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NEFERTITI FARMDEMO

D5.5 Lessons and recommendations for AKIS on demo-activities on commercial farms

Document Summary

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Abstract

NEFERTITI Programme promotes the creation of interactive thematic networks related to the agriculture sector to promote knowledge, learning and the adoption of innovative techniques through the exchange of information between different actors and live demonstrations..

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Introduction

1. Introduction

1.1. Background to NEFERTITI Project and WP5

The overall objective of NEFERTITI is to establish an EU-wide highly connected network of demonstration and pilot farms designed to enhance knowledge exchanges, cross-fertilization among actors and efficient innovation uptake in the farming sector through peer-to-peer (**p2p**) demonstration of techniques on major agricultural challenges in Europe. In order to do so, NEFERTITI has established 45 regional clusters (hubs) that bring together a wide range of demo-farmers and involve innovation actors (farmers, advisors, education, NGOs, researchers, and industry) working on a given topic. These clusters (hubs) are organised in ten thematic networks and represent key concerns within the main agricultural sectors in Europe.
During the course of the past years, to date 768 demo activities have taken place across these European networks, each with some sort of p2p and/or farm demonstration activity being carried out and necessarily involving multi-actor participants in agricultural and knowledge innovation systems (**AKIS**).
How these knowledge exchanges occur is a critical piece in the success of the above- mentioned multi-actor networks and the AKIS, at local, regional and European levels. The process of adoption, adaptation, and scaling of sustainable innovations, and the rate at which this occurs both in speed and number, is central to the transition to innovative and sustainable European agriculture. This critical piece of the puzzle, particularly with respect to commercial demo farms, is the main work of WP5.

The specific WP 5 objectives are:

- Capturing and sharing practices and methods to improve collective p2p learning on demo-farms;
- Organising self-monitoring, evaluation of these practices and methods and collective learning to enhance the learning process of farmers within the NEFERTITI demonstration networks; and
- Developing recommendations on how to utilise these approaches for Demo-farms in various countries of the EU, supporting the implementation of EIP-AGRI, related to the dynamics of the advisory and education systems in the EU.

To achieve these overall objectives, WP5 created and facilitated monitoring & evaluation of both regional learning processes and interregional knowledge exchange within demonstration networks of NEFERTITI. *A Monitoring and Evaluation (M&E) approach to support reflexivity in and realisation of the hub plans* was developed (D5.1) as well as *a Training manual including tools and approaches for self-monitoring of demo-activities and monitoring of collective learning* (D5.2). Lessons learned from carrying out demo activities in D5.3 (*First set of monitoring reports on carrying out effective demo activities on- farm*) were separated in wins, hurdles, emerging questions and testimonies, and were based on an analysis of the Hub Monitoring & Evaluation Journals, which all 45 NEFERTITI hubs filled in during the first NEFERTITI demo year. D5.4 (*Set of reports originating from the collective learning within the cross-reflection process*) sets out lessons learned from collective learning within cross-reflection processes, where demo activities were ideally meant to inspire and catalyse the acceleration of (mutual) cognitive, social, and institutional learning processes, as well as horizontal knowledge flows between peers. All of these reports from WP5 can be found on the NEFERTITI website https://nefertiti-h2020.eu/home/work-package-5/. This D5.5 sets out reflections, general lessons and recommendations for AKIS on demo-activities on commercial farms.

1.2 Introduction to Deliverable 5.5

An important question to be answered concerning commercial farms by this specific WP5 Deliverable 5.5, related to such reflection, general lessons, and recommendations for AKIS, is “How can the lessons learned in NEFERTITI in various EU countries be utilised to support the implementation of EIP-AGRI, and to connect to the dynamics of the advisory and education systems in the European Union”? Reflections, lessons and recommendations set out in this D5.5 have been informed by resorting to other WP5 outputs, Nefertiti related workshops and activities, consideration of other European project findings (ProAKIS, PLAID, Agri Demo, AgriLink, i2connect, etc.), as well background literature. In order to supplement the finding of other Deliverables

of WP5 and of other complementary projects, members of WP5 and other NEFERTITI members carried out additional activities and AKIS workshops, which will be described below.
The contents and resulting observations and recommendations of this Deliverable 5.5 are a result of a continuous collection and synthesis of outputs and activities throughout the life of the NEFERTITI project (Figure 1). This D5.5 (*Reflections, general lessons and recommendations for AKIS on demo-activities on commercial farms*) synthesises and then distils in Chapter 7 the results from the sources indicated below in Figure 1 and formulates recommendations. Each item below corresponds to the chapter which follows herein.

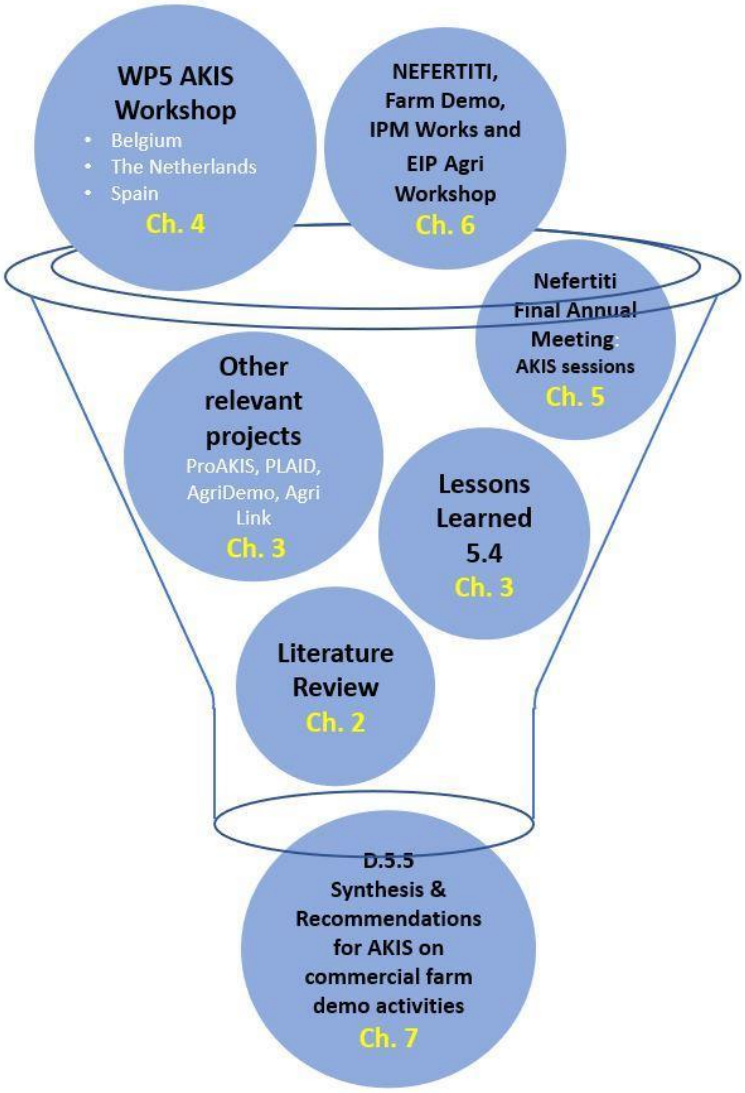

Figure 1 *Inputs for D5.5*

Lessons learned from T5.4, and other relevant projects will be considered in recommendations to improve collective learning and practice change in p2p and demo activities by farmers, advisors, and other actors outside the NEFERTITI project.
This Deliverable 5.5 will complement other existing research on the importance of demo-farms for an efficient and interactive AKIS and the removal of bottlenecks for the dissemination of results from practice-oriented research to end-users. Local AKIS Workshops have been organised under WP5, as well as broader Workshop sessions which included representatives from the EIP-AGRI, Farm Demo, IPM Works, etc. to hold co-creation sessions, share findings and harvest recommendations. The above-mentioned sessions included farmers (including women and young farmers) and advisors as well as their associations and services entities, producer organisations, cooperative and corporate farm businesses, SMEs, farm business industry representatives

(farm machinery, inputs, tech providers, etc.), agroecologists, policy representatives etc., thus representing a wide group of diverse multi-actors and related incentives and perspectives.
However, it should be kept in mind that there is a huge diversity in the organisation of AKIS throughout Europe, at all levels, thus resulting in very different approaches to the inclusion and utilisation of p2p learning and on-farm demonstrations.[1] The results within NEFERTITI and other farm demonstration projects and initiatives also support this observation. For example, AgriLink points out that economic and social mechanisms at play in agricultural contexts require a "best fit" of advisory systems, rather than the identification of "best practices".[2] For this reason, it is necessary to put the role of p2p and farm demonstrations in context particularly with respect to agricultural innovation and transitions to a more sustainable European agriculture. This is necessary to understand how the recommendations pursuant to this D5.5. will be framed as part of a multi-actor, multi-level, sustainable transitions framework. After collecting all the results in Sections 2 to 6 herein, in section *7 Conclusions and Recommendations*, Figure [8] we include a scheme to organize the recommendations, in light of different target groups, the diversity of AKIS landscapes across Europe, and the differences between operational and organizational or policy and institutional environment recommendations. Actions which occur at any one level often require interaction with other levels and recommendations also take this into account.

[1] See various AKIS country reports of i2Connect https://i2connect-h2020.eu/resources/akis-country-reports/

[2] AgriLink Conceptual Framework https://www6.inrae.fr/agrilink/content/download/3606/35459/version/1/file/AgriLink.Conceptual+framework+full+version+report.pdf

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Putting the role of p2p and farm demonstration in context

2. Putting the role of p2p and farm demonstration in context

This Deliverable 5.5 explores the integration of farm demonstration activities and p2p learning in AKIS. Task 5.5 "Providing recommendations for a better use of demo-activities in the AKIS" requires that it also should i) identify bottlenecks and challenges in the dissemination of results from practice-oriented research to advisors and farmer end-users; promote exchanges with farmers who experiment with innovative practices so that these practices may be the subject of further research; and iii) that it propose a role for farm demonstration and p2p learning in improving innovative processes and knowledge systems. As well, it should deal with the fact that a diverse group of stakeholders and AKIS are involved in their collective transition to a more innovative and sustainable, agricultural system - each with their own histories and development paths, institutional logics, incentives, socio-economic costs and benefits calculations, etc. The very structure of NEFERTITI recognises and is built upon this reality, with its structure of hubs and local demos, networks and cross-visits, all across 10 distinct themes.
But the crux of the matter is how to organise and frame recommendations that arise from this immensely heterogeneous body of observation and information that can be of use to the various levels of multi-actors and AKIS structures in leveraging p2p and farm demo approaches.

Consider an example from a local agricultural territory (based on NEFERTITI hub situations):

Several initiatives are taking place in a local agricultural territory: an increase in organic production; adoption of measures to address the reduction of scarce resources, particularly water; optimisation of fertiliser use to decrease environmental impacts; reduction of agricultural waste; and the uptake of digital technologies, accompanied by the emergence of a local digital innovation hub. At the same time, there is a strategic market orientation towards value added products, which requires investment in new varieties and thus new techniques. There is recently a turn towards agro-ecological approaches, particularly by younger farmers, who consider farming activity as part of a broader eco-system and who are frustrated by the lack of information and an emphasis by public advisory services on conventional practices. Women farmers in this local system, who in a prior generation were relegated to being the "farm wife", are now farm owners/farmers, yet are still struggling to gain access to, and have a voice in, the local or broader AKIS system.
Many of these farmers understand that they are part of a larger system and that there are compelling reasons why the transition to sustainable agriculture is an urgent issue, whether due to climate change, increased desertification, lack of biodiversity, the FAO 2050 predictions on sustainable food systems, or, the European Green Deal and the new Common Agricultural Policy (CAP), not to mention market conditions. They have received bulletins on subsidies, information about operating groups, etc. But making this transition a reality is a complex task.
With respect to programs under the CAP, farmers know that the modernisation of agriculture is often seen as necessary in order to produce more and use less resources, while at the same time, reduce food production´s impact on the environment. However, within their cooperatives, producer organisations, and associations, there is much debate on which actions can and should be promoted.
Certain farmers/actors advocate sustainable intensification, others regenerative agriculture highlighting soil, thus requiring a complete reorientation of production techniques. Some put their hopes on short supply chains, some on the production of new niche products, and other farmers focus on efforts to reduce agricultural waste. Some simply think that optimisation of water and fertiliser is sufficient with the backup of a desalinisation infrastructure, but local agro-ecologists call for a reduction in land area under production. Innovative farmers call for farm, organisational and institutional level investment in water capture systems. Experimental farms are developing solar and other innovative solutions but the cost-benefit is not clear. Some farmers have been told to put their faith in a digital revolution but lack independent information on overall benefits of digitalisation for their farming system and return on investment.
What should these farmers do? What information can they trust to make their decisions?

What is clear in the text box above, is that any sustainable transformation of this example agricultural system implies an integrated, coordinated, and effective transfer of knowledge across various levels (farm and local agricultural sector, organisational and institutional/policy) which make up an AKIS system(s). Both market and administrative/policy spheres are involved.

Very few of these decisions concern simply on-farm activities and they require some change in farm businesses (supply companies, marketing cooperatives, farm machinery, sensors and robotics firms, etc.), advisory services (public and private), or organisations (administrations, associations, etc.), in addition to action to be taken by farmers. It requires that diverse multi-actors make decisions and take action. Such decision-making will be facilitated by the quality of knowledge flows, including accessibility, timing, applicability, and reliability, not just knowledge content.
While traditional models of knowledge transmission have mainly focused on supporting individual farm management, given the collective nature of agricultural challenges, more attention needs to be paid to issues with a collective dimension related to divergent interests and perspectives, as well as to conflict resolution, organizational structure, collective learning and decision making and strategic planning.
Traditionally, and more specifically in the European context, training of farmers was done through agricultural extension services in a top-down approach. These extension services were based on the so-called "golden triangle": research, education, and training. These were a set of structures often under national ministries of agriculture that guided/dictated the incorporation of technologies and good practices. However, these bodies have been dismantled or strongly restructured in most countries in Europe.[3] The retreating role of the state and the privatisation of some of its farm advisory services, coupled with the complex challenges involved in making agricultural production more sustainable and the multifunctional and multi-stakeholder nature of the agricultural sector, have made the traditional agents of knowledge transmission and innovation less relevant and influential.[4]
Models with a more integrated approach of all the actors related to innovation and knowledge have arisen, introducing practices such as co-design, open innovation, "learning organizations" rather than "learning within organizations", and the facilitation of learning between peers.[5] Wielinga, et al [6] noted that successful innovations are often the result of synergy among technical, organizational and institutional dimensions, referring to the implementation of a combination of new technologies and practices (hardware), new knowledge and ways of thinking (software) and new institutions or organization (orgware).[7] This reality is reflected in the SCAR AKIS Report: AKIS in Europe, and embodied by EIP-Agri initiatives. In addition, the EU Commission reports dealing with AKIS, Solinsa ; FarmPath ; PROAKIS ; AgriSpin ; Agrilink ; and i2Connect, support this

Alskaf et al.[8]point to many variables as well that influence the successful uptake of innovations, among these communication channels and the facilitation of ideas exchange, together with the individual context and conditions of the farmers. In contrast to traditional methods, interactive extension approaches were found to include initiatives such as Farm Field Schools, p2p, Communities of Practice, Learning groups, etc. Numerous research and policy initiatives have advocated new models of innovation and the more traditional vertical and linear approach to knowledge transfer has been questioned.

However, traditional models have been institutionalised and internalised by a wide range of AKIS actors. The top down approach or mind-set of the "golden triangle" of research, education and training is still prevalent in advisory services and existing agricultural knowledge and innovation systems. Traditional top-down oriented extension systems continue to operate in the context of national and/or regional policies and regulations, influenced as well by non-independent market actors.[9]

[3] Cristóvão, A., Koutsouris, A., Kügler, M. (2012). Extension systems and change facilitation for agricultural and rural development. In: Darnhofer, I., Gibbon, D., Dedieu, B. (eds) Farming Systems Research into the 21st Century: The New Dynamic. Springer, Dordrecht. https://doi.org/10.1007/978-94-007-4503-2_10

[4] Karlheinz Knickel, Gianluca Brunori, Sigrid Rand & Jet Proost (2009) Towards a Better Conceptual Framework for Innovation Processes in Agriculture and Rural Development: From Linear Models to Systemic Approaches, The Journal of Agricultural Education and Extension, 15:2, 131-146, DOI: 10.1080/13892240902909064

[5] Ibid.,

[6] Wielinga, E., Koutsouris, A., & Knierim, A. (2016). Stimulating Innovations : Building Bridges and Generating Spaces. (1), 1–13.

