

## SUSTAINABLE AGRICULTURE – COULD IT BE A SOLUTION?

The intensive livestock industry is an element of **production-focused** (intensive) **farming** whose aim is to provide large volumes of cheap food for the growing population of an industrial society. This model of agriculture fits the assumptions of the capitalist economy which favours the fulfilment of economic goals as its top priority. With the development of intensive agriculture, the conflict between agricultural activities and the natural environment has deepened, which is clearly visible in the scale of the competition between economic and environmental goals.

This fundamental problem can be addressed by **sustainable agriculture**. It can be implemented by subjecting the existing installations to environmental protection discipline (also in terms of law enforcement and compliance monitoring), and by adapting them to environmentally friendly production requirements (causing as little harm to the environment as possible). With respect to the planned undertakings, sustainable approach to the investment process can be expressed by incorporating specific limitations and restrictions into spatial development plans so as to prevent the establishment of large-scale livestock farms within areas of precious environmental qualities, or unfit for intensive livestock industry for social (risk of social conflicts, close proximity to residential areas, etc.) and strategic reasons (tourist and recreation qualities as the area of interest of local administration).

The idea behind sustainable agriculture directly draws from the idea of **sustainable development**. Sustainable agriculture is subordinate to the fulfilment of basic sustainable development goals, and consists in the use of environmentally friendly methods which allow to limit negative impact of agriculture on the environment by introducing integrated plant protection and fertilisation plans based on nitrogen balance (Council Regulation (CE) 1257/1999).

In comparing the **productive farming**, **sustainable agriculture** and **ecological farming**, it would be advisable to refer to the objectives of the agricultural activities in each of these farming models. Productive farming strives for economic and social balance without paying much attention to ecological balance. Sustainable agriculture balances social, economic and ecological issues. Ecological farming strives to keep an ecological balance, which is superior to social issues and economic relations. These three farming models have different environmental consequences. In intensive farming, the environment is polluted, the ecological balance and cultural qualities of rural areas are lost, and soil is degraded. In sustainable agriculture, these negative consequences are counterbalanced by limiting pollution and environmental degradation and by protecting the current environmental and cultural status. In ecological farming, the natural environment of the agro-ecosystems and the directly related ecosystems are a matter of priority with the aim to preserve their biodiversity for the future generations.

For more information visit: [www.ccb-industrialanimalfarming.eu](http://www.ccb-industrialanimalfarming.eu)



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## Guidelines for Best Environmental Practice for Industrial Animal Farming

Dynamic development of modern agriculture, intensive livestock industry and yield maximization measures in the face of limited and definite agricultural area give rise not only to economic opportunities, but also to serious risks for the natural environment of the Baltic Sea. Intensive and unsustainable livestock production and its contribution to the eutrophication of the Baltic Sea as well as the inland water courses and reservoirs have become one of the most serious challenges in environmental protection of the Baltic Sea catchment basin.

In consideration of the scale and intensification of livestock production, as well as the livestock density, it appears obvious that large-scale animal production installations exert a significant effect on the natural environment and local communities. It is widely believed that large-scale livestock production has no chance of being environmentally friendly, which is, at least in many cases, confirmed in practice.

There are methods to prevent negative consequences of industrial livestock production to make it, if not friendly, than perhaps neutral to the natural environment. By applying these methods, the intensive livestock industry can come closer to the sustainable agriculture role-model; however, these methods can never substitute work at the grassroots level, i.e. starting from investment planning, in the spirit of sustainable development. In other words, the scale and concentration of production is at stake.

## PREVENTING WATER AND SOIL POLLUTION

1. **Full compliance with legal agro-technical requirements for storage and use of natural fertilisers**, with a focus on periods when the use of fertilisers is prohibited, field conditions, doses and methods of land spreading (i.e. slurry injection for nitrogen losses reduced by as much as 90%, fertiliser covering or mixing with soil within 6 h from land spreading can reduce nitrogen losses by as much as 99%), use of fertilisers close to watercourses and water protection zones, volume/area and non-permeability of fertiliser storage tanks (nitrogen losses reduced by as much as 70%), minimum storage capacity for no less than 6 months, fertilisation plans and fertilisation within NVZs;

2. **Determining doses of fertilisers based on nutrient balance**, taking into account soil fertility and the actual nutrient uptake of crops;
3. **Limiting livestock size down** to levels which guarantee optimal use of natural fertilisers;
4. **Classifying large-scale livestock farms as point sources of agricultural pollution**, HELCOM's HOT SPOTS, to make room for formal recovery programmes to eliminate conditions which were the basis for such classification;
5. **Promoting alternative methods to limit nutrient run-off** to groundwater and surface water (water recirculation accompanied by nitrogen and phosphorus reduction in bacteria-algae treatment ponds, removal of soil suspension, macrophyte/plant filters, artificial biological barriers along water courses, filtration ditches, phosphorus removal from surface water using biological coagulation methods, in-field retention containers);
6. **Dividing fertiliser doses**, avoiding land spreading in the autumn period (when the highest nutrient losses are observed);
7. **Providing effective education system for present-day** (professional agricultural advisory services) and future (training teachers and updating curricula in agricultural schools) farmers on environmental impact of agricultural production.

