



# Subgroup on Innovation for agricultural productivity and sustainability

11<sup>th</sup> Meeting

*5 June 2018*

**REPORT**



## Introduction

The Subgroup on Innovation met for the eleventh time in Brussels on 5 June 2018. The **programme of the meeting** [\[link\]](#) was focused on 5 topics:

- I. Informing the members of the Subgroup about the Commission's proposal for a simplified and modernised CAP, in particular as regards innovation in agriculture
- II. Shaping the work of the EIP-AGRI network for 2019
- III. Upcoming networking activities
- IV. Feedback from recent activities and next meeting of the Subgroup
- V. *AGM – Advanced Gateway to EU Meetings*: the new simplified system to be used for the organisation of future Subgroup meetings.

Kerstin Rosenow, Head of Unit AGRI B.2, presented the basics of the legislative proposal of the common agricultural policy (CAP) post-2020 [\[link\]](#). Starting from the objectives and the strategic plans, she focused on the building blocks of Agricultural Knowledge and Innovation System (AKIS):

1. Farm advisory services
2. The CAP networks (EU, national/regional)
3. The European Innovation Partnership for agricultural productivity and sustainability (EIP-AGRI) connecting policies

Ms Rosenow highlighted the importance of synergies and complementarity between a modernised CAP and the Research and Innovation policy.

## Session I: Shaping the work of the EIP-AGRI network for 2019

Koen Desimpelaere (EIP-AGRI Service Point) presented the proposals for potential activities in the work programme 2019 from different sources [\[link\]](#):

1. The Subgroup on Innovation
2. The proposals for Focus Groups through the EIP-AGRI website
3. European Commission and the EIP-AGRI Service Point
4. Left over from last years

A few proposals were not included for discussion because they referred to activities already taken up by the network. In this regard Marko Mäki-Hakola asked to reconsider the exclusion of the proposal "Creating a market for agricultural side streams".

These proposals were discussed in 6 breakout groups. The conclusions were reported in the plenary session and can be found in [Annex 1](#).

Kerstin Rosenow concluded the session by highlighting the following points:

- The list of topics discussed today results from a long and bottom-up process of collecting ideas.
- The discussion was very rich and concerned a broad range of topics and activities seen from different angles.
- In principle the Commission does not expect new proposals to pop up after the meeting.
- DG AGRI will check again if the proposal “Creating a market for agricultural side streams” concerns topics already taken up by the network.

The task after today is to explore these topics deeper to be able to end up with a narrowed list of themes to work on at the October meeting of the Subgroup. Additional input from Subgroup members to help focus or additional information on topics is very welcome.

## Session II: Upcoming networking activities

Two speakers provided information on the launch of calls for experts for **two new Focus Groups** (FGs):

- FG 32 'Non-chemical weed management' (Alberto D'Avino, DG AGRI) [\[link\]](#)
- FG 33 'Pests and diseases in olive trees' (Sergiu Didicescu, EIP-AGRI Service Point) [\[link\]](#)

The representative of PAN Europe asked some clarifications about the FG process: how many meetings per Focus Group and where?

The Service Point clarified that FGs follow a standard procedure including 2 meetings on places all over the EU in a period of about 1 year. The locations for FGs 32 and 33 are not yet fixed. The meetings will probably take place in autumn 2018 and spring 2019.

The call for experts will be published in June and will be open until September. Please spread the information to good experts.

Fabio Cossu (DG AGRI) provided an update on available **SFC data regarding Operational Groups** [\[link\]](#).

Sirpa Karjalainen (DG AGRI) provided an update on the **Operational Group assessment** commissioned by the EIP-AGRI Service Point [\[link\]](#).

Margarida Ambar (EIP-AGRI Service Point) provided a short update on the upcoming **seminar “EIP-AGRI: From Operational Group project to impact - building the innovation ecosystem for the future”** which will be held in Spoleto (Italy) on 17-18 October 2018 [\[link\]](#).

After the presentations, a few members of the Subgroup shared some information about the implementation of the EIP-AGRI in their country.

## Session III: “Feedback from recent activities and next meeting of the Subgroup”

The results from the **workshop “Enabling farmers for the digital age: the role of AKIS”** in Latvia on 26-27 April 2018 was presented by Fabio Cossu (DG AGRI) [[link](#)].

The **workshop “Innovative water management in agriculture”** in Spain, from 30-31 May 2018 was presented by Anikó Seregélyi (DG AGRI) [[link](#)].

