy_urine[Oats&pea] = 0.25*Emptying ofav_urine
tank_Zn
Zn_Fertilisation_strategy_urine[LeyI] = 0*Emptying ofav_urine tank_Zn
Zn_Fertilisation_strategy_urine[LeyII] = 0.25*Emptying ofav_urine tank_Zn
Zn_Fertilisation_strategy_urine[LeyIII] = 0.5*Emptying ofav_urine tank_Zn
Zn_Fertilisation_strategy_urine[Barley] = 0*Emptying ofav_urine tank_Zn
Zn_Fertilisation_strategy_urine[Potato] = 0*Emptying ofav_urine tank_Zn
Zn_Fieldbalances[Field,Crop] = IF(Zn_Time_for_summing_up_annual_Zn_flows>0)
THEN (Zn_Sum_of_Inflows_to_crop_balances[Field,Crop]-
Zn_sum_of_outflows_of_field_balances[Field,Crop]) ELSE (0)
Zn_fieldwise_fertilisation_per_ha_per_y[Field] =
IF(Zn_Time_for_summing_up_annual_Zn_flows>0) THEN
(ARRAYSUM(Zn_Sum_of_fertilisation[Field,*])) ELSE (0)
Zn_Field_2_urine_minfert =
ARRAYSUM(Zn_Urine_per_ha[Field2,*])+ARRAYSUM(Zn_Konstgödselspridning[Field2
```

```
,*])
Zn_Field_3_urine_minfert =
ARRAYSUM(Zn_Urine_per_ha[Field3,*])+ARRAYSUM(Zn_Konstgödselspridning[Field3
,*])
Zn_Field_4_urine_minfert =
ARRAYSUM(Zn_Urine_per_ha[Field4,*])+ARRAYSUM(Zn_Konstgödselspridning[Field4
,*])
Zn_Field_5_urine_minfert =
ARRAYSUM(Zn_Urine_per_ha[Field5,*])+ARRAYSUM(Zn_Konstgödselspridning[Field5
,*])
Zn_Field_6_urine_minfert =
ARRAYSUM(Zn_Urine_per_ha[Field6,*])+ARRAYSUM(Zn_Konstgödselspridning[Field6
,*])
Zn_Field_urine_minfert =
ARRAYSUM(Zn_Urine_per_ha[Field1,*])+ARRAYSUM(Zn_Konstgödselspridning[Field1
,*])
Zn_Hemproducerat_foder = Zn_Total_barley_requirements-
Zn_Simulated_barley_import
Zn_Ideal_uptake[Field,Crop] =
Crop_rotation_6_years[Field,Crop]*Zn_crop_requirements[Field,Crop]*2.5
Zn_Interna_flöden =
Zn_Hemproducerat_foder+Zn_silage+Zn_in_m_anure+Zn_i_urine+Zn_Deposition_tot
al+Zn_Total_läckage_från_alla_Field+Zn_Straw
Zn_Kd_Subsoil = RANDOM(2000,10000)
Zn_Kd_topsoil = RANDOM(1500,6800)
Zn_conc_ensilage = NORMAL(0.03075,0.0031)
Zn_Konstgödselspridning[Field,Crop] =
Zn_Mineral_fertiliser_flow[Field,Crop]
Zn_Lime_strategi[Field,Crop] =
Lime_amount[Field,Crop]*Crop_rotation_6_years[Field,Crop]*Zn_conc_lime
Zn_losses_crop_rotation[Field,Crop] =
Crop_rotation_6_years[Field,Crop]*Zn_Summerade_förlustflöden[Field]
Zn_Manure_Seeds_Deposition_Pesticid_Fieldwise[Field1] =
Field_1_Manure_Seeds_Dep_Pesticid_Zn+(0*Field_2_Manure_Seeds_Dep_Pesticid_Z
n*Field_3_Manure_Seeds_Dep__Pesticid_Zn*Field_4_Manure_Seeds_DepPesticid_Zn
*Field_5_Manure_Seeds_Dep_Pesticid_Zn*Field_6_Manure_Seeds_Dep_Pesticid_Zn)
Zn_Manure_Seeds_Deposition_Pesticid_Fieldwise[Field2] =
Field_2_Manure_Seeds_Dep_Pesticid_Zn+(0*Field_1_Manure_Seeds_Dep_Pesticid_Z
n*Field_3_Manure_Seeds_Dep__Pesticid_Zn*Field_4_Manure_Seeds_DepPesticid_Zn
*Field_5_Manure_Seeds_Dep_Pesticid_Zn*Field_6_Manure_Seeds_Dep_Pesticid_Zn)
Zn_Manure_Seeds_Deposition_Pesticid_Fieldwise[Field3] =
Field_3_Manure_Seeds_Dep__Pesticid_Zn+(0*Field_2_Manure_Seeds_Dep_Pesticid_
Zn*Field_1_Manure_Seeds_Dep_Pesticid_Zn*Field_4_Manure_Seeds_DepPesticid_Zn
*Field_5_Manure_Seeds_Dep_Pesticid_Zn*Field_6_Manure_Seeds_Dep_Pesticid_Zn)
Zn_Manure_Seeds_Deposition_Pesticid_Fieldwise[Field4] =
Field_4_Manure_Seeds_DepPesticid_Zn+(0*Field_2_Manure_Seeds_Dep_Pesticid_Zn
*Field_3_Manure_Seeds_Dep__Pesticid_Zn*Field_1_Manure_Seeds_Dep_Pesticid_Zn
*Field_5_Manure_Seeds_Dep_Pesticid_Zn*Field_6_Manure_Seeds_Dep_Pesticid_Zn)
Zn_Manure_Seeds_Deposition_Pesticid_Fieldwise[Field5] =
Field_5_Manure_Seeds_Dep_Pesticid_Zn+(0*Field_2_Manure_Seeds_Dep_Pesticid_Z
```

```
n*Field_3_Manure_Seeds_Dep__Pesticid_Zn*Field_4_Manure_Seeds_DepPesticid_Zn
*Field_1_Manure_Seeds_Dep_Pesticid_Zn*Field_6_Manure_Seeds_Dep_Pesticid_Zn)
Zn_Manure_Seeds_Deposition_Pesticid_Fieldwise[Field6] =
Field_6_Manure_Seeds_Dep_Pesticid_Zn+(0*Field_2_Manure_Seeds_Dep_Pesticid_Z
n*Field_3_Manure_Seeds_Dep__Pesticid_Zn*Field_4_Manure_Seeds_DepPesticid_Zn
*Field_5_Manure_Seeds_Dep_Pesticid_Zn*Field_1_Manure_Seeds_Dep_Pesticid_Zn)
Zn_Medelförluster_per_hektar = IF(Zn_Time_for_summing_up_annual_Zn_flows>0)
THEN (Zn_Totala_förluster_för_gården/Total_acreage) ELSE (0)
Zn_Mineral_fertiliser_matrix[Field1,Oats&pea] =
Mineral_fertiliser_application[Field1,Oats&pea]*Crop_rotation_6_years[Field
1,Oats&pea]*Zn_conc_N28*Zn_conc_NPK
Zn_Mineral_fertiliser_matrix[Field1,LeyI] =
Mineral_fertiliser_application[Field1,LeyI]*Crop_rotation_6_years[Field1,Le
yI]*Zn_conc_N28+(0*Zn_conc_NPK)
Zn_Mineral_fertiliser_matrix[Field1,LeyII] =
Mineral_fertiliser_application[Field1,LeyII]*Crop_rotation_6_years[Field1,L