[7] Ibid.,

[8] Alskaf, K, Sparkes, DL, Mooney, SJ, Sjögersten, S, Wilson, P. The uptake of different tillage practices in England. Soil Use Manage. 2020; 36: 27– 44. https://doi.org/10.1111/sum.12542

[9] See wide range of descriptions in i2Connect AKIS Country Reports https://i2connect-h2020.eu/resources/akis-country-reports/

The agricultural knowledge chain is often composed of a few public and/or private extension or communication agents on top, and information receivers that can be clustered or operate on an individual basis, depending on the organizational scale of their local systems. In contrast, bottom-up innovations take place in systems where the knowledge that comes from "doing things" is formally or informally exchanged between peers dealing with issues more related with operations or practices rather than structures or large-scale approaches.[10]

The consolidation and institutionalisation of bottom up and/or co-creation initiatives and mentalities are a pending task, although demo and p2p networks, operating groups and the consolidation of thematic knowledge networks are first steps in this direction.

Another consideration related to top down/bottom-up approach is the extent to which AKIS systems are fragmented or integrated. The ProAKIS project carried out an overview in Europe of the degree to which AKIS systems were strong/powerful and the extent to which they were fragmented/integrated (Figure 2). As can be seen in Figure 2, strong AKIS systems may be both fragmented or integrated but it appears that only fragmented AKIS systems are considered weak.

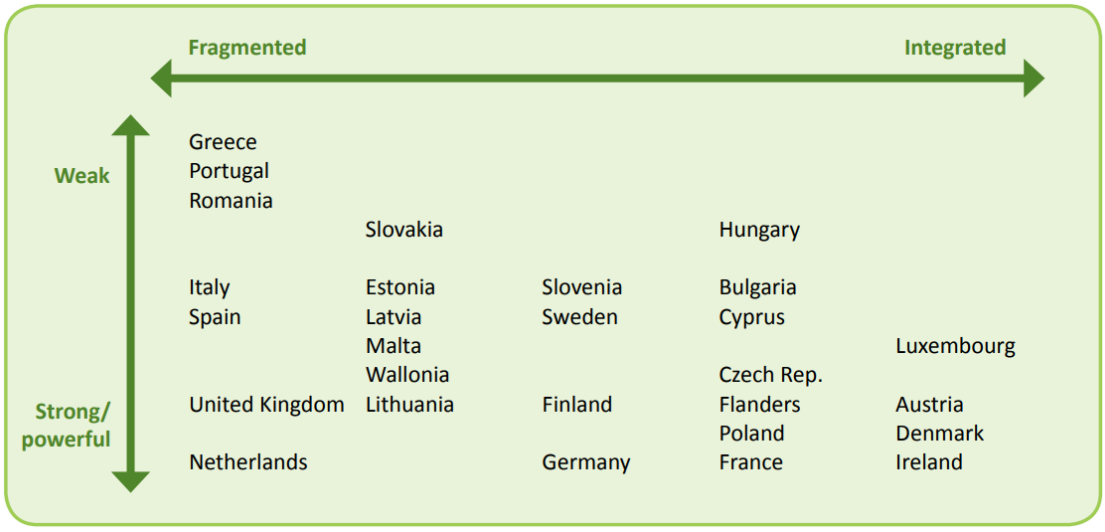


Figure 2 *An overview of European AKIS distinguished along a continuum from weak – strong and fragmented – integrated (as of 2014)*[11]

In addition, the literature on p2p learning and knowledge networks describes the **different types of networks associated with the transmission of knowledge**. On the one hand, **centralized networks** are characterized by having a central node through which all the information circulates, and which is specific to institutional or regulatory information. Another type of less centralized networks are the **distributed networks** in which the knowledge that is transmitted has more to do with experience, it is a tacit or implicit knowledge, according to the terminology used by Sutherland et al.[12] and that characterizes the reciprocal transmission of social capital and learning between peers. A third group is the **decentralized networks with multiple nodes** that connect diverse asymmetric actors and their knowledge and that characterize the transmission of highly innovative

[10] Rockenbauch, T., Sakdapolrak, P. and Sterly, H.(2019) Do translocal networks matter for agricultural innovation? A case study on advice sharing in small-scale farming communities in Northeast Thailand. Agric Hum Values 36, 685–702. https://doi.org/10.1007/s10460-019-09935-0

[11] Knierim, A. and Prager K, (2015) Agricultural Knowledge and Information Systems in Europe:Weak or strong, fragmented or integrated? PROAKIS publication https://430a.uni-hohenheim.de/fileadmin/einrichtungen/430a/PRO_AKIS/About/OVERVIEW.OF.AKIS.IN.EUROPE.AKIS_characterisation_briefing_final.pdf (accessed 23 September 2022).

[12] Sutherland, L.-A., L. Madureira, V. Dirimanova, M. Bogusz, J. Kania, K. Vinohradnik, R. Creaney, D. Duckett, T. Koehnen, and A. Knierim. (2017). "New Knowledge Networks of Small-Scale Farmers in Europe's Periphery." Land Use Policy 63: 428–439.

knowledge with transformative potential.[13] **The participation of farmers and technicians in the different types of networks is common and typical of mature knowledge systems.**
Argyris and Schön[14] established that **different innovations require different degrees of learning**. Regular innovations which do not require change of paradigms but are rather operational decisions fall into the category of **single loop** learning ("how to do things better") whereas the adoption of structural innovations which imply the change of basic certainties, goals and values are considered **double loop** learning ("how to do things different"). **Triple loop** learning has a meta-dimension on "how to learn better". The approach to p2p learning and farm demo networks not only address single and double loop learning, but also incorporate the "how to learn better" dimension.
In addition, EIP Agri, European Innovation Partnership in Agriculture, has promoted innovation through collaboration to make best use of complementary types of knowledge and linking policies and instruments such as Operational groups, H2020 and Horizon Europe research and innovation multi-actor projects and thematic networks.

For the purposes of this D5.5, the question then is what role can p2p and farm demos play in such diverse and unevenly fragmented or consolidated AKIS systems?

[13] Smedlund, Anssi. (2008). The knowledge system of a firm: Social capital for explicit, tacit and potential knowledge. J. Knowledge Management. 12. 63-77. https://doi.org/10.1108/13673270810852395
[14] Argyris, C., and Schön, D. A. (1996). Organizational Learning II: Theory, Method and Practice. Boston, MA: Addison-Wesley.

3

Complementary projects, prior NEFERTITI deliverables, and initiatives on p2p and farm demos

3. Complementary projects, prior NEFERTITI deliverables, and initiatives on p2p and farm demos

Over the last European Commission Research Programmes, various projects and initiatives have dealt with the support for on-farm demonstration activities, p2p learning and their embedding in the regional or local AKIS. Examples included SOLINSA (Support of learning and Innovation Networks for Sustainable Agriculture), PLAID (Peer-to-Peer Learning: Accessing Innovation Through Demonstration), PRO AKIS (Prospects for Farmers´Support: Advisory services in European AKIS), AgriDemo-F2F (Building An Interactive Agridemo-Hub Community: Enhancing Farmer To Farmer Learning), FarmDemo (Innovation through On Farm Demonstration collaboration), i2Connect (Connecting advisers to boost interactive innovation in agriculture and forestry), NextFood (Educating the next generation of professionals in the agrifood system), IPMWorks, and this project NEFERTITI (Networking European Farms to Enhance Cross Fertilisation and Innovation Uptake Through Demonstration).
In these projects we find that the role of demonstrations and p2p learning has been explored and visualised in various manners. For example, Figure 3 below sets out the framework developed in the collaboration of FarmDemo participants, addressing the **operational level and the enabling level**. Demos were found to facilitate dialogue, increase social interaction and "hands on" experience, leading to p2p experiential, transformational and network learning. In order to enable p2p and demos, the role of organisations, AKIS, and regional contexts was referenced, distinguishing between strategies to enable effective demonstrations and those to increase access.

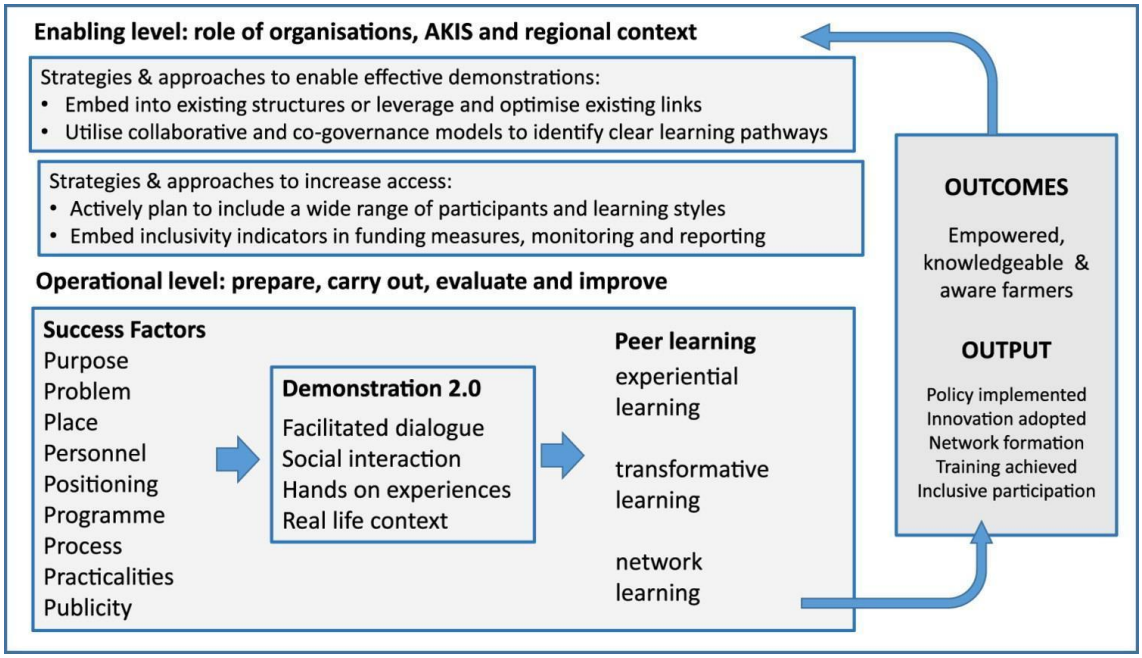


Figure 3 *Conceptual framework of on farm demonstration developed through the FarmDemo collaboration*[15]

Agrilink, on the other hand, conceptualised a **micro, meso and macro approach** (Figure 4), ranging from farmer´s decision-making processes to the policy and institutional environment, indicating the importance of brokering activities as innovation trigger events, as well as R&D activities and advice. Policy and institutional environments are seen to wield influence through regulation, funding, and networks.

[15] Sutherland, L.A. and Marchand, F. (2021) On-farm demonstration: enabling peer-to-peer learning, *The Journal of Agricultural Education and Extension*, 27:5, 573-590, https://doi.org/10.1080/1389224X.2021.1959716

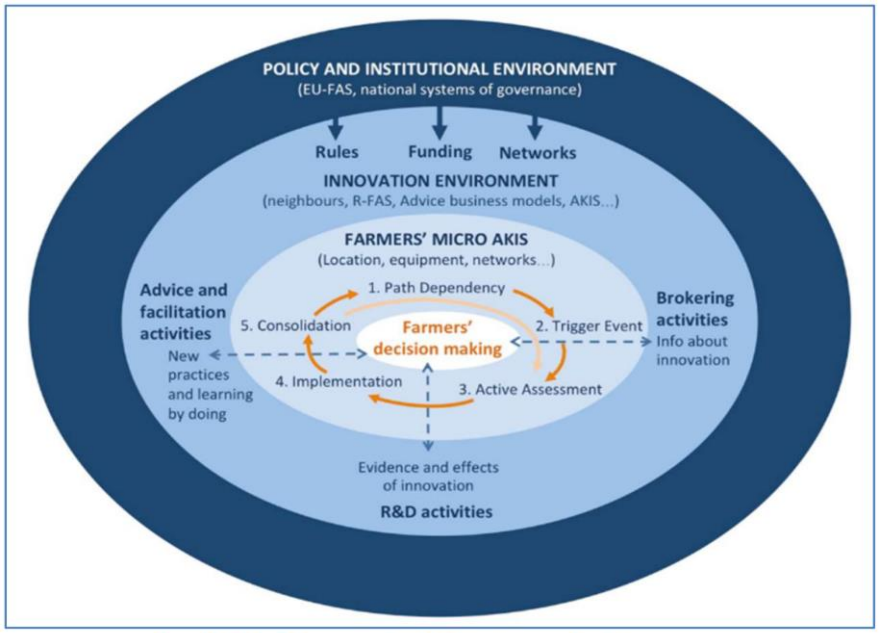


Figure 4 *Agri-Link Multi-level Conceptual Framework (2018).*[16]

Key messages from Farm Demo (PLAID and AgriDemo) were developed into four policy briefs. Summarising[17] we note that:

Policy brief 1: Demonstration as part of dissemination activities in EU innovation support projects. Well organized on-farm demo events are positively accepted by a wide range of AKIS actors and are useful to stimulate innovations and to disseminate and validate research results in practice, thereby bridging the gap between science and practice. Yet demonstration activities are rarely, until recently, included in project calls, and as a result, are seldom part of project proposals and projects.[18]
Recommendation: **On-farm demonstration should be an essential part of the dissemination activities of EIP Agri Operational Group innovation projects, Thematic Networks, and other European project programmes such as Horizon Europe and Interreg**. This would encourage researchers to work together with end-users and other stakeholders in the agri-food chain and to build demonstration activities together in order to improve, validate and disseminate their research findings and innovation.

Policy brief 2. Education and training to enhance demonstration for farmers, facilitators, and demo organisers. The dissemination and peer-to-peer learning effect of a demo depends on a well-structured and executed event, requiring specific skills.
Recommendation: **Training programmes to enhance demonstration should be supported and implemented in each of the EU countries and regions**. Specific training should be organised at national level to train the trainers. Training at three levels: demo trainers (train-the-trainer) in each EU country, training for demo actors in each region, agricultural vocational education in each country with modules to encourage farmers and advisors to take responsibility in demonstrations. Organization of regular cross visits at national and EU level, learning from each other's approaches for on-farm demo-events. A training programme about demonstration activities could be carried out by each country's agricultural training and education bodies, with an involvement of scientists, facilitators, and demonstration practitioners.

[16] https://www6.inrae.fr/agrilink/content/download/3606/35459/version/1/file/AgriLink.Conceptual+framework+full+version+report.pdf
[17] Summarized from: https://agridemo-h2020.eu/recommendations-for-akis-governance-and-policies-on-support-for-farmer-to-farmer-learning-approaches/
[18] Note that this has recently changed, where network projects, EU initiatives and EIP-agri and Operational Groups require the organisation of demos.

Policy brief 3: Supporting Demonstration through Agricultural Knowledge and Innovation Systems (AKIS). Despite recognition that demonstrations are an effective way to exchange knowledge and facilitate change and innovation, there is not sufficient attention to the instrument of on-farm demos to enhance impact. *Recommendation:* Inclusion of funding schemes which create favourable conditions for demos through existing programmes and funding schemes (at EU, national and regional level). Attention should be given to **coordination of demos within and across funding programmes to avoid fragmentation and duplication, and to facilitate integration into advisory landscapes/AKIS**.