#### PREVENTING AIR POLLUTION

1. **Biotechnological slurry processing** (biological disinfection and sanitisation, mineralisation of organic matter, biological treatment installations, controlled fermentation, use of 'effective microorganisms');
2. **Use of balanced livestock diet** which is easier to digest, adapting feed portions to the actual demand for nutrients (in terms of species, age, production type; adding phytase) to prevent over-excretion of nitrogen and phosphorus;
3. **Promoting production and conversion of agricultural biogas** into thermal, electric or mechanical energy (back in 1980s, there were 20 agricultural biogas production installations in Poland, there are currently only 11, 10 installations were established after 2007; the renewable energy sector based on biogas production has been progressively expanding by 30%; with the current production levels of livestock waste, as much as 3.3 Gm<sup>3</sup> biogas with average calorific value of 23.0 MJ/m<sup>3</sup> could be produced);
4. **Limiting ammonia emissions** by ultraviolet radiation, negative air ionisation, mechanical ventilation with recirculation, floor(surface) heating, maintaining optimum litter humidity, as well as microbiological and mineral-organic additive to animal excrements (bentonite, zeolites, humic raw materials - peat and brown coal, microbiological agents based on *Lactobacillus* and *Bacillus* strains, saponins) in livestock housings;
5. **Limiting microbiological contamination of air** in livestock buildings (regular disinfection and disinsectisation of livestock housings, ventilation and recirculation filters with disinfecting agents, livestock hygiene);
6. **Isolation and protection zones** (green belts made of selected species of tall trees, medium trees and shrubs);
7. **Use of alternative natural fertilisers processing methods** (ashing, thermal gasification of fermentation residues).

#### PREVENTING ODOUR POLLUTION

1. **Use of modern deodorization methods** for exhaust gases from intensive livestock farms (biological methods - biofilters and bioscrubers, neutralisation);
2. **Preventing odour emissions** with bioagents added to litter, slurry and manure;
3. **Location of new livestock farms** far from residential areas.

#### PREVENTING LEGISLATIVE AND LEGAL PROBLEMS

1. **Full implementation of amended Helsinki Convention (Annex III)** and its full transposition to the HELCOM Member-countries' law;
2. **Effective supervision of intensive livestock industry** by public authorities and municipal bodies;
3. **Adoption and enforcement well-designed and effective laws and regulations on air quality standards**, establishing standards and methods of air quality assessment (implementing act to the Environmental Protection Law Act);
4. **Facilitating public involvement in the decision-making** on geographical location and commissioning of new large-scale livestock farms and introducing changes in operating permits awarded to existing farms (i.e. by unification of the Public Information Bulletins (BIP) in terms of social consultations, facilitating access to public information and environmental information and its protection, changing the attitudes of public officers to the participation of local communities and NGOs in decision-making);
5. **Review of Nitrogen Vulnerable Zones** (particularly exposed to nitrogen pollution from agricultural sources) in Poland by adapting their location and size to the actual vulnerability of waters, based on environmental, hydrological and agricultural criteria;
6. **Unification of the definition of large-scale livestock farms**, by expanding it to include rearing installations designed for all livestock species (cattle, horses, sheep, goats, fallow deer, and fur animals, apart from poultry and pigs) with livestock size determined by means of unified criteria expressed in LU;
7. **Consolidating the legitimacy of the Best Available Techniques (BAT)** for intensive livestock production, and making them legally binding while determining the conditions for granting integrated permits and decisions on environmental conditions for investment permits;
8. **Popularisation of the idea of Corporate Social Accountability and the Voluntary Ecological Commitments** among the large-scale livestock farm owners and consumers;
9. **More effective enforcement of voluntary commitments made by large-scale livestock farms under the Rural Development Programme**, and making subsidies/preferential loans/public assistance granted by the EU (European Bank for Reconstruction and Development, EBRD) dependent on meeting the EU environmental protection standards;
10. **Public disclosure of fertilisation plans** for public monitoring of compliance with fertilisation regulations;
11. **Training of public officers** who deal with environmental assessment procedures; optimisation of environmental assessment procedures and timetables.