eyII]*Zn_conc_N28+(0*Zn_conc_NPK)
Zn_Mineral_fertiliser_matrix[Field1,LeyIII] =
Mineral_fertiliser_application[Field1,LeyIII]*Crop_rotation_6_years[Field1,
LeyIII]*Zn_conc_N28+(0*Zn_conc_NPK)
Zn_Mineral_fertiliser_matrix[Field1,Barley] =
Mineral_fertiliser_application[Field1,Barley]*Crop_rotation_6_years[Field1,
Barley]*Zn_conc_N28*Zn_conc_NPK
Zn_Mineral_fertiliser_matrix[Field1,Potato] =
Mineral_fertiliser_application[Field1,Potato]*Crop_rotation_6_years[Field1,
Potato]*Zn_conc_NPK+(0*Zn_conc_N28)
Zn_Mineral_fertiliser_matrix[Field2,Oats&pea] =
Mineral_fertiliser_application[Field2,Oats&pea]*Crop_rotation_6_years[Field
2,Oats&pea]*Zn_conc_N28*Zn_conc_NPK
Zn_Mineral_fertiliser_matrix[Field2,LeyI] =
Mineral_fertiliser_application[Field2,LeyI]*Crop_rotation_6_years[Field2,Le
yI]*Zn_conc_N28+(0*Zn_conc_NPK)
Zn_Mineral_fertiliser_matrix[Field2,LeyII] =
Mineral_fertiliser_application[Field2,LeyII]*Crop_rotation_6_years[Field2,L
eyII]*Zn_conc_N28+(0*Zn_conc_NPK)
Zn_Mineral_fertiliser_matrix[Field2,LeyIII] =
Mineral_fertiliser_application[Field2,LeyIII]*Crop_rotation_6_years[Field2,
LeyIII]*Zn_conc_N28+(0*Zn_conc_NPK)
Zn_Mineral_fertiliser_matrix[Field2,Barley] =
Mineral_fertiliser_application[Field2,Barley]*Crop_rotation_6_years[Field2,
Barley]*Zn_conc_N28*Zn_conc_NPK
Zn_Mineral_fertiliser_matrix[Field2,Potato] =
Mineral_fertiliser_application[Field2,Potato]*Crop_rotation_6_years[Field2,
Potato]*Zn_conc_NPK+(0*Zn_conc_N28)
Zn_Mineral_fertiliser_matrix[Field3,Oats&pea] =
Mineral_fertiliser_application[Field3,Oats&pea]*Crop_rotation_6_years[Field
3,Oats&pea]*Zn_conc_N28*Zn_conc_NPK
Zn_Mineral_fertiliser_matrix[Field3,LeyI] =
Mineral_fertiliser_application[Field3,LeyI]*Crop_rotation_6_years[Field3,Le
yI]*Zn_conc_N28+(0*Zn_conc_NPK)
```

```
Zn_Mineral_fertiliser_matrix[Field3,LeyII] =
Mineral_fertiliser_application[Field3,LeyII]*Crop_rotation_6_years[Field3,L
eyII]*Zn_conc_N28+(0*Zn_conc_NPK)
Zn_Mineral_fertiliser_matrix[Field3,LeyIII] =
Mineral_fertiliser_application[Field3,LeyIII]*Crop_rotation_6_years[Field3,
LeyIII]*Zn_conc_N28+(0*Zn_conc_NPK)
Zn_Mineral_fertiliser_matrix[Field3,Barley] =
Mineral_fertiliser_application[Field3,Barley]*Crop_rotation_6_years[Field3,
Barley]*Zn_conc_N28*Zn_conc_NPK
Zn_Mineral_fertiliser_matrix[Field3,Potato] =
Mineral_fertiliser_application[Field3,Potato]*Crop_rotation_6_years[Field3,
Potato]*Zn_conc_NPK+(0*Zn_conc_N28)
Zn_Mineral_fertiliser_matrix[Field4,Oats&pea] =
Mineral_fertiliser_application[Field4,Oats&pea]*Crop_rotation_6_years[Field
4,Oats&pea]*Zn_conc_N28*Zn_conc_NPK
Zn_Mineral_fertiliser_matrix[Field4,LeyI] =
Mineral_fertiliser_application[Field4,LeyI]*Crop_rotation_6_years[Field4,Le
yI]*Zn_conc_N28+(0*Zn_conc_NPK)
Zn_Mineral_fertiliser_matrix[Field4,LeyII] =
Mineral_fertiliser_application[Field4,LeyII]*Crop_rotation_6_years[Field4,L
eyII]*Zn_conc_N28+(0*Zn_conc_NPK)
Zn_Mineral_fertiliser_matrix[Field4,LeyIII] =
Mineral_fertiliser_application[Field4,LeyIII]*Crop_rotation_6_years[Field4,
LeyIII]*Zn_conc_N28+(0*Zn_conc_NPK)
Zn_Mineral_fertiliser_matrix[Field4,Barley] =
Mineral_fertiliser_application[Field4,Barley]*Crop_rotation_6_years[Field4,
Barley]*Zn_conc_N28*Zn_conc_NPK
Zn_Mineral_fertiliser_matrix[Field4,Potato] =
Mineral_fertiliser_application[Field4,Potato]*Crop_rotation_6_years[Field4,
Potato]*Zn_conc_NPK+(0*Zn_conc_N28)
Zn_Mineral_fertiliser_matrix[Field5,Oats&pea] =
Mineral_fertiliser_application[Field5,Oats&pea]*Crop_rotation_6_years[Field
5,Oats&pea]*Zn_conc_N28*Zn_conc_NPK
Zn_Mineral_fertiliser_matrix[Field5,LeyI] =
Mineral_fertiliser_application[Field5,LeyI]*Crop_rotation_6_years[Field5,Le
yI]*Zn_conc_N28+(0*Zn_conc_NPK)
Zn_Mineral_fertiliser_matrix[Field5,LeyII] =
Mineral_fertiliser_application[Field5,LeyII]*Crop_rotation_6_years[Field5,L
eyII]*Zn_conc_N28+(0*Zn_conc_NPK)
Zn_Mineral_fertiliser_matrix[Field5,LeyIII] =
Mineral_fertiliser_application[Field5,LeyIII]*Crop_rotation_6_years[Field5,
LeyIII]*Zn_conc_N28+(0*Zn_conc_NPK)
Zn_Mineral_fertiliser_matrix[Field5,Barley] =
Mineral_fertiliser_application[Field5,Barley]*Crop_rotation_6_years[Field5,
Barley]*Zn_conc_N28*Zn_conc_NPK
Zn_Mineral_fertiliser_matrix[Field5,Potato] =
Mineral_fertiliser_application[Field5,Potato]*Crop_rotation_6_years[Field5,
Potato]*Zn_conc_NPK+(0*Zn_conc_N28)
Zn_Mineral_fertiliser_matrix[Field6,Oats&pea] =
Mineral_fertiliser_application[Field6,Oats&pea]*Crop_rotation_6_years[Field
