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## **SPRINT project**

Sustainable plant protection transition: a global health approach.

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### **SPRINT STAKEHOLDER WORKSHOP**

**Reducing the Use of and Risks from Pesticides**

**CSS 07 - Slovenia**

**21. 4. 2022 & 10.00-13.00, On-line**

**Assist. prof. dr. Matjaž GLAVAN**

**University of Ljubljana, Biotechnical Faculty**



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# 1. Workshop participants

## 1.1 Organising Team

**Matjaž GLAVAN - CSS leader – facilitator**

**Rozalija Cvejić**

**Špela Železnikar**

## 1.2 Agenda

The on-line workshop consisted of three parts:

- introduction and presentation of the project and fieldwork on the project,
- discussion of possible strategies for the transition to less pesticide use,
- different stakeholders' views on the possibilities and feasibility of switching to less pesticide use.

### SPLETNA DELAVNICA

#### Kako zmanjšati odvisnost od pesticidov?

#### četrtek, 21. april 2022

10.00 – 12.30

Oddelek za agronomijo, Biotehniška fakulteta, Univerza v Ljubljani  
Spletna delavnica

#### PROGRAM

9.45 – 10.00	Registracija
	<b>Predstavitev</b>
10.00 - 10.05	Projekt SPRINT – prehod k manjši odvisnosti od pesticidov
10.05 - 10.15	Dosedanje terensko delo – monitoring okolja, ljudi in živali
10.15 - 10.30	Predstavitev namena delavnice
	<b>Razprava z udeleženci</b>
10.30	Ključne strategije za zmanjšanje uporabe / odvisnosti od pesticidov
11.50	Ključne ovire in omejitve pri izvajanju strategij
11.10	Ključne spremembe nujne za uspešen razvoj in izvajanje strategij
	<b>Predavanja</b>
11.30 – 11.40	Strateški načrt skupne kmetijske politike 2023–2027 za Slovenijo in pot do izpolnitve zavez o zmanjšanju uporabe pesticidov do leta 2030 Ministrstvo za kmetijstvo, gozdarstvo in prehrano, Uprava Republike Slovenije za varno hrano, veterinarstvo in varstvo rastlin
11.40 – 11.50	Izzivi proizvajalcev pesticidov ob zmanjševanju uporabe pesticidov v kmetijstvu Združenje proizvajalcev, distributerjev in zastopnikov fitofarmaceutskih sredstev
11.50 – 12.10	Prednosti in nevarnosti kmetijske prakse varstva rastlin z zmanjševanjem uporabe pesticidov v poljedelstvu prof. dr. Mario Lešnik (Univerza v Mariboru)
12.10 - 12.20	Priložnosti zmanjšanja uporabe pesticidov v sadjarstvu Biserka Donik Purgaj (Sadjarskem centru Maribor – Gačnik, KGZ Maribor, KGZS)
12.20 – 12.30	Pogled kmetov (konvencionalnega in ekološkega) na zmanjšanje uporabe pesticidov Damjan Zore (Medvode) / Anton Žnideršič (Brežice)
12.30	Zaključek

**PRIJAVA NA DOGODEK - Odprite povezavo in se prijavite kot SPRINT deležnik:**

<https://forms.gle/9KHuZayrvTrJaeUJ8>

Delavnica je brezplačna. Število udeležencev ni omejeno.

Več informacij o projektu: <https://www.sprint-h2020.eu/>

<https://www.bf.uni-lj.si/sl/raziskave/raziskovalni-projekti/183/sustainable-plant-protection-transition-a-global-health-approach>

**POVEZAVA DO DELAVNICE NA DAN DOGODKA:**

**KLIKNI TU → PRIDRUŽI SE DELAVNICI ← KLIKNI TU**



**SPRINT**  
SUSTAINABLE PLANT PROTECTION TRANSITION



Sofinancirano s programom  
Evropske unije - Obzorje 2020



**Disclaimer:** This document is part of a project that has received funding by the European Union's Horizon 2020 research and innovation program under grant agreement number 862568.

### 1.3 Stakeholders

Please list the stakeholders present at the workshop (provided consent has been obtained), their name, organisation, and role in the food supply chain (type of stakeholder), e.g. Government, Regulator, NGO, Supplier, e.g. seed company, plant breeder, Producer, e.g. Land Manager, Processing, Distribution, Retail, Consumer, Researcher, Other -

Nr.	Name (no permission)	Organization/affiliation	Type of Stakeholder	Agreed to be a SPRINT project stakeholder in the future	Male (25) Female (40)
1		Administration for Food Safety, Veterinary Sector and Plant Protection	Governance - Regulator	Yes	F
2		Agency for Agricultural Markets and Rural Development	Governance - Regulator		F
3		Agency for Agricultural Markets and Rural Development	Governance - Regulator	Yes	F
4		Agency for Agricultural Markets and Rural Development	Governance - Regulator		F
5		Agency for Agricultural Markets and Rural Development	Governance - Regulator		F
6		Agency for Agricultural Markets and Rural Development	Governance - Regulator	Yes	M
7		Agency for Agricultural Markets and Rural Development	Governance - Regulator	Yes	M
8		Agency for Agricultural Markets and Rural Development	Governance - Regulator	Yes	F
9		Agency for Agricultural Markets and Rural Development	Governance - Regulator	Yes	M
10		Agency for Agricultural Markets and Rural Development	Governance - Regulator	Yes	M
11		Agency for Agricultural Markets and Rural Development	Governance - Regulator	Yes	F
12		Agency for Agricultural Markets and Rural Development	Governance - Regulator	Yes	M
13		Agency for Agricultural Markets and Rural Development	Governance - Regulator		F
14		BASF	Input supply - Agrochemical manufacturers	Yes	F
15		Bioteh d.o.o.	Input supply - Agrochemical manufacturers		M
16		Bioteh d.o.o.	Input supply - Agrochemical manufacturers		F