Information on the **12<sup>th</sup> Subgroup on Innovation** meeting was presented by Antonella Zona (DG AGRI). It will take place in Spoleto, Italy, on 18-19 October 2018 after the seminar on OGs. We will be starting after lunch on 18 October and will continue until lunch on the 19<sup>th</sup>.

The indicative programme for the 12<sup>th</sup> meeting will be:

- Finalising the working plan for 2019
- Discussion on the future of Networking for Innovation in agriculture

It was kindly asked to send ideas for the October meeting per email.

Information about the new simplified system for the organisation of future Subgroup meetings (**AGM – Advanced Gateway to EU Meetings**) was presented by Isabelle Tranchant (DG AGRI) [[link](#)].

Members will be informed when the new system will become operational.



The detailed agenda of the meeting and all presentations can be found [on the EIP-AGRI website](#).

The next meeting of the Subgroup on Innovation will take place on Thursday and Friday 18-19 October 2018 in Spoleto, Italy.

## Annex 1 to the Report on Session I: Results of the breakout sessions – Shaping the work of the EIP-AGRI network

### I. Innovation in agricultural products and practices

#### 1. Explore crop diversification and crop rotation to improve the resilience of the farm; including enablers and drawbacks of arable crop diversification

<p><b>Conclusion</b></p>	<p>Despite the fact that there are a lot of benefits when establishing good crop rotations (soil fertility, reduces the risk of weeds, pest and diseases, it increases soil organic carbon content, it increases the resilience and economic stability of the farm, ... ) these good crop rotations are not implemented well.</p> <p>It helps the sustainability of the farm.</p> <p>The balance between short-term economic benefits and long-term benefits like reducing risk management, environmental benefits and resilience can be made more clear. It takes time to see the benefits and it is part of a transition process. The knowledge for such a transition process is there from previous times, but is getting lost. This knowledge on how crop rotation can improve economic stability can be collected and exchanged with farmers through demonstration projects. To identify the gaps in knowledge.</p> <p>It links with climate change and other objectives of the future CAP.</p>
<p><b>Background</b></p>	<p>Cooperation between different types of farms is a way forward and is tackled in the Focus Group on mixed farming systems.</p> <p>A lot of Operational Groups are working on this topic and there are H2020 projects as well.</p> <p>This topic has been touched upon in different Focus Groups but has not been taken up in a specific EIP-AGRI event.</p> <p>There is a link with the production of protein crops.</p> <p>New machines need to be developed for harvesting new crops.</p>

## 2. Immaturity of new clusters like mushroom production (efficiency), aromatic and medicinal plants (competitiveness and sustainability)

<b>Conclusion</b>	<p>For niche production like aromatic and medicinal plants, there is an economic potential for small farms and a way for differentiating from bulk production. Improving diversity of crops for different uses and different needs for customers can be explored.</p> <p>There is innovation potential in the development of new products for animal health, human health (important for consumers) crop protection, ...</p> <p>There are no strong networks yet as it is a young sector.</p> <p>There is a need to foster links between production, agro-business and research. What new business models can be developed?</p> <p>The focus on transfer of know-how is needed.</p>
<b>Background</b>	<p>Other new clusters are insect production and aquaculture.</p> <p>Not much input on mushrooms, networks exist at European level.</p>

## 3. Plant breeding and crop improvement for sustainable and organic maize farming; including smart use of partner and cover crops in maize

<b>Conclusion</b>	<p>The key question is, is it relevant to use the EIP-AGRI to target improvements in maize mono-cropping or should we reach further in ambition in terms of sustainability?</p> <p>Plant breeding is a hot topic today and there is a need for new varieties to tackle climate change. Small farmers with low inputs need adapted varieties.</p>
<b>Background</b>	<p>Connection with a running H2020 project on organic plant breeding.</p>

## 4. Promising crops for marginal lands

<b>Conclusion</b>	<p>There is a big need for biomass, so there is a need to optimise marginal lands. There are different possibilities: biofuel, solar energy, wild species for medicinal crops. It supports the viability of the rural economy so there is a link with smart villages and rural development and it could be important for the rural economy. New business models can be explored.</p> <p>A balance must be reached between putting land into production and taking care of the environmental sustainability (e.g. low input farming) and ecosystem services, climate change and biodiversity.</p> <p>There is a need to exchange information on how to innovate on marginal lands. Possibilities for agroforestry and medicinal plants and new types of animals. This covers an important area in Europe.</p>
<b>Background</b>	<p>This has not been addressed in any other EIP-AGRI activity.</p> <p>There are Operational Groups in Italy working on this topic.</p>