```

```
6,Oats&pea]*Zn_conc_N28*Zn_conc_NPK
Zn_Mineral_fertiliser_matrix[Field6,LeyI] =
Mineral_fertiliser_application[Field6,LeyI]*Crop_rotation_6_years[Field6,Le
yI]*Zn_conc_N28+(0*Zn_conc_NPK)
Zn_Mineral_fertiliser_matrix[Field6,LeyII] =
Mineral_fertiliser_application[Field6,LeyII]*Crop_rotation_6_years[Field6,L
eyII]*Zn_conc_N28+(0*Zn_conc_NPK)
Zn_Mineral_fertiliser_matrix[Field6,LeyIII] =
Mineral_fertiliser_application[Field6,LeyIII]*Crop_rotation_6_years[Field6,
LeyIII]*Zn_conc_N28+(0*Zn_conc_NPK)
Zn_Mineral_fertiliser_matrix[Field6,Barley] =
Mineral_fertiliser_application[Field6,Barley]*Crop_rotation_6_years[Field6,
Barley]*Zn_conc_N28*Zn_conc_NPK
Zn_Mineral_fertiliser_matrix[Field6,Potato] =
Mineral_fertiliser_application[Field6,Potato]*Crop_rotation_6_years[Field6,
Potato]*Zn_conc_NPK+(0*Zn_conc_N28)
Zn_Pesticide_use_strategy[Field1,Oats&pea] =
Crop_rotation_6_years[Field1,Oats&pea]*0
Zn_Pesticide_use_strategy[Field1,LeyI] =
Crop_rotation_6_years[Field1,LeyI]*0
Zn_Pesticide_use_strategy[Field1,LeyII] =
Crop_rotation_6_years[Field1,LeyII]*0
Zn_Pesticide_use_strategy[Field1,LeyIII] =
Crop_rotation_6_years[Field1,LeyIII]*0
Zn_Pesticide_use_strategy[Field1,Barley] =
Crop_rotation_6_years[Field1,Barley]*0
Zn_Pesticide_use_strategy[Field1,Potato] =
Crop_rotation_6_years[Field1,Potato]*(NORMAL(8.9,0.36))
Zn_Pesticide_use_strategy[Field2,Oats&pea] =
Crop_rotation_6_years[Field2,Oats&pea]*0
Zn_Pesticide_use_strategy[Field2,LeyI] =
Crop_rotation_6_years[Field2,LeyI]*0
Zn_Pesticide_use_strategy[Field2,LeyII] =
Crop_rotation_6_years[Field2,LeyII]*0
Zn_Pesticide_use_strategy[Field2,LeyIII] =
Crop_rotation_6_years[Field2,LeyIII]*0
Zn_Pesticide_use_strategy[Field2,Barley] =
Crop_rotation_6_years[Field2,Barley]*0
Zn_Pesticide_use_strategy[Field2,Potato] =
Crop_rotation_6_years[Field2,Potato]*(NORMAL(8.9,0.36))
Zn_Pesticide_use_strategy[Field3,Oats&pea] =
Crop_rotation_6_years[Field3,Oats&pea]*0
Zn_Pesticide_use_strategy[Field3,LeyI] =
Crop_rotation_6_years[Field3,LeyI]*0
Zn_Pesticide_use_strategy[Field3,LeyII] =
Crop_rotation_6_years[Field3,LeyII]*0
Zn_Pesticide_use_strategy[Field3,LeyIII] =
Crop_rotation_6_years[Field3,LeyIII]*0
Zn_Pesticide_use_strategy[Field3,Barley] =
Crop_rotation_6_years[Field3,Barley]*0
```

```
Zn_Pesticide_use_strategy[Field3,Potato] =
Crop_rotation_6_years[Field3,Potato]*(NORMAL(8.9,0.36))
Zn_Pesticide_use_strategy[Field4,Oats&pea] =
Crop_rotation_6_years[Field4,Oats&pea]*0
Zn_Pesticide_use_strategy[Field4,LeyI] =
Crop_rotation_6_years[Field4,LeyI]*0
Zn_Pesticide_use_strategy[Field4,LeyII] =
Crop_rotation_6_years[Field4,LeyII]*0
Zn_Pesticide_use_strategy[Field4,LeyIII] =
Crop_rotation_6_years[Field4,LeyIII]*0
Zn_Pesticide_use_strategy[Field4,Barley] =
Crop_rotation_6_years[Field4,Barley]*0
Zn_Pesticide_use_strategy[Field4,Potato] =
Crop_rotation_6_years[Field4,Potato]*(NORMAL(8.9,0.36))
Zn_Pesticide_use_strategy[Field5,Oats&pea] =
Crop_rotation_6_years[Field5,Oats&pea]*0
Zn_Pesticide_use_strategy[Field5,LeyI] =
Crop_rotation_6_years[Field5,LeyI]*0
Zn_Pesticide_use_strategy[Field5,LeyII] =
Crop_rotation_6_years[Field5,LeyII]*0
Zn_Pesticide_use_strategy[Field5,LeyIII] =
Crop_rotation_6_years[Field5,LeyIII]*0
Zn_Pesticide_use_strategy[Field5,Barley] =
Crop_rotation_6_years[Field5,Barley]*0
Zn_Pesticide_use_strategy[Field5,Potato] =
Crop_rotation_6_years[Field5,Potato]*(NORMAL(8.9,0.36))
Zn_Pesticide_use_strategy[Field6,Oats&pea] =
Crop_rotation_6_years[Field6,Oats&pea]*0
Zn_Pesticide_use_strategy[Field6,LeyI] =
Crop_rotation_6_years[Field6,LeyI]*0
Zn_Pesticide_use_strategy[Field6,LeyII] =
Crop_rotation_6_years[Field6,LeyII]*0
Zn_Pesticide_use_strategy[Field6,LeyIII] =
Crop_rotation_6_years[Field6,LeyIII]*0
Zn_Pesticide_use_strategy[Field6,Barley] =
Crop_rotation_6_years[Field6,Barley]*0
Zn_Pesticide_use_strategy[Field6,Potato] =
Crop_rotation_6_years[Field6,Potato]*(NORMAL(8.9,0.36))
Zn_Procent_interna_flöden_jmf_cashflöden =
Time_for_emptying_of_import_and_export_of_Zn*(Zn_Interna_flöden/
(Flöden_som_passerar_gårdsgrinden_3+Zn_Interna_flöden))*100
Zn_Self_sufficiency_in_feed =
Time_for_emptying_of_import_and_export_of_Zn*(1-(Zn_Total_feed_import/
Total_Zn_fed))*100
Zn_subsoil_conc_g_per_dm3[Field] = ZnSoil_solution_subsoil[Field]/
(Water_in_subsoil*1000)
Zn_Summerade_förluster_Fieldvis_gånger_storlek_på_Field[Field1] =
Zn_Sum_per_ha_losses_fieldwise[Field1]*5.82