17		Chamber of Agriculture and Forestry of Slovenia - Zavod Celje	Production - Farmer organisation - Agriculture extension service	Yes	M
18		Chamber of Agriculture and Forestry of Slovenia - Zavod Ljubljana	Production - Farmer organisation - Agriculture extension service	Yes	F
19		Chamber of Agriculture and Forestry of Slovenia - Zavod Ljubljana	Production - Farmer organisation - Agriculture extension service		F
20		Chamber of Agriculture and Forestry of Slovenia - Zavod Ljubljana	Production - Farmer organisation - Agriculture extension service	Yes	F
21		Chamber of Agriculture and Forestry of Slovenia - Zavod Maribor	Production - Farmer organisation - Agriculture extension service - Fruit centre	Yes	F
22		Chamber of Agriculture and Forestry of Slovenia - Zavod Novo mesto	Production - Farmer organisation - Agriculture extension service	Yes	F
23		Chamber of Agriculture and Forestry of Slovenia - Zavod Novo mesto	Production - Farmer organisation - Agriculture extension service	Yes	F
24		Chamber of Agriculture and Forestry of Slovenia - Zavod Novo mesto	Production - Farmer organisation - Agriculture extension service	Yes	F
25		Chamber of Agriculture and Forestry of Slovenia - Zavod Novo mesto	Production - Farmer organisation - Agriculture extension service		F
26		Chamber of Agriculture and Forestry of Slovenia - Zavod Novo mesto	Production - Farmer organisation - Agriculture extension service	Yes	F
27		Chamber of Agriculture and Forestry of Slovenia - Zavod Novo mesto	Production - Farmer organisation - Agriculture extension service		F
28		Cooperative Association of Slovenia, z. o. o.	Production - Farmers Cooperative		F
29		Corteva Agriscience	Input supply - Agrochemical manufacturers	Yes	M
30		Economic Interest Association of Phytopharmacy - GIZ fitofarmacije	Input supply - Agrochemical manufacturers		F
31		Economic Interest Association of Phytopharmacy - GIZ fitofarmacije	Input supply - Agrochemical manufacturers		F
32		Economic Interest Association of Phytopharmacy - GIZ fitofarmacije	Input supply - Agrochemical manufacturers	Yes	F
33		Grm Novo mesto - Center of biotechnology and tourism	Education - High School	Yes	F



34		Grm Novo mesto - Center of biotechnology and tourism	Education - High School	Yes	F
35		Grm Novo mesto - Center of biotechnology and tourism	Education - High School	Yes	F
36		Institute for Water of the Republic of Slovenia	Governance - Institute	Yes	F
37		Kmetija Resman	Production - Land manager - farmer	Yes	F
38		Kmetija Žnideršič	Production - Land manager - farmer		M
39		Kmetija Zore	Production - Land manager - farmer		M
40		Agricultural Institute of Slovenia	Research - Institute	Yes	F
41		KZ Agraria Koper	Production - Farmers cooperative	Yes	F
42		Metrob	Input supply - Agrochemical manufacturers	Yes	M
43		Ministry of Agriculture, Forestry and Food	Governance - Agricultural policy maker		M
44		Ministry of the Environment and Spatial Planning	Governance - Environment policy maker	Yes	F
45		Ministry of the Environment and Spatial Planning	Governance - Environment policy maker	Yes	F
46		Potrošnik	Consumer - general public	Yes	M
47		Potrošnik	Consumer - general public		M
48		ŠC Ptuj, ŠETK	Education - High School		F
49		Slovenian Beekeepers' Association	NGO	Yes	M
50		Slovenian Institute of Hop Research and Brewing	Research - Institute	Yes	M
51		Slovenian Institute of Hop Research and Brewing	Research - Institute	Yes	F
52		Unichem d.o.o.	Input supply - Agrochemical manufacturers	Yes	M
53		University of Ljubljana	Research	Yes	M
54		University of Ljubljana, Biotechnical Faculty	Research and education - University		M
55		University of Ljubljana, Biotechnical Faculty	Research and education - University	Yes	F
56		University of Ljubljana, Biotechnical Faculty	Research and education - University		M
57		University of Ljubljana, Biotechnical Faculty	Research and education - University	Yes	F
58		University of Ljubljana, Biotechnical Faculty	Research and education - University	Yes	M



59		University of Ljubljana, Biotechnical Faculty	Research and education - University	Yes	M
60		University of Ljubljana, Biotechnical Faculty	Research and education - University	Yes	F
61		University of Ljubljana, Biotechnical Faculty	Research and education - University	Yes	M
62		University of Ljubljana, Faculty of Medicine	Research and education - University	Yes	F
63		University of Maribor, Faculty of Agriculture and Life Sciences	Research and education - University		M
64		University of Primorska, FAMNIT	Research and education - University	Yes	M
65		Vrtec Vodmat	Consumer - Kindergarden	Yes	F
66		ŽITO	Processing - Food Factories - Bakery and milling sectors		F

Figure 1.1: Stakeholders taking part in the on-line National stakeholder workshop on 21. 4. 2022.





### 1.3 Photographs

Photos of the stakeholder workshop.

PowerPoint presentations are available from 5. May 2022 here: <https://www.bf.uni-lj.si/si/raziskave/raziskovalni-projekti/183/sustainable-plant-protection-transition:-a-global-health-approach>