Policy brief 4: Funding Schemes setting long term (EU) demonstration networks and cross-border exchange programmes. Networking and cross-fertilisation at EU level should be supported both through a greater commitment for demonstration in EU projects and through the funding of long term networking between demo organisers and farmers. Experiences from the FarmDemo project indicated the **diversity of approaches to organise demos across Europe, differing greatly between countries and regions**. These differences may create learning opportunities.
Recommendation: Ongoing projects, Thematic Networks and Interreg projects, which include cross-border exchanges should be leveraged to improve methods and offer more opportunities for accessing **new knowledge on on-farm demonstration practices**. Secondly, **long term demonstration networks at European level should be supported**[19]. These long-term networks can reinforce trust among partners, allow further expertise development in the network and consequently build a network of real "demonstration experts" to support technology and practices that develop more sustainable agriculture in their countries, and at EU level.

NEFERTITI D5.4 "Set of reports originating from the collective learning within the cross-reflection process" outlined lessons learned and outcomes of the NEFERTITI project on two levels: **collective learning** and on the practical lessons at the **hub level**, as outcomes of these collective learning approaches. The considerable improvements of hub coaches in demo organisation indicated that 'practice makes improvement' and merely organising demo events and evaluating the events afterwards is a first step in improving demo organisation and thereby contributing to the acceleration of sustainable innovation and European sustainable agriculture.
A number of recommendations were offered both to demo organisers as well as to other future projects and initiatives wanting to use a **collective learning approach to stimulate learning and demo and p2p exchange** in the context of sustainable European agriculture. Recommendations included:
• On the **hub level** demos, p2p exchange, should be facilitated and be a central part of each farm demo activity. Facilitation is particularly important for virtual demos.
• **Demo organisers should be trained in both technical and soft skills (**facilitation, communication, and general organisation skills). Demo organisers are usually experts on the thematic topic of a demo, but training in soft skills should be given the same priority.
• **Collaboration with other parties in the farmers´value and supply chains or advisors** at the hub level and at the network level embeds the topic within the wider AKIS context and contributes to sustainability of networks. Building **confidence and trust** should therefore, be given priority.
• Network leaders should act as **facilitators** of p2p learning and exchange rather than as a "top down" knowledge dispenser or chief.
• **Cross-visits** are a beneficial way of connecting different countries who are dealing with similar thematic issues and should involve policy makers and public administration representatives to obtain support for p2p learning, as well as issues or themes which are the subject of cross visits.
• **Virtual demos** present both advantages (e.g., lower threshold to participate) and disadvantages (e.g., virtual setting hinders informal exchange). It is important to carefully consider which setting is most appropriate for each demo topic and demo objective.
• A demo consisting of both physical and virtual elements, a so-called **hybrid demo** event, can offer the best of both worlds and may remain a sustainable option in the future, both for educational purposes and possibilities, as well as for increasing the reach and effectiveness of a demo event across geographical boundaries.

[19] Note that projects such as Climate Smart Demo and Climate Smart Advisors are for terms of 7 years.

4

AKIS Workshops under WP5 T5.5

4. AKIS Workshops under WP5 T5.5

4.1 Introduction to AKIS WP5 workshops and procedures

Recognising the background provided by prior EU project work and research outlined above in this D5.5, as well as prior NEFERTITI inputs, and with the intention to more fully understand the role of farm demo activities and p2p learning in local AKIS systems, Task 5.5. lead University of Almería and task participants developed a methodology for an AKIS structured workshop *"Mapping local AKIS and role of Farm Demonstrations and Peer to Peer Learning".* It was piloted and tested in Almería, Spain on 8 November 2019 and was then intended to be replicated within WP5 participants and throughout the NEFERTITI network on a voluntary basis in order to collect more insights for D5.5. The onset of COVID-19 delayed substantially such plans.
Three workshop events were held spanning various sectors and themes:
-Almeria, Spain, F&V sector of Almería, water, soil, and IPM themes, local and regional AKIS, November 8, 2019, organised by University of Almería (UAL) with the collaboration of the Association of Producer Organisations, COEXPHAL.
- WUR Field Crops, soil, water and climate themes, Valthermond, The Netherlands, 23 May 2022, organised by WUR and LTO-DAW (Deltaplan Agrarisch Waterbeheer/Delta Plan for Water Management).
- Flanders/Belgium, arable, livestock, horticultural, and general AKIS workshops, 9 June, 2022, organised by ILVO.
These multi-actor workshops provided a rich and diverse source of information. More details on the full results can be seen in Annex 1.

The AKIS Workshop guide (Annex 2), a version of which is set out on the NEFERTITI website https://nefertiti-h2020.eu/home/downloads/, set out procedures to organize and implement a NEFERTITI AKIS-Farm Demo workshop. The overall objective of the workshops is to explore how to integrate NEFERTITI farm demo activities and p2p learning in the relevant AKIS systems and to remove bottlenecks in the dissemination of results from practice-oriented research to end-users, as well as leverage synergies, improve innovation, and foster sustainability of the AKIS through multi-actor "ownership". In short, it is meant to collect actors' insights on "how can farm demos and p2p learning help support and strengthen AKIS?" and to spur them to further action.

There is also an explanatory video available (produced by Tomas Alföldi from NEFERTITI partner FiBL) at https://www.youtube.com/watch?v=8xURGGTRzYQ and organizers and participants were encouraged to watch the video before reading the guide. The workshop protocol has been adapted for NEFERTITI local AKISs so that they can hold a "mini" workshop. The guide contains simple worksheets for each step of the workshop and an optional pre-workshop survey for participants on their local AKIS. Suggested number of participants was 8-9 people with an expected approximate 2.5-to-3-hour timeframe. The usefulness of the workshop was to allow local AKIS NEFERTITI multi-actors to be able to better determine the best ways to integrate farm demos and p2p learning in their specific agricultural contexts and AKIS.

The workshops gave hub coaches/network leaders an overview of the state of their local AKIS, as well as its relationship to the broader AKIS, allowing them to delve into the actors that made up the AKIS, how the AKIS functioned, barriers to knowledge and innovation flows, the role of p2p and farm demos, and suggested solutions and recommendations. These workshops may also help to consolidate the community and may contribute to the sustainability of the local AKIS in the future. Where national NEFERTITI hubs had several related subject themes they were encouraged to carry out a joint workshop.

Specifically, **hub/network AKIS were asked to explore the following questions**:

- What is the structure of the relevant AKIS?
- What are the main opportunities/barriers to promote agricultural knowledge and innovation?
- What role does/could p2p learning and farm demos play in the transmission of agricultural knowledge and innovation? Specifically, are demonstration activities a useful tool to promote knowledge exchange, co-creation, and learning?

▪ What actions could be carried out in the short and medium term to improve the local AKIS, particularly with respect to the NEFERTITI approach to farm demos and p2p learning?

4.2 The importance of mapping AKIS and organizational and institutional diversity.

The activity of mapping required the participants to **first identify AKIS entities** and then to focus on **collaborations and relationships between AKIS actors and levels**. This implies considering the actors related to supply chains and markets within which farmers carry out their business. While AKIS studies have focused often on farmers and advisors and their associations, educational entities, and regional and national policy makers, less attention has been paid to the supply chain: commercial and financing actors who also can play an important role in collaborations, knowledge flows and the enabling of innovation. While concerns about neutrality should be addressed when dealing with for-profit actors, it should be noted that bias may also exist in other public and not-for-profit private AKIS entities. The mapping exercise can expose these biases which often lead to barriers if not acknowledged.

Mapping also demonstrated the competing views of AKIS actors as to which entities were the protagonists and prime movers of innovation and knowledge flows. Different types of actors were well represented in the mapping and complexity was evident in all WP5 AKIS Workshops, with perhaps the most complex represented by the Flanders AKIS (see Figure 5 below) which distinguished several main categories: research organisations (academic and applied) and experimental stations; education, encompassing higher education (universities and colleges), secondary agricultural education, and centres for agricultural training and refresher courses; government and policy actors (from EU to local level); advisory organisations, including bookkeeping companies and private consultants; farmers' organisations; agrifood chain actors (Cooperatives & auctions, suppliers, agri-food firms),banks/insurance, media and a number of NGOs.

Figure 5 *Flanders AKIS mapping: an example of complexity*

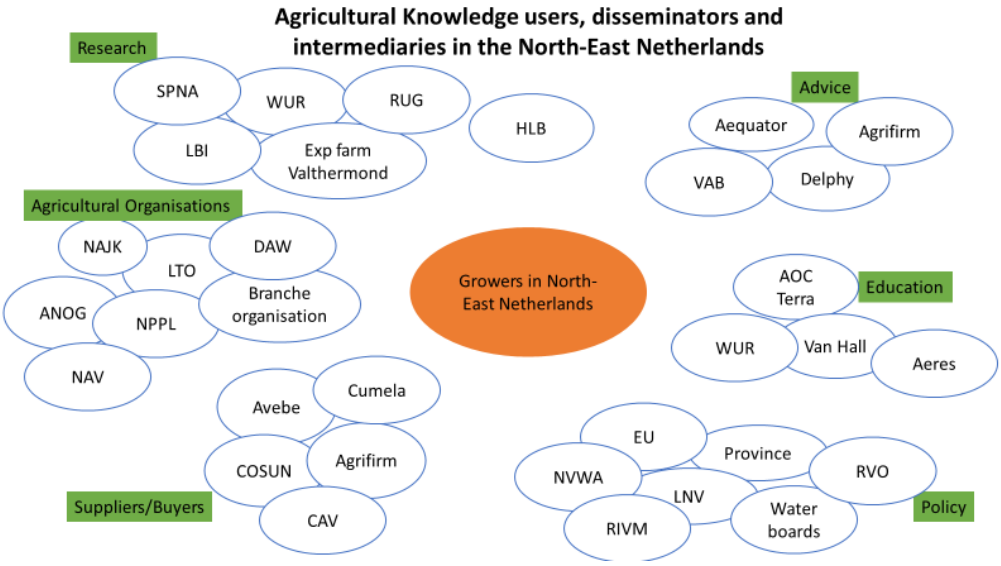
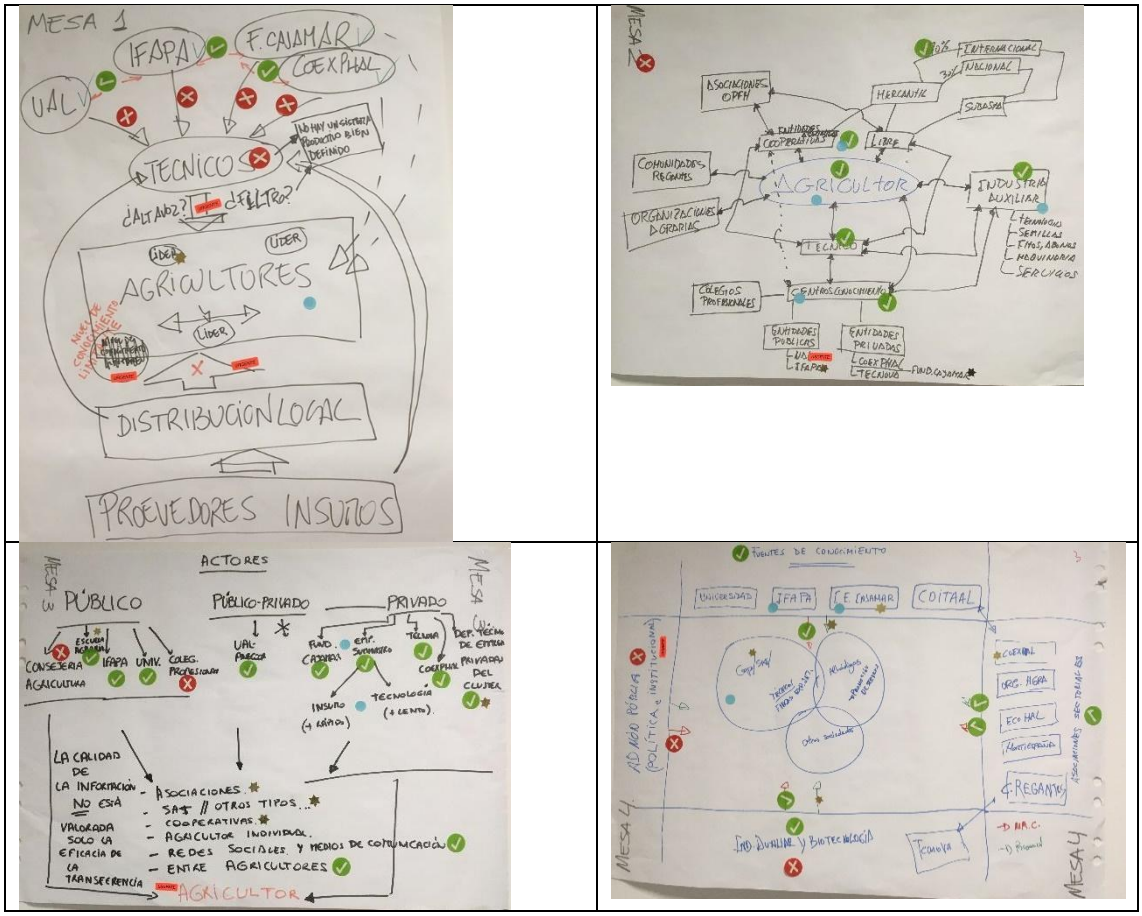


Figure 6 *North-East Netherlands AKIS mapping*

The public-private nature of entities at times was a defining feature for certain AKIS actors. The Almeria workshop, with 30 attendees, had four mapping groups (see Figure 7). In some cases, the mapping exercise also highlighted blindspots, such as the absence of young farmers unions or the lack of inclusion of women farmers and their associations (even though they were invited and present).

While in most instances across all AKIS mapping examples, the “farmers” were put in the middle of the map, the representation of knowledge flows demonstrated that farmers are still at times seen as the “receivers” of information, rather than as knowledge generators in reciprocal or co-creation relationships. This was particularly evident in the knowledge flows from advisory services to farmers.

Notably however, in one case of a mapping dominated by the agricultural advisors, regional government advisory services, a consortium of tech providers, and financial cooperatives, farmers were not only excluded from being a “knowledge provider” but absent from the map itself.



Summary of identified locations for p2p learning and demonstration activities from four group maps (green dots represent successful p2p and demos, red dots failure/barriers, blue dots opportunities, and gold stars demos and p2p of excellence).

***Figure 7** Almeria AKIS workshop mapping results.*

The mapping exercise is meant to encourage a negotiation of a common vision of the AKIS community, or if not common, then at least a more inclusive vision of a wider range of AKIS actors. Many innovations are initiated by niches, which then go on to lead change, or by previously ignored groups that are involved in both operational and enabling environments. This is an important point since **dominant actors may not include other multi-actors in innovation activities or include them in knowledge networks**.

Consider this case of AKIS and women farmers (in other AKIS contexts, other groups may be relevant, such as young farmers, biodynamic or agroecological growers, new Europeans, etc.):

The lack of recognition of women farmers as AKIS actors in Almería, Spain, spurred the organisation of a NEFERTITI hub (water and soil) farm demo webinar on women and digitalisation, which featured leading women Agri innovators. The live stream demo activities and presentations were then followed by an instructive discussion led by the administrative head of the Association of Producer Organisations in the second hour of the webinar on reasons why women were not full participants in digital innovation uptake and processes (see results in Annex 3). The results indicated that in 51% of occasions, lack of participation was due to lack of information and lack of support, in contrast to lack of technical knowledge at 17%. Farm demos and p2p learning were identified as useful ways to deal with the inclusion of women farmers, with reference as well to the utility of virtual demos. AKIS Workshop guidelines were created to be shared with other EU projects such as SmartAgriHubs (see Annex 4).

The collective mapping of AKIS is an important first step in ensuring inclusive multi-actor participation and a common understanding of the role of diverse AKIS actors. It begins a process of consolidating social-economic-ecological relationships around a purpose driven common goal of sustainable agricultural transitions and innovations. Farm demos and p2p learning can serve as inclusive initiatives to fill AKIS gaps identified in the mapping process.