Zn_Summerade_förluster_Fieldvis_gånger_storlek_på_Field[Field2] =
Zn_Sum_per_ha_losses_fieldwise[Field2]*6.22
```

```
Zn_Summerade_förluster_Fieldvis_gånger_storlek_på_Field[Field3] =
Zn_Sum_per_ha_losses_fieldwise[Field3]*7.75
Zn_Summerade_förluster_Fieldvis_gånger_storlek_på_Field[Field4] =
Zn_Sum_per_ha_losses_fieldwise[Field4]*6.3
Zn_Summerade_förluster_Fieldvis_gånger_storlek_på_Field[Field5] =
Zn_Sum_per_ha_losses_fieldwise[Field5]*7.35
Zn_Summerade_förluster_Fieldvis_gånger_storlek_på_Field[Field6] =
Zn_Sum_per_ha_losses_fieldwise[Field6]*5.38
Zn_Summerade_förlustflöden[Field] =
Zn_leaching_subsoil[Field]+Zn_loss_Runoff[Field]
Zn_Summerad_Limeanvändning = ARRAYSUM(Zn_Limeanvändning[*,*])
Zn_Summerad_Pesticidanvändning = ARRAYSUM(Zn_Pesticidanvändning2[*,*])
Zn_Sum_array_barley = ARRAYSUM(Zn_Barley_per_ha_to_total[*,*])
Zn_Sum_array_ley_I = ARRAYSUM(Zn_Hay_per_ha_to_total[*,LeyI])
Zn_Sum_array_ley_II = ARRAYSUM(Zn_Hay_per_ha_to_total[*,LeyII])
Zn_Sum_array_ley_III = ARRAYSUM(Zn_Hay_per_ha_to_total[*,LeyIII])
Zn_Sum_array_oats&pea = ARRAYSUM(Zn_Oats&pea_per_ha_to_total[*,Oats&pea])
Zn_Sum_array_oatsonpotatofield =
ARRAYSUM(Zn_oatsonpotatofield_per_ha_to_total[*,Potato])
Zn_Sum_array_straw = ARRAYSUM(Zn_Straw_per_ha_to_total[*,*])
Zn_Sum_Fertilisation_I = ARRAYSUM(Utgödsling_I_Zn[*,*])
Zn_Sum_Fertilisation_II = ARRAYSUM(Zn_Fertilisation_II[*,*])
Zn_Sum_inflows_topsoil[Field] = Zn_Urie_minfert_fieldwise[Field]
Zn_Sum_of_inflows_to_silage_tower =
Zn_Sum_array_oatsonpotatofield+Zn_Sum_array_oats&pea+Zn_Sum_array_ley_I+Zn_
Sum_array_ley_II+Zn_Sum_array_ley_III
Zn_Sum_per_ha_losses_fieldwise[Field] = Total_Zn_loss_g_Zn_per_field[Field]
Zn_Sum_uptake[Field,Crop] =
Zn_Upptag_Subsoil[Field,Crop]+Zn_Upptake_Topsoil[Field,Crop]
Zn_topsoil_conc_g_per_dm3[Field] = Zn_Soil_solution_topsoil[Field]/
(Water_in_topsoil*1000)
Zn_Totala_förluster_för_gården =
ARRAYSUM(Zn_Summerade_förluster_Fieldvis_gånger_storlek_på_Field[*])
Zn_Total_läckage_från_alla_Field =
Total_acreage*ARRAYMEAN(Total_Zn_loss_g_Zn_per_field[*])
Zn_Total_accumulation_per_tot_ha =
IF(Zn_Time_for_summing_up_annual_Zn_flows>0) THEN
((Tot_ack_field_1_Zn+Tot_ack_field_2_Zn+Tot_ack_field_3_Zn+Tot_ack_field_4_
Zn+Tot_ack_field_5_Zn+Tot_ack_field_6_Zn)/Total_acreage) ELSE (0)
Zn_Total_barley_requirements = Feeding_of_barley*Zn_conc_barley*Cows
Zn_Total_feed_import =
Zn_Simulated_barley_import+Zn_Beetpulp+Zn_Minerals_and_concentrates
Zn_Upptag_subsoil_per_Field[Field1] =
Field_1_Upptag_Zn_Subsoil+(0*Field_2_Upptag_Zn_Subsoil*Field_3_Upptag_Zn_Su
bsoil*Field_4_Upptag_Zn_Subsoil*Field_5_Upptag_Zn_Subsoil*Field_6_Upptag_Zn
_Subsoil)
Zn_Upptag_subsoil_per_Field[Field2] =
Field_2_Upptag_Zn_Subsoil+(0*Field_1_Upptag_Zn_Subsoil*Field_3_Upptag_Zn_Su
bsoil*Field_4_Upptag_Zn_Subsoil*Field_5_Upptag_Zn_Subsoil*Field_6_Upptag_Zn
_Subsoil)
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```
Zn_Upptag_subsoil_per_Field[Field3] =
Field_3_Upptag_Zn_Subsoil+(0*Field_1_Upptag_Zn_Subsoil*Field_2_Upptag_Zn_Su
bsoil*Field_4_Upptag_Zn_Subsoil*Field_5_Upptag_Zn_Subsoil*Field_6_Upptag_Zn
_Subsoil)
Zn_Upptag_subsoil_per_Field[Field4] =
Field_4_Upptag_Zn_Subsoil+(0*Field_1_Upptag_Zn_Subsoil*Field_2_Upptag_Zn_Su
bsoil*Field_3_Upptag_Zn_Subsoil*Field_5_Upptag_Zn_Subsoil*Field_6_Upptag_Zn
_Subsoil)
Zn_Upptag_subsoil_per_Field[Field5] =
Field_5_Upptag_Zn_Subsoil+(0*Field_1_Upptag_Zn_Subsoil*Field_2_Upptag_Zn_Su
bsoil*Field_3_Upptag_Zn_Subsoil*Field_4_Upptag_Zn_Subsoil*Field_6_Upptag_Zn
_Subsoil)
Zn_Upptag_subsoil_per_Field[Field6] =
Field_6_Upptag_Zn_Subsoil+(0*Field_1_Upptag_Zn_Subsoil*Field_2_Upptag_Zn_Su
bsoil*Field_3_Upptag_Zn_Subsoil*Field_4_Upptag_Zn_Subsoil*Field_5_Upptag_Zn
_Subsoil)
Zn_Upptag_topsoil_per_Field[Field1] =
Field_1_Upptag_Zn_Topsoil+(0*Field_2_Upptag_Zn_Topsoil*Field_3_Upptag_Zn_To
psoil*Field_4_Upptag_Zn_Topsoil*Field_5_Upptag_Zn_Topsoil*Field_6_Upptag_Zn
_Topsoil)
Zn_Upptag_topsoil_per_Field[Field2] =
Field_2_Upptag_Zn_Topsoil+(0*Field_1_Upptag_Zn_Topsoil*Field_3_Upptag_Zn_To
psoil*Field_4_Upptag_Zn_Topsoil*Field_5_Upptag_Zn_Topsoil*Field_6_Upptag_Zn
_Topsoil)
Zn_Upptag_topsoil_per_Field[Field3] =
Field_3_Upptag_Zn_Topsoil+(0*Field_1_Upptag_Zn_Topsoil*Field_2_Upptag_Zn_To
psoil*Field_4_Upptag_Zn_Topsoil*Field_5_Upptag_Zn_Topsoil*Field_6_Upptag_Zn
_Topsoil)
Zn_Upptag_topsoil_per_Field[Field4] =
Field_4_Upptag_Zn_Topsoil+(0*Field_1_Upptag_Zn_Topsoil*Field_2_Upptag_Zn_To