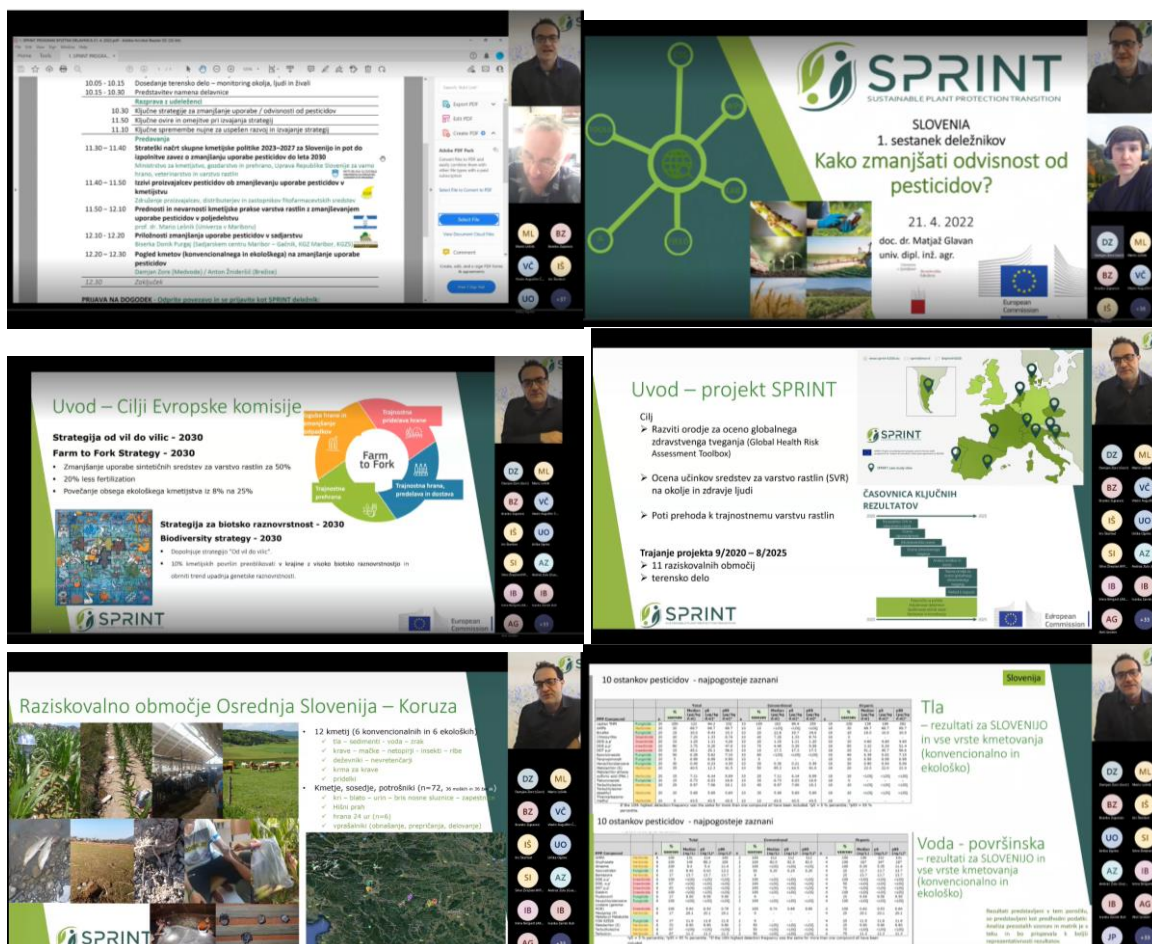


Figure 1.2: Introduction to the workshop

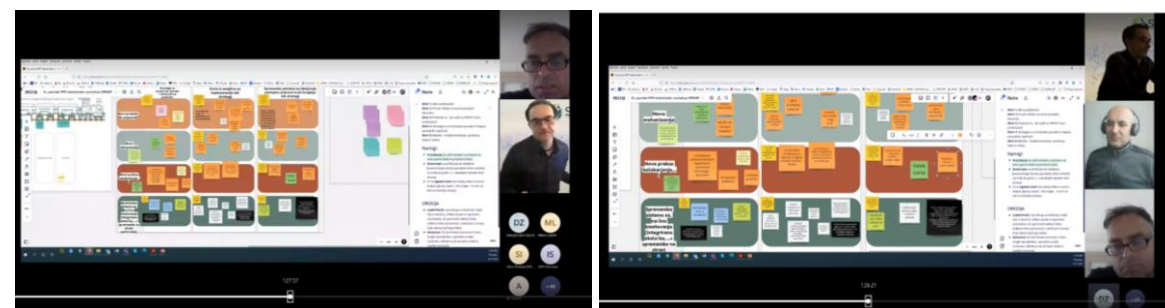


Figure 1.3: Workshop MIRO board- Strategies for reduction of pesticide use



Figure 1.4: Ministry of agriculture, forest and food views on reducing the use of and risk from pesticides – dr. Jože Ileršič

Figure 1.5: Economic Interest Association of Phytopharmacy (GIZ fitofarmacije) views on reducing the use of and risk from pesticides – Branko Zupančič



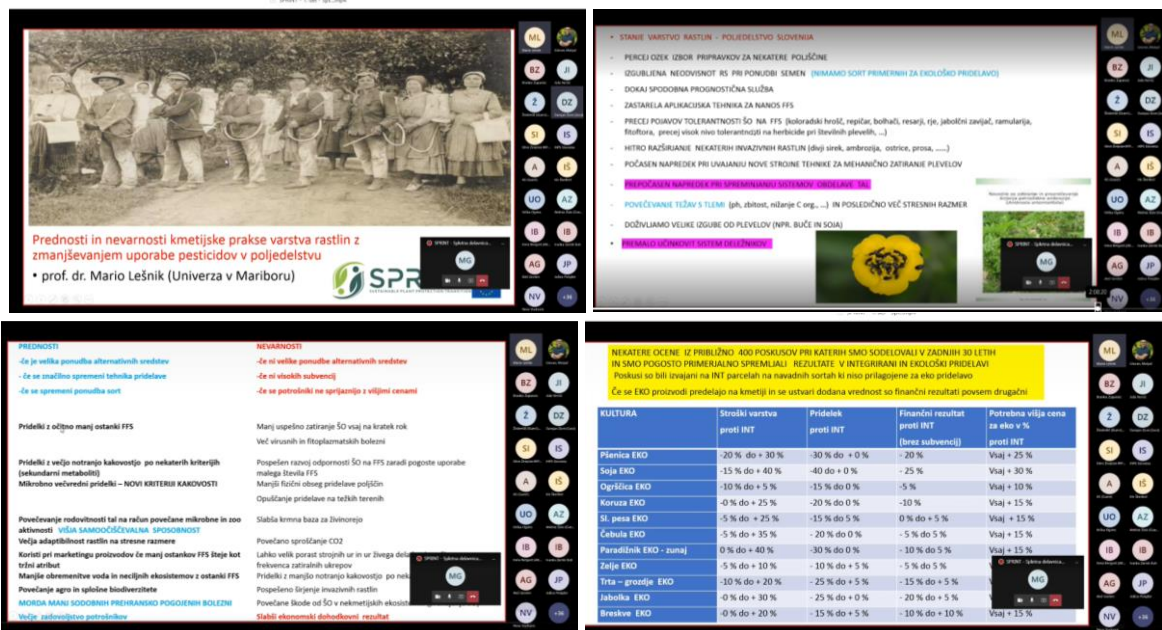


Figure 1.6: Views on reducing the use of and risk from pesticides in field crop production from leading Slovenia researcher from the University of Maribor – prof. dr. Mario Lešnik