4.3 Results from WP5 AKIS Workshops: barriers, solutions and strategies

4.3.1 North-East Netherlands AKIS workshop results

Participants produced a long list of barriers for knowledge flow around soil, water and farming in the North-East of the Netherlands. Seven **barriers** were prioritised from this long list to discuss further:

1. Knowledge often flows to the farm via advisers. Advice that is linked to the supply of certain products is **not independent**. Moreover, advisors rarely have an overview of the entire farm. Those who finance research and advice determine e.g., the focus of research.
2. Research is **short term oriented**: the complexity of arable farming requires long-term, integrated research into agronomy and farm systems.
3. The **translation of research** into daily arable farming practice and farm-specific applications is **insufficient**.
4. The **economic perspective is insufficiently linked** to knowledge products and research results, even though the economic perspective is the beginning of behavioural change.
5. Research, policy, and advice are not centrally bundled, since research and advice are disconnected. There is **fragmentation in the supply of knowledge** with few area-specific networks. Advice and policy do not fit in with the integral picture of the farm.
6. Farmers **lack urgency to change** because of too much contradictory information or doubts about the basis for change.
7. The **distance between policy and farming practice** is too great. There is a great lack of knowledge within the authorities, partly due to a high turnover of staff.

Following these seven barriers, participants proposed **strategies and actions** to overcome these barriers (including the role of demos and p2p):

1. Independent advice
   - Where doubts exists about neutrality of the research funder, the independence of the approach may be safeguarded through **third party** means (scientific and experimental tests, reviews by farmers, etc.).

2. Research
   - More **long-term system research** is needed since political agendas are too short
   - Research knowledge must reach policymakers in a broad and integrated way
   - Integrate practice in research and ensure the translation of research into practice, for example through a review by farmers or other AKIS actors
   - Bring the practice of farming into society through **education**
   - Link up comparable and complementary projects, exchange datasets and build on them to avoid repetition and to find **synergies**
   - Acknowledge that although a demo is not research, farmers learn from farmers
   - **Independent governance** is needed

3. Translation to farm practice
   - Use **demos to translate research** into the images and language of farming practice;
   - **Emphasize facilitation and narratives** to enhance/ensure more optimal and applicable learning through multiple channels

4. Economic perspective
   - Include the **economic perspective** where relevant and the economic consequences for the entire farm business.

- Include comprehensive discussions to reports of demos.
- Take an integrated view of research, including peer review with (area) experts
- **Link commercial demonstration farms** to regional or **relevant experimental farms**

5. Fragmented knowledge system
   - Encourage **openness on, and consolidation of, knowledge sharing** (e.g. Green Knowledge Network) and research.
   - Fragmentation may be a consequence of the method by which research is written and commissioned.
   - Conduct knowledge collection and data gathering in an **area-oriented approach** with an organized approach to governance of research activity.
   - Consider funding requirements mandating accessibility (public funding) and where research results should be deposited

6. Lack of urgency
   - **Regional Agricultural and Horticultural Associations** (LTOs) should lead on raising awareness of urgent matters.
   - Results of projects and research should be accessible on suitable platforms so that it reaches farmers
   - Integral practice-oriented research should be shown on each regional experimental farm
   - Ideally, farmers should measure and share information
   - Farmers' practical knowledge should be utilised by the research
   - **Up-to-date training and lifelong learning**

7. Distance between policy and practice
   - Create more effective bridges between farmers and policy officials and encourage more input on policies
   - **Officials should be required to carry out periodic practical training**
   - Farmers could carry out internships in government entities
   - Policy should consider more goals per area with a vision per area

4.3.2. Almeria, Spain AKIS workshop results

The following barriers were identified, as per the AKIS workshop protocol, in the Almería AKIS system.

1. Too much information from too many sources. Prevalent "top-down" approach, where farmers are the recipients of knowledge from several institutions and/or agents.

2. Lack of coordination between the main actors. Most knowledge flows were presented as hierarchical and unidirectional. The problems of **excess information (too many voices), and, on the other hand, the contradictory messages that reach the farmer were repeatedly pointed out**.

3. The information from the public administration is not adequate for its most relevant users. Difficulty to find fragmented information, which is at times conflictive, out of date, not what farmers want/need.

4. Traditional (face-to-face) information channels do not help small farmers (98%). There is an over emphasis on face-to-face training during work hours and that is far away from deeper rural areas and small farmers.

5. Slow adoption of innovation. Actors are territorial about their innovations, knowledge and not prone to co-create or share information. Advisors may be discouraged or penalised for mixing with the competition.

6. Lack of rapid response to critical situations. Reactionary, rather than pro-active and lacking articulation of common visions or roadmaps.

7. Contradictory information. More reliable and independent testing is needed.

8. Information is self-serving, filtered and not based on farmers' needs. Administrations are seen as control agents and not close to the business needs of farmers. Commercial companies are aware of market needs of farmers and can be important partners in innovation and knowledge flows. Both administrations and companies could benefit from collaborations with **independent evidence/scientific entities who can provide verification**.

Some additional subjects that arose during the presentation by participants of these major barriers which are directly connected with p2p learning and learning processes were:

- **What needs to be learned and how is it best learned?** First, identify what the knowledge requirements of farmers are, and also **consider motivations for learning, change, and implementation of acquired knowledge**.
- Initially farmers learned from their experience, largely because there was no formal education, so they were the protagonists of their own learning. Currently, there is a certain feeling of **alienation of the farmers from the production of knowledge.**
- Farmers continuously exchange information among themselves in an informal manner (warehouse doors, canteens, cooperative meetings, etc.) yet this **knowledge exchange remains oral and uncaptured making it difficult to disseminate and scale**. **Could these exchanges be coordinated and articulated?**

***Strategies and conclusions for P2P learning and demonstration activities*.**
In response to such barriers the following strategies were proposed:

- Currently p2p learning is complicated and not effective because **knowledge is often viewed and protected as an asset, and a factor of competitivity which should not be freely transferred to peers.** A strategy to overcome this would be to carry out knowledge exchange and farm demos within a common "ecosystem", that is, among knowledge entities within the farmers´ environment that can transfer knowledge by using demonstration activities as a tool (in combination with others).

- Activities should take place within the **agricultural producer organisations and cooperative structures**. The cooperative has an interest in improving the knowledge base of their farmer producers. Initiatives to encourage agricultural producer organisations and cooperative uptake of farm demos should be explored.

- P2p and demos should **not be left predominantly to auxiliary industries**, which may have a legitimate economic interest, but which leads to the perception of marketing, rather than the transfer of trusted information

- There is a clear **need for more structured training, in which farmers and their associations and advisors take a more active part not only in the design of their knowledge transmission methodologies and better adapted language, but also in their contents**.

- **Training through traditional channels (courses, talks...) is outdated (this point was made emphatically).** Promote the use of more **new tools** to reach more farmers, especially those who may be small or independent.

- Generated knowledge and **farm demos must meet growers´ needs**.

- **Build and preserve a relationship of trust between AKIS actors**; if not, expectations are raised, but trust is broken if the actual experience disappoints.

Consequently, the following actions to be taken/solutions/recommendations were proposed:

- Establish a mechanism for the coordination of entities that generate knowledge/common repositories
- Use of social networks in an appropriate and coordinated way
- Develop new training programmes in collaboration with farmers
- Use of new educational tools (videos, podcasts, open forums, etc.)

- More or increased use of existing experimental farms that respond to the interests of producers and advisors, always with scientific and holistic methodology
- Reinforce farmers' confidence in research by bridging divide
- Conduct studies that incorporate economic efficiency of better knowledge exchange
- Research should also be focused on farmer/agri sector needs
- Adapt scientific or bureaucratic language for practical use
- Field advisors should retrain and update knowledge and knowledge exchange practices
- The public administrations should encourage feedback from farmers

4.3.3. Flanders AKIS workshop results

The Flanders AKIS workshop was further broken down into arable, livestock, and horticulture, the latter being a more generic discussion of AKIS. Overall, the Flanders AKIS workshops generated general observations and discussion of strengths and weaknesses. Thereafter more specific observations of each subgroup is set out.
A general strength of the Flemish AKIS is that **most organisations know each other and find their way to each other**. However, there are also weaknesses of the Flemish AKIS system:

1. The strength of short links between organisations also comes with a weakness: the **complexity of the system can be overwhelming** and especially for farmers, it is difficult to find the right information and knowledge flows.
2. **Information is often not sufficiently differentiated towards specific audiences**, or shared through the 'right' information channels, adding to the difficulty of accessing information and knowledge.
3. The **weaker connection** between research organisations and advisory organisations and an 'overload' of information flowing from research.
4. A relatively **weak connection between research and education**, at all levels, and even between different education actors (e.g. secondary agricultural schools and centres for agricultural education and refresher courses).
5. A **weak connection to politics/politicians** (opposed to other policy/government actors) This situation presents an opportunity for demonstrations targeted at policy actors.
6. A **poor connection between financing mechanisms for research and implementation in practice**.

Participants consider barrier 3 (weaker connection between research organisations and advisory organisations) the main barrier. Several actions were suggested to overcome this barrier:

- First, there is a **lack of understanding for the reasons for a relatively weak connection (besides information overload) between research and farmers, and one of the first actions to overcome this barrier should be to improve our understanding about this commonly mentioned topic.**
- Other actions that were mentioned include: i) **supporting peer-to-peer exchange between advisors**, where specific advisors specialising in a specific topic follow-up and "translate" research, before sharing further with colleague-advisors; ii) **dedicated communication and dissemination activities for advisors as a specific target group**, rather than joint activities for farmers and advisors; and iii) investing in **long-term cooperation relationships between research and advisory organisations**. It was also mentioned that this presents **specific challenges for smaller advisory organisations** or self-employed organisations, who rarely have the time/capacity for additional activities, besides advisory work.

Next to these general barriers, participants discussed barriers and suggestions for the arable, livestock and horticulture sectors.

<u>Arable farming</u>
Research & Education

- Lack of **practical know-how**

- Stimulate **farmers' lifelong commitment to learning**, supported through university and agricultural schools
- **Connections between universities and agricultural schools** are not as strong as actors desire.
- There is currently **no quality control for teachers** in these fields and future learning paths are unclear

Advisory services & Extension

- **Commercial incentives for advisors** may cause conflicts with other objectives, such as a farmer's own interests or possible sustainability goals
- **Unwillingness to pay for independent advice**

Governments & Farmer

- **Negative view on government agencies and services** since this is generally focused on restrictions to farmers and fines for non-compliance to regulations
- Changes in subsidies and regulation and support for good environmental measures can positively influence this relationship
- **Obliging farmers to attend certain additional courses** can be beneficial in the long term

Retail & Agri-Food (supply chain)

- **Retail & Agri-food sector/supply chain actors are often missing** when discussing the AKIS system.

Livestock farming

- **High and costly administrative burden** for farmers
- The **knowledge** that farmers receive from the supply chain is sometimes **contradictory**
- Many farmers want **free, independent advice, tailored to the farm**, but no single player can meet this requirement and advice is not free
- **Collaboration is difficult** because of the narrow perspective of some actors, who are often protective of their information. There is a **need for a cultural shift towards collaboration between different knowledge organisations**.
- Permanent **need for basic research/basic funding, with long-term trials (and demos).**

Farming requires a high level of knowledge, so the question is **whether farmers should be expected or required to master all such knowledge themselves**. Proposed actions:

  - Farmers have first-line contact with **knowledge bundlers (in the front office) who are connected to** advisors with various expertise present in the back office
  - **Experts could learn from each other** so that they can give broader advice themselves. **P2P exchanges and demonstrations for advisors** could play a role
  - A local **'knowledge hub'** was also discussed, which would create a role for farm demonstrations and p2p learning
- The **AKIS seems to be mainly concerned with technical knowledge exchange and not with personal, psychological, or behavioural development**
- **Career coaching** could also be given a role in the AKIS

Horticulture

- **Innovation potential is dependent on:**
  - The type of farm and farm managers
  - The time availability
  - The risks associated with the innovation
  - The cost-profit balance and the availability of financing
  - The timing (is it on the moment of generation turnover?)
  - How well the innovation is developed
  - The availability of a legal framework
- **Young and old farm managers have different barriers and other connections with the AKIS**. There is an opportunity to bring these two knowledge-spheres together by **promoting more interaction** between young and old farmers.

- **Suppliers** have a strong influence on farmers, but farmers know their **advice is not impartial and therefore check their advice with other farmers, farmer organisations and local demonstration farms and research centres**.
- Many **farm managers lack the economic and financial knowledge** to ascertain if information and advice from AKIS actors is applicable and suitable for their farm.

5

AKIS Interactive sessions at NEFERTITI 5th annual meeting 5-7th of April 2022

5. AKIS Interactive sessions at NEFERTITI 5th annual meeting 5-7th of April 2022

At the 5th annual meeting of NEFERTITI, 5-7 of April 2022, an interactive session (see Annex 5) was organised by WP5 about developing recommendations for an effective AKIS. A main objective of the session was to collect ideas and insights for **improving the role of farm demos and p2p in an effective AKIS.** Pursuant to a designed protocol, the warming up of the session started with a chat within the larger group with two, then four persons about personal experiences with unsuccessful knowledge and/or innovation flows from research and/or innovators to farmers in participants´ region/country and the reasons behind it. Facilitators were available to help group formation as needed.

A facilitated discussion in groups of eight persons then followed regarding the barriers in these knowledge flows, and ideas and recommendations to deal with such barriers, thus leading to a more effective AKIS. Seven reports were created and submitted for analysis (summary materials can be found in Annex 5). Main topics discussed included:

- **Lack of trust in and credibility of advisors**: conflicts of interest, privatizations, or administrative bias, were seen to still be an issue for some farmers and advisors in their AKIS systems, as well as advisor ignorance of the needs of farmers. In the Netherlands, commercialization of the AKIS/advisory services is a big barrier. Partners connect because they can share funds, not necessarily because of mutual interests. The issue with privatisation is also that when one must pay for knowledge**, and when knowledge becomes commoditised, knowledge flows less freely.**

- **Information overload and/or irrelevant information/information not reaching target group**: Many AKIS actors noted the information explosion (particularly online), including policy initiatives and regulatory compliance. Some farmers observed that information was not relevant for their needs and lacked specific focus or that it was difficult to distinguish correct information for a concrete situation. It was also noted that there are inefficient knowledge flows and/or that farmers are not aware of knowledge that exists. Finally, operational environments are volatile and change quickly, thus creating further challenges in identifying relevant current information.

- **Lack of incentives to participate in Farm Demos by both demo farmers and demo visitors**: a) by demos farmers- the dilemma of asymmetric contributions and benefits was raised where farmers spend time and money on demos, but receive nothing in return and then question how it is useful to their farm business; farmers are also wary of innovations that are not successful and of appearing as failing; b) by visiting farmers – visiting farmers need to see value and that the farm demo meets their needs for their farm business; and c) Farmers do not participate in events at times because they think they already know what they need to know. **Other AKIS actors do tend to show up, but they talk *about* farmers and farmer issues, instead of *with* farmers**.

- **Bridging the gap between farmers, scientists, and advisors**: A common complaint is a lack of a shared language between AKIS actors, which sometimes leads to negative perceptions or frustration. The lack of coordination between AKIS actors was noted in several groups.

- **Continued top-down approach**: demos do not sufficiently involve farmers, both in numbers and in engagement and needs assessments are often absent, thus contributing to incomplete feedback loops.

- **Difficulty in measuring impact, showing efficacy of demo initiatives, and opening up minds to change**: Benefits or value not demonstrated. Lack of time. “What I see demonstrated here will not be effective on my own farm”. It is hard to break this way of thinking, even when it may not be accurate. This obstructs the knowledge flow since it becomes very hard to convince farmers to try a new practice.

- **Need for higher quality demos**. This topic covered a wide array of observations, from the need for better demo, facilitation and soft skills (i.e. there are many poorly executed farm demos, too much “preaching”, etc.), to the use of better tools, and the search for measurement tools and certification schemes.

- **Lack of support by policy and regulations**: General frustration with lack of support and funding across various levels of AKIS was noted as a barrier to well-functioning agricultural knowledge and innovation system. Policy makers are seen to lack technical and organisational knowledge about farming matters and agricultural practice. Government involvement is important and in some areas, there is a new push for governmental support due to evidence of the importance of p2p impact (70% of farmers indicating that p2p exchange is important to them). Increased policy requirements-National and EU policy requirements (e.g., environmental policy or CAP, F2F, Green Deal) increase the amount of knowledge that is needed. One advisor cannot know about everything.

