

## Need for standard values for livestock manure in the Baltic Sea region

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It is widely accepted that agriculture counts for more than half of the N and P sources reaching the Baltic Sea, and additionally that these losses mainly originate from livestock manure. The legal framework established by EU and its Member States, such as the Nitrates Directive, the Water Framework Directive and the Directive on Industrial Emissions (follower of the IPPC Directive) can principally not be effectively implemented without official standard values for livestock manure, but only three countries in the Baltic Sea Region have enforced the use of such standards. Moreover, farmers' incentives to invest in agro-environmental technology like biogas production, manure separation and SCIEN<sup>1</sup> drainage technologies are severely hampered if they are not credited for the environmental benefits of such investments, and investment calculations concerning environmental technology projects are basically dependent on precise manure values.

### Definition of standard values for livestock manure

Standard values for livestock manure is basically a table with information of the following type:

Animal type, for instance heifers from 12-24 months age	Feed intensity / productivity for instance 5,000 kg milk produced per year	Housing system, for instance partly slotted floors	Bedding type, for instance chopped straw	Ton per year per animal place or per produced animal, for instance 0.6 ton per produced fattener	Dry matter content, for instance 5.5 %	Total nitrogen content, for instance 4.8 kg/ton	NH <sub>4</sub> <sup>+</sup> -N, for instance 3.1 kg/ton	P content, for instance 2.3 kg/ton (can also be expressed as P <sub>2</sub> O <sub>5</sub> )	K content, for instance 3.4 kg/ton (can also be expressed as K <sub>2</sub> O)

The standard values shall of course be described for all/relevant animal types, feed intensities, housing systems and bedding types. There would therefore typically be at least 30 datasets / rows in the table.

<sup>1</sup> SCIEN is an acronym for sustainable, controlled, intelligent, environmental friendly and nutrient loss mitigating



Standard values are necessary for precise use of livestock manure as fertilizer.

### **Methodology for preparation of the standards**

Correct prepared standard values are prepared following a mass balance methodology, i.e. where N and P going into the production via feed and bedding material are deducted amounts leaving with products (meat, milk, etc.) and ventilation air.

The standards are defined as to ex animal, ex housing and ex storage, since there are considerable differences in manure qualities and amounts at these stages; it is for instance typical that 20-60% of the nitrogen disappears from ex animal to ex storage.

EU's Nitrates Directive concerns the manure qualities and amounts ex storage (i.e. what is available for fertilising of field crops).

Manure standards can therefore not be established via analyses, because one of the key parameters, the amount produced per animal place or per produced animal, logically cannot be determined by analyses. Another reason is that representative sampling of livestock manure is almost impossible, at least for the solid types, wherefore a sufficient statistical certainty of analysis results typically requires that several hundred samples are analysed, and determination of the figures ex storage is impossible if the storage as normally is a mixture of manures from several animal types.

Standard values for livestock manure are expensive to develop, and they require frequent updating along with the development in stable systems, productivity levels, etc. It has earlier been said that each country needs their own standards because productivity levels and production systems differ from country to country. However, with and increasing harmonisation of agricultural production systems and practices in the Baltic Sea Region there are today the best possibility ever to share at least a part of the complex scientific work among countries in the region.



Slurry is the most common livestock manure type in the Baltic Sea area, but qualities varies a lot, for instance with dry matter content from around 1% to around 12%.

### **Existence of official and sufficient standard values for livestock manure**

Like in Latvia and Lithuania the recent National Roundtable meeting in Poland, held under auspices of Baltic COMPASS, concluded that official manure standards do not exist, but farmers and their advisers and anyone else have to deal with some more or less incomplete recommendations; in Poland a statistics of manure analyses is available, but without indication of the amount of livestock manure from different animal types, kept under different conditions of housing systems, bedding types and feed intensity. Latvia has some unofficial figures that were developed in several steps with heavy influence of manure analysis results, but this has been criticised by farmers for not corresponding with reality. Lithuania has some similar insufficient figures in the Code of Good Agricultural Practices from 2001. Estonia and Finland have some figures, but these are not considered trustworthy even by the ministries who use them. Only three out of ten countries in the region, namely Sweden, Denmark and Germany, have official and trustworthy manure figures.

## **Baltic Compass**

Baltic COMPASS promotes sustainable agriculture in the Baltic Sea region. The region's 90 million inhabitants anticipate both high quality food produced in the region and a healthy environment, including a cleaner Baltic Sea. Baltic Compass looks for innovative solutions needed for the future of the region and its agriculture, environment and business.

Baltic Compass has a wide approach to the agri-environmental challenges, covering agricultural best practices, investment support and technologies, water assessment and scenarios, and policy and governance issues.

Baltic Compass is financed by the European Union as a strategic project for its support to investments and policy adaptation. The 22 partners represent national authorities, interest organizations, scientific institutes and innovation centres from the Baltic Sea Region countries. Baltic Compass is a three year project running until December 2012.