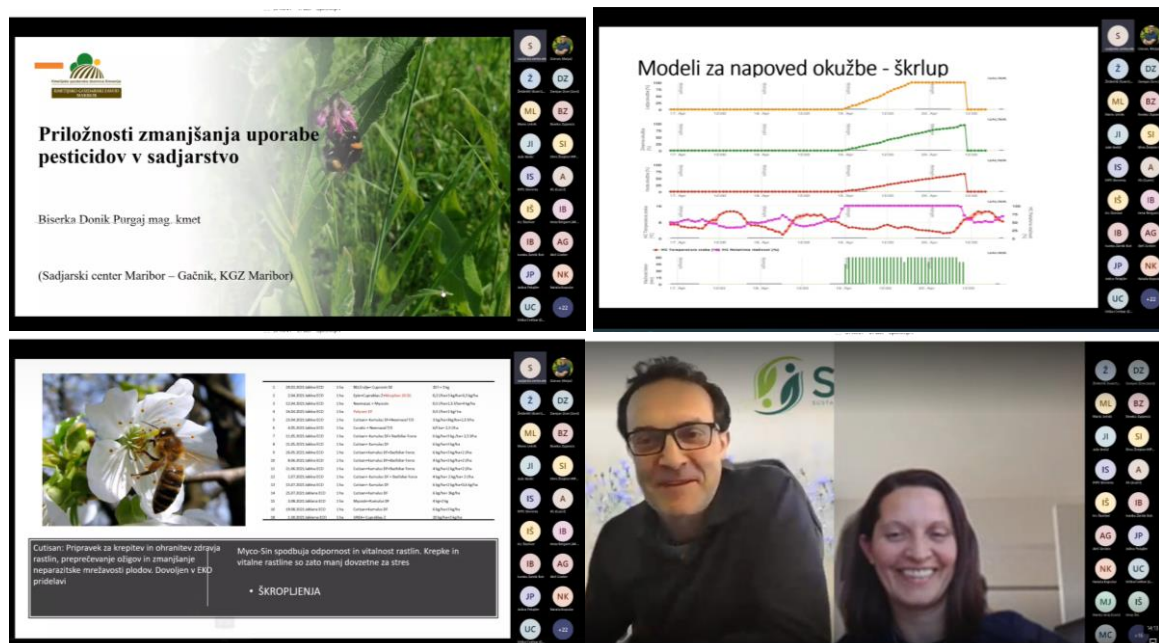


Figure 1.7: Views on reducing the use of and risk from pesticides from leading Slovenia fruit research centre in Maribor - Chamber of Agriculture and Forestry of Slovenia - Zavod Maribor – Biserka Donik Purgaj







Figure 1.8: Conversion with two farmers (conventional and organic involved in SPRINT) on views on how to reduce the use of and risk from pesticides



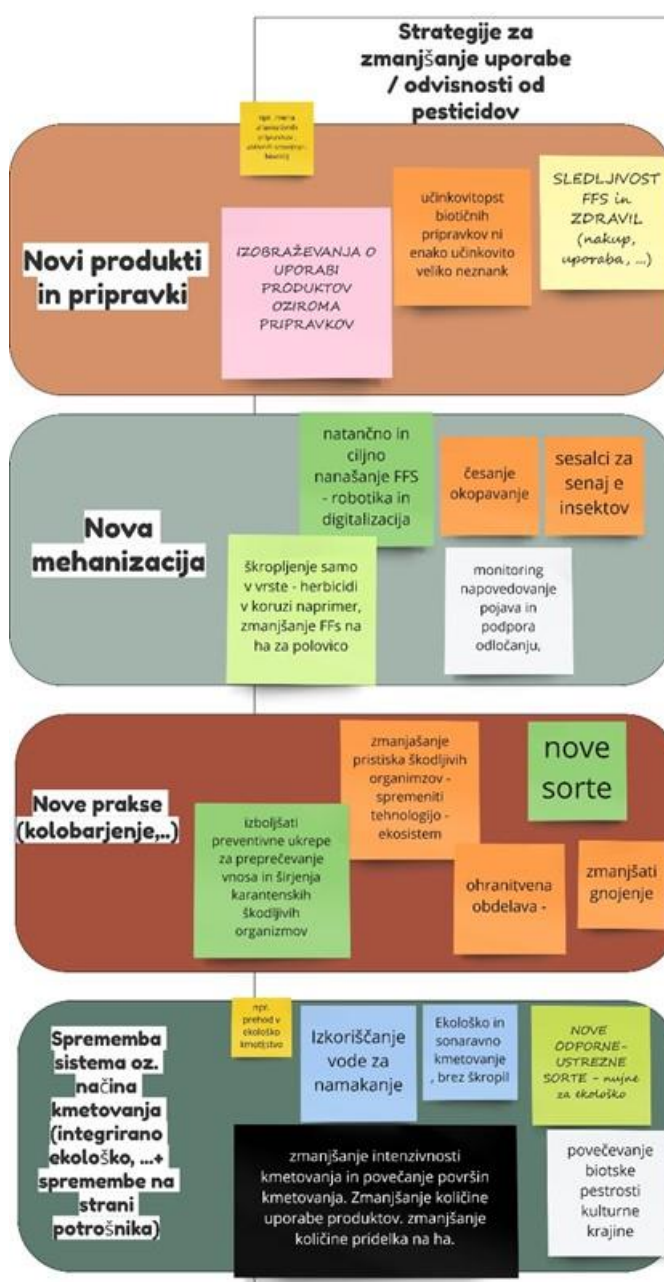
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## 2. Summary of the discussion

### 2.1 What are the top 3 strategies that you find most relevant for reducing pesticide use and risk in the farming system (cover both conventional and organic in the production system in your case study)?

Summary of discussion and include screenshots of Miro board.