## 5. Competitiveness of the wool sector

<b>Conclusion</b>	<p><b>WHY</b></p> <p>Sheep keeping is still a worthwhile farming activity in marginal areas or marginal parcels of a farm. More sheep to graze sensitive areas would be great, working on the competitiveness of the wool sector would strengthen the economics of marginal areas. There is a logical relation to tourism in these areas as tourists would buy wool products. This would especially support to mountain economies where sheep keeping is also cultural heritage of pastoralism.</p> <p>Further, in some areas, wool is now used as waste because of the poor quality of the wool or because of lack of marketing possibilities. Two things could be done as also 'poor wool' still has specific qualities to be commercialised. One is to find new markets for wool characteristics for usage as it is now e.g. for circular economy, bio-economy, low carbon economy. Think about wool as fertiliser and other niche products. The other thing would subsequently be to look at how wool quality could be improved.</p> <p>So, the wool sector is a potential growing sector.</p> <p>There are already some existing experiences that could be used to start up knowledge exchange.</p> <p><b>WHO</b></p> <p>First beneficiaries are to be sheep farmers to diversify their product range. Combination with tourism would offer employment to more local inhabitants.</p> <p>New product would be developed by farmers in cooperation with processors, scientists on themes of tourism and moreover circular or bioeconomy SMEs. This way diversified new wool industries could be created.</p> <p><b>HOW</b></p> <p>Innovation &amp; market development of new products. Improve 'side stream' market valorisation. There are a lot of opportunities, e.g. insulation material.</p> <p>Explore breeding goals aimed at wool improvement.</p>
<b>Background</b>	Relation to H2020 Sheepnet.

## 6. Animal power/animal traction

<b>Conclusion</b>	<p><b>WHY</b></p> <p>Animal power should be framed very well to have a position in modern agriculture. It is clearly an emerging topic with few joint platforms and interesting to put ongoing 'robotisation' to discussion.</p> <p>There are still several types of areas where heavy machines cannot be used e.g. sensitive soils / nature reserves, city park management. There are also relations to social farming and strengthening agri-tourism.</p>
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	<p>Working with animals (oxen, horses) has a long, cultural tradition (heritage). However with the transformation to tractors, innovation on machinery 'behind the animal' has stopped. Today, low weight - high tech equipment are demanded.</p> <p>There are even modern solutions possible with animal power like precision farming (gps) or filling up batteries.</p> <p>With revitalising animal traction we could be prepared on oil/energy crisis due to closed borders, lack of energy sources.</p> <p><b>WHOM</b></p> <p>This subject could be of interest for farmers, social partners, technology developers, nature conservationists and city park managers.</p> <p><b>HOW</b></p> <p>Development of low weight high technological equipment.</p>
<b>Background</b>	<p>There were questions raised about animal welfare, feed, CO<sub>2</sub> reduction</p> <p>This subject is related to social farming / agri-tourism</p>

## 7. Antimicrobial resistance in poultry

<b>Conclusion</b>	<p><b>WHY</b></p> <p>This is a real and huge public health-threatening problem to producers and consumers in Central / the whole of Europe because of growing antibiotic resistance. The importance of solving AMR is very obvious!</p> <p><b>WHO</b></p> <p>It is important to all: from farmer to consumer, growers and eaters.</p> <p><b>HOW</b></p> <p>This is not a question of how. It is already possible. what is the reason for low uptake of farmers?</p> <p>More research can be directed to plant, animal research (alternative to antibiotics), better and safer production.</p>
<b>Background</b>	<p>The subject is related to H2020 thematic network on antibiotic in animal husbandry (4 different livestock).</p> <p>There is also a learning opportunity from FG on antibiotic use in pig keeping.</p> <p><b>Remarks</b></p> <p>There should not be preventive feeding with antibiotics, find alternatives!</p>



