MANURE STANDARDS PUBLICATION

Conclusions from Manure Standards national events

Interreg Baltic Sea Region
EUROPEAN REGIONAL DEVELOPMENT FUND
EUROPEAN UNION
Manure Standards

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The project Manure Standards organized a series of national events in the Baltic Sea countries to receive feedback from the project's targets groups at three different stages of the project. The first national events were organized in the beginning of the project in autumn 2017 and winter 2018 to introduce the project and the planned activities. The second set of events in autumn 2018 and winter 2019 presented the first results, and the final events in the end of 2019 summed up the final results and project's recommendations. The events attracted a broad range of participants representing national ministries, authorities, research institutes, industries, farmers and advisory organizations.

The Baltic Sea countries are in different situations when it comes to practices in manure management and the availability of and the frequency of updating manure related data. These conclusions drawn from the national events highlight some of these differences and the key discussion points in each country. More information on the national legislation regarding manure use as a fertilizer can be found in the report "Legislation and voluntary actions regulating manure fertilisation and fertiliser use in the Baltic Sea Region" produced by the project.

Denmark

During the last three decades, Denmark has used an advanced, yearly updated normative manure system to calculate the nutrient content in manure produced at individual farms. The normative system (Normtal) is a comprehensive mass balance calculation model. In fact, the Calculation Tool developed in the project Manure Standards WP3 is based on the Danish system. One of the aims of the Danish contribution to the project has been to compare the nutrient content calculated by the normative system to the nutrient content measured by manure sampling.

The methods used and the results found in these comparative studies has been presented and discussed at a number of national events with representatives from national ministries, research institutes, and agricultural advisory organisations.

The national events summed up the project results and recommendations. Reasons for differences in the results obtained by the sampling method and the normative system were discussed. The highest difference was observed for phosphorus and this was assumed to be due to its high tendency for stratification in slurry storage tanks. Thus, it was concluded for Denmark that the phosphorus content in liquid manure (slurry) cannot be correctly estimated by produced instructions for manure sampling methods. This was thought to apply especially to pig slurry.

The Danish partners in Manure Standards were Aarhus University and SEGES.

Estonia

The Estonian project team of Manure Standards held several national events targeting different stakeholder groups. The more general events introducing the project and its key outputs were held in the beginning, the middle and the end of the project. They were targeted to policy makers and monitoring organisations with the aim of encouraging updates in the national legislation and emission

calculation systems related to manure. In addition, eight specific workshops and seminars were held for farmers introducing and providing training on using the farm-level calculation tool the project developed.

In the Estonian events, it was a common position that a standardised manure sampling, monitoring and management assessment is highly relevant and there is a need to improve the situation in the sector both from the environmental and the economic point-of-view. In the long-term, it was agreed that Estonia aims to get to a point where the farmer has to insert their data only once and the relevant emissions, fertilisation rates etc. are calculated automatically and are usable by the farmer and all other relevant organisations.

As a result of the Manure Standards project, Estonia has started changes in two regulations related to manure management. These are to include the developed manure calculation tool in the official legislation as an optional tool for calculating emissions and nutrients on farm level.

During the seminars and throughout other project activities (especially manure sampling on pilot farms), it became very clear that the methodologies currently used by Estonian laboratories for manure sampling and analyses need to be refined so that the reliability of the results would be improved. Currently, Estonia has no transnational control mechanisms for manure analyses, unlike for feed and mineral fertilizers. So far, the main problems have arisen from manure sampling, as farmers occasionally do not follow the sampling guidelines properly (taking the sample, preserving the sample). Thus, raising awareness and improving skills on manure sampling will be one of the priorities for policy makers, advisory services and monitoring organisations in the upcoming years.

The Estonian partners in Manure Standards were Estonian University of Life Sciences (EMU) and Estonian Crop Research Institute (ECRI).

Finland

In Finland the project Manure Standards organised three national project events which gathered stakeholders from policy making, regional authorities, industries, advisory organisations, farmers and research.

In the national events, the Finnish stakeholders discussed both manure sampling and analysis, which is currently the usual method to determine manure nutrient content on farm scale, and calculating manure as a mass balance, including the reliability and feasibility of the methods for different purposes. The stakeholders supported the project's aim to harmonise the methods for collecting manure data and for using it in manure fertilisation planning. The harmonisation was seen important in achieving a more level playing field between the farms and the countries in the Baltic Sea region.

Project coordinator Sari Luostarinen presented Manure Standards results and draft recommendations in the final national event on 3rd December 2019.

It was concluded that the input data collection for improving and maintaining high quality manure data in Finland should be developed further. For instance, feeding information can be difficult to attain or

some parameters are lacking and it was agreed that the dialogue between research and feeding industry should be continued. Overall, to improve the feasibility of mass balance calculations, high quality input data was seen vital.

Regarding manure sampling and analysis, the project recommends more precise sampling procedures also for Finnish farms, which was supported by the participating stakeholders. There was also discussion about the differences in the analysis results of different commercial laboratories as the project results showed. It was seen important to have further discussions with the laboratories to improve their knowhow with manure as a matrix.

