AdvisoryNetPEST

DSS for sustainable berry production

The practices identified in this project are called 'Novel Approaches' and abbreviated as 'NA'

Farmer's name
Paweł Krawiec

Contact
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Name of the farm
ul. Owocowa 3, Karczmiska, lubelskie region

Country
Poland

Description of the farm context

Area: 25 ha
Cultivation: blueberries, raspberries, Japanese quince, chokeberry, dogwood, watermelon
Soil: clay, on limestone, class IIIa, IIIb
Climatic conditions: typical of southeastern Poland, total annual rainfall: 570-620 mm, typical spring frosts in May

Partner Organization

Agricultural Advisory Centre in Brwinów, Poland

AdvisoryNetPEST

The **AdvisoryNetPEST** project aims to create a **network** and **upgrade advisory services** across the EU to increase the sharing of knowledge and the **adoption of innovative solutions to reduce the use and risks of pesticides** (RURP) in all **EU Member States**, enabling the agricultural sector to achieve the targets proposed by the Farm to Fork Strategy.

AdvisoryNetPEST www.advisorynetpest.eu

THE TECHNIQUE

Short Description:

This Decision Support System (DSS) is based on sensors, traps, data collection. It then delivers recommendations for farmers on berry production

Crop Sector:

Soft fruits

Targeted pest and diseases:

aphid, mite, midge and grey mould

Objective of the NA:

Through the cooperation of farmers advisors and technology providers in the field, observations, traps and sensors enables the collection of data to issue recommendations on aphid, mite, midge and grey mould control. These recommendations help avoid unnecessary treatments, put forward non chemical and less hazardous products to be used for plant protection.
The set of solutions in the form used on the farm - combining decision support systems, disease models, pest monitoring and biological methods of reducing the Drosophila suzuki population - is an innovative solution in Poland.

Level of practice adoption across the country:

1 2 3 4

Funded by the European Union

UK Research and Innovation

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Expectations regarding RURP

*RURP : Reduction of Use and Risks of Pesticides

The use of this DSS enables more precise application and suggests non chemical solutions, or less hazardous products, to fight against pests and iseases.
A reduction in the use of pesticides by at least 50% was assumed, but in 2025, after the use of traps, the use of insecticides to control Drosophila suzuki was completely abandoned.

Key success factors

The key to success is the gradual introduction of decision support systems and disease and pest monitoring methods to gain a thorough understanding of their performance and the reliability of forecasts in local farm conditions.
The implementation of such solutions requires openness to modern technologies and systematic data collection and analysis.

Methods/strategy of application in the farm

'- iMetos/ Pessl with meteo station and Botrytis model
- AgroSmartLab with meteo station and models for Botrytis, alternaria, Powdery Mieldew, Pseudomonas
- BayerCropscience with ResiYou system for prediction of pesticide residues in fruits. The system is a decision support tool for the standard of max 4 a.i. in fruits (Lidl)
- ICB Pharma with Drosinal traps for Drosophila suzuki monitoring
- MedChem pheromone traps for raspberry and blueberry midge

Improvements of the NA

Develop a system of mulching plantations with natural materials such as lignite to control soil moisture, manage weeds and improve soil structure.

Resources and skills needed to adopt the NA

Purchase of sensors, weather stations, applications for predicting the decomposition of active substances, traps for monitoring pests, purchase of lignite mulch.
Most of the solutions used require at least basic training, especially in the use of digital systems and the interpretation of data from disease and meteorological models.

Figure 1-3 raspberry cultivation on the farm of Mr. Krawiec

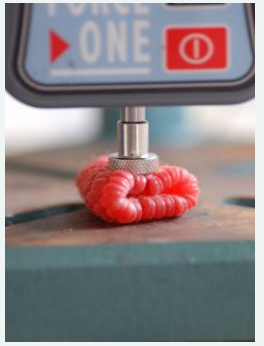


Figure 4 raspberry firmness test

Advice from the Advisor

Start with a single weather station and regularly analyze data from disease models (e.g., Botrytis, Alternaria, powdery mildew, Pseudomonas) against actual field symptoms; Use decision support tools (such as ResiYou) not only to meet customer requirements (e.g., Lidl) but also to optimize treatments for safety and cost; Conduct regular pest monitoring using pheromone traps and attractants to ensure treatment decisions are data-driven, not routine;

Farmers Testimony

Implement biological methods gradually and consistently, as in the case of the introduction of Typhlodromus pyri or the innovative use of Trichopria drosophilae, while remembering the need to limit the use of chemical agents that could harm these beneficial organisms; · Maintain documentation and personal observations to refine the management strategy year after year and adapt it to seasonal conditions.