psoil*Field_3_Upptag_Zn_Topsoil*Field_5_Upptag_Zn_Topsoil*Field_6_Upptag_Zn
_Topsoil)
Zn_Upptag_topsoil_per_Field[Field5] =
Field_5_Upptag_Zn_Topsoil+(0*Field_1_Upptag_Zn_Topsoil*Field_2_Upptag_Zn_To
psoil*Field_3_Upptag_Zn_Topsoil*Field_4_Upptag_Zn_Topsoil*Field_6_Upptag_Zn
_Topsoil)
Zn_Upptag_topsoil_per_Field[Field6] =
Field_6_Upptag_Zn_Topsoil+(0*Field_1_Upptag_Zn_Topsoil*Field_2_Upptag_Zn_To
psoil*Field_3_Upptag_Zn_Topsoil*Field_4_Upptag_Zn_Topsoil*Field_5_Upptag_Zn
_Topsoil)
Zn_Uptake_drive[Field,Crop] =
IF(Zn_Uptake[Field,Crop]<Zn_crop_requirements[Field,Crop]) THEN (1) ELSE
(0)
Zn_uptake_fieldwise[Field] =
Zn_Upptag_subsoil_per_Field[Field]+Zn_Upptag_topsoil_per_Field[Field]
Zn_Urie_minfert_fieldwise[Field1] =
Zn_Field_urine_minfert+(0*Zn_Field_2_urine_minfert*Zn_Field_3_urine_minfert
*Zn_Field_4_urine_minfert*Zn_Field_5_urine_minfert*Zn_Field_6_urine_minfert
)
Zn_Urie_minfert_fieldwise[Field2] =
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Zn_Field_2_urine_minfert+(0*Zn_Field_urine_minfert*Zn_Field_3_urine_minfert
*Zn_Field_4_urine_minfert*Zn_Field_5_urine_minfert*Zn_Field_6_urine_minfert
)
Zn_Urie_minfert_fieldwise[Field3] =
Zn_Field_3_urine_minfert+(0*Zn_Field_2_urine_minfert*Zn_Field_urine_minfert
*Zn_Field_4_urine_minfert*Zn_Field_5_urine_minfert*Zn_Field_6_urine_minfert
)
Zn_Urie_minfert_fieldwise[Field4] =
Zn_Field_4_urine_minfert+(0*Zn_Field_urine_minfert*Zn_Field_2_urine_minfert
*Zn_Field_3_urine_minfert*Zn_Field_5_urine_minfert*Zn_Field_6_urine_minfert
)
Zn_Urie_minfert_fieldwise[Field5] =
Zn_Field_5_urine_minfert+(0*Zn_Field_2_urine_minfert*Zn_Field_3_urine_minfe
rt*Zn_Field_4_urine_minfert*Zn_Field_urine_minfert*Zn_Field_6_urine_minfert
)
Zn_Urie_minfert_fieldwise[Field6] =
Zn_Field_6_urine_minfert+(0*Zn_Field_2_urine_minfert*Zn_Field_3_urine_minfe
rt*Zn_Field_4_urine_minfert*Zn_Field_5_urine_minfert*Zn_Field_urine_minfert
)
Zn_Urinematris[Field,Crop] =
Crop_rotation_6_years[Field,Crop]*Zn_Fertilisation_strategy_urine[Crop]
Zn_variation_dep[Field] = IF(Zn_Time_for_summing_up_annual_Zn_flows>0) THEN
(1*Zn_sum_dep[Field]) ELSE(0)
Zn_variation_harvest[Field] = IF(Zn_Time_for_summing_up_annual_Zn_flows>0)
THEN (1*Sum_Zn_harvest[Field]) ELSE(0)
Zn_variation_lime[Field] = IF(Zn_Time_for_summing_up_annual_Zn_flows>0)
THEN (1*Zn_sum_lime[Field]) ELSE(0)
Zn_variation_losses[Field] = IF(Zn_Time_for_summing_up_annual_Zn_flows>0)
THEN (1*Sum_Zn_losses[Field]) ELSE(0)
Zn_variation_manure[Field] = IF(Zn_Time_for_summing_up_annual_Zn_flows>0)
THEN (1*Zn_sum_manure[Field]) ELSE(0)
Zn_variation_mineralfertiliser[Field] =
IF(Zn_Time_for_summing_up_annual_Zn_flows>0) THEN
(1*Zn_Sum_mineral_fertiliser[Field]) ELSE(0)
Zn_variation_pesticide[Field] =
IF(Zn_Time_for_summing_up_annual_Zn_flows>0) THEN
(1*Zn_sum_pesticide[Field]) ELSE(0)
Zn_variation_seeds[Field] = IF(Zn_Time_for_summing_up_annual_Zn_flows>0)
THEN (1*Zn_sum_seeds[Field]) ELSE(0)
Zn_variation_urine[Field] = IF(Zn_Time_for_summing_up_annual_Zn_flows>0)
THEN (1*Zn_sum_urine[Field]) ELSE(0)
Cropping_period = GRAPH(Season)
(0.00, 0.00), (0.0909, 0.00), (0.182, 0.00), (0.273, 0.00), (0.364, 1.00),
(0.455, 1.00), (0.545, 1.00), (0.636, 1.00), (0.727, 0.00), (0.818, 0.00),
(0.909, 0.00), (1.00, 0.00)
EvapVariation = GRAPH(Season)
(0.00, 0.00), (0.0909, 0.00), (0.182, 0.00), (0.273, 0.00), (0.364, 0.8),
(0.455, 2.00), (0.545, 2.00), (0.636, 2.00), (0.727, 1.37), (0.818, 0.00),
(0.909, 0.00), (1.00, 0.00)
Harvest_time = GRAPH(Season)
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(0.00, 0.00), (0.0909, 0.00), (0.182, 0.00), (0.273, 0.00), (0.364, 0.00),
(0.455, 0.00), (0.545, 0.00), (0.636, 0.00), (0.727, 1.00), (0.818, 0.00),
(0.909, 0.00), (1.00, 0.00)
Limited_size_of_cowshed = GRAPH(Cows)
(0.00, 0.00), (3.16, 0.00), (6.32, 0.00), (9.47, 0.00), (12.6, 0.00),
(15.8, 0.00), (18.9, 0.00), (22.1, 0.00), (25.3, 0.00), (28.4, 0.00),
(31.6, 0.00), (34.7, 0.00), (37.9, 0.00), (41.1, 0.00), (44.2, 0.00),
(47.4, 0.00), (50.5, 0.00), (53.7, 60.0), (56.8, 60.0), (60.0, 60.0)
Nederbördsvariation = GRAPH(Season)
(0.00, 0.00), (0.0909, 0.00), (0.182, 0.525), (0.273, 3.00), (0.364, 1.91),
(0.455, 1.78), (0.545, 1.92), (0.636, 1.67), (0.727, 1.32), (0.818, 0.075),
(0.909, 0.00), (1.00, 0.00)
PercTopsoil = GRAPH(Soil_moisture_Topsoil)
(0.00, 0.00), (0.1, 2200), (0.2, 4350), (0.3, 6450), (0.4, 8350), (0.5,
