



ASSESSING THE USE OF PESTICIDES IN THE ESTONIAN RDP 2014-2020

FACTSHEET OF THE EUROPEAN EVALUATION HELPSDESK FOR RURAL DEVELOPMENT - JUNE 2020

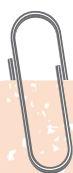


A DELICATE BALANCING ACT

Pesticides are often viewed as a central production factor as they can guarantee yield consistency and optimal production processes. Pesticides, however, also can contribute to a decline in biodiversity and have the potential to pollute the water and soil as well as lead to some health problems for humans. The EU has recognised this in its newly published 'Farm to Fork Strategy', which looks to 'take additional action to reduce the overall use and risk of chemical pesticides by 50% and the use of more hazardous pesticides by 50% by 2030'.¹ Specifically, the European Commission will make a proposal for a revision of the Sustainable Use of Pesticides Directive to significantly reduce use and risk and dependency on pesticides and enhance Integrated Pest Management and propose a revision of the pesticides statistics Regulation to overcome data gaps and reinforce evidence-based policy making by 2023.

In rural development programmes issues related to pesticides are typically addressed through rural development Priority 4 (restoring, preserving and enhancing ecosystems) as well as Priority 5 (resource efficiency and a climate-resilient economy) and sometimes also Priority 3 (food chain organisation and risk management). The common evaluation question (CEQ) 9, 'to what extent have RDP interventions supported the improvement of water management, including fertilizer and pesticide management' is used as a starting point to assess the use of pesticides in rural development programmes (RDPs).

In Estonia, beginning in 2004 a special monitoring and evaluation system has been developed and designed in cooperation with the Ministry of Rural Affairs, Agricultural Research Centre and scientific institutions in order to make sure that enough environmental data on agricultural land was available for the purpose of monitoring and evaluation of RDP environment related measures. This system was established to ensure that EU requirements for RDP agri-environment measures monitoring and evaluation could be met as well as for internal information needs for the improvement of measures implementation and performance assessments. Each programming period the system has been adapted and improved according to ongoing needs, during the RDP 2007-2013 period it was part of the ongoing evaluation and the same system has been continued. One of the main evaluation topics related to agri-environmental climate measures is related to water, which in Estonia for reporting on the Annual Implementation Report submitted in 2019 (AIR 2019) has been assessed with the support of three ongoing studies



FURTHER INFORMATION

Agricultural Research Centre (ARC)
Teaduse str. 4/6, 75501 Saku, Harju county, Estonia

Study on the assessment of pesticide use:
<https://pmk.agri.ee/et/pollumajanduskeskkonna-uuringud/uurimisvaldkonnad/vesi>

Read More About the EU's Farm to Fork Strategy:
https://ec.europa.eu/food/farm2fork_en



(Farm Gate balance, pesticide utilisation load and drainage water) carried out by the Estonian Agricultural Research Centre (ARC).



USING A COUNTERFACTUAL APPROACH TO ASSESS PESTICIDE USE

The objective of the evaluation was to assess and compare through a counterfactual if beneficiaries (RDP agri-environmental measure Environmentally Friendly Management supported farms) had a reduced pesticide utilization load to water, soil and the environment than those non-beneficiaries (non-RDP supported farms who are only part of the single-area payment scheme (Pillar I)).

The sample was formed in 2007 based on Paying Agency (PA) LPIS/IACS (Land Parcel Identification System, and Integrated Administrative and Control System) data. More specifically, data was collected from the PA register of agricultural supports

and the register of field plots and the PA register of agricultural animals. Agricultural farms were selected for the sample based on the following criteria:

1. Support type (beneficiaries receiving RDP agri-environmental support for sub-measures relating to environmentally friendly management versus non-RDP supported farms who only receive Pillar I, area-based payments and single area payment schemes);
2. Production type (crop production and animal husbandry);
3. Size (groups of <40 ha; 40-100 ha and >100 ha);
4. Regional location (Central-Estonia and Southern-Estonia).