In general, it was agreed that Finland has a good amount of manure data and the methods are mostly in line with the project findings. Still, there should be adequate resources for maintaining and updating the data and clarifying which organizations are responsible for which data generation.

The Finnish partners in Manure Standards were Natural Resources Institute Finland, Luke (project coordinator), Finnish Environment Institute SYKE and Central Union of Agricultural Producers and Forest Owners MTK. Also the transnational project partner HELCOM took part in organising the Finnish events.

Germany

In Germany, three national events were held during the project, targeting which gathered stakeholders from policy making, advisory organisations and research. The main discussion topic of all events was: 'How can reliable nutrient contents and amounts of manure be collected or derived from agriculture practice to plan sustainable fertilisation for closing nutrient cycles to protect the environment?'

It was seen that data collection on manure amounts, use and properties should be improved. Manure properties that change with feeding should be examined and evaluated regularly. Statistics and databases about farms and agriculture created and collected by different institutions should be improved, merged, connected and homogenised. More data should be collected, and the temporal rhythm of data collection should be shortened. The actually available data do not allow for, on the one

hand, an exhaustive assessment for one distinct farm, and on the other hand, for serious upscaling of all relevant information. No actually available model is fulfilling the requirements to allow for an all-embracing judgement about manure use in Germany.

Standard table values for manure are not sufficiently detailed for the different needs of the various kinds of agriculture and production systems. Some important information, e.g. soil organic carbon content and the carbon content in manure, is not measured regularly and are often unknown by the farmer. Feeding of livestock is a very important factor, but it is not publicly available, especially not at farm scale. This would be useful, however, for the regulation of manure application, and it would assist in accessing the environmental effects of agriculture. The focus on nitrogen, phosphorus and potassium fertilization should be extended also to carbon.

The German stakeholders also highlighted the great importance of representative manure samples and related analysis results. On the other hand, the sampling instructions must be simple enough for farmers.

The German partner in Manure Standards was Julius Kühn Institut (JKI).

Latvia

In Latvia during the project three national events and two events that targeted specific stakeholders were held. The national events were open to everyone and was attended by farmers, advisors, scientists and policy makers. The two separate events were organised for advisors and policy makers and were more focused.

It was noted during the Latvian events that the updated methods for manure data collection and thus manure data will allow the Latvian farms to perform manure analysis with better quality. This will help in their nutrient management and eventually improved, positive environmental and economic performance of the farming sector is expected.

Also, different solutions for manure transport and spreading were discussed. It is true that the most environmentally-friendly technologies are more expensive. Especially on smaller farms it is not profitable to buy modern manure spreading technology because it cannot be paid back. The solution could be outsourcing that is rapidly developing in Latvia. The willingness to develop outsourcing business by providing slurry removal and installation services to smaller farms was confirmed by the attendees representing this business.

A key conclusion from the Latvian events was that manure is a very valuable source of nutrients that needs to be managed properly; otherwise manure handling will cause environmental pollution. Much work remains to be done in Latvia to educate farmers about the value of manure and to set up a support system for the purchase of modern technology. Only a comprehensive approach will make a significant contribution to the economic growth of farms while respecting the environment.

The main benefit of the project for Latvia is the exchange of information on manure management in the Baltic Sea region and the development of uniform guidelines (instructions) for the sampling of manure, the evaluation of laboratory methods used for the analysis of manure and the development of a calculation tool for the calculation of manure quantity and chemical composition. 22 Latvian livestock

farms were involved in the project and 124 samples were analyzed, thus the amount of manure and its chemical composition were updated according to modern production conditions, which are influenced by many different factors: livestock productivity, used feed and its doses, animal housing, methods of manure removal and storage. The instructions and calculation tools developed during the project will be used by farmers and agricultural consultants in their daily work, and by policy makers in the development of rules and requirements for manure management.

The Latvian partners in Manure Standards were State Plant Protection Service SPPS and the Latvian Farmers' Parliament ZSA.

Lithuania

Lithuanian events focused strongly on sustainable manure practices and attracted an audience consisting of scientist and lecturers from Agricultural and Animal Science institutes, universities and colleges, advisors from Agricultural Advisory Service, farmers, students. Most active were scientists and advisors.

There was a general agreement that manure management and nutrient bookkeeping should be improved in Lithuania and more attention should be dedicated to reducing negative environmental impacts of agriculture. It was discussed that there is a strong need to update the Lithuanian Code of Good Agricultural Practices with current data.

Participants of the events pointed out that there are problems with over-fertilising in the middle regions of Lithuania. Besides that, farmers tend to increase yields of crops with the help of nitrogen fertilisers only and forgetting about P and K and therefore a deficit of phosphorus started to appear in soils of some regions and surplus of N is leached to the waters.

There was a discussion about allowed time periods for manure spreading. From time to time, the spreading periods are adjusted, and the adjustments should be based on different weather conditions not allowing for spreading manures frozen land. However, it seems that some farmers and farming enterprises have problems with insufficient manure storage capacities. As a consequence, there is a pressure to prolong manure spreading period and that can lead to pollution.