- **Lack of professional facilitation and no support for p2p learning**, which is needed to get to a better understanding of the demonstrated topic and guide judgement of usefulness of new insights for the farmers´ own farm. Too little budget of technology development is going to knowledge exchange.

- **Governance of AKIS challenges:** Roles of AKIS members are not well defined and there is often no governance structures embedded in an AKIS. As a result, is it challenging to organize knowledge flows in an informal network and/or organization. This is more difficult than in projects, in which there is a steering committee guaranteeing knowledge exchange between partners. In an AKIS there are often parallel roles resulting in fragmentation of information. There is also the risk of information being consolidated and/or controlled by one actor: this can be an advisor, farmer, researcher, etc. As well, this becomes a significant problem when an actor leaves and no other actor has that relevant knowledge, or commands trust in the same way as the prior actor.

Recommendations from NEFERTITI final annual meeting sessions:

- A **clear strategy on regional and national level on how to actively include farmers/advisors in the AKIS is a critical prerequisite for the success of AKIS and Demo farms.** A needs analysis of what demo topics farmers need or are interested in should be carried out. Advisors and other knowledge actors should **focus on farmers' needs and not just innovative solutions**, which are sometimes too complex, unclear as to financial benefits, or not relevant for some agricultural contexts.

- New research or projects could be structured in such a way that farmers have a more active role in what they wish to trial. Open calls focused on farmers could ensure participation.

- **To clarify the roles of AKIS actors:** Use a collaborative and partnership approach: include all the actors of the relevant supply/value chain.

- In order to adopt and adapt, and in the end to recognize the value and benefits of AKIS and accompanied farm demo activities and p2p learning, farmers require **clear, concise and timely communication, preferably in regional/national language.** Communication strategies should focus on relevant information i.e., be simple and effective as much as possible. **Targeting** of groups/action groups/discussion groups.

- **Improve the quality of Demo Experience and Engage Pioneer Farmers**: Professional or experienced **facilitators** are required since the dynamic during knowledge exchange is very important. **New tools** could be introduced such as serious games tools (interactive, for students/future farmers), benchmarking tools, increased digital access/minimum standards for demos/certification/best practices accompanied by **funding and recognition schemes for farmers who carry out quality demos**. There should be a KPI measuring the ratio of time that was spent by experts talking, and how much time for farmers talking.

- The **hybrid approach** of demo and p2p events should be maintained, depending on the topic and accompanied discussion/training/knowledge exchange. Addresses the problems of those who cannot attend.

- **To address the Research-Practice divide:** Track impact of research on farmers and follow up after cross visits/demo events to maintain a continuous relationship. Many systems do reward extension oriented or "action" research. A system for career advancement (recognition) for researchers who engage should be promoted. New entrants or young advisors may have a closer relationship with AKIS research entities and their relationships may be supported and leveraged to provide bridges between actors.

- **Recognition of environmental/ecosystem services and benefits** and not just economic benefits for those farmers who are engaged in sustainable practices.

- Leverage **CAP measures that will give AKIS a better structure and create more links between different levels of AKIS.**

- To stimulate **open minds of AKIS actors** (not just farmers, but researchers, advisors, public administrations, financing institutions, etc) there is a need to **understand lock-ins and path dependencies**. Farm demos and p2p learning are one method to do so.

- **Cooperation between AKIS actors can help to navigate the overload of information**. Cooperation can happen at many different levels (e.g., farmers discussion groups, advisor firms working together, etc.). The way in which cooperation is structured will depend on the country/region and what fits best in local culture and practices. However, more public funding is necessary to organise and verify information.

- To deal with **changing environments** farmers need **fact-based data but also change management and visioning support**. In general: showing that something 'works' is very convincing for farmers, but also the **demonstration of future pathways** is also important.

- **Trust:** Cultural and social backgrounds have a high impact and need to be kept in mind. Networking is a tool to gain trust, bu**t different countries have different trust or social capital**. **National differences should be kept in mind. It is unlikely that one solution will be found for the whole of the EU. Utilising existing networks and proven social capital is recommended, such as cooperatives, associations, producer organisations, etc.**

- **Empirical research on the value of demos and p2p for policy makers.** There was some debate on how to include **Policy makers** and demonstrate the value of demos and p2p. Is there presence necessary or are they more interested in evidence of impacts of farm demos and p2p learning? If so, research is necessary on "how to learn best".

6

FarmDemo2022 conference session: How can farm demos strengthen the AKIS system?

6. FarmDemo2022 conference session: How can farm demos strengthen the AKIS system?

Three AKIS workshop sessions were organised at the Farm Demo conference in Brussels on the 11th of May 2022 entitled: **How can farm demos activate and create bridges for the different actors in the local AKIS system?**
The conference was held in common with participants from European projects IPM Works and IPM Decisions. **For this reason, the session was further organised around a relevant objective:** how could participants learn from a demo farmer **to make a step from "single IPM solutions" to "holistic IPM"**? Participants reflected on: 1) what could be contributed to the demo to promote better knowledge exchange by diverse AKIS actors?; 2) what were main lessons and take-aways for each group of AKIS actor?; 3) how could barriers be removed and change encouraged?; and 4) what will these AKIS actors do in the future to make the farm demo a success over time?
This workshop was designed to elicit 1) conscious attention **to the role of farm demos and p2p in changes in attitude within a system**, rather than just demonstrating single unrelated solutions; and 2) an exploration of the **interconnected roles of various actors within the AKIS (linked to supply chain)**.
Results from the sessions indicated:

1. **Farmers** who demonstrate have first-hand experience of the barriers for implementation of an innovation across many levels from farm to market. They experienced what will work and what not and could share that at a farm demo. The take aways for visiting farmers are incentives for change ("aha" moments, seeing is believing, innovation demonstrated in the full context of a farm). Adoption and change can be encouraged by adding practice and science-based indicators with the impact on the farm level particularly in terms of income, yield. They can create communities of learning, exercise influence, and take a broad and more complex approach to change, as well as play a role in engaging people through communication of demos and events. They are also aware of future challenges.
2. **Advisors and researchers** can contribute to methodology and perform a role in translating and making explicit the experience of the farmers, so other farmers and AKIS actors can learn from them. Advisors and researchers also give feedback to farmers and other AKIS actors on the range of solutions and perspectives that are available. They can act as a bridge between local and broader AKIS systems, incorporating farmers' insights and problems articulated during the farm demo in their research agenda's. Researchers play a particularly important role in promoting trust in and credibility of the demo. Advisors play a more practical role in follow up and evaluation.
3. **Policy makers** can provide financial support, or the conditions in which financing can take place, as well as legal frameworks (governance of AKIS systems). Participatory support in demos and p2p is of great importance as participation also educates themselves and others within public administrations. Improved knowledge would thus help to eliminate barriers to the extent they are related to public policy. Coordination of knowledge flows at the local and broader AKIS level is also of importance. Policy makers could take up a platform function between AKIS actors and/or provide funding for improving digital knowledge collection and dissemination.
4. **Suppliers of agri inputs**, while not necessarily independent, also act as bridges between market and research and can at times help farmers navigate the distance between the two. They are also able to understand the needs of farmers and the economic impacts. To address concerns of independence, advice could be validated by **independent research entities.**
5. **Agri-food industries/supply chains** provide links with markets and at times consumers and other actors along the supply chain. Demos can aid in farm to fork communication, building more knowledgeable supply chains and awareness of agricultural issues and education of consumers. Suppliers and industries provide long-term network relations between AKIS actors.
6. **Demonstrations can be a platform for interaction between the AKIS actors, if**:
   i) Interaction is facilitated and learning is organised;
   ii) There is transparency on data and knowledge;
   iii) Every actor serves some role in the validation of knowledge;
   iv) Researchers and advisors make the effort to integrate the knowledge that is shared between AKIS actors;

7

Discussion and Recommendations

7. Discussion and Recommendations

This chapter 7 is divided into Discussion (7.1) and Recommendations (7.2). The Discussion section 7.1.1 sets out a multi-actor, multi-level scheme to understand interactions between and within the operational, organisational and institutional environments. To understand the transitions and interaction between these levels, an example from sustainable transitions framework and demos is used. Thereafter, in 7.1.2 the vast number of findings set out above are synthesised and distilled into recurring themes. In response to these findings, Recommendations are set out and explained in 7.2. and in a general Conclusion in 7.3.

7.1 Discussion

7.1.1 Multi-actor, multi-level scheme to understand interactions

The amount of data, observations, identification of issues and barriers, as well as proposed solutions and recommendations collected under this Task 5.5 is voluminous and diverse, as can be expected from a multi-actor, multi-sector, European-wide consultation. The end purpose of this D5.5 is to propose recommendations for the use of p2p and farm demos to support agricultural innovation, build stronger and more efficient AKIS, and facilitate the transition to more sustainable agriculture for commercial farms. Therefore, we synthesise the above results, borrowing and mixing from prior frameworks to present a multi-actor, multi-level scheme, which encompasses several levels or arenas of activity (see Figure 8):
-the Operational Environment
-the Organisational Environment
-the Policy and Institutional Environment

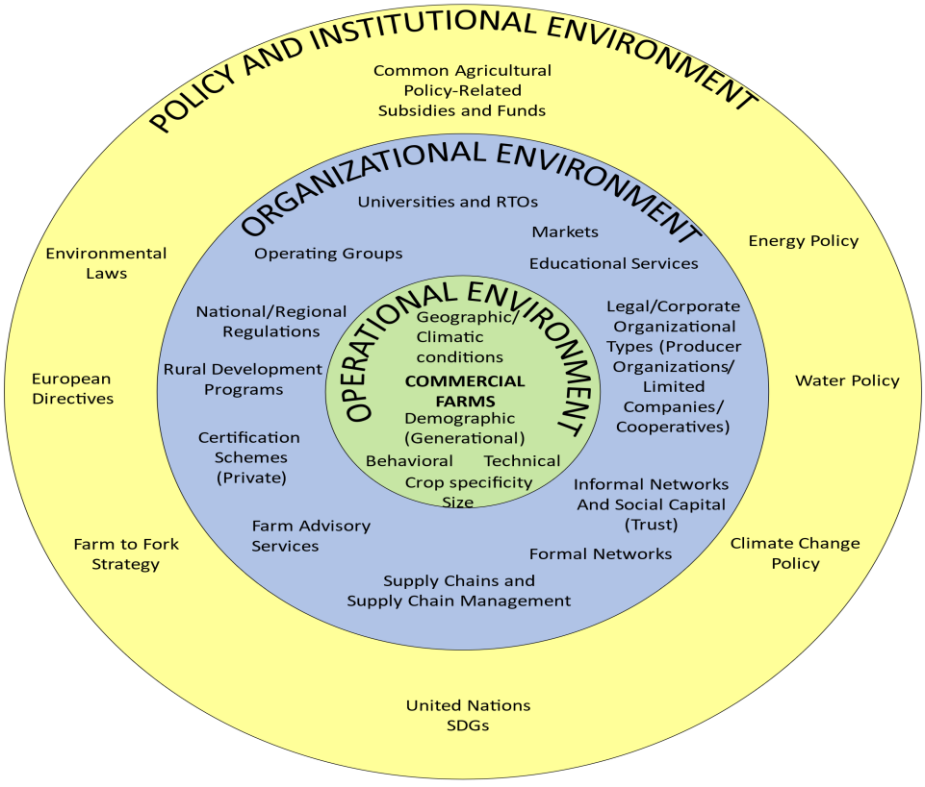


Figure 8 *Interacting multi-actor levels for AKIS Recommendations*

It should be noted that **p2p and farm demos serve to bridge these environments** as well, since the levels are not separate and discrete but often interdependent and simultaneous. For example, if a farmer is concerned with market access or product differentiation which would increase their commercial farm returns and at the same time improve environmental sustainability through the adoption of certain farming techniques or the introduction of technologies, the organisational environment may be implicated through the participation of certification companies, producer organisations and/or marketing cooperatives, as well as supply chain

actors from input providers to consumers. The Institutional and/or policy environment may also be involved through available subsidies through various CAP measures, Farm to Fork Strategies, Environmental legislation, etc. P2p also may occur in Organisational and Institutional Environments. And while policy makers may not be particularly interested in attending a farm demo on sugar beets or a new sensor, they may very well be interested in demonstrated impacts of p2p and farm demos.

If we look to sustainable transition studies [20],[21],[22], which deal with niche innovations, regime change and system change, we can locate p2p and farm demos within niche activities amongst leading or small groups of likeminded or similarly incentivised farmers, which also then contribute to the forming of communities of AKIS actors, influence on organisational spheres, cross fertilisation and scaling up of such innovations through p2p and farm demos, and the consolidation and building up of a meta-narrative in institutional and policy systems and spheres.

A historical example of this can be found in the adoption of IPM in Spanish greenhouse horticulture, where an entire AKIS system was mobilised to respond to a pesticide market crisis and to bring about a drastic system change in the space of 18 months through the use of farm demos and p2p learning: farmers, advisors, large and small industry players, supply chain actors, cooperative associations and experimental farms funded by coop finance providers, and regional administrations were all involved.[23] As Figure 9 below demonstrates, at first the activity was at the operational level and the goal was to substitute alternative on- farm practices and inputs, and thereafter to redesign the whole agroecosystem and institutional environment, implicating agri-food actors, certification companies, auxiliary businesses, regional administrations, etc. At the beginning innovations occurred at a niche level and were subsequently supported by p2p and farm demos to influence markets and "regime" change and finally it became an institutionalised system change. In the study referenced below in Figure 9 not all p2p and farm demo activities have managed to scale up to system change, and in fact, in the case of water pond management, change is stagnated, but hubs and networks have begun to affect regimes in soil and ecosystem restoration. Farm demos and p2p continue to be necessary in IPM to introduce innovations and bring on board new or resistant farmers.

[20] Gliessman, S. Transforming food systems with agroecology. Agroecol. Sustain. Food Syst. 2016, 40, 187–189.

[21] Geels, F.W. Technological transitions as evolutionary reconfiguration processes: A multi-level perspective and a case-study. Res. Policy 2002, 31, 1257–1274.

[22] Seeds of the Future in the Present: Exploring Pathways for Navigating Towards "Good" Anthropocenes. In Urban Planet: Knowledge towards Sustainable Cities; Elmqvist, T., Bai, X., Frantzeskaki, N., Griffith, C., Maddox, D., McPhearson, T., Parnell, S., Romero-Lankao, P., Simon, D., Watkins, M., Eds.; Cambridge University Press: Cambridge, UK, 2018; pp. 327–350.

