

Development of standards for protecting the environment from the adverse effects of animal farming

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Work has been carried out to determine national standards for the concentration of animal production, i.e. cattle, pigs and poultry, in terms of permissible environmental damage.

The work involved determining the gas emissions and the content of biogenic elements in manure from animal farms.

Based on these figures, guidelines for determining the concentration of animal production have been developed.

Table 5.**Environmental damage in relation to the size of dairy cows herd**

Type of damage	Number of head in the herd					
	20	60	120	240	480	700
N-NO₃ deposition (kg)	2854.8	8564.4	17128.8	34257.6	68515.2	102518
CO₂ eq. emission (t)	251.8	755.4	1510.8	3021.6	6043.2	8813.0
VOC emission (kg)	1440	4320	8640	17280	34560	50400
Minimum fertilized area(ha)	15.8-16.5	45.3-47.5	85.6-90.0	171.2-180.0	382.4-400.0	561.8-587.5
Optimal fertilized area (ha)	50	150	250	550	1200	1800

Table 6.**Environmental damage in relation to the size of sow herd**

Type of damage	Number of head in the herd					
	20	60	120	240	480	700
N-NO₃ deposition (kg)	673.4	2020	4040	6216	8080	23569
CO₂ eq. emission (t)	1.8	5.5	11,1	22.2	44.5	63.0
VOC emission (kg)	104.0	312.0	624.0	1248.0	2496	3640
Minimum fertilized area (ha)	2.87-3.64	9.54-11.84	17.65-25.58	35.3-44.5	70.6-90.1	102.6-129.7
Optimal fertilized area (ha)	15	50	100	170	360	450

Table 7.**Environmental damage in relation to the size of a laying hens flock**

Type of damage	Number of hens in the flock		
	300	1 000	200 000
N-NO₃ deposition (kg)	195.8	652.5	130500
CO₂ eq. emission (t)	0.5	1.7	340.0
VOC emission (kg)	28.5	95.0	19000.0
Minimum fertilized area (ha)	1.13-1.14	3.76-3.82	752.9-764.7
Optimal fertilized area (ha)	5	15	3000

Conclusions:

- **In terms of deposition, it is environmentally safe to keep a maximum of:**

200 cows,

600 sows

200,000 laying hens

These assumptions correspond approximately to a minimum farm area of 150 ha, but in order to eliminate the risks, the figure should be tripled (450 ha).

- **In terms of emission of volatile organic compounds (VOC), farms with the minimum cultivated area do not meet the requirement of spatial isolation and are sources of odour nuisance for the environment.**
- **A programme for reducing greenhouse gas emissions and biogenic potential should be implemented for farms exceeding the proposed area ranges.**