## 8. 'Salty agriculture' – How to deal with higher salt content of water and soil as a consequence of climate change?

<p><b>Conclusion</b></p>	<p><b>WHY</b></p> <p>Salination is a problem increased by climate change. Especially in coastal areas where salt water comes in through delta rivers, dry areas (more and longer draughts) and specifically islands. More areas have problems with water quality and salt content in water and soil.</p> <p>Irrigation management must have attention as much as over-exploitation of groundwater.</p> <p>More areas have problems with water quality and salt content in water and soil.</p> <p>The subject should be studied from individual farm level to regional or watershed level.</p> <p>Salination is still not very much looked at. However, it is an important subject that needs more exploration.</p> <p><b>WHOM</b></p> <p>Salination is an important theme for farmers in coastal or dry/irrigated areas. There are some Operational Groups on this subject in Mediterranean MS. It is a challenging subject for developers of new crops/technologies. Look at (Mediterranean) islands where water from wells is used (salinated water, rising temperature, water scarcity).</p> <p><b>HOW</b></p> <p>Adaption of species, new food species. Adaption of land/crop management.</p> <p>Several studies/experiments have been done, needs more exploration.</p> <p>A start can be made with exchange of experienced Operational Groups with the research that is already done. Furthermore literature should be explored and new questions and information to be found in a FG.</p> <p>There can be looked at innovation like new remediation techniques, breeding salt resistant varieties of e.g. potato, wheat but also further developing marine vegetables or adaptation of new species, with different management.</p> <p>Be aware the salty crops today are niche crops and still expensive.</p>
<p><b>Background</b></p>	<p><b>Remarks</b></p> <p>Salination should also to be studied at watershed level.</p> <p>It could be most interesting to study the economics of not dealing with higher content of salt.</p> <p>This subject might have a link to the environmental sector: subject in nr. 4 too. (agriculture in difficult areas).</p> <p>The subject can also be related to bio-economy and industry.</p>

## 9. Beekeeping / Pollinators and biodiversity

### Conclusion

To the opinion of most of the participants this topic should be split in two topics: 9A Pollinators and biodiversity, and 9B Beekeeping, to give both a good chance to be explored thoroughly. Different actors have different roles in exploring this subject.

### 9A Pollinators-biodiversity

#### WHY

Wild bees and other pollinators are threatened in Europe, even though they are crucial for pollination of both food crops and wild plants. As part of biodiversity they are 'public goods'. They have their role in biodiversity and are challenged by climate change. Having no bees affects not only farming but the whole world we live in.

Pollinators are the main focus to visualise The - After the Neonicotinoid Ban Era – story. It is interesting to focus on the way in which we treat bees/pollinators and what are possible alternatives in crop management? But also to study the influence of honey bees on other pollinators?

#### WHOM

This subject addresses all agricultural producers that use chemical or non-specific pesticides, herbicides, etc. It should be integrated in AKIS systems on non-chemical land management.

There are opportunities to cooperate with nature conservation organisations to work on nature-inclusive agriculture.

#### HOW

Exchange agricultural practices that preserve/protect/ host biodiversity and pollinators.

### 9B Beekeeping

#### WHY

The economic importance of the beekeeping sector (itself and other sectors) is quite high in some regions.

The current beekeeping practice is an old practice of mostly old farmers. However, new beekeeping practices are needed due to climate change (new pathogens and diseases, other blooming periods), pesticide use. Improving the economics of beekeeping supports the upgrading of the rural economy e.g. broader product ranges, new marketing tools and new chances for tourism.

Api-tourism would raise the income of the farm and stimulate diversification of products.

There has not been any previous activity. So, an operational programme on beekeeping should focus on both knowledge exchange needed as new beekeeping skills.

Pollination OS ecosystem service is old but needs to be reinvented. It is also endangered. Hot topic not only for agriculture-biodiversity.

	<p><b>WHOM</b></p> <p>First beneficiaries would be beekeepers and their local communities. Further there are chances for processors to develop new products. Agricultural producers with crops that need pollination are main clients of pollination services.</p> <p>Even broader we could count on interest from the whole agricultural production chain: beekeepers, farmers, industry, consumers, oil seed producers, horticulturists, researchers, processors and pharmaceutical producers.</p> <p><b>HOW</b></p> <p>There are several themes to be explored:</p> <ul style="list-style-type: none"> <li>- Further develop market pollinator services by learning from examples in different MS like Sweden and Finland</li> <li>- Knowledge exchange on (non-chemical) bee management systems is needs on disease management (VARROA, climate change), different breeds of bees (knowledge?)</li> <li>- Give beekeeping and beekeeper management a decent position in AKIS</li> <li>- Beekeeping management, changing Blooming periods (climate change)</li> <li>- Improving resilience of agrosystems</li> <li>- New and better products supporting beekeeping business</li> <li>- Product innovation and development (honey and wax usage)</li> <li>- Api-tourism possibilities</li> </ul>
<p><b>Background</b></p>	<p>A workshop or seminar for examples, and ideas for high-end products would put beekeeping on the agenda</p> <p>There might be a relation with H2020?</p>