[23] Giagnocavo C, de Cara-García M, González M, Juan M, Marín-Guirao JI, Mehrabi S, Rodríguez E, van der Blom J, Crisol-Martínez E. Reconnecting Farmers with Nature through Agroecological Transitions: Interacting Niches and Experimentation and the Role of Agricultural Knowledge and Innovation Systems. Agriculture. 2022; 12(2):137. https://doi.org/10.3390/agriculture12020137

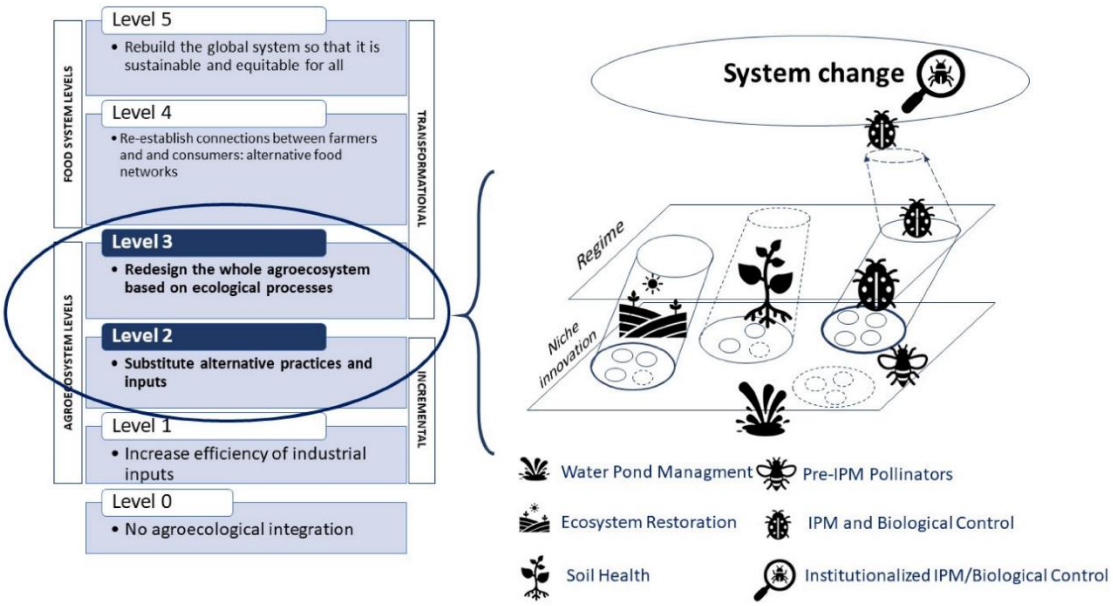


Figure 9 *Example of agricultural innovations based on specific themes within an AKIS system.*[24]

Figure 10 sets out in more detail the various AKIS actors involved, from operational, organisational, and policy and institutional levels in the transition to IPM management: niche experiments, p2p, and farmer demos played a clear role in knowledge co-creation and innovation uptake at the farm level, but it also played an important role in the institutionalisation of IPM in the horticultural sector in Almería, accompanied by policy measures, and organisational environment actors (research, market, industry, etc.).

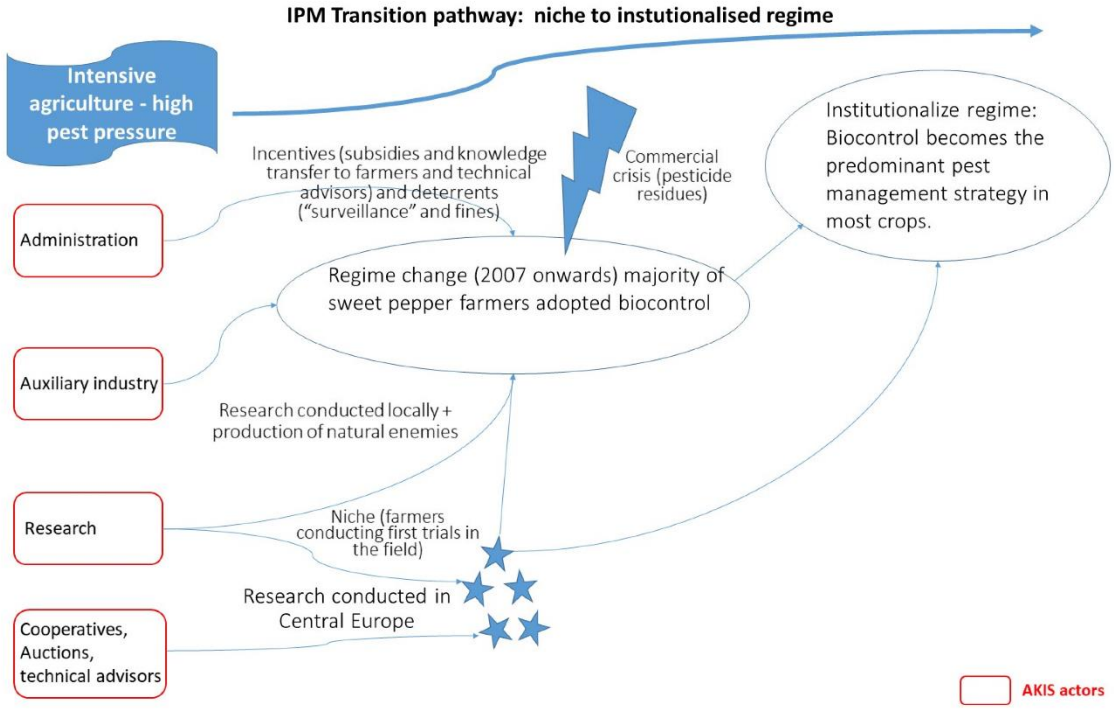


Figure 10 *AKIS and IPM transition pathways.*[25]

[24] Ibid.

[25] Ibid.

It is worth noting that many demos attract pioneer-farmers as well as 'mainstream-farmers' and, hence, the demo functions as a linking between the niche and the regime. Demo organisers should be aware of this distinction as some activities addressing pioneers or mainstream farmers should be designed differently to be effective.

7.1.2 Recurring issues in the AKIS environments of commercial farms

A main factor to keep in mind in this analysis is that **D5.5 is focused on commercial farms**, in contrast to many other studies which have placed advisory services or policy measures as the central focus. As well, commercial farms differ from experimental farms, whether funded by private industry or public administrations. In light of this, several recurring issues (Table 1) were noted across workshops that are of particular importance for commercial farms and their AKIS environments. In addition, we indicate which level they concern: **Op = Operational; Org = Organisational; and P&I = Policy and Institutional environments.**

Trust. Trust, social capital, community, collaboration, commonality, were all terms that take on extra importance where there is heterogeneity of interests and incentives, and plurality in the composition of AKIS actors. There is the fear of "free riding" of others and of not gaining benefits for themselves. Who should bear the cost of commercial farm demos was often raised. Commercial farmers may be concerned with competitive advantage, margins where "time is money", and lack of return on the general investment in demo activities. Many other farm demo and p2p learning on commercial farm issues are related to or stemming from trust issues, such as incentive questions ("why should farmers bother to give commercial farm demos?"). **Op; Org. Governance of AKIS.** Flowing from the discussion of trust, are concerns about the governance of the AKIS system: how is the AKIS system or parameters decided (product sector, geographic area, conventional v organic, farm size, legal type, etc.?), who participates, what role should actors play, who has access to and/or controls knowledge and data, who applies for/receives funding for farm demos, who benefits/bears costs, etc. The often-noted lack of coordination of local and regional AKIS was tied to the fragmented and poorly organised knowledge systems. **Op; Org; and P&I.**

Knowledge Systems. Fragmentation, complexity, overwhelming volume, difficulties in finding correct data, lack of differentiated information, out of date knowledge in both form and content due to lack of training of AKIS information actors and/or rapidly changing environments, lack of relevance, overly technical or academic knowledge, incorrect or conflicting information, were amongst the many issues raised in workshops and supported by previous literature. In addition, knowledge was seen to be a protected proprietary asset by those who had it (i.e., why should commercial farmers share *their* knowledge?), but for those that did not have access to reliable information, there seems to be an unwillingness to pay for it. Public administrations were also blamed for having fragmented, disorganised, irrelevant, or out of date knowledge. Overall, there is a vacuum with respect to who is responsible for building a reliable, efficient, and effective knowledge system within AKIS. **Op; Org; and P&I.**

Lack of independent knowledge, an observation launched particularly at market actors, such as private advisors and/or the auxiliary industry, but also at research dictated by funding entities, was raised often across all workshops and meetings. At the same time, many participants noted the **lack of economic or market knowledge aspects** of farm demos and p2p learning. These observations were seen as a double-edged sword: market actors often have the best or at least most current knowledge of the utility of innovations for farmers and ROI, yet they are not considered independent enough to garner trust. The role of researchers as third-party validators was raised, but there was a lack of clarity as to who would fund such research. **Op; Org; and P&I.**

Economic focus vs. recognition of non-economic values Innovative commercial farmers adopting more sustainable solutions are presented with a dilemma: innovative and sustainable practices and/or products do not necessarily translate into increased profits, at least in the short term. However, an emphasis on sustainability and/or the uptake of an innovation may enhance non-monetary aspects, such as quality of life, labour conditions, contribution to sustainable agriculture, climate change mitigation, provision of ecosystem services, contribution to community goods, satisfaction of moral or intellectual endeavours, social benefits, etc. It was also noted that supply chain actors are often missing in AKIS ecosystems. Consequently, collaborations along the supply chain which both push and pull innovations are not approached in a holistic manner, nor is

the consumer taken into consideration. As well, certification schemes, which most European farmers would participate in, such as Global GAP and GRASP, and increasingly, organic/ecological, carbon footprint, etc., and regulatory and policy requirements, are not convincingly presented as reasons why innovations may be adopted for market reasons that go beyond farm level cost/benefit. **Op; Org; and P&I.**

No appreciable benefits of either adopting innovations or participating in demos/p2p. This observation is particularly important with respect to commercial farms where the need to be able to measure impacts is fundamental, often implying a call for the involvement of AKIS actors such as research entities or third-party validators who can provide empirical support to underpin farm demos and p2p learning. Given that the adoption of innovations is somewhat dependent on market rewards or at least market reception, the implication of supply chain actors is also crucial. **Op; Org.**

Research-farm divide and research-advisory divide. Ironically, while there is a call for knowledge providers that are neutral/independent (i.e. not suppliers, industry or private advisors), there is still a notable complaint about the lack of engagement of researchers and the research-farm divide and as well the research-advisory divide-i.e. that researchers were out of touch and not particularly relevant. It was acknowledged in some workshops that researchers need controlled experimental environments, thus when commercial farms are involved this does not necessarily meet the needs of researchers (who rely on competitive funds based on the strength of empirical/experimental research design). In addition, researcher-farm or researcher-advisor relationships are seen to fall into extension activities, which are generally not included in research entities presently. However, in general the reasons for the research-farmer divide is not well understood. Increasingly, there was seen to be the alienation of farmers from the production of knowledge within AKIS systems, even though incoming farmers tend to have more formal education. **Op; Org; and I&P.**

Lack of quality of demos. The observations on the quality of demos, in general, related to both form and content. With respect to form, it was noted that there was not enough emphasis on soft skills, facilitation, planning, creative and diverse demo and p2p formats and information channels, etc. Methods and tools available in NEFERTITI were found to be useful to improve the quality of demos in terms of form, but such process needs to be further extended. Lack of quality in demo and p2p content was noted by diverse AKIS actors across sectors and geographic regions: up-to-date information was lacking, particularly from public administrations and advisory services. As well, content was not seen to be relevant or new and/or did not fit the needs of farmers. Some advisors commented that there was little new information to pass on, which may suggest that advisors are lacking knowledge of the most up- to-date research results or available technologies and their potential benefits, or that they fail to understand their potential role as conduits of research knowledge. Alternatively, lack of time to keep updated was also noted. The need for mandatory/voluntary lifelong learning and more structured training of farmers, advisors and public administrators was noted, akin to what other professions require in their continuing education programs. Lack of independence was also tied to lack of reliable and trusted quality demos. **Op; Org.**

Path Dependency, lack of urgency, slow adoption of innovation, and lack of "vision". Frustration with the apparent lack of interest in change and the failure to sense urgency for innovation was commonly expressed by almost all AKIS categories of actors towards other categories of actors. For example, advisory demo organisers complaining of farmers not understanding urgency; farmers complaining about public administrations and advisory services of path dependencies and failure to listen to needs of new technical or knowledge demands and the imperative to innovate and update their systems, etc. The general sense across workshops was that uptake of innovations was often reactive and not proactive, even though demos and p2p may be functioning in niches or specific areas amongst leader farmers. This observation acknowledged the interdependence of one level on other levels (i.e. an innovative farmer may suffer in a traditional market, as did many organic farmers at first, or policy and regulatory bureaucracy may inhibit agility). An overall AKIS strategy to align different levels was noted as lacking. A call for "visioning" was made, where demos and p2p learning would be part of a "visioning" exercise for what farmers wished to achieve. **Op; Org; and P&I.**

Lack of policy support. What various AKIS actors mean by "policy support" tended to vary, indicating different regulatory programmes and funding and subsidy support. At times complaints were directed at regional officials who could not be convinced to attend demos (or just showed up for the photo), and in other cases there were references to lack of funding for demos under European research programmes, operating programmes, regional policies, etc. But in general, there is the impression that there is a **lack of consolidation**

of support across all levels that support farmer demos and p2p learning. On the one hand, commercial farmers are given much responsibility and are under pressure to be sustainable, and on the other hand, funding of methods to do so, which include farm demos and p2p, seem to be missing. It is evident that there is also a **lack of information on what funds and opportunities may be available and for what entities** (i.e. farmers, associations, producer organisations, regional, national or European programmes and funding, etc.). This issue is pertinent to the governance of AKIS as well, given that a well organised AKIS may be able to facilitate such information and application for support. **Org; and P&I.**

Recurring Issues	Operational	Organisational	Policy & Innovation
Trust	x	x	x*
Governance of AKIS	x	x	x
Knowledge Systems	x	x	x
Lack of Independent Knowledge	x	x	x
Economic focus v. recognition of non-economic values	x	x	x
No appreciable benefits of either adopting innovations or participating in demos/p2p.	x	x	
Research-farm divide and research-advisory divide	x	x	x
Lack of quality of demos	x	x	
Path Dependency, lack of urgency, slow adoption of innovation, and lack of "vision".	x	x	x
Lack of policy support		x	x
* lack of trust at P&I level was raised at the NEFERTITI final online event on 20 September 2022-i.e. a breakdown of trust between farmers and their governments in some instances.			

Table 1. *Recurring issues*

7.2 Recommendations

The recommendations below, based on a wide consultation throughout the project with heterogeneous workshop groups and guided activities including multi-sector and multi-actor AKIS participants, continue from the tools, observations and reflections set out in prior deliverables in WP5. We include and move from the operational levels dealt with earlier in the project, to another level, which involves more organizational and institutional aspects. D5.1 "Monitoring and Evaluation Approach for NEFERTITI Hubs and Networks" provided guidelines tools and methods for hub coaches/network leaders/demo organisers to set a vision and plan for their hub and a way to measure demo performance. D5.2 created a "Training manual for self-monitoring of demo-activities and monitoring of collective learning" and D5.3 described results in "First set of monitoring reports on carrying out effective demo activities on- farm". These Deliverables mainly dealt with the operational aspects of farm demos and p2p learning. D5.4 emphasized collective learning in "Set of reports originating from the collective learning within the cross-reflection process", thus bridging what happened at hub/farm demo level to a broader level involving more diverse AKIS actors and learning experiences through networks and cross visits. The recommendations below revisit some of the operational topics addressed by D5.1, 5.2, 5.3 and the collective learning aspects of D5.4, by considering such issues within an AKIS framework.

These recommendations, given the different AKIS actors and target groups, as well as the extremely diverse AKIS landscapes across Europe, are not bespoke or individually tailored remedies, nor are they one-size-fits-all proposals. Instead, they are organized around addressing issues that any number of actors set out in Figure 8 may find across organizational and policy/institutional, as well as operational, levels.

Organisational, and Policy & Institutional levels:

1. AKIS collective mapping – The usefulness of mapping is not necessarily evident to some established AKIS actors, such as large advisory services, or public administrations. Yet it is crucial for an inclusive approach that does not favour size or longevity over new or niche participants in AKIS, or simply those who

have not been included in the AKIS influence and power historically. (The NEFERTITI Guide to WS on Women and Digitalisation is one example where demos can contribute to inclusiveness.) This issue is current and important, as research indicates[26] However, other contexts may implicate the need for inclusion of young farmers, organic farmers, etc. At the organisational level, an effect of this recommendation will be that during the preparation of a demo, not only should relevant target groups be considered, but also how knowledge flows. This will stimulate contributions and "take aways" for a much broader group of stakeholders that will/ should participate in the intended change. More importantly, effective, and efficient AKIS governance is not possible without first having clear which AKIS actors are involved and at which level, and subsequently, where, and how farm demos and p2p learning can play an effective role in sustainable Innovation in European farming Systems. While European national AKIS have been mapped through the efforts of the SCAR AKIS Group, more regional and local AKIS have yet to be defined, particularly from collective and bottom-up initiatives.

