



Summary conclusions of discussion group on SuMaNu recommendations: “Future agri environment measures- opportunities and challenges for farmers”

Latvia, Marupe, 12.03.2020

Fertilization:

1. Must be planned according to crop need

In Latvia it is most common to calculate the necessity of fertilizers by estimating the yield potential, and then determining the necessary nutrient amount for each crop. In order to do this, there is a written handbook published called “Normative and calculation methodologies for soil cultivation and fertilization usage” (Kārklīņš; A. Līpenīte) – this handbook was published within the Manure Standards project.

2. All Phosphorus in manure is plant available

Our experts strongly disagree with this statement. Multiple studies in Latvia have shown, that during the first year after application, only 50% of phosphorus in slurry is available for plants. Depending on type of soil, phosphorus can also be rapidly included in soil complex and become unusable for plants.

3. Annual fertilization plan on a field plot level (N&P)

*In Latvia the multi-year fertilization plans are made based on NPK and **not** NP, due to reason that potassium is one of the main macro-elements, which is needed both for plant survival during the winter period as well as tolerance for dry conditions.*

4. Guidelines for economically optimal N&P fertilization rates for relevant crops

The fertilization plans are based on potential yield and necessary NPK elements for the estimated yields. But it is important to underline, that yield is influenced by many factors – soil type, pH, plant-available P and K in soil, organic matter, etc. For example, in podzol soil with pH 5 and low P content, the potential wheat yield will never come close to 10 t/ha, due to limiting factors.

5. Soil analysis, cultivation history

Soil analysis is basis for creation of fertilization plans. Without soil analysis it is not possible to create fertilization plan and achieve economically rational yields. The question under discussion could be on the issue of how often this analysis should be done, due to reason that soil properties are changing very slowly, especially the growth of organic matter. Currently it is agreed that soil analysis should be done every 5 years. If soil properties are analyzed for the first time, we recommend to do the full analysis of all agrochemical factors, but for all the following analysis, only the determination of nutrients would be necessary.



Field-history in Latvia is mandatory since 2004 for all farms located in nitrate vulnerable zones. In other parts of Latvia, it is mandatory since 2014, when integrated pest management legislation was introduced.

6. Development of P indices –

Unfortunately, Latvian experts do not fully understand this term. Considering the low animal density, therefore, the lack of organic fertilizer (since 1990, the use of organic fertilizers has decreased 10 times), the amount of Phosphorus in soils is low. Some exceptions could be the territories around large animal farms (500+ dairy cows, 10 000+ pigs), where slurry is still being used in the territory of 10km around the farm.

7. Farm-gate nutrient balancing. Information on the nutrient flows and the nutrient use efficiency. Tool for improved crop rotation and fertilization.

Latvian advisors underline that this could be a very useful tool, if representative and objective input data is provided. For example, harvested yields among different crops. Currently there is a lack of these tools in Latvia, due to reason that yield levels are not stable, which leads to non-representative data.

Storing and spreading manure

Sufficient storage capacity

All advisors agree, that this is fundamentally important for effective organic fertilizer handling. By moving the spreading of organic fertilizers to spring period, a greater efficiency could be achieved, since crops more intensively would take up the nutrients – NPK. In contradiction, during the autumn period, the P and K elements should be ensured for crops, but the amount of N should be reduced, since it also reduces the crop hibernation.

Unfortunately, establishing of these facilities demand a lot of financial resources, therefore it is only possible to do these investments with a help of state or EU support.

To enable manure spreading in spring and summer –

There are contradictions between slurry spreading during the spring period and BAT, because during the spring slurry spreading, it is not incorporated in soil, which increase the GHG emissions. From the other perspective – N and P leaching is reduced, which could arise, if slurry is spread and incorporated before the winter period, and the period of frost is absent. The question – which of the targets (water quality or climate change reduction) is more important?

Autumn spreading only for establishment of winter crops, otherwise forbidden –

This requirement is currently not possible to implement in Latvia, since the capacity of current storage facilities un insufficient. Currently there is a requirement to ensure a capacity for 6 to 7 months. This requirement is also impossible to implement for farms with solid manure.

Application rates based on manure nutrient content and fertilization plan –

This is a good and logical requirement.



EUROPEAN
REGIONAL
DEVELOPMENT
FUND

Country-level standards for manure quantity and nutrient content –

This is currently difficult in Latvia. Our legislation states the average NPK content in different type of organic fertilizers. Within the Manure Standards project, precise fertilizer analysis were done, and the results are very different from the values indicated in our national legislation. The most convenient solution would be if farms were to do their own analysis of organic fertilizers, but a qualitative and representative sampling has to be ensured.

BAT lists for reducing NH3 and GHG for all livestock producers –

Currently this sort of list is not created in Latvia (locally specialized). But, considering the research, which was done by Latvian and Estonian researchers in GreenAgri project, the content of measures under BAT list are familiar. The biggest issue here is that advanced spreading machinery is very expensive, therefore farmers should start to buy spreading service, or create local cooperatives for sharing this machinery.

Regional scale measures

Regional nutrient reallocation. Prerequisite is the knowledge on biomass quantities and characteristics, regional crop nutrient need, overarching national strategies to support sustainable nutrient recycling with simultaneous transition towards renewable transportation, support the use of recycled fertilizer products.

Promotes markets for the products. Support the production of recycled fertilizer products, large processing plants producing concentrated recycled fertilizer products, farm-scale structures supporting nutrient reallocation

This, unfortunately, is hard to understand for Latvian advisors, since there is no clear definition of “regional scale”, and methodology of how it is determined. Should country be determined as a region? As a baseline, we only have statistical data – overall animal density, number of animals, amount of organic fertilizer and used NPK. Different information is absent. In theory, there could also be data for amount of sewage sludge amount.

Steps for safer manure use. No unnecessary use of trace elements (e.g. Cu, Zn, As) & antibiotics in animal rearing . When processing esp. in larger scale: Hygienization + prevention of recontamination. No co-processing with sewage sludge

Unfortunately, this is also not understandable for our advisors. How can the regular manure be separated from the manure, which comes from cows that are treated with anti-biotics? How can this manure be treated so that it is possible to use it as a fertilizer later on? The topic of antibiotic residue decomposition should be studied by scientists.

Knowledge transferenables successful implementation in practice! ... in close cooperation between farmers and scientists... ... with clear messages and a holistic approach.

The topic of knowledge transfer is very important! A lot more should be told about optimal manure handling and spreading, including both the technical side, as well as spreading conditions. Currently there is no clear knowledge among small and medium size farms on the topic of when the slurry should



be spread in order to cause the least harm to environment. The recommendation of using BATs and immediate incorporation simply makes them very dissatisfied, since it is just not economically possible to implement any of these technologies.

Those farmers, who have participated in experience exchange visits to other countries and other farms, admit, that the experience of other farmers has made it more clear of which machinery and technique is the most suitable for their farm. Unfortunately, the machinery dealers can only characterize the machinery they are selling.

Participated 11 persons, participant list attached.

Summary developed by Iveta Grudovska, Valters Zelcs and Zanda Melnalksne