## II. Natural resource management & crop protection

### 10. Economics in applying good agricultural practices; and reducing pesticide use; Non-chemical alternatives for pesticides

<p><b>Conclusion</b></p>	<p>Huge interest for the organic sector. IPM / organic have regulation at the EU and national level. It would be interesting to look deeper into organic practices for some crops and think how to adapt them for other crops in conventional systems.</p> <p><b>Topic:</b></p> <ul style="list-style-type: none"> <li>• To have the pesticide view, and not only the herbicide that was developed in a Focus Group already (non-chemical weed management). Discussion about reduction of pesticides should focus only on some specific crops for which it makes sense or there is more need. Example: not much sense for strawberries but important for pears, where there are a lot of new pests and fungi.</li> <li>• To have the economical view (the economic value of the alternative techniques) and less the farming practices / environmental point of view</li> </ul>
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	<ul style="list-style-type: none"> <li>• Farmers need help to think their farming system in a more long-term vision: to rely more on agronomy (holistic approach) that could help to improve the soils and resources in general.</li> <li>• It is not the question of ensuring the farmers income, but more to ensure a long-term cash flow.</li> </ul> <p><b>The idea would be to:</b></p> <ul style="list-style-type: none"> <li>• Approach: financial planning, new technologies, agricultural practices, pesticides use (reduction), plant breeding...</li> <li>• Have it in the context of climate change (new pests involved).</li> <li>• Link it with Agro-environmental measures (how to make incentives within the policy)</li> <li>• Would be interesting to get the feedback from OGs working on this.</li> <li>• Take stock of what exists already, and collecting info, proof and evidence about “long-term systems” and the challenge is to bring the knowledge to the field, apparently, no need to investigate more on this.</li> </ul> <p><b>Target would be:</b></p> <ul style="list-style-type: none"> <li>• farmers</li> <li>• advisory services, but be careful as they are sometimes more focused on the technical point of view and sometimes less on the economical one. The topic could also be reformulated as a tool for advisers.</li> <li>• training advisers (potential multipliers)</li> <li>• but also the consumers (society). In particular, are consumers ready to pay for more sustainable practices? (although this is seen rather as a research topic)</li> </ul> <p>One group was not convinced by the fact that this topic should be the basis for an EIP event, as it should be more a Research subject or a publication.</p> <p>The long-term focus is also the point of view of the #14 linked to biodiversity: long-term functionality of lands. The 2 topics might be linked maybe.</p> <p>Activity could be a WS or a seminar.</p>
<b>Background</b>	

## 11. Changes in plant protection following neonicotinoid ban

<b>Conclusion</b>	<p>What are the alternatives for conventional farming as regards crop protection after the ban on neonicotinoids?</p> <p>This topic is more a research topic (or even to be taken at the political level) than a subject for a Focus Group.</p> <p>It would be relevant for sugar beet, as in the EU there is almost no organic sugar production. It would be also important to widen it a bit, taking the point of crop rotation in general.</p> <p>A lot of OGs in Romania are working on non-chemical alternatives. Maybe it would be better to wait a bit for the results of those OGs, before organising a Focus Group.</p>
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	<p>Addressing only solutions after the neonicotinoid ban would be a bit narrow, but taking the point of view of biodiversity would help: combining alternative crop protection linked to integrated biodiversity on the farm. Following this, a proposal to merge #11 and #14 was formulated.</p> <p>But, in any case, it seems that there should be first a research level to work on this and this was shared by all the groups. Then the link between #11 and #14 could be made.</p>
<b>Background</b>	

## 12. How to preserve agricultural soils from contamination / pollution by land-applied products/nutrients as part of the circular economy?