2. Governance of AKIS, including knowledge platforms[27] – at all levels. Following on from the need for AKIS collective mapping, roles of AKIS members need to be better defined and some sort of governance structures embedded in an AKIS, whether informal or formal. MOUs (memorandum of understanding) are often a good start, offering a "light touch", which can later be formalized, as **trust and social capital** are constructed, and as the situation demands. Given they do not usually involve enforceable rights and obligations, they can also be amended and expanded for new AKIS actors, including public entities which cannot often enter binding agreements easily. Taking some sort of steps to set up an AKIS governance structure would help to address challenges in **organizing knowledge flows** within an informal network and/or organization, contributing to better knowledge exchange between partners. It may also address the fact that in an AKIS there are often parallel roles resulting in fragmentation, duplication, and conflicts of information. The risk that information will be consolidated and/or controlled by one actor is also reduced (knowledge = power), as advisors, farmers, researchers, businesses, etc. have a better sense of their expected roles and contributions. Collective management and organization of knowledge flows is related to equitable outcomes, a case in point being digitalization of agriculture (risk of farmer data exploited by others, etc.). **Continuity of knowledge** is also better ensured and the collective governance of knowledge flows presents the possibility to **empower farmers and to engage researchers and advisors.** Better-organized knowledge management flows may also lead to better-informed farm demo actors. The desire for the concept of **agricultural knowledge as a commons** to be put into practice (cf. Ostrom, Knowledge as a Commons), expressed repeatedly in workshop sessions should be taken seriously as a policy objective, particularly in light of the Farm to Fork Strategy and other climate and sustainability based policy. If farmers are to act to transform agriculture into a sustainable practice, then a science based but accessible common knowledge base is necessary. **A shared socio-economic agricultural framework based on sustainability requires a common and reliable knowledge base**, at European and national/regional levels. Analysis should be carried out to consider if **commoditisation and ownership/privatisation of agricultural knowledge** has led to a situation where only large farmers can afford to hire private advisors, while the remaining smaller and often less educated and entrepreneurial, have to rely on technicians from supply companies or cooperatives, often overloaded with bureaucracy and with little time to keep up with research results.[28] This **recommendation requires serious consideration of its complexity, which is outside the scope of this D5.5,** particularly given that as a knowledge society, knowledge is often the source of competitive advantage, and that the generation of innovative knowledge often requires incentives or ROI. Efforts have been made in Europe, the US, and other countries to deal with agricultural data, to varying degrees of satisfaction, and the governance of agricultural knowledge in general will need to be considered. Farm demos and p2p learning can help bridge knowledge gaps and create at least local knowledge commons.

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[26] See also Lee-Ann Sutherland, Rob J. F. Burton, Anda Adamsone-Fiskovica, Claire Hardy, Boelie Elzen, Lies Debruyne & Sharon Flanigan (2021) Inclusivity of on-farm demonstration: gender, age, and geographic location, The Journal of Agricultural Education and Extension, 27:5, 591-613, DOI: 10.1080/1389224X.2020.1828115

[27] In the Netherlands an example of a platform is GroenKennisNet.nl (green knowledge network) where where farmers can find all information (including research results) in one platform, instead of having to comb through many different sources. https://groenkennisnet.nl/

[28] Labarthe, P., and Laurent, C. (2013). Privatization of agricultural extension services in the EU : Towards a lack of adequate knowledge for small-scale farms? Food Policy, 38, 240-252.

3. Creation of AKIS structured farm demo strategic programmes and p2p opportunities, created by consensus with farmers and other AKIS actors. This would ensure that farmer needs are met, and **needs assessments** more easily carried out. By collectively structuring an AKIS demo programme, **heterogeneous environments, objectives, incentives and motivations** may be met : economic assessments (cost/benefit) can be assured, as well as market incentives, compliance motivations, sustainability concerns, or simply interest in new innovations. [29] A collectively structured farm demo and p2p programme would also deal with concerns of **independence**, as market or political perspectives can be countered by independent research actors in the AKIS. The programme could include **recognition of excellent farmers, ensure inclusion of young farmers, women and new Europeans, etc**. while also serving as a vehicle to seek diverse sources of funding and sponsorships, whether public or private, for farm demos and p2p learning. Conscious planning of who does what, where and when is important, as is the fact that farmer needs are front and centre. The previously mentioned **"visioning"** could also be carried out under the auspices of the programme-this is the first step of any strategic plan and is particularly important from the perspective of demos and p2p learning which are meant to encourage and support change and avoid path dependencies.

4. Funding for AKIS hubs and network building activities, including farm demos and p2p. It is evident that funding for AKIS farm demo and p2p programmes is necessary if they are to play a significant role in agricultural innovation. **Research funding programmes could include demo activities**, thus serving to bring science and farmer/advisors closer together. The obtaining of funding could be done by any one or more of the multi-actor organisations involved in the local AKIS and/or as agreed in the MOU. CAP provisions could also further support farm demo and p2p activities. D6.2 of this project "Analysis of EU regions S3 and RDPs funding capacities" notes that "demonstration activities taking place in private commercial farms are also supported by CAP or EAFRD, as these farms are fully eligible to receive such European funds. They may also be active in innovation projects funded by other instruments (eg. ERDF; R&I programmes; other national/regional funds)." **AKIS Innovation Test Hubs** could also be set up to deal with concerns about independence and market interests, leveraging existing AKIS institutions and actors, funds for independent experimental farms and researchers to test commercial solutions/advice with participation of farmers/farmers associations. **The innovations of commercial entities should not be discounted, since they are close to the market** and aware of economic priorities of farmers, but they can be independently verified. These hubs could be **partnered with other European initiatives such as the European Digital Innovation Hubs or existing initiatives to fund experimental farms, agroecology networks**, etc.

5. Providing more support and incentives for farmer owned/directed agricultural organisations such as cooperatives or associations, which are private but farmer centred, so they can embed improved demo, p2p, and advisory learning and services. These entities serve as natural farmer learning networks, where knowledge, practice and markets meet. Cooperatives and producer organisations are responsible for about 50% of agricultural production in Europe (Support for Farmers Cooperatives, 2013) and can be an important support actor. Funding provisions should be reviewed to ensure that effective demo activities are supported, as opposed to top-down, expert lecture-oriented events.

6. Reform Research Assessment across Europe. Research entities and researchers are often criticized for lack of engagement at the farm level or for not being able to communicate research in understandable terms to other actors. Rewarding researchers and research institutions almost solely on publications in JCR first quartile journals, and not assessing or evaluation "action research" or "transfer" as equally important is counterproductive for both an innovative research system and an agricultural knowledge and innovative system. The role of researchers to provide independent verification to commercial and market interests in the farm demo process is fundamental for building trust, as well as to receive information from farmers and other actors.

[29] For example, the Almeria SmartAgriHub, which is an initiative between a public university, an Agri cooperative bank foundation, the association of producer organisations, and Agri tech companies, serves this function. Both the university and the coop foundation have experimental farms, and the association of producer organisations has access to and knowledge of leading farmers and initiatives. The university and the association of producer organisations each have their official transfer of knowledge office, recognised by the government. The tech companies have access to market initiatives. They collectively plan strategic demo activities to meet the needs of their common farmer and advisor base community.

Operational:

7. Quality Demos and p2p exchange. Much work has been done in WP5 and prior farm demo projects on the planning, monitoring and evaluation of demos and p2p processes. The Farm Demo Training Kit was aimed at significantly improving the quality of farm demos. In addition to the improvements that these tools will bring, **further emphasis is needed so that quality demos are not left to serendipity and/or voluntary efforts**. One area of focus should be on **facilitation training**, so that demo and p2p experiences do not revert to top down, conventional methods of teaching, as opposed to opportunities for learning and knowledge exchange. Multi-level facilitation training could target exchanges within and between levels of AKIS actors: policymakers and farmers; advisor to advisor; AKIS system with AKIS system, etc. **Formal certification requirements** of facilitators and demo farmers and trainers would be useful to improve the quality of demos and could be a condition of funding.

8. Continuing education requirements: Related to quality demos is the quality of content that actors bring to the knowledge exchange. **As in other professions,** incentive and/or **mandatory requirements for lifelong learning or continuing professional development could be introduced** for AKIS actors, including farmers, advisors, policy makers and public administrators, etc. This would avoid failures to update knowledge. Such education requirements should also include **pedagogy, soft skills, and modern technologies and communication channels** so that digital means are utilized to engage and reach larger audiences: podcasts, webinars, videos, platforms, etc.

9. Economic Assessments, Cost Benefit analysis, and/or sustainability or non-market impacts assessment. To address lack of incentives to participate in p2p and farm demo activities, cost/benefit and impact assessments are useful. They are also at times costly, or actors simply do not have the skills to measure such impact. This may be addressed through combined efforts of commercial entities, researchers, farmers and their producer organisations or associations, etc., who can provide both market proximity, but also verifiable results. While initiatives like Operating Groups may be useful for such purposes, further initiatives which incorporate farm demos and verification of innovations would help stimulate interest for participation in demos. As well, **company, farmer, researcher encounters** or collaborative demos (stemming from OGs, for example) may be structured where companies present innovations which are then evaluated by farmers and researchers. A simple framework which would help actors identify added value, and as well, allow demo activity organisers and researchers to better evaluate added value would be useful.

10. Multi-level demos to foster collaboration across and between operational, organizational, policy and institutional levels. While farmer demo cross visits have been shown to be valuable in NEFERTITI, demos that are cross visits on different organisation and operational levels may serve to create farmer-policy dialogue or farmer – supply chain collaborations. Multi-level cross visits would serve to give a 360° view of AKIS systems.

11. Farmer - Researcher Nights sponsored by EU (or other similar actions). Taking as a reference the success of the European Researchers Night, where the general public attends research demonstrations, a similar action could involve European farmers collaborating with research institutions.Steps should be taken to introduce and make visible the activity of farmers into the research agenda and the general public.
Table 2 below demonstrates that multiple actors are implicated in any one of the Recommendations, and often at various levels (operational, organisational, and policy & institutional). Who does what will sometimes depend on resources available, historical contexts or sector organisation.

Involved Actors	Farmers	Advisory	Research	Supply Chain (inputs, tech, etc.)	Prod. Org. and Coops	Formal and informal networks. Civil society	Finance providers	EU, national, regional govt
Recommendations								

1.AKIS collective mapping	x	x	x	x	x	x	x	x
2. Governance of AKIS– at all levels.	x	x	x	x	x	x	x	x
3. Creation of AKIS farm demo strategic programmes and p2p opportunities	x	x	x	x	x	x	x	x
4.Funding for AKIS hubs and network building activities, including farm demos and p2p				x	x		x	x
5.Providing more support and incentives for farmer owned/directed agricultural organisations such as cooperatives or associations	x			x		x	x	x
6.Reform Research Assessment across Europe			x					x
7. Quality Demos and p2p exchange.	x	x	x	x	x	x	x	x
8. Continuing education requirements	x	x	x	x	x			x
9. Economic Assessments, Cost Benefit analysis, and/or sustainability or non-market impacts assessment		x	x	x	x	x	x	
10. Multi-level demos to foster collaboration across and between operational, organizational, policy and institutional levels	x	x	x	x	x	x	x	x
11. Farmer - Researcher	x		x			x		x

Nights sponsored by EU								

***Table 2** Recommendations and Involved Actors.*

7.3 Conclusion

A roadmap for an AKIS strategic approach, reinforced and further developed by NEFERTITI and sister projects, includes strategic steps like understanding the local context and environment, the identification and networking of leading farmers and commercial demo sites, the organization of farm demos, the involvement of multi-actors, and the connection of farmers in European networks. What remains is the task of better supporting, connecting, and developing these and future AKIS with more technical and financial resources, and the inclusion of, and support by, a broader range of agri-food and policy actors, value chains, and regulatory bodies.

The summary of Recurring Issues 7.1.2 and Recommendations 7.1.3, found in the text above, are very meticulously distilled syntheses of a tremendous amount of multi-level and multi-actor reflections, lessons and recommendations from across Europe. To distil them even more into a checklist or “to-do” list would risk stripping their nuanced, and already synthetic, value. While contexts differ, this D.5.5 has shown that issues of similar type are often repeated across AKIS and agricultural systems and that proposed solutions by a broad range of actors also coincide.

Of particular importance is understanding that any actions taken, or policies introduced often implicate the several levels of agricultural activity: operational, organisational, and policy and institutional responses. Multi-level demos and p2p can play a role in bridging these levels. Included in this observation is that a wider range of stakeholders than may have been traditionally anticipated. Collaboration and knowledge exchange with other actors along the value chain and within the knowledge community is necessary.

8 Annex

8. Annex

Annex 1 – Summary results of WP5 AKIS Workshops (NE Netherlands; Almeria, Spain; Flanders)

Almeria AKIS workshop
After group work and brainstorming exercises as per the AKIS workshop protocol, the following barriers were identified in the Almería AKIS system.
1. Too much information from too many sources. Prevalent "top-down" approach, where farmers are the recipients of knowledge from several institutions and/or agents.
2. Lack of coordination between the main actors. Most knowledge flows were presented as hierarchical and unidirectional. On the one hand, there are barriers to the transfer of knowledge from institutional agents (e.g. university, public administration agent, private experimental facilities and producer organisation entities) to the farm advisors. On the other hand, **information is transferred by the "industry" (inputs, tech providers, consultants, etc.) and the distributors to farm advisors, and** such information often is seen to clash with the model advocated by the above-mentioned institutional knowledge agents. Farm advisors, were seen as an intermediary between knowledge sources and farmers and are depicted as the most relevant in the transfer of knowledge to the farmer. The problems of **excess information (too many voices), and, on the other hand, the contradictory messages that reach the farmer were repeatedly pointed out**.
3. The information from the public administration is not adequate for its most relevant users. Difficulty to find fragmented information, which is at times conflictive, out of date, not what farmers want/need.
4. Traditional (face-to-face) information channels do not help small farmers (98%). There is an over emphasis on face to face training during work hours and that is far away from deeper rural areas and small farmers.
5. Slow adoption of innovation. Actors are territorial about their innovations, knowledge and not prone to co-create or share information. Advisors may be discouraged or penalised for mixing with the competition.
6. Lack of rapid response to critical situations. Reactionary, rather than pro-active and lacking articulation of common visions or roadmaps
7. Contradictory information. More reliable and independent testing is needed.
8. Information is self-serving, filtered and not based on farmers' needs. Administrations are often seen as control agents and not close enough to the business needs of farmers. Commercial companies are aware of market needs of farmers and often understand their cost structures and economic situation. They can be important partners in innovation and knowledge flows. Both administrations and companies within AKIS could benefit from collaborations with independent evidence/scientific entities who can provide verification of and what is most sustainable and cost effective.
Some additional subjects that arose during the presentation of these major barriers which are directly connected with p2p learning and learning processes were:

- **Questions on what needs to be learned and how is it best learned?** First, it is necessary to identify what the knowledge requirements of farmers are, and also to **consider motivations for learning, change, and implementation of acquired knowledge (e.g. behavioural economics)**.
- Initially farmers learned from their experience, largely because there was no formal education, so they were the protagonists of their own learning. Currently, there is a certain feeling of **alienation of the farmers from the production of knowledge.**
- Farmers continuously exchange information among themselves in an informal manner (warehouse doors, canteens, cooperative meetings, etc.) yet this **knowledge exchange remains oral and uncaptured making it difficult to disseminate and scale**. **Could these exchanges be coordinated and articulated, for example, through cooperatives or lead farmers?**

***Strategies and conclusions for P2P learning and demonstration activities*.**
In response to such barriers the following strategies were proposed:

- Currently p2p learning is complicated and not effective because **knowledge is often viewed and protected as an asset, a very valuable asset, and a factor of competitivity which should not be freely transferred to peers.** A strategy to overcome this would be to carry out knowledge exchange and farm demos among non-peers but within a common “ecosystem”, that is, among knowledge

entities within the farmers´ environment that can transfer knowledge to non-peers by using demonstration activities as a tool (in combination with others).

- Another solution is that such activities should take place within the **agricultural producer organisations and cooperative structures**: that is, amongst members of the same cooperative. While they may be separate farmers, they together have a common economic interest in the cooperative. Conversely, the cooperative has an interest in all of its farmer producers improving their knowledge base. Initiatives to encourage agricultural producer organisations and cooperative uptake of farm demos should be explored.