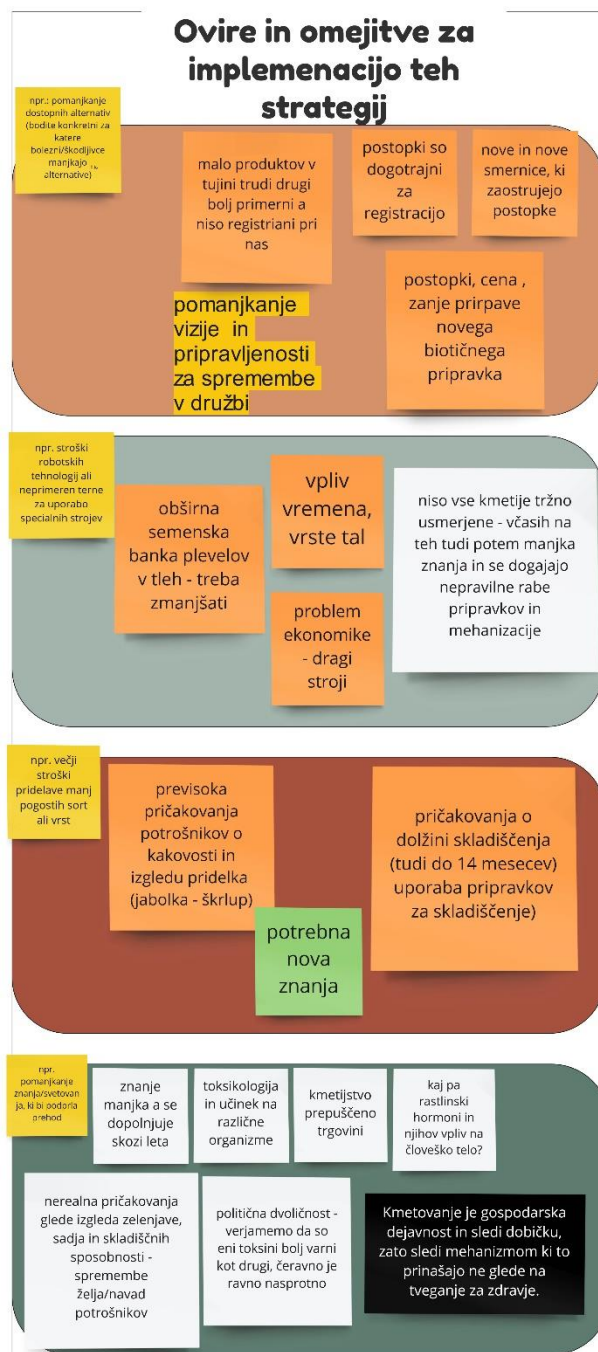
- New products:
  - education on the use of products or preparations,
  - traceability of PPP and medicines (purchase, use, ...),
  - the effectiveness of biotic preparations is not as effective - many unknowns.
- New mechanization:
  - precise and targeted application of PPP - robotics and digitization (insect sucking vacuum cleaners, spraying only between rows - herbicides in maize, for example, reducing PPP per ha by half)
  - monitoring forecasting and decision support,
  - mechanical weeding.
- New agriculture practice:
  - improve preventive measures to prevent the introduction and spread of quarantine/invasive pests,
  - reducing the pressure of harmful organisms - changing technology/ecosystem,
  - new varieties of crops,
  - conservation practices,
  - reduce fertilization – fertilized permanent crops are more susceptible to pests - over-fertilized - physiological diseases.
- Change in the farming system:
  - organic and sustainable farming, without pesticides,
  - new resistant/suitable varieties - essential for organic agriculture,
  - increasing the biodiversity of the cultural landscape,
  - reducing the intensity of farming and increasing the area under farming - reducing the amount of PPP use and reducing yield per hectare.



## 2.2 Where are the limitations and barriers of these strategies in terms of achieving a reduction in use and risk?

Summary of discussion and include screenshots of Miro board.

- New products:
  - lack of vision and readiness for change in society,
  - very few PPP products on the Slovenian market - others are more suitable abroad but not registered in Slovenia,
  - new and new guidelines tightening up PPP registration procedures,
  - procedures for PPP registration of new products are time-consuming,
  - demanding procedures, price, and knowledge of preparing a new biotic PPP.
- New mechanization:
  - the problem of economics - expensive machines,
  - not all farms are market-oriented
  - sometimes they still lack knowledge on how to use new modern machinery (incorrect use of PPP and machinery occurs),
  - extensive seed bank weeds - should be reduced – limitations of machinery,
  - influence of weather, type of soil.
- New agriculture practice:
  - excessive consumer expectations about the quality and appearance of the crop (apple peel disease),
  - new knowledge required,
  - expectations about the length of storage of crops (up to 14 months) - use of preparations for storage of crops.
  - Current technology of production is stimulated high pressure of pest organisms and contributes to the destabilization of the ecosystems
- Change in the farming system:
  - lack of knowledge is observed; however, it can be upgraded over the years,
  - agriculture sector left to trade and market lobby that lowers the prices on the costs of quality of produce – this needs to change,
  - unrealistic expectations regarding the appearance of vegetables, fruit and storage capacity of products - changes in consumer preferences/habits are needed,
  - toxicology and effects on various organisms,
  - political hypocrisy - we believe that some toxins are safer than others, although the opposite is true,
  - question about plant hormones and their impact on the human body,



Highlighted disagreement/diverging opinions about farmers value more profit or human health.

- Opinion: farming is an economic activity and follows profit, so it follows the mechanisms that bring this regardless of the health risk.
- Farmers disagree with this – they value their health state high – they trust regulators that PPPs are safe.
- It is not about profit - farmers are struggling to survive.
- No one has yet gotten rich from agricultural work. If the farmer was lucky, he lived normally.
- There is no long-term agricultural policy to support the farmer.
- If it does not invest in agriculture, it will cease its activity sooner or later.
- Processing and trade plants reduce the price of crops at the expense of farmers - if the price is not suitable, they bring food from elsewhere.
- Agricultural land is being built up, less available land.
- Present to society the importance of agriculture and that it produces food.
- It is not easy to calculate anything on the farm for the short or mid-term. How could we know/predict the war, virus, extreme weather - drought and consequently the prices of oil, fertilizers that represent costs, or the prices of cereals they produce on the global market. We should do everything in the long term, and for that, each farm needs to know his/her farm (land, soil, working force, aspiration of family members, animal, technical equipment, computer, machinery) and profit will come on its own.
- Health and the fitness of the farm and its people, soil, and animals should come first because we can not calculate the profit – politics/weather makes its way, and we have to dance their way.