<b>Conclusion</b>	<p>How to prevent pollution of the land by applied products that come from waste management?</p> <p>Circularity: farm producing raw materials → cities and industries transforming it → recycling it → to send it back to the farm.</p> <p>There is a need for the technical solutions to split the waste between bad and good nutrients in waste. There is a lot of technical knowledge involved.</p> <p>This is a question of what could be the negative aspects of waste and the concentration of pollutants that is used on lands, like heavy metals etc.</p> <p>The matter is not so much to improve research about this but more to put together the actors of the chain. The fact is that there are lots of clustered sectors working on that field: all actors are not working so much together. EIP / Multi-actor projects would be very interesting regarding that aspect. To enable to overcome barriers with an inter / transnational point of view and enhance knowledge transfer.</p> <p>Some participants suggest not to limit the issue to pollution of soil, but also of water.</p> <p>To complete the waste cycle having in mind the waste management regulation. In the wood sector, the use of wood trash for road construction is a problem as the regulation does not consider it as a potential resource.</p> <p>To have the link between farms / cities / industries of waste management. Maybe a need to narrow it to the recycling from urban use.</p> <p>Targets:</p> <ul style="list-style-type: none"> <li>• farmers,</li> <li>• advisers,</li> <li>• waste management companies,</li> <li>• cities (non-agricultural sector)</li> </ul> <p>Proposal to combine activities #12 and #13, since these could be the two faces of the waste cycle and the reuse of nutrients: #12 is about avoiding soil contamination (e.g. through heavy metals), while #13 would be about recycling nutrients from urban organic waste. It would take the form of a WS, which would build on the past FG on “nutrient recycling”.</p>
<b>Background</b>	

### 13. Recycling of only nutrients in mineral form (N, P, K) from urban organic waste and manure

<b>Conclusion</b>	<p>Business itself should find the interest of it in a fluid economy. There is a specificity to highlight urban waste there and link cities and farmers.</p> <p>Proposal to merge topics 12 and 13 to make a broader topic: how to complete the circle of food to keep minerals for the best use in farming?</p> <p>To link cities and farm communities.</p> <p>To take into account the waste management regulation as well (see #12)</p> <p>Topic could be very interesting for phosphorus, which is a clear issue in a lot of Member states, although issue is difficult to catch in a FG (rather for research project).</p>
<b>Background</b>	

### 14. Nature-inclusive farming and making smart use of functional biodiversity

<b>Conclusion</b>	<p>What are the benefits of a functional biodiversity? To focus on the farm level. But farmers are not that interested in that topic, it is too wide. There is also the question of what is biodiversity and the opposition to farming in general. It will be already a first challenge to show the interest and added value for farmers.</p> <p>It would be interesting to make the link with OG and H2020 projects working on this. It makes sense to organise an event (WS or seminar) about it, such as the EIP ones, so to have different countries addressing this point. Focus should be on dissemination of good practices in this field.</p> <p>Target group:</p> <ul style="list-style-type: none"> <li>• OGs</li> <li>• Thematic networks</li> <li>• LIFE projects</li> <li>• H2020 projects</li> <li>• farmers</li> <li>• advisers</li> <li>• policy makers</li> </ul> <p>Question for those farmers having practices linked with biodiversity: what is their access to market, and how to advertise their products? A question could be how the market could reward biodiversity in farming.</p>
<b>Background</b>	

### III. Business models and digital transformation

#### 15. New business models and digital solutions to enhance environmental performance (circular approach - including forestry and monitoring of agri-environmental schemes ...)

<b>Conclusion</b>	<p>It is important for farmers to valorise what they are already doing, things such as environmentally friendly practices could help increase value of products and bridge the communication gap with wider society.</p> <p>Better waste management and a circular approach helps convincing consumers that food deserves a better price. We need to redefine waste and build business models around this subject.</p> <p>Creation of sustainability profiles for farms (linked to the two points above)</p>
<b>Background</b>	

#### 16. Skills development for the digital transition

<b>Conclusion</b>	<p>Increase digital skills for farmers, advisers, rural area actors, SMEs in the agri-food sector, end users, administration – how to implement a strong back office function?</p> <p>Set up and strengthen the organisation of these actions through AKIS plans and a strong EU agenda for advisers and digitisation by:</p> <ul style="list-style-type: none"> <li>• Identifying digital skills and developing them</li> <li>• Providing advisers with skills to fulfil the digital demand</li> <li>• Creating strong back-office systems</li> <li>• Implementing locally</li> </ul>
<b>Background</b>	

#### 17. The internet of things and its uptake and application in agriculture

<b>Conclusion</b>	Find those business models which benefit farmers: data selling, valorising environmental benefits derived from the way they farm (can be measured with sensors).
<b>Background</b>	