- P2p and demos should **not be left predominantly to auxiliary industries**, which may have a legitimate economic interest, but which leads to marketing, or the perception of marketing, rather than the transfer of trusted information

- There is a clear **need for more structured training, in which farmers and their associations and advisors take a more active part not only in the design of their knowledge transmission methodologies and better adapted language but also in their contents**. Experimental farms for instance should coordinate their activity with the demands from the growers´ community and demonstration activities would play a major role in this regard.

- **Training through traditional channels (courses, talks...) is outdated (this point was made emphatically).** It is necessary to promote the use of more **new tools** for the transmission of knowledge (videos, podcasts, etc.) and the internet and social networks in order to reach more farmers, especially those who may be small or independent.

- Generated knowledge and **farm demos have to meet growers´ needs**.

- It is necessary to **build and preserve a relationship of trust between AKIS actors**; if not, expectations are raised, but trust is broken if the actual experience disappoints.

Consequently, the following actions to be taken/solutions/recommendations were proposed:

- Establish a mechanism for the coordination of entities that generate knowledge/common repositories
- Use of social networks in an appropriate and coordinated way
- Develop new training programmes in collaboration with farmers
- Use of new educational tools (videos, podcasts, open forums, etc.)
- More or increased use of existing experimental farms that respond to the interests of producers and advisors, always with scientific and holistic methodology
- Reinforce farmers' confidence in research by bridging divide
- Conduct studies that incorporate economic efficiency of better knowledge exchange
- Research should also be focused on farmer/agri sector needs
- Adapt scientific or bureaucratic language for practical use
- Field advisors should retrain and update knowledge and knowledge exchange practices
- The public administrations should encourage feedback from farmers

Finally, the location for p2p and demos, and related inherent strengths, were identified, and ascribed to actors:

LOCATION FOR P2P LEARNING AND DEMOS	**ACTORS**
Workshops and round tables	Growers
Farmers' forums, with leading farmers, greenhouses	Growers
Auxiliary industry	Advisors
Associative entities, coops	Growers, advisors
Knowledge Centres	Researchers
STRENGTHS	**ACTORS**
Lots of information and knowledge (synergy)	All
Forefront farmers as knowledge agents	Growers
Large number of advisors	Advisors
Powerful auxiliary industry	SME´s

Cooperativism and/or associative entities (SAT, OPFH)	Growers

The Netherlands AKIS workshops

The following barriers were identified by participants for knowledge flow around soil, water and farming in the North-East of the Netherlands:

- Significant **distance between solution and farm practice**. The farmer's perspective is lacking in experimental design and researchers, authorities and farmers do not speak the same language
- **Unclear resulting benefits** of innovations and solution
- **Knowledge is not easy to find and is not consolidated in one place**.**Research entities are no longer responsible for knowledge transfer** . (between research, advice and education). There are many **small sub-studies, lack of umbrella organisation**
- **Fragmentation of demo farms and companies**, which lack networks.
- Questions about the independence of advice and what constitutes independence.
- Difficult for suppliers and customers to do something that covers all crops
- Delivery obligations and quality requirements have an impeding effect
- **Policy is extremely fragmented**, legislation and regulations are contradictory or not integral, and rules do not sufficiently match practice. **Policymakers lack agricultural knowledge** and there is a high turnover of staff requiring re-education.
- **Farmers are not paid for their time and efforts** (e.g. in EU projects and discussion groups)
- Outdated knowledge, few students, little depth and **lack of inspiration in education** (vocational training and universities of applied sciences)
- **Advisors are control oriented** and focus on barriers and restrictions on farms. Advisors **lack a holistic overview** of the entire farm
- **Farmers are not convinced of the problem and lack urgency**
- **Difference in goals of farmers**: focus on yield optimisation versus integral optimisation (biodiversity, soil, etc.)

Seven prioritised barriers were crafted from the initial observations and discussed further:

1. Knowledge often flows to the farm via advisers. Advice that is linked to the supply of certain products is not independent. Advisors rarely have an overview of the entire farm. Those who finance research and advice determine e.g. the focus of research. This can be a problem in terms of neutrality and objectivity.
2. Research is short term oriented: the complexity of arable farming requires long-term, integrated research into agronomy and farm systems.
3. The translation of research into daily arable farming practice and farm-specific applications is insufficient.
4. The economic perspective is insufficiently linked to knowledge products and research results, even though the economic perspective is the beginning of behavioural change.
5. Research, policy and advice are not centrally bundled, since research and advice are disconnected. There is fragmentation in the supply of knowledge with few area-specific networks. Advice and policy do not fit in with the integral picture of the company.
6. The farmer lacks urgency to change because of too much contradictory information or doubts about the basis for change.
7. The distance between policy and farming practice is too great. There is a great lack of knowledge within the authorities, partly due to a high turnover of staff.

Strategies and actions were proposed to overcome barriers (including the role of demos and p2p)

1. Independent advice

- Where doubts exists about neutrality of the research funder, the independence of the approach may be safeguarded through **third party** means (scientific and experimental tests, reviews by farmers, etc.).

2. Research
- More **long-term system research** is needed since political agendas are too short
- Research knowledge must reach policy-makers in a broad and integrated way
- Integrate practice in research and ensure the translation of research into practice, for example through a review by farmers or other AKIS actors
- Bring the practice of farming into society through **education**
- Link up comparable and complementary projects, exchange datasets and build on them to avoid repetition and to find **synergies**
- Acknowledge that although a demo is not research, farmers learn from farmers;
- **Independent governance** is needed

3. Translation to farm practice
- Use **demos to translate research** into the images and language of farming practice;
- **Emphasize facilitation and narratives** to enhance/ensure more optimal and applicable learning through multiple channels

4. Economic perspective
- Include the **economic perspective** where relevant and the economic consequences for the entire farm business.
- Include comprehensive discussions to reports of demos.
- Take an integrated view of research, including peer review with (area) experts
- **Link commercial demonstration farms** to regional or **relevant experimental farms.**

5. Fragmented knowledge system
- Encourage **openness on, and consolidation of, knowledge sharing** (e.g. Green Knowledge Network) and research.
- Fragmentation may be a consequence of the method by which research is written and commissioned.
- Conduct knowledge collection and data gathering in an **area-oriented approach** with an organized approach to governance of research activity.
- Consider funding requirements mandating accessibility (public funding) and where research results should be deposited.

6. Lack of urgency
- **Regional Agricultural and Horticultural Associations** (LTOs) should lead on raising awareness of urgent matters.
- Results of projects and research should be accessible on suitable platforms so that it reaches farmers;
- Integral practice-oriented research should be shown on each regional experimental farm
- Ideally, farmers should measure and share information;
- Farmers' practical knowledge should be utilised by the research;
- **Up-to-date training and lifelong learning**.

7. Distance between policy and practice
- Create more effective bridges between farmers and policy officials and encourage more input on policies.
- **Officials should be required to carry out periodic practical training**.
- Farmers could carry out internships in government entities.
- Policy should consider more goals per area with a vision per area.

Flanders AKIS Workshop
The Flanders AKIS workshop was further broken down into arable, livestock, and horticulture, the latter being a more generic discussion of AKIS. Overall, the Flanders AKIS workshops generated the following general observations and discussion of strengths and weaknesses. Thereafter more specific observations of each sub group is set out.

General strengths and weaknesses

The sectors studied reveal a very diverse and at the same time closely connected AKIS. Linkages exist between all actors, and participants indicated that these are often two-way connections. Flows encompass knowledge in the first place, but some are also "financial" flows, mostly from the side of the various government actors to the other organisations in the AKIS. This in itself is considered a strength and a weakness of the Flemish AKIS. **Most organisations know each other and find their way to each other, but the complexity can be overwhelming, and especially for farmers, it is difficult to find the right information and knowledge flows.** It was suggested that there is a need for an intermediary actor, which acts as the connection between farmers on the one side, and all other actors on the other side. Advisory organisations appear to be ideally positioned for this, but as mentioned further below, they also struggle with the information overload.

Overall, **participants agreed that information is often not sufficiently differentiated towards specific audiences, or shared through the 'right' information channels, adding to the difficulty of accessing information and knowledge.** Demonstration farms and pilot farmers were specifically mentioned in this respect, as a "communication and dissemination channel" highly valued by farmers. Main strengths that were mentioned is the close connection and good cooperation between the various research organisations, and the close connection and interaction of advisory organisations with government actors and farmers.

However, a number of flows are regarded as weaker, creating some barriers in the system. **A main barrier that was considered was the weaker connection between research organisations and advisory organisations.** Advisors participating in the workshop session indicated however that they struggle with what they labelled as 'an overload' of information flowing from research. It is too time-consuming to filter out relevant information for themselves, and their clients. They advocated for more directed and target-specific communication and dissemination actions, and more attention for local contexts when presenting research results from European research projects, to increase relevance of research results for farmers and other local actors. Several actions were suggested to overcome the barrier:

- First, there is a **lack of understanding for the reasons for a relatively weak connection (besides information overload) between research and farmers, and one of the first actions to overcome this barrier should be to improve our understanding about this commonly mentioned topic.**

- Other actions that were mentioned include: i) **supporting peer-to-peer exchange between advisors**, where specific advisors specialising in a specific topic follow-up and "translate" research, before sharing further with colleague-advisors; ii) **dedicated communication and dissemination activities for advisors as a specific target group**, rather than joint activities for farmers and advisors; and iii) investing in **long-term cooperation relationships between research and advisory organisations**. It was also mentioned that this presents **specific challenges for smaller advisory organisations** or self-employed organisations, who rarely have the time/capacity for additional activities, besides advisory work.

Other barriers and weaknesses that were mentioned include:

- **a relatively weak connection between research and education, at all levels, and even between different education actors** (e.g. secondary agricultural schools and centres for agricultural education and refresher courses). An opportunity exists for demonstrations targeted at teachers and lecturers.

- **a weak connection to politics/politicians** (opposed to other policy/government actors) This situation presents an opportunity for demonstrations targeted at policy actors.

- **a poor connection between financing mechanisms for research and implementation in practice.**

Roles of different actors in p2p and farm demos

As a final part of the AKIS discussion, participants indicated **which actors have a role to play in on-farm demonstrations**, co-creation, digitalisation and p2p exchange. This added further to the overall complexity of the system, since most organisations feel they play a (active) role in all aspects, and there are no specific aspects associated with specific organisations. Specifically, for on-farm demonstrations, it was indicated that nearly all categories of AKIS actors are involved in the organisation and set-up of on-farm demo's, including research organisations, experimental stations, education, agrifood chain actors, farmers' organisations, advisory organisations and government actors (mostly by providing specific funding for such activities).

Sub-group 1: Arable Farming Group AKIS workshop results

Several overarching categories of actors proved most important to the arable farming network, which are **research & education**, including universities, secondary agricultural schools, practical centers for advice and research centers. A second category are the **advisory services and extension, which are mostly private enterprises** connected to input providers such as fertilizer & pesticide companies and seed companies. A third category is centered around **government services**, mainly focused on agri-environmental regulation and the input provided by government agencies around this theme. A **last category is the retail & agri-food**, which mainly set certain parameters that farmers must comply with. These categories are discussed below:

Research & Education

- Schooling of (future) farmers and farm advisors, whether university students received enough hands-on experience to be able to work with/as farmers. The practical know-how was seen to be lacking, which negatively impacts the knowledge provided to farmers.
- A large group of farmers who study agriculture in secondary school, generally stopped attending further education. **A lifelong commitment to learning, supported through university and agricultural schools** might be beneficial.
- Connections between universities and agricultural schools are not as strong as actors desire.
- There is currently no quality control for teachers in these fields and future learning paths are unclear. "After school learning" for agricultural teachers, instead of only for farmers, presents an opportunity for demos for teachers.

Advisory services & Extension

- Advisory services for arable farmers are quite straightforward, but such farm advice is provided by input providers that are not independent. Commercial incentives for advisors may cause conflicts with other objectives, such as a farmer's own interests or possible sustainability goals, such as healthy soils or biodiversity.
- However, there is an unwillingness to pay for independent advice, as there is no clear business case to pay for an additional service which is otherwise given apparently "for free". This attitude may lock farmers into a relationship which is characterized by conflicting interests.

Governments & Farmer

- various government agencies and services have contact with arable farmers and provide advice and information about agri-environmental measures and regulation to the farmer. This relationship is seen in a somewhat negative light, due to the fact that this is generally focused on restrictions to farmers and fines for non-compliance to regulations.
- Changes in subsidies and regulation and support for good environmental measures can positively influence this relationship, improving the information flow between these actors.
- Sometimes obliging farmers to attend certain additional courses can be beneficial in the long term. This has been the case for example for the "phyto-licence" in Flanders. The respondents indicated that there lies some potential, especially for arable farmers, in making them more aware of the potential opportunities of better understanding their soil analyses (there might be some potential for farm demos here).

Retail & Agri-Food (supply chain)

- Retail & Agri-food sector/supply chain actors are often missing when discussing the AKIS system. They are mainly important with respect to setting standards and rules to farmers that their products need to comply with. These standards can for instance be the use (or banning) of certain pesticides but also can be related to animal welfare standards. This is a relatively linear relationship, where retail actors provide this information to farmers and compensate farmer's products accordingly.

Sub-Group 2: Livestock Farming Group AKIS workshop results

- Many different knowledge providers within AKIS deliver knowledge directly to farmers. Group advice is provided via policy, producer organisations, (after-school) training centres, and agricultural practice

centres. Product organisations often work together with industry (processors, buyers and suppliers), developing knowledge from the market in function of the farmer.

- Producer organisations often use data from the farmers for developing knowledge, filling gaps where knowledge does not yet exist (mainly benchmarking). The Producers organisation has a WhatsApp group that allows a large group of farmers to be reached immediately in a very informal way. In contrast, the Kratos system of the Flemish government that provides advice to farmers is described as administratively difficult and insufficiently customised.
- Personal tailor-made advice is mainly provided by private (independent) advisors. Private advisors are often protective about information to other advisors. Buyers and suppliers are often very protective towards sharing information.
- There is also p2p knowledge exchange between farmers through the agricultural organisations.
- In Flanders, the practice centres for livestock farming are less well developed than those for plant cultivation. They do not have a physical location, but function as a mini-AKIS at sector level, through cooperation between different actors: processors, practice centres, agricultural organisations, etc. They work together on a project basis. Practical research in animal husbandry is expensive. Research often cannot keep up with practice.
- A distinction should be made in the AKIS between flows of data, information, knowledge and advice.

Barriers:

- Farmers often have a high and costly administrative burden. This time/money could be better spent on technical advice.
- **The knowledge that farmers receive from the supply chain is sometimes contradictory** (or in conflict with other sources).
- Many **farmers want free, independent advice, tailored to the farm, but no single player can meet this requirement and advice is not free.**
- **Collaboration is difficult** because of the narrow perspective of some actors, who are often **protective of their information**. Actors often have their own agenda and therefore do not always work for the best interests of the farmer, for example by placing a pig advisory centre clearly under one research institution´s flag, cooperation with other players is more difficult. There is a **need for a cultural shift towards collaboration between different knowledge organisations**. The way in which funding is provided also influences degrees of collaboration. **Actors also have silos of expertise.** Inspiration could be taken from the organic sector, where a **systemic vision** is much more prominent. Many different knowledge carriers should be able to behave like joint knowledge translators and learn from each other. At present, there is **little money or budget for such knowledge integration.**
- There is a permanent **need for basic research/basic funding, with long term trials (and demos)**. Currently, **funding is often provided only for what is perceived as "innovative".**
- **Farming requires a high level of knowledge**, but farmers do not always have the time to acquire it and may even lack the basic competences to navigate the multitude of information. One question is **whether farmers should be expected or required to master all such knowledge themselves**.
  - A proposed action is that farmers have first-line contact with **knowledge bundlers (in the front office) who are connected to** advisors with various expertise present in the back office. The current pig advisory centre has this as its objective (to collect knowledge from various expertise), but it is not seen to function in a way that is tailor-made for the farmer.