9600), (0.6, 9950), (0.7, 9950), (0.8, 10000), (0.9, 10000), (1, 10000)
perkSubsoil = GRAPH(Soil_moisture_Subsoil)
(0.00, 0.00), (0.1, 3450), (0.2, 5950), (0.3, 8200), (0.4, 9700), (0.5,
10000), (0.6, 10000), (0.7, 10000), (0.8, 10000), (0.9, 10000), (1, 10000)
RunoffKurva = GRAPH(Soil_moisture_Topsoil)
(0.00, 0.00), (0.1, 495), (0.2, 860), (0.3, 970), (0.4, 985), (0.5, 995),
(0.6, 1000), (0.7, 1000), (0.8, 1000), (0.9, 1000), (1, 1000)
Säsongsvariation = GRAPH(Season)
(0.00, 0.00), (0.0909, 0.00), (0.182, 0.00), (0.273, 0.00), (0.364, 1.00),
(0.455, 1.00), (0.545, 1.00), (0.636, 1.00), (0.727, 1.00), (0.818, 0.41),
(0.909, 0.00), (1.00, 0.00)
Tid_för_årsummering_av_Cd_flöden = GRAPH(Season)
(0.00, 0.00), (0.00787, 0.00), (0.0157, 0.00), (0.0236, 0.00), (0.0315,
0.00), (0.0394, 0.00), (0.0472, 0.00), (0.0551, 0.00), (0.063, 0.00),
(0.0709, 0.00), (0.0787, 0.00), (0.0866, 0.00), (0.0945, 0.00), (0.102,
0.00), (0.11, 0.00), (0.118, 0.00), (0.126, 0.00), (0.134, 0.00), (0.142,
0.00), (0.15, 0.00), (0.157, 0.00), (0.165, 0.00), (0.173, 0.00), (0.181,
0.00), (0.189, 0.00), (0.197, 0.00), (0.205, 0.00), (0.213, 0.00), (0.22,
0.00), (0.228, 0.00), (0.236, 0.00), (0.244, 0.00), (0.252, 0.00), (0.26,
0.00), (0.268, 0.00), (0.276, 0.00), (0.283, 0.00), (0.291, 0.00), (0.299,
0.00), (0.307, 0.00), (0.315, 0.00), (0.323, 0.00), (0.331, 0.00), (0.339,
0.00), (0.346, 0.00), (0.354, 0.00), (0.362, 0.00), (0.37, 0.00), (0.378,
0.00), (0.386, 0.00), (0.394, 0.00), (0.402, 0.00), (0.409, 0.00), (0.417,
0.00), (0.425, 0.00), (0.433, 0.00), (0.441, 0.00), (0.449, 0.00), (0.457,
0.00), (0.465, 0.00), (0.472, 0.00), (0.48, 0.00), (0.488, 0.00), (0.496,
0.00), (0.504, 0.00), (0.512, 0.00), (0.52, 0.00), (0.528, 0.00), (0.535,
0.00), (0.543, 0.00), (0.551, 0.00), (0.559, 0.00), (0.567, 0.00), (0.575,
0.00), (0.583, 0.00), (0.591, 0.00), (0.598, 0.00), (0.606, 0.00), (0.614,
0.00), (0.622, 0.00), (0.63, 0.00), (0.638, 0.00), (0.646, 0.00), (0.654,
0.00), (0.661, 0.00), (0.669, 0.00), (0.677, 0.00), (0.685, 0.00), (0.693,
0.00), (0.701, 0.00), (0.709, 0.00), (0.717, 0.00), (0.724, 0.00), (0.732,
0.00), (0.74, 0.00), (0.748, 0.00), (0.756, 0.00), (0.764, 0.00), (0.772,
0.00), (0.78, 0.00), (0.787, 0.00), (0.795, 0.00), (0.803, 0.00), (0.811,
0.00), (0.819, 0.00), (0.827, 0.00), (0.835, 0.00), (0.843, 0.00), (0.85,
0.00), (0.858, 0.00), (0.866, 0.00), (0.874, 0.00), (0.882, 0.00), (0.89,
0.00), (0.898, 0.00), (0.906, 0.00), (0.913, 0.00), (0.921, 0.00), (0.929,
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0.00), (0.937, 0.00), (0.945, 0.00), (0.953, 0.00), (0.961, 0.00), (0.969,
0.00), (0.976, 0.00), (0.984, 1.00), (0.992, 0.00), (1, 0.00)
Time_for_emptying_of_bought_and_sold_Cd = GRAPH(Season)
(0.00, 0.00), (0.00787, 0.00), (0.0157, 0.00), (0.0236, 0.00), (0.0315,
0.00), (0.0394, 0.00), (0.0472, 0.00), (0.0551, 0.00), (0.063, 0.00),
(0.0709, 0.00), (0.0787, 0.00), (0.0866, 0.00), (0.0945, 0.00), (0.102,
0.00), (0.11, 0.00), (0.118, 0.00), (0.126, 0.00), (0.134, 0.00), (0.142,
0.00), (0.15, 0.00), (0.157, 0.00), (0.165, 0.00), (0.173, 0.00), (0.181,
0.00), (0.189, 0.00), (0.197, 0.00), (0.205, 0.00), (0.213, 0.00), (0.22,
0.00), (0.228, 0.00), (0.236, 0.00), (0.244, 0.00), (0.252, 0.00), (0.26,
0.00), (0.268, 0.00), (0.276, 0.00), (0.283, 0.00), (0.291, 0.00), (0.299,
0.00), (0.307, 0.00), (0.315, 0.00), (0.323, 0.00), (0.331, 0.00), (0.339,
0.00), (0.346, 0.00), (0.354, 0.00), (0.362, 0.00), (0.37, 0.00), (0.378,
0.00), (0.386, 0.00), (0.394, 0.00), (0.402, 0.00), (0.409, 0.00), (0.417,
0.00), (0.425, 0.00), (0.433, 0.00), (0.441, 0.00), (0.449, 0.00), (0.457,
0.00), (0.465, 0.00), (0.472, 0.00), (0.48, 0.00), (0.488, 0.00), (0.496,
0.00), (0.504, 0.00), (0.512, 0.00), (0.52, 0.00), (0.528, 0.00), (0.535,
0.00), (0.543, 0.00), (0.551, 0.00), (0.559, 0.00), (0.567, 0.00), (0.575,
0.00), (0.583, 0.00), (0.591, 0.00), (0.598, 0.00), (0.606, 0.00), (0.614,
0.00), (0.622, 0.00), (0.63, 0.00), (0.638, 0.00), (0.646, 0.00), (0.654,
0.00), (0.661, 0.00), (0.669, 0.00), (0.677, 0.00), (0.685, 0.00), (0.693,
0.00), (0.701, 0.00), (0.709, 0.00), (0.717, 0.00), (0.724, 0.00), (0.732,
0.00), (0.74, 0.00), (0.748, 0.00), (0.756, 0.00), (0.764, 0.00), (0.772,
0.00), (0.78, 0.00), (0.787, 0.00), (0.795, 0.00), (0.803, 0.00), (0.811,
0.00), (0.819, 0.00), (0.827, 0.00), (0.835, 0.00), (0.843, 0.00), (0.85,
0.00), (0.858, 0.00), (0.866, 0.00), (0.874, 0.00), (0.882, 0.00), (0.89,