#### 18. Blockchain technology in improving rural businesses

<b>Conclusion</b>	Blockchain could be used to benefit farmers, business, customers and government by enhanced security, speed of transaction, faster availability of money, unchangeable data, traceability of products and inputs. It can also be used to simplify governance and controls. To explore how it may be applied in farm management.
<b>Background</b>	

## 19. Innovative solutions for small farms, and access of small farms to new technologies

<p><b>Conclusion</b></p>	<p>A large majority of Sol members considered this topic interesting for different reasons:</p> <ul style="list-style-type: none"> <li>• Access to new technologies by small farms is more difficult because of cost, technologies not adapted to small sizes, poorer digital infrastructure in remote areas where many small farms are located</li> <li>• Small farms can be innovation leaders (but it was mentioned that only 2% of small farms in Poland declared that they are interested in innovation)</li> <li>• There is an East-West digital divide and small farms are concentrated in some Eastern European areas</li> <li>• Importance of small farms for lively rural areas and “risk of extinction” in some areas (e.g. in Lithuania where 3% of farmers own 50% of land – inverse trend in other areas like NL where average farm size is decreasing)</li> </ul>
<p><b>Background</b></p>	<p>Issues to be addressed based on the discussion: Marketing potential and short supply chain Acceptance of new technologies and benefits that can derive from it Social innovation aspects Cooperation between small farms - big farms Consider also agro-forestry farms How to upscale the results of EIP projects and make them available to small farms? Check overlap with H2020 project on similar topic (Evora University leading)</p>

## 20. Future family farm business models and What does the farmer of the future look like? What support is needed?

<p><b>Conclusion</b></p>	<p>A majority of Sol members considered this topic interesting and suggested to merge it with topic 19 “Innovative solutions for small farms”</p> <p>Reasons for addressing this topic:</p> <ol style="list-style-type: none"> <li>a) Current business models do not work or will not be able to cope with ongoing challenges;</li> <li>b) There is a better cope with multifunctionality on the farm: how can the different activity strands be best combined?</li> <li>c) digital transformation involves challenges and opportunities for farmers</li> </ol> <p>The digital transformation, A.I. and other global trends (e.g. changes in land ownership with increased importance of investors from 3<sup>rd</sup> countries) are likely to have huge impacts on how agricultural businesses are structured – e.g.: will the farmer of the future need to own/use a tractor? How will labour be organised? Farm transmission is more and more an issue and new entrants face many difficulties; investments are too costly for the average farmer.</p>
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<b>Background</b>	<p>Important issues to be addressed:</p> <ul style="list-style-type: none"> <li>Development of digital hubs</li> <li>New forms of cooperation – collective ownership services</li> <li>New possible income sources, e.g. from the use of the data owned by the farmers</li> </ul>
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## 21. Digitisation tools to improve forest management

<b>Conclusion</b>	<p>Considered important by a few Sol members.</p> <ul style="list-style-type: none"> <li>• Forest sector lacks innovation funding</li> <li>• Digital tools likely to have a big impact because of large number of small forest owners</li> <li>• Can help dealing with climate change challenges, e.g. through weather monitoring sensors and to deal with new pests (e.g. bark beetle)</li> </ul> <p>Important for non-professional foresters and for agroforesters</p>
<b>Background</b>	

## 22. Cooperation with industry to build resilience and ability to cope with adverse weather events linked to climate change

<b>Conclusion</b>	<p>Extreme weather events are more and more frequent and new tools are needed to address these risks.</p> <p>Need for both horizontal cooperation among farmers and for vertical cooperation with other industrial sectors along the chain (example of green tomatoes because of abnormal weather conditions in PT: cooperation with industry for new industrial structures)</p> <p>Explore risk management by farming type, e.g. organic, Integrated pest management, etc.</p> <p>In general Sol members considered this topic interesting, maybe not mature enough at this stage.</p>
<b>Background</b>	

## IV. Innovation networking and capacity building

### 23. Boosting/networking/exchange on Operational Groups on specific themes like soils, forestry, Mediterranean orchards

<b>Conclusion</b>	Important to have activities that further support thematic networking of OGs at EU level, while taking in consideration the regional relevance of each particular topic.
<b>Background</b>	<p>Important to organise events that are thematic, as well as considering the regional relevance of specific topics (regional clustering considering regions such as Baltic Sea, Northern Europe, etc.).</p> <p>Concrete examples presented were an event focusing on Mediterranean orchards (olive, citrus, etc.) and a FG on pests and diseases of citrus sector (lemon, orange, bergamot, etc.).</p> <p>These can be organised both at EU level but also at national /regional level. Organising them at EU level creates further opportunities for creating synergies and supporting projects' networking / knowledge exchange. Cross-border exchange and cooperation is extremely important. Themes can be determined by the number of OGs focusing on a specific topic. In addition, NRNs can run surveys among their stakeholders and suggest themes.</p> <p>EU database can support this type of activity, facilitating the clustering, but it needs further awareness.</p>