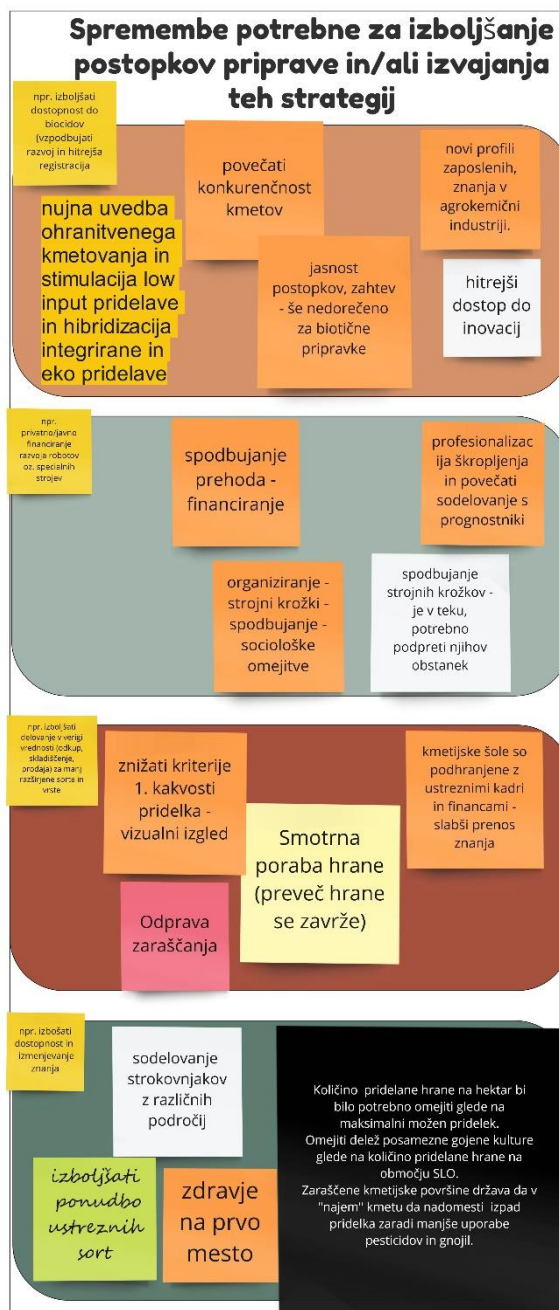




## 2.3 What are the top three changes that are needed to improve the development and/or implementation of these strategies (policy, research, economics or other)?

Summary of discussion and include screenshots of Miro board.  
Highlight disagreement/diverging opinions?

- New products:
  - urgent introduction of conservation farming and stimulation of low input production and hybridization of integrated and organic production,
  - increase the competitiveness of farmers,
  - new knowledge and knowledge profiles of employees in the agrochemical industry,
  - speed up access to innovation,
  - clarity of procedures, requirements – which are not yet defined for biotic preparations.
- New mechanization:
  - promoting the transition – funding/support,
  - professionalize PPP spraying (use of the cutting-edge technique) and increase cooperation with disease and pest prognosticators,
  - organization of farmers - service agreement - promotion of Farmers' Neighborhood Assistance Association - Machine clubs (it is necessary to support their exitance) - sociological restrictions have to be overcome in Slovenia.
- New agriculture practice:
  - lower the criteria or 1<sup>st</sup> class crop quality - visual appearance (fruit, vegetable),
  - rational consumption of food (too much food is discarded),
  - agricultural schools are lacking appropriate staff / financial funds – impact on knowledge transfer – more practical knowledge needed,
  - elimination of overgrowing on agricultural land,
  - Change of the ecosystem (lower the pressure from pest organisms) hybridization of integrated and organic production and conservation tillage – improve the efficiency of autoregulatory mechanisms to reduce the pressure of pest organisms.
- Change in the farming system:
  - improve the supply of appropriate crop varieties – resistant to pests and diseases,
  - human health should be the first aim,
  - changes need to agree by the participation of experts from different fields of expertise,
  - the amount of food produced per hectare should be limited according to the maximum possible yield,
  - limit the share of individual cultivated crops in relation to the amount of food produced in agricultural areas in Slovenia,
  - naturally afforested agricultural land should be cleared and "leased" by the state to compensate farmers for lower crop yield due to reduced use of pesticides and fertilizers.



## 2.4 Stakeholder Views on reducing the use of and risk from pesticides

### ***Dr. Jože Ileršič, Ministry of agriculture, forestry and food (male)***

One of the aims of the Strategic Plan for Agriculture is also the protection of the environment and sustainable management of natural resources. Under this aim, a need was identified to reduce PPP use and develop non-chemical methods for plant protection.

Firstly, there are several financial supports under agri-environmental-climate intervention subsidy payments. Among 32 sub-interventions, there are 10 of them envisioned in the new Strategic Plan that are connected with lower use or abandonments of PPP in agricultural production:

- A.16 – water sources
- A.18 – integrated field crop production
- A.19 – integrated vegetable production
- A.20 – integrated hops production
- A.21 – integrated fruit and olive production
- A.22 – integrated grape production
- A.23 – use of biotechnology methods for control of pest organisms in permanent crop plantations
- A.24 – abandonment of the use of herbicides in vineyards
- A.25 – abandonment of the use of insecticides in vineyards
- A.26 – precise fertilisation and PPP spraying

Integrated production returns in 2023-2027 NP CAP after 2007-2013 RDP CAP. However, EC comments on the Strategic Plan for Agriculture question these sub-interventions. EC states that sub-interventions, as presented at this point, are already covered by the Directive on Sustainable Use of Pesticides (2009/128/EC), which means that standards of integrated production in the sub-intervention are part of already established agricultural practices. Ministry will prepare an up-grade and explanation for the EC in the coming days.

Secondly, financial support is connected with the intervention on "Investments in purchasing agricultural machinery for grassland habitat management and optimal use of nutrients and sustainable use of PPPs". Financial support in 30-50% of investment and from 2.000 up to 200.000 EUR.

Finally, financial support is envisioned for "Biotic plant protection", which will support above-standard plant protection practices with benefits for water and soil resources. It includes using PPPs based on microorganisms (fungi, bacteria, viruses) and natural predators of pest organisms.

All the above measures are voluntary.

### ***Branko Zupančič, Economic Interest Association of Phytopharmacy - GIZ fitofarmacije (male)***

They suggest that:

- EU Green deal goals impact should be assessed for Slovenian agriculture like it was done in other countries (e.g. Poland);
- when adopting measures, the current state of Slovenian production should be considered;
- to harmonize EU goals with the strategy of Slovenian agriculture;
- the availability of active substances and PPPs is declining;
- current EU regulations are based on a risk assessment and do not consider the actual risk (1107/2009);
- additional reduction of active substances (microplastics, PFAS, new class of risk) - Strategy ECHA;
- access to new technology-based products is slower for EU farmers than it was envisioned by new legislation or it was under previous legislation;
- the regulatory system for new biological preparations is deficient - changes are expected for microorganisms in 2022 - biological preparations have lower efficiency - development requires significantly more knowledge and is, therefore, more expensive;
- in Slovenia, we have a limited number of registered products – small market, no local registration studies, additional national restrictions;



- goals for PPPs reduction by 2030 in Slovenia are ambitious – 55% reductions of PPPs and 72% reduction in the use of more dangerous PPPs;
- additional restrictions due to Water Protection Areas and voluntary measures under agri-environmental-climate measures CAP;
- they support innovations in biological PPPs; however, new technologies cannot fill the gap quick enough to substitute the current synthetic PPPs.

