



Nitrate Directive

How to manage nitrogen in intensive dairy farming?

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Impact of Nitrate Directive

- **Flanders is Nitrate Vulnerable Zone since January 2007**
 - Maximum 170 kg N/ha/year manure
- **< 90 kg/ha residual nitrate nitrogen in autumn**



Production of nitrogen

➤ Total nitrogen production in Flanders 2008

Animal category	Gross N production (kg)	Net N production (kg)
Cattle	78.251.062	66.235.669
<i>Milking cows</i>	<i>27.714.136</i>	<i>24.385.287</i>
Pigs	58.812.348	44.524.863
Poultry	14.676.303	9.396.163
Other	2.935.252	2.382.493
Total	154.674.965	122.539.188

Production of nitrogen

➤ N production milking cows

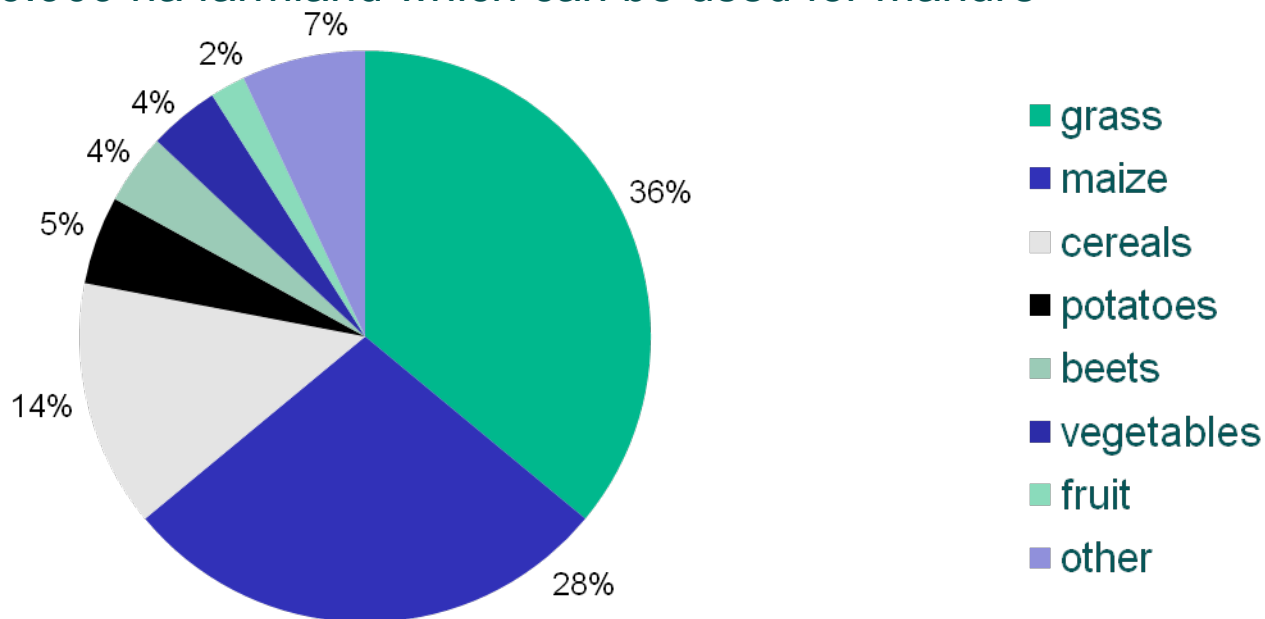
Milkproduction (kg milk/cow/year)	Excretion (kg N/cow/year)
$7.500 \leq 7.750$	111
$7.750 \leq 8.000$	113
$8.000 \leq 8.250$	115
$8.250 \leq 8.500$	117
$8.500 \leq 8.750$	119
$8.750 \leq 9.000$	121
$9.000 \leq 9.250$	123
$9.250 \leq 9.500$	125
$9.500 \leq 9.750$	127
$9.750 \leq 10.000$	129
>10.000	131

- Maximum 3 milking cows per ha fodder and grass
- At least 45% fodder in total surface fodder and grass

Application of nitrogen

➤ Potential manure application

➤ 676.909 ha farmland which can be used for manure



➤ 109.700.000 kg N potential manure application

➤ 22.460.465 kg N processed and/or exported



Application of nitrogen

➤ Average farm in book keeping system

Boerenbond

- 75,5 cows with milk production of 7.863 kg/cow/year
 - $75,5 * 113 \text{ kg N} = 8.532 \text{ kg N}$ production
 - 50 ha needed when 170 kg N/ha in manure is permitted
- 22 ha grass and 21 ha maize = 42 ha

Derogation

➤ Norms for manuring and fertilizing 2010

	P ₂ O ₅	N Total	N Manure	N Other	N Fertilizer
Grass	100	350	170 – 250 (1)	170	250
Maize/Grass	85	260 – 275 (2)	170 – 250 (1)	170	150
Winter wheat /catch crop	85	260 – 275 (2)	170 – 200 (1)	170	175
Fodder beets	85	260 – 275 (2)	170 – 200 (1)	170	175
Sugar beets	80	220	170 – 200 (1)	170	175

➤ (1) Derogation

➤ (2) Lower total N in case of sand



Derogation

➤ Requirements for derogation plots

➤ Crops:

➤ Grass: Nó clover in seed mixture

➤ Maize/grass: Grass sown on November 30 and cut and removed (no date)

➤ Winter wheat/catch crop: Catch crop sown on September 10 and plowing after February 15

➤ Sugar- and fodderbeets

➤ Manure: cattle, sheep, goat and horse manure, liquid fraction of pig manure



Derogation

➤ Requirements for derogation plots

➤ At least 2/3 of manure spread before May 15

➤ Except grazing

➤ Soil samples

➤ Phosphate: 1 standard soil sample/5 ha/4 years

➤ Nitrogen: 1 depth soil sample/5 ha/4 years → before 15/06



Derogation

➤ Requirements for whole farm

- Pasture renewal between February 15 and May 31
 - No manure and fertilizer in year of renewal
- Manure sample required for each transport of derogation manure
 - Result of sample is available before transport
 - Result of sample can be used during 1 year
 - Result of sample must be kept during 5 years
- Plan and register on manure and fertilizer



Solving manure surplus

- **Derogation: + 80 kg N/ha**
- **Decrease youngstock**
- No heifers above 2 years: 77kg N/heifer
- youngstock < 1 year: 33 kg N; youngstock 1-2 jr: 58 kg N
- **Increase milkproduction/cow**
 - 75 cows with 7.000 kg milk = 525.000 kg milk → 7.875 kg N/year
 - 58 cows with 9.000 kg milk = 525.000 kg milk → 7.058kg N/year
- **Manure placing in neighbourhood: €2,50 - €10/m³**
- **Manure treatment: €18 - €20/m³**



Residual nitrogen

- **Soil samples between Oktober 1 and November 15;
0-90 cm depth**
- Residual nitrate nitrogen < 90 kg/ha
- Punishment in case > 90 kg NO₃⁻-N/ha
 - No derogation
 - Mandatory guidance in creating a plan on manure
 - Penalty in case > 150 kg NO₃⁻-N/ha

Questions or remarks?



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