Policies and Regulatory Support

No specific policies or regulatory support for this practice

Social and Cultural Acceptance

The Lublin region is known for its berry cultivation. All efforts to develop berry cultivation technologies are consistent with local traditions and practices.
This farm is known and appreciated not only in the surrounding area, but also throughout Poland, thanks to its initiatives and openness to sustainable agriculture. Mr Krawiec organises events for farmers interested in introducing these systems and getting to know more about its scientific justification

To go further on NA replication:

On small farms, implementing these solutions can be cost-effective if the investment is tailored to the scale of production. Starting with a single weather station or a few monitoring traps allows for fewer treatments and better planning of protection. Costs can be reduced by using group licenses or collaborating within producer groups. Less expensive solutions, such as Drosinal, DecisTrap, or MedChem pheromone traps, are particularly recommended for smaller farms. Even small improvements yield measurable economic and environmental benefits.
Besides financial factors, climatic and phenological differences between regions can be a significant limitation. The effectiveness of disease models and traps depends on local weather conditions – temperature, humidity, and the length of the growing season. In warmer or more humid zones, these solutions may require adjusted warning thresholds or more frequent trap maintenance and attractant replacement. Furthermore, different pest development rates (e.g., earlier emergence of Drosophila suzukii or more intense Botrytis infections) may require modification of management strategies. In regions with large temperature fluctuations or high humidity, disease models may require local calibration to maintain accurate predictions.

BENEFITS

In addition to reducing fruit residues, the implemented solutions enable better treatment planning, reduced protection costs, and reduced chemical consumption. They improve fruit quality and shelf life, enhance production safety, and facilitate meeting retail chain requirements. Furthermore, they provide better insight into weather conditions and disease pressure, increasing independence and confidence in decision-making.

BOUNDARIES

In unfavorable climatic conditions, programs with a limited number of standard plant protection products may have lower effectiveness

Systemic Feasibility Analysis: Expert insights from Literature and Field Data

CRITERIUM	INDICATOR	INDICATOR SCORE	EVALUATION
Pesticide use reduction level	Reduction of the applied volume of pesticides	high reduction (>25%) **moderate reduction (10-25%)** low reduction (<10%) no reduction	
Effectiveness of controlling the target pest/diseases/weed	Percentage reduction of the target pest/weed infestation or of the damage caused by the target disease	high reduction (>60%) **moderate reduction (30-60%)** low reduction (<30%) no reduction	
Soil quality	Impact on soil infiltration	-- / - / o / + / ++	
	Impact on soil erosion	-- / - / o / + / ++	
Biodiversity	Impact on bees	-- / - / o / + / ++	
Water quality	Impact on pesticide losses to surface water (runoff)	-- / - / o / + / ++	
	Impact on nutrient losses	-- / - / o / + / ++	
Water conservation	Impact on water dependence	-- / - / o / + / ++	
Working conditions	Knowledge requirements	high training level moderate training level **low training level** no training	
	Impact on human health	high risk moderate risk **low risk** no risk	
	Risk mitigation on operator/employee exposure	high mitigation moderate mitigation **low mitigation** no mitigation	
Costs	Required level of investment	> EUR 100.000 EUR 50.000 - 100.000 EUR 10.000 - 50.000 **< EUR 10.000**	
Outputs	Impact on yields (produced volumes)	**no change**	
	Impact on crop quality	-- / - / o / + / ++	
Profitability	Impact on profit margin	**+ 10%**	
	Payback period	**5 years**	

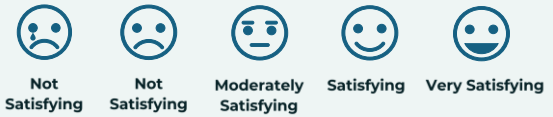
Impact Highlights

The novel Decision Support System (DSS) for berry production, using sensors, traps, and field data to guide pest and disease control, can effectively target specific pests and diseases, achieving a moderate pesticide reduction of 10–25%.

It positively impacts pesticide losses to surface water and benefits bee populations, though other environmental indicators such as soil infiltration, erosion, and nutrient losses score only mediocre. Minimal training requirements, combined with low health risks for workers, contribute to improved working conditions.

Economically, the DSS requires very low investment and generally supports yield and crop quality, though results, profit margins, and payback periods remain highly variable.

Evaluation:



Further information:

- http://www.hortiteam.pl/index.html
- https://jagodnik.pl/ochrona-malin-jesiennych-przed-kwitnieniem-kluczowe-zabiegi-i-srodki-ochrony/
- https://jagodnik.pl/muszka-plamoskrzydla-jak-ja-zwalczac/
- https://www.youtube.com/watch?v=luUy8xDll-M