0.00), (0.898, 0.00), (0.906, 0.00), (0.913, 0.00), (0.921, 0.00), (0.929,
0.00), (0.937, 0.00), (0.945, 0.00), (0.953, 0.00), (0.961, 0.00), (0.969,
0.00), (0.976, 0.00), (0.984, 0.00), (0.992, 1.00), (1, 1.00)
Time_for_emptying_of_imports_and_exports_of_P = GRAPH(Season)
(0.00, 0.00), (0.00787, 0.00), (0.0157, 0.00), (0.0236, 0.00), (0.0315,
0.00), (0.0394, 0.00), (0.0472, 0.00), (0.0551, 0.00), (0.063, 0.00),
(0.0709, 0.00), (0.0787, 0.00), (0.0866, 0.00), (0.0945, 0.00), (0.102,
0.00), (0.11, 0.00), (0.118, 0.00), (0.126, 0.00), (0.134, 0.00), (0.142,
0.00), (0.15, 0.00), (0.157, 0.00), (0.165, 0.00), (0.173, 0.00), (0.181,
0.00), (0.189, 0.00), (0.197, 0.00), (0.205, 0.00), (0.213, 0.00), (0.22,
0.00), (0.228, 0.00), (0.236, 0.00), (0.244, 0.00), (0.252, 0.00), (0.26,
0.00), (0.268, 0.00), (0.276, 0.00), (0.283, 0.00), (0.291, 0.00), (0.299,
0.00), (0.307, 0.00), (0.315, 0.00), (0.323, 0.00), (0.331, 0.00), (0.339,
0.00), (0.346, 0.00), (0.354, 0.00), (0.362, 0.00), (0.37, 0.00), (0.378,
0.00), (0.386, 0.00), (0.394, 0.00), (0.402, 0.00), (0.409, 0.00), (0.417,
0.00), (0.425, 0.00), (0.433, 0.00), (0.441, 0.00), (0.449, 0.00), (0.457,
0.00), (0.465, 0.00), (0.472, 0.00), (0.48, 0.00), (0.488, 0.00), (0.496,
0.00), (0.504, 0.00), (0.512, 0.00), (0.52, 0.00), (0.528, 0.00), (0.535,
0.00), (0.543, 0.00), (0.551, 0.00), (0.559, 0.00), (0.567, 0.00), (0.575,
0.00), (0.583, 0.00), (0.591, 0.00), (0.598, 0.00), (0.606, 0.00), (0.614,
0.00), (0.622, 0.00), (0.63, 0.00), (0.638, 0.00), (0.646, 0.00), (0.654,
0.00), (0.661, 0.00), (0.669, 0.00), (0.677, 0.00), (0.685, 0.00), (0.693,
0.00), (0.701, 0.00), (0.709, 0.00), (0.717, 0.00), (0.724, 0.00), (0.732,
0.00), (0.74, 0.00), (0.748, 0.00), (0.756, 0.00), (0.764, 0.00), (0.772,

0.00), (0.78, 0.00), (0.787, 0.00), (0.795, 0.00), (0.803, 0.00), (0.811,
0.00), (0.819, 0.00), (0.827, 0.00), (0.835, 0.00), (0.843, 0.00), (0.85,
0.00), (0.858, 0.00), (0.866, 0.00), (0.874, 0.00), (0.882, 0.00), (0.89,
0.00), (0.898, 0.00), (0.906, 0.00), (0.913, 0.00), (0.921, 0.00), (0.929,
0.00), (0.937, 0.00), (0.945, 0.00), (0.953, 0.00), (0.961, 0.00), (0.969,
0.00), (0.976, 0.00), (0.984, 0.00), (0.992, 1.00), (1, 1.00)
Time_for_emptying_of_import_and_export_of_Zn = GRAPH(Season)
(0.00, 0.00), (0.00787, 0.00), (0.0157, 0.00), (0.0236, 0.00), (0.0315,
0.00), (0.0394, 0.00), (0.0472, 0.00), (0.0551, 0.00), (0.063, 0.00),
(0.0709, 0.00), (0.0787, 0.00), (0.0866, 0.00), (0.0945, 0.00), (0.102,
0.00), (0.11, 0.00), (0.118, 0.00), (0.126, 0.00), (0.134, 0.00), (0.142,
0.00), (0.15, 0.00), (0.157, 0.00), (0.165, 0.00), (0.173, 0.00), (0.181,
0.00), (0.189, 0.00), (0.197, 0.00), (0.205, 0.00), (0.213, 0.00), (0.22,
0.00), (0.228, 0.00), (0.236, 0.00), (0.244, 0.00), (0.252, 0.00), (0.26,
0.00), (0.268, 0.00), (0.276, 0.00), (0.283, 0.00), (0.291, 0.00), (0.299,
0.00), (0.307, 0.00), (0.315, 0.00), (0.323, 0.00), (0.331, 0.00), (0.339,
0.00), (0.346, 0.00), (0.354, 0.00), (0.362, 0.00), (0.37, 0.00), (0.378,
0.00), (0.386, 0.00), (0.394, 0.00), (0.402, 0.00), (0.409, 0.00), (0.417,
0.00), (0.425, 0.00), (0.433, 0.00), (0.441, 0.00), (0.449, 0.00), (0.457,
0.00), (0.465, 0.00), (0.472, 0.00), (0.48, 0.00), (0.488, 0.00), (0.496,
0.00), (0.504, 0.00), (0.512, 0.00), (0.52, 0.00), (0.528, 0.00), (0.535,
0.00), (0.543, 0.00), (0.551, 0.00), (0.559, 0.00), (0.567, 0.00), (0.575,
0.00), (0.583, 0.00), (0.591, 0.00), (0.598, 0.00), (0.606, 0.00), (0.614,
0.00), (0.622, 0.00), (0.63, 0.00), (0.638, 0.00), (0.646, 0.00), (0.654,
0.00), (0.661, 0.00), (0.669, 0.00), (0.677, 0.00), (0.685, 0.00), (0.693,
0.00), (0.701, 0.00), (0.709, 0.00), (0.717, 0.00), (0.724, 0.00), (0.732,
0.00), (0.74, 0.00), (0.748, 0.00), (0.756, 0.00), (0.764, 0.00), (0.772,
0.00), (0.78, 0.00), (0.787, 0.00), (0.795, 0.00), (0.803, 0.00), (0.811,
0.00), (0.819, 0.00), (0.827, 0.00), (0.835, 0.00), (0.843, 0.00), (0.85,
0.00), (0.858, 0.00), (0.866, 0.00), (0.874, 0.00), (0.882, 0.00), (0.89,
0.00), (0.898, 0.00), (0.906, 0.00), (0.913, 0.00), (0.921, 0.00), (0.929,
0.00), (0.937, 0.00), (0.945, 0.00), (0.953, 0.00), (0.961, 0.00), (0.969,
0.00), (0.976, 0.00), (0.984, 0.00), (0.992, 1.00), (1, 1.00)
Time_for_manure_application = GRAPH(Season)
(0.00, 0.00), (0.0909, 0.00), (0.182, 0.00), (0.273, 0.00), (0.364, 1.00),
(0.455, 0.00), (0.545, 0.00), (0.636, 0.00), (0.727, 0.00), (0.818, 0.00),
(0.909, 0.00), (1.00, 0.00)