In 2015, the pesticide study sample has increased from 80 to ~120 farms and the sample compliance is checked annually. Pesticide utilisation data was collected from the farm's personal Field Record Data Book² through face-to-face interviews.

National statistics were used for background information including the total marketed amounts of pesticides. However, since national statistics were not sufficient to answer the evaluation questions concerning the impact of the RDP 2014-2020 in the AIR 2019, data from the ongoing evaluation study 'Pesticide Utilisation Load' was essential to fill the data gaps. Based on this data the following values were calculated for each farm in the sample:

- Proportion of area sprayed with pesticides on agricultural land (%);
- Amount and name of pesticide active substance used per agricultural land (kg/ha);
- Amount and name of pesticide active substance applied per sprayed area (kg/ha);
- Pesticides (active substance) by types (herbicides, insecticides, fungicides, plant growth regulators) and utilisation by cultivated crops (cereals, horticultural crops, potatoes, peas, broad beans, hemp, etc.).

As there are no common indicators related specifically to pesticides at the EU level, Estonia has devised five additional indicators at the national level for the reporting in the AIR in 2019³:

- (A67) Change in the quantity of marketed plant protection products by active substance.
- (A68) Change in the utilised amounts of pesticides on the agricultural land between monitoring farms with RDP measures and control group (contributing to Focus Area (FA) 4B).
- (A69) Change in the area treated with the pesticides between monitoring farms with RDP measures and control group (contributing to FA 4B).
- (A70) Change in the glyphosate treated area in the RDP measures monitoring farms and reference treated area (%), contributing to FA 4B.
- (A71) Change in the amount of glyphosate in the RDP measures monitoring farms and reference group per glyphosate treated area. Contributing to FA 4B.

Data for the indicator A67 was received from the national statistics. In the AIR in 2019 the reference period was 2011-2013 average values, which were compared to 2015-2017 averages, thus indicator value change in percentages were

calculated from the pre-period value. For indicators A68 and A69 in the AIR 2019 the reference period was 2010-2013 average values, which were compared to 2015-2017 averages. For the indicators A70 and A71 the reference period was 2015-2016 average values, which were compared to 2017 results as data related to glyphosates were collected and analysed since 2015.

To find the RDP's net effects, the statistical method Difference in Difference (DiD) was applied in which indicator values for beneficiaries and non-beneficiaries were calculated and after which the results were compared in before-after comparison. Average indicator values were presented for the current RDP period and, in comparison, for the period before the current RDP period for beneficiaries and non-beneficiaries in kg/ha.

Step 1: Before-after share of the indicator was calculated for the beneficiary and non-beneficiary areas in percentages.

Step 2: After that, the difference in beneficiary and non-beneficiary areas were found. If the indicator was presented as a share (in %), then the change was presented as a change of percentage points before-after for the beneficiary and non-beneficiaries.

Step 3: These calculations were made for beneficiaries and non-beneficiaries also concerning Nitrate Vulnerable Zones (NVZ) versus non-NVZ, by type of cultivated crop and by type of pesticide (herbicide, fungicide, insecticide and plant growth regulators) since 2015.

Step 4: Since a pesticides' active substances are considered one of the direct factors contributing to the impact on the environment and health and can differ significantly in terms of toxicity from one to another, this was also analysed in terms of utilised crops and support type.

As data collection is done on a continuous basis and studies are done annually, it has enabled the evaluators to assess specific trends and provide recommendations.

Major Findings

The additional national indicator A67 has facilitated an overview of the changes in the sale of pesticides in Estonia, while additional national indicators A69-A71 have provided vital understanding into the RDP's net effects and have further provided an overview of the changes in pesticide use and impact of the RDP measures applied.

The average area sprayed with pesticides from the agricultural land in RDP beneficiary monitoring farms between 2015-2017 was 66.81% and 69.51% for non-beneficiary farms.

Compared to the average from the period between 2010-2013, the sprayed area increased 16.89% in those farms supported by RDP measures and decreased in the non-supported group by 9.21%. The difference therefore between the RDP supported group in the sprayed area was 26.10% higher than the non-supported group indicating that the RDP measures did not have a positive effect.