Another discussion topic was the changes in animal keeping technologies that lead to changes in manure types produced. That means that slurry technologies have started to prevail compared to litter technologies with solid manure. Formerly there was a surplus of solid manure, but now solid manure is in strong demand and farms with solid manure no longer have problems with its distribution.

Despite the raised problems, it was emphasised that there has been a huge improvement in manure management compared to pre-EU time in Lithuania. At that time 15 years ago, there were only single cases of proper manure handling. After re-establishing of independence and restoring land ownership, many animal farms appeared with low or lacking knowledge about proper manure management. Besides that, legal requirements were bare or absent as well. That is why the implementation of EU Nitrate Directive was a huge and important step forward to save the environment.

Lithuanian partner in Manure Standards was Lithuanian University of Health Sciences.

Poland

The effect that updating national manure data could have on farmers was an important topic in the first Polish national event. The participants expressed views regarding possible added bureaucracy or impacts on farm economy – for better or for worse. Some concerns regarding added bureaucracy involved the increase in the number of procedures to implement the new manure data or the need to keep more extensive documentation. As regards farm economy, the participants discussed the impacts of the new data on limiting the use of manure for fertilisation or the need to expand storage facilities. These issues have been addressed in the project with economic impact assessment. On a more positive note, there was also discussion on whether more precise manure data will allow for better manure management and reduction of costs of mineral fertilisers.

During the Polish final event of the Manure Standards project, assumptions, goals, performed actions and achieved results were assessed. The level of implementation of individual work packages was discussed in detail. An important element of the event was the presentation of the currently available project effects - tools, publications, and studies: Database of the chemical composition of livestock manures, farm survey, calculation tools, handbook, sampling and analysis guidelines, and report on different manure legislation in the countries.

The event was concluded with a joint discussion with project partners and meeting participants: representatives of the Ministry of Agriculture and Rural Development, Chemical–Agricultural Station, scientists, advisors, and NGOs. The most important issues concerned the possibility of using the tools developed by the project in creating a national strategy for the livestock manure management, the use of project achievements in education, and the future challenges facing Polish agriculture in fertilisation issues.

The Polish partners in Manure Standards were Institute of Soil Science and Plant Cultivation (IUNG) and Agricultural Advisory Centre in Brinów.

Russia

The need to update the current Russian standards, which are used to calculate the quantity and estimate the quality of manure, was brought up during the Russian events. The events were participated by researchers, scientists and students as well as representatives from farms, NGOs and expert authorities. The project activities will make it possible to specify more precisely manure nutrient content and nutrient losses at all stages of manure handling and to outline the relevant measures.

As part of the discussion in the final event, the participants agreed that the project had produced scientifically grounded proposals and methodological recommendations, which were aimed at lowering the negative impact of livestock / poultry complexes on the environment, the diffuse load from farming on the Baltic Sea catchment area in particular.

These proposals and recommendations were considered in terms of their applicability for assessing the environmental and economic impacts compared with current practice in order to determine the most sustainable and relevant methods for future implementation. The data comparison results within Work Packages 2 and 3 were seen to indicate the need to develop scientifically sound proposals for updating the Russian legal framework governing manure management. The target audiences confirmed the relevance and priority of research in this sphere.

The Russian partners in Manure Standards were Institute of Agroengineering and Environmental Problems in Agricultural Production (IEEP), Interregional Public Organisation – Society for Assistance of Sustainable Rural Development, and Pskov Agrotechnical College.

Sweden

In Sweden the project Manure Standards organised three national project events for stakeholders which gathered advisory organisations, researchers, policy makers, farmers union, industries and farmers. In Sweden, advisors use the national tool Vera to calculate the amount of and the nutrient content in manure. During the project events, results from some of the pilot farms were presented. Data from the pilot farms was used to calculate the concentration of nutrients in manure, by both the calculation tool made within Manure Standards project and by Vera. The results were also compared to manure sampling and analysis made on the pilot farms and differences between the different methods discussed during the events.

There was also a discussion in the Swedish events on how the project results could be usable in the Swedish context since Sweden already has a tool to calculate manure nutrient content. It was concluded that output from the comparison between the project's farm-level calculation tool and the Swedish Vera would be further investigated within the work of improving the national tool. Also, the measurement on the amount of process water in dairy farms that were conducted in the project could be useful nationally.

The national calculation tool will also be looked at to see how it could complement the data that is currently compiled at the Swedish national level.

The Swedish partners in Manure Standards were RISE Research Institutes of Sweden and Swedish Board of Agriculture.

Concluding words

The project Manure Standards was able to reach its main target groups (policy makers, authorities, advisors and farmers) in the Baltic Sea countries effectively and engage them in a dialogue about the current practices regarding manure data generation and manure data use.

Most countries showed willingness to adopt the recommended methods for manure data generation and use to improve their manure management and to reduce manure-related emissions. Some even decided on immediate actions.

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