Time_for_summing_the_P_flows = GRAPH(Season)
(0.00, 0.00), (0.00787, 0.00), (0.0157, 0.00), (0.0236, 0.00), (0.0315,
0.00), (0.0394, 0.00), (0.0472, 0.00), (0.0551, 0.00), (0.063, 0.00),
(0.0709, 0.00), (0.0787, 0.00), (0.0866, 0.00), (0.0945, 0.00), (0.102,
0.00), (0.11, 0.00), (0.118, 0.00), (0.126, 0.00), (0.134, 0.00), (0.142,
0.00), (0.15, 0.00), (0.157, 0.00), (0.165, 0.00), (0.173, 0.00), (0.181,
0.00), (0.189, 0.00), (0.197, 0.00), (0.205, 0.00), (0.213, 0.00), (0.22,
0.00), (0.228, 0.00), (0.236, 0.00), (0.244, 0.00), (0.252, 0.00), (0.26,
0.00), (0.268, 0.00), (0.276, 0.00), (0.283, 0.00), (0.291, 0.00), (0.299,
0.00), (0.307, 0.00), (0.315, 0.00), (0.323, 0.00), (0.331, 0.00), (0.339,
0.00), (0.346, 0.00), (0.354, 0.00), (0.362, 0.00), (0.37, 0.00), (0.378,
0.00), (0.386, 0.00), (0.394, 0.00), (0.402, 0.00), (0.409, 0.00), (0.417,
0.00), (0.425, 0.00), (0.433, 0.00), (0.441, 0.00), (0.449, 0.00), (0.457,

```
0.00), (0.465, 0.00), (0.472, 0.00), (0.48, 0.00), (0.488, 0.00), (0.496,
0.00), (0.504, 0.00), (0.512, 0.00), (0.52, 0.00), (0.528, 0.00), (0.535,
0.00), (0.543, 0.00), (0.551, 0.00), (0.559, 0.00), (0.567, 0.00), (0.575,
0.00), (0.583, 0.00), (0.591, 0.00), (0.598, 0.00), (0.606, 0.00), (0.614,
0.00), (0.622, 0.00), (0.63, 0.00), (0.638, 0.00), (0.646, 0.00), (0.654,
0.00), (0.661, 0.00), (0.669, 0.00), (0.677, 0.00), (0.685, 0.00), (0.693,
0.00), (0.701, 0.00), (0.709, 0.00), (0.717, 0.00), (0.724, 0.00), (0.732,
0.00), (0.74, 0.00), (0.748, 0.00), (0.756, 0.00), (0.764, 0.00), (0.772,
0.00), (0.78, 0.00), (0.787, 0.00), (0.795, 0.00), (0.803, 0.00), (0.811,
0.00), (0.819, 0.00), (0.827, 0.00), (0.835, 0.00), (0.843, 0.00), (0.85,
0.00), (0.858, 0.00), (0.866, 0.00), (0.874, 0.00), (0.882, 0.00), (0.89,
0.00), (0.898, 0.00), (0.906, 0.00), (0.913, 0.00), (0.921, 0.00), (0.929,
0.00), (0.937, 0.00), (0.945, 0.00), (0.953, 0.00), (0.961, 0.00), (0.969,
0.00), (0.976, 0.00), (0.984, 1.00), (0.992, 0.00), (1, 0.00)
Uptake_activity_Subsoil = GRAPH(Soil_moisture_Subsoil)
(0.00, 0.00), (0.1, 0.1), (0.2, 1.15), (0.3, 1.03), (0.4, 0.05), (0.5,
0.01), (0.6, 0.00), (0.7, 0.00), (0.8, 0.00), (0.9, 0.00), (1, 0.00)
Uptake_activity_Topsoil = GRAPH(Soil_moisture_Topsoil)
(0.00, 0.00), (0.1, 0.00), (0.2, 0.54), (0.3, 1.35), (0.4, 1.48), (0.5,
1.37), (0.6, 0.92), (0.7, 0.05), (0.8, 0.00), (0.9, 0.00), (1, 0.00)
Zn_Time_for_summing_up_annual_Zn_flows = GRAPH(Season)
(0.00, 0.00), (0.00787, 0.00), (0.0157, 0.00), (0.0236, 0.00), (0.0315,
0.00), (0.0394, 0.00), (0.0472, 0.00), (0.0551, 0.00), (0.063, 0.00),
(0.0709, 0.00), (0.0787, 0.00), (0.0866, 0.00), (0.0945, 0.00), (0.102,
0.00), (0.11, 0.00), (0.118, 0.00), (0.126, 0.00), (0.134, 0.00), (0.142,
0.00), (0.15, 0.00), (0.157, 0.00), (0.165, 0.00), (0.173, 0.00), (0.181,
0.00), (0.189, 0.00), (0.197, 0.00), (0.205, 0.00), (0.213, 0.00), (0.22,
0.00), (0.228, 0.00), (0.236, 0.00), (0.244, 0.00), (0.252, 0.00), (0.26,
0.00), (0.268, 0.00), (0.276, 0.00), (0.283, 0.00), (0.291, 0.00), (0.299,
0.00), (0.307, 0.00), (0.315, 0.00), (0.323, 0.00), (0.331, 0.00), (0.339,
0.00), (0.346, 0.00), (0.354, 0.00), (0.362, 0.00), (0.37, 0.00), (0.378,
0.00), (0.386, 0.00), (0.394, 0.00), (0.402, 0.00), (0.409, 0.00), (0.417,
0.00), (0.425, 0.00), (0.433, 0.00), (0.441, 0.00), (0.449, 0.00), (0.457,
0.00), (0.465, 0.00), (0.472, 0.00), (0.48, 0.00), (0.488, 0.00), (0.496,
0.00), (0.504, 0.00), (0.512, 0.00), (0.52, 0.00), (0.528, 0.00), (0.535,
0.00), (0.543, 0.00), (0.551, 0.00), (0.559, 0.00), (0.567, 0.00), (0.575,
0.00), (0.583, 0.00), (0.591, 0.00), (0.598, 0.00), (0.606, 0.00), (0.614,
0.00), (0.622, 0.00), (0.63, 0.00), (0.638, 0.00), (0.646, 0.00), (0.654,
0.00), (0.661, 0.00), (0.669, 0.00), (0.677, 0.00), (0.685, 0.00), (0.693,
0.00), (0.701, 0.00), (0.709, 0.00), (0.717, 0.00), (0.724, 0.00), (0.732,
0.00), (0.74, 0.00), (0.748, 0.00), (0.756, 0.00), (0.764, 0.00), (0.772,
0.00), (0.78, 0.00), (0.787, 0.00), (0.795, 0.00), (0.803, 0.00), (0.811,
0.00), (0.819, 0.00), (0.827, 0.00), (0.835, 0.00), (0.843, 0.00), (0.85,
0.00), (0.858, 0.00), (0.866, 0.00), (0.874, 0.00), (0.882, 0.00), (0.89,
0.00), (0.898, 0.00), (0.906, 0.00), (0.913, 0.00), (0.921, 0.00), (0.929,
0.00), (0.937, 0.00), (0.945, 0.00), (0.953, 0.00), (0.961, 0.00), (0.969,
0.00), (0.976, 0.00), (0.984, 1.00), (0.992, 0.00), (1, 0.00)
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