Between 2015-2017 the average percent of pesticide active ingredients applied to agricultural land compared to the

baseline years increased in the RDP supported farms by 0.088 kg/ha or 24.92% and in the non-supported farms by 0.089 kg/ha or 17.56%. RDP supported farms therefore had an increase in the before-after comparison of 7.36%.

In 2017, compared to the baseline the area sprayed with glyphosate decreased in the RDP supported farms by 0.62% and in non-supported farms by 3.87%. As the sprayed area decreased in the non-supported farms in comparison more than 3.25% than in the area with RDP measures, it shows that the RDP measures did not have overall more positive effects.

In 2017, the amount of glyphosate sprayed per area in RDP supported farms was 1,146 kg/ha and in the non-supported group 1,074 kg/ha. Compared to the baseline years the amount of glyphosate increased by 10.93% in RDP supported farms and decreased in the control group.

The results of this study have been considered by the Ministry of Rural Affairs in the current period and used as an important information source while working on the CAP strategic plan and future measures.



CHALLENGES AND FUTURE RECOMMENDATIONS

In Estonia national statistics could specify amounts of marketed and used pesticide active substances ingredients in order to facilitate more detailed evaluations, as well as, provide an overview on pesticides and their use in the non-agricultural sector since at the moment there are no differentiations, which makes it difficult for evaluators to decouple these amounts.

Although beneficiaries are obliged to give data to the PA on their activities, they are not specifically obliged to give data on pesticides. The issue remains that some beneficiaries and non-beneficiaries are not willing to give data on pesticide use, arguing that it is an additional unpaid administrative burden for them. Obliging those beneficiaries receiving RDP support to provide this data would allow for more robust evaluations. Furthermore, as on-site data collection from the farmer can be very time consuming and labor intensive, it would be advised to use some electronic form (e.g. electronic field record data book or other electronic data registration system), where data could be later accessed electronically.

In the future, further consideration of spraying techniques in the analyses, which are not currently considered, would be useful, in order to know how much precision farming is used, or for example, how much special equipment for reducing carry-over is used.

As changes to the environment related to pesticide use do not appear in one year (in general) and results are dependent on different factors (weather, soil, crops, production specifics, meeting support requirements, farmers' awareness and knowledge, etc.), in the evaluation of environmental changes, averages of several years should be considered and not be limited to comparing only one year results before and after. To be able to carry out analyses involving longer time scales, it is essential to have ongoing data collection, which is continually improved.

Many of these challenges were overcome in this evaluation using on farm interviews and data collection through farmers' personal field record data books. Furthermore, as in this case additional thematic studies can be made in order to collect additional data for evaluations in order to fill potential data gaps in national statistics.



Send your questions to:

info@ruralevaluation.eu

¹ Farm to Fork Strategy: For a fair, healthy and environmentally-friendly food system. https://ec.europa.eu/food/sites/food/files/safety/docs/f2f_action-plan_2020_strategy-info_en.pdf

² Farmers' personal field record data book, where they need to write down all the certain activities, they do in the farm fields. Field Record Data Book requirement is set in Estonian Water Act and by that every farmer/agricultural enterprise need to keep records on their activities carried out in the farm. The records are available only at the farm, at the moment there is no requirement that is has to be available electronically.

³ These are the numbers which have been assigned to additional indicators for reporting in the AIR 2019.

EUROPEAN
EVALUATION
HELPPDESK
FOR RURAL DEVELOPMENT



T +32 2 737 51 30
info@ruralevaluation.eu
<http://enrd.ec.europa.eu/evaluation/>

EVALUATION WORKS!



European Network for
Rural Development

The Evaluation Helpdesk works under the supervision of Unit C.4 (Monitoring and Evaluation) of the European Commission's Directorate-General for Agriculture and Rural Development.

The contents of this fact sheet do not necessarily express the official views of the European Commission.