### 24. Cross-border inspiration from other sectors

<b>Conclusion</b>	Inspiration from other sectors and /or regions (cross-fertilisation) should be a cross-cutting approach to all activities.
<b>Background</b>	<p>Cross-fertilisation, looking at problems with a different 'eye' is most effective. "Thinking out of the box" is relevant in varied circumstances, either when starting an OG project or organising an event. This relates to involving experts from the most diverse sectors but also people from different regions / countries (cross-border approach). Inspiration from other sectors brings a 'new look' and new tools. Interdisciplinarity is a great source of innovation / innovative solutions (e.g. farmers working with designers or doctors). Example from Sweden: 'Innovation Race'.</p> <p>Some OGs are working quite traditionally in this respect, quite 'closed' in their own universe.</p> <p>Creativity tools can bring innovation forward.</p> <p>Some themes are cross-sector by their own nature, such as value chains or bioeconomy.</p> <p>In order to have such an open innovation, EU framework needs to support this approach.</p>

## 25. EIP-AGRI Operational Group management and performance

<b>Conclusion</b>	Organise an event focusing on the evaluation of OG projects which should include topics such as specificities in OGs' evaluation, common practices (or 'standardisation') of methods to evaluate OGs, and dissemination of OGs results
<b>Background</b>	<p>Evaluate the performance of OGs can't be done in a classical manner, it needs to take in consideration the specificity of this kind of projects, it needs the right type of indicators, the right way of reporting and should look at processes. Issues such as how to evaluate the benefit of an OG project or what is a good practice are difficult to determine. But it's also good for evaluators to 'standardise' methods.</p> <p>This topic is very relevant for MAs, PAs and NRNs, suggestion is to organise an event.</p> <p>It's very important to exchange experiences and identify common bottlenecks that have been overcome.</p> <p>One important aspect to take in consideration in the performance of OGs is how they are communicating about their results: are they doing enough? What are the necessary means? What is enough?</p> <p>Example that was mentioned: in PT, OGs need to deliver a yearly report and participate in an yearly public event where they present their progress.</p> <p>How to disseminate results to practice? In Slovenia, they are considering the possibility of involving public advisory services in this.</p>

## 26. Future of EU innovation funding and networking in MS and EU

<b>Conclusion</b>	There's clear need for simplification and modernisation in EIP implementation, thus sharing experiences in this matter is a real need.
<b>Background</b>	<p>Some organisations involved in OG projects are satisfied, others frustrated. Main reasons are related to the existing high level of bureaucracy and to the long time needed for the reimbursement of expenditures (thus liquidity becomes an issue). There is need for further simplification and modernisation. Current situation promotes the participation of certain type of partners and gives little changes to small organisations.</p> <p>Suggestion is to organise an event on simplification (current programming period and future CAP) and involving EU court of auditors. It is of utmost relevance to learn from each other's experiences. Simplification is good for MAs (facilitates implementation), for farmers (becomes easier to understand) and for evaluators (the outputs are clearer).</p> <p>The possibility of having pre-financing of costs would be of great value. In Romania this is possible, under certain conditions and as long as they have investment.</p> <p>The strength of the partnership to face such challenges can be taken in consideration during the evaluation of the applications for funding: via selection criteria and depending on the selection committee. Exchange of experiences on this matter would be valued.</p>

## 27. Raising awareness on farm demonstration activity

<b>Conclusion</b>	There's a role for farm demonstration and a need to raise awareness for it, which can be addressed via publications and / or field visits associated to events.
<b>Background</b>	<p>Farm demonstration needs to be promoted, particularly now that discussions on the future CAP are going on.</p> <p>Farmers need to speak to each other. Farmers need to show what they are doing, what is going on. Farmers need to talk about what's important for them, particularly to the policy level, but also to industry. Farm demonstration is a way to do it.</p> <p>This topic can be addressed thematically – via publications, or broadly – via events with a field visit to / open day at a demonstration farm.</p> <p>There's need to raise awareness at political level on the whole AKIS system.</p>