**Prof. dr. Mario Lešnik, University of Maribor, researcher (male)**

System path to reduce PPPs input

- modified production systems - holobiont phytobiomic ecology;
- reduced sensitivity of plants and will reduce the need for the use of PPPs;
- better decision support systems on the need for the use of PPPs;
- better application technique for PPPs application (digitization);
- more excellent knowledge of PPPs users to decide on PPPs use;
- changes regarding expected quality criteria for crops;
- changed storage techniques and storage length for crops;
- reduction of crop areas with high input of PPPs;
- increasing organic and conservation farming;
- introduction of integrated zero-residue production systems;
- hybridization of organic and integrated production;
- subsidizing biotic protection;
- production of new, less toxic PPPs (prohibition of unacceptable PPPs);
- safer use of PPP (safety at work, restriction of drift, surface drainage);
- accelerating the decomposition of PPP residues in and on crops before harvest;
- accelerating the decomposition of PPP residues in soil and water (self-cleaning capacity);
- prohibition of the use of classic PPPs in the urban environment and by non-professional users;
- because the self-cleaning capacity of soil has significantly decreased, the extent of the accumulation and leaching of PPPs from the soil is greater.

**Agriculture Extension service, Chamber of Agriculture and Forestry of Slovenia - Zavod Maribor – Fruit Centre (female)**

Ways to reduce the use of pesticides in fruit growing:

- identify promising practices for pest and disease control that can be adapted to different conditions, including preventive practices for early detection, diagnosis and monitoring;
- review preventive agri-environmental strategies and solutions, including current and forgotten methods, and organic farming strategies, direct and indirect measures to further reduce pesticide use;
- make an inventory of IPM (Integrated Pest Management) strategies. Compare these different management practices and strategies to consider existing problems and opportunities, considering feasibility and costs;
- from 2011 onwards, we changed the concept of thinking and reduced spraying. Reduction number of sprayed from approx. 30 (conventional production) to 15-18 (our hybrid production);
- we grow and study different varieties = the variety must be economically viable;
- optimal crop yield/ha;
- VARIETIES - NEW VARIETIES - NEW RISK (increasing irrationality);
- resistant varieties: MODI, TOPAZ, LAFAYETTE, DALINBEL ANTARES, ARIANE, CRIMSON CRISP, DALINCO, OPAL, LUNA SIRIUS, FUJI, GALA;
- investigate how crop diversification and ecological intensification increase ecosystem and production by increasing plant diversity;
- pesticide-free? - no - however, we can work with a low input of pesticides – implement GRADUALLY;
- a diverse ecosystem combines mechanical tillage, sown grasses, annuals, and perennials.;
- dispensers used on apple trees contain volatile pheromones that are gradually released into the environment, thus confusing males of the apple Codling moth *Cydia pomonella* when searching for females during mating;
- use of models for predicting infection and pests;
- preventive use of preparations: (1) Cutisan - A preparation for strengthening and maintaining plant health allowed in organic production. (2) Myco-Sin promotes plant resistance and vitality.



### ***Farmer conventional (male)***

His thoughts:

- nowadays, the problem is that NGOs and politicians say things that people like - in practice, everything is different;
- if we want to farm organic, the population should be halved, but people are already hungry in Africa;
- in Slovenia, many PPPs are banned, but many are imported through food imports;
- more cooperation between policymakers, researchers and growers is needed - this is the solution;
- in recent years, we have started with minimal tillage because we want to reduce the cost of producing feed. I found that a different approach/machinery is needed for each type of soil (sand, clay);
- we aim to produce healthy feed and food;
- we aim to follow the good agricultural practice, as farming is a long-term job;
- in suburban areas, agriculture is being pushed out due to land closure, which is affecting the reduction of arable land, which is affecting intensive farms, which need more extensive areas for conservation agriculture and a five-year rotation;
- the purchase prices of milk (39 cents/litre) are also a problem; our price is lagging behind production costs (the price of milk is 8-10 cents lower than in the EU);
- spatially dispersed cultivated areas are also a problem, as they increase the cost of production;
- the EU's high standard is based on cheap food, imports of cheap products from third countries, and non-existent money (leasing, subsidies, loans), all these at the farmer's expense.

### ***Farmer organic (male)***

- when I finished school, I started doing many experiments for various companies and schools - gradually, we managed to significantly improve intensive production. improvements are made for them about soil, animals, ecosystems, impacts on disease development;
- they started thinking about how to eliminate the causes of difficult situations;
- without knowing what the method of production is called, 20 years ago they started to deal with conservation/minimum treatment - although they did not have suitable machines, they found solutions and slowly upgraded - they abandoned the plough - the problems in the fields began to diminish;
- they started to reduce the use of fertilizers and 10 years before entering organic production, only nitrogen was added to the fields - yields did not decrease, despite lower soil supply;
- the same procedure was followed for PPPs from the very beginning, in cooperation with companies they carried out experiments on the impact of reducing the amount of intake and thus observed the effects on yield - of course, they adapted spraying to weather (temperature, humidity), and the crop and weeds right stage of development;
- next level was organic grassland - they had problems with root weeds - when the grass did not grow in the summer, weeds did and had to be sprayed in the autumn - at that time, they decided to reset the meadows and gave up fertilizing and spraying, and in five years they got rid of weeds with about the same yields and more species-diverse fodder;
- crimson clover is a key plant before sowing corn, as it has a beneficial effect on soil structure, nitrogen content - after mowing, clover is minimally cultivated and then maize sown - in this way, they get extra strong protein feed, which can reduce the area of corn and thus expand the crop rotation;
- they switched to organic farming 4 years ago;
- subsidies in the context of organic production are not as high (they get around 5,000 EUR more) as they have previously been voluntarily included in all agri-environmental-climate measures;
- an additional reason for including organic farming was the higher price of milk (plus 13 cents);
- they have the only problem with crows because organically grown corn seeds do not have this protection;
- self-sufficiency of the state with food is a relative concept as we import a large share of means of production from pesticides, fertilizers, strong feed, machinery, fuels - so it is a very interconnected system;
- all we have and can offer is our knowledge, farmers' work and land.



## 2.6 Some general points

### **Ministry of agriculture, forestry and food - government (male)**

*Goals for PPPs reduction by 2030 in Slovenia are ambitious – 55% reductions of PPPs and 72% reduction in the use of more dangerous PPPs. In addition, several financial mechanisms will be in place under agri-environmental-climate intervention subsidy payments. Among 32 sub-interventions, there are 10 of them envisioned in the new Strategic Plan connected with lower use or abandonments of PPP in agricultural production. Most of the ten are connected with integrated production, which returns in 2023-2027 National Plan CAP after 2007-2013 RDP CAP. Additional financial supports will be (1) “Investments in purchasing agricultural machinery for grassland habitat management and optimal use of nutrients and sustainable use of PPPs” and “Biotic plant protection”. Later will support above-standard plant protection practices, including using PPPs based on microorganisms (fungi, bacteria, viruses) and natural predators of pest organisms.*

### **Economic Interest Association of Phytopharmacy – supplier (male)**

*Slovenian market has a limited number of registered products due to the small market, no local registration studies and additional national restrictions. Producers support innovations in biological PPPs; however, new technologies cannot fill the gap quick enough to substitute the current synthetic PPPs. Moreover, the development of biological products requires significantly more knowledge, registrations are time-consuming, and the products are therefore more expensive.*

### **Agriculture Extension service - NGO (female)**

*From 2011 onwards, we changed the concept of thinking and reduced PPP spraying in orchards from approx. 30 per season to 15-18 per season. All this in orchards where we grow different economically viable varieties with optimal crop load/ha. We grow many new resistant varieties (MODI, TOPAZ, LAFAYETTE, DALINBEL ANTARES, ARIANE, CRIMSON). Plant diversity in the orchard ecosystem (we sown under apple grasses, annuals, and perennials) combined with mechanical weeding tillage increases production. We use models for predicting infection and pests, pheromonal dispensers for apple Codling moth *Cydia pomonella*, and preparations like *Cutisan* and *Myco-Sin* that strengthen and maintain plant health and promote plant resistance and vitality. Strong and vital plants are therefore less susceptible to stress. We are not pesticide-free; however, we have a very low PPP intake.*



**University of Maribor - researcher (male)**

*The system path to reduce PPPs input is to modify production systems promoting the introduction of conservation farming, integrated zero-residue production systems, and a hybrid combination of organic and integrated production. To support these production systems, we need better decision support systems, better application technique, greater knowledge, and subsidizing biotic protection. This has to be supported by society by changes regarding expected quality criteria for crops, fruits, and vegetables in stores and changed storage techniques and storage length of crops. Moreover, the general public will have to lower the expectations of the visual look of crops.*

**Farmer conventional – land manager (male)**

*In recent years, we started with minimal tillage because we want to reduce the cost of producing feed. However, I found that a different approach/machinery is needed for each soil type (sand, clay). We aim to produce healthy feed and food and follow the good agricultural practice, as farming is a long-term job. I expect more cooperation between policymakers, researchers and growers - this is the solution for the future. In Slovenia are, many PPPs banned, but many of them are also imported through food imports. The EU's high standard is based on cheap food, imports of cheap products from third countries and non-existent money (leasing, loans, subsidies); all this at the expense of the farmers - our work is devalued.*

**Farmer organic (male) – land manager**

*When I finished school, I started doing many experiments for various companies and schools. Thus, we managed to improve intensive production significantly. Without knowing what the production method is called, 20 years ago, we started with conservation/minimum tillage. Although we did not have suitable machines, we found solutions and slowly upgraded the production system. We slowly abandoned the plough. As a result, the problems in the fields began to diminish.*

*Crimson clover is a crucial plant in our rotation, as it has a beneficial effect on soil structure and nitrogen content. After cutting clover field is minimally cultivated and then sown. In this way, we get extra strong protein feed, which can reduce the area of corn and thus expand the crop rotation.*

*State food self-sufficiency is a relative concept as we import a large share of means of production from pesticides, fertilizers, strong feed, machinery and fuels - so it is a very interconnected system. We farmers have and can offer our knowledge, work, and land.*





## 3. Reflections on the Workshop

### 3.1 Overall impression from the workshop

#### ***Who were the participants?***

Participants (63) present mainly classified themselves as:

- governance (17),
- production (16) with farmers organization (11), farmers (3), farmers cooperative (2)
- research and education (11)
- input supply – agrochemical manufacturers (9)
- education - high school (4)
- research (4)
- consumer (3)
- NGO (1)
- processing (1)

#### ***What was the general level of interest?***

The main interest of participants was:

- Impact on human health (36),
- Impacts on environmental health (42),
- Risk assessment toolbox (24),
- Transition to sustainable plant protection (36).

#### ***Any critical themes from the discussion (verbal or chat)***

Key themes were:

- better education needed/improve knowledge on pesticide use;
- transition can be achieved only by completely changing the system/ecosystems/practices at the farms;
- stability of the economic environment - too many unknowns for stable operation of farms, companies.

#### ***Any other impressions that you think convey something about the content of the workshop***

- The lack of a variety of active substances in Slovenia may cause resistance of harmful organisms to the active substances of existing available pesticides on the market.
- Biocides are a new type of industry that needs new knowledge/new profiles of employees.
- Biocides are less effective - more active substances are needed.
- The processes for biocides registration are still remarkably undefined with long testing periods.
- To change the farm practice, first, we need to analyze farm resources, from people working interests, animal needs, crops grown, and soil state.

### 3.2 What worked well? Or not so well

Participants, in general, contributed to the MIRO board. However, they stayed quiet when they were invited to share their opinions vocally.

Views expressed by six key stakeholders were interesting and controversial and gave participants a lot to think about. Especially the discussion on harmful substances produced by modified plants or organisms (moulds) that can affect human and animal health. Very unexplored area.



### 3.3 What were the issues that you think are particularly important for SPRINT to consider in terms of the aims of the workshop?

Strategic changes are needed:

To reduce pesticide use, we need to change the ecosystem in our fields first (new crops, new varieties, new tillage technics, new machinery, digitalization, new biological products).

The system path to reduce PPPs input is to modify production systems, promoting the introduction of conservation farming, integrated zero-residue production systems and a hybrid combination of organic and integrated production.

The transition should be slow and gradual, as pre-fixed recipes do not work the same in all environments.

The development of biological products requires significantly more knowledge, registrations are time-consuming, and the PPP products are therefore more expensive.

This has to be supported by society by changes regarding expected quality criteria for crops, fruits, and vegetables in stores and changed storage techniques and storage length of crops. In addition, the general public will have to lower the expectations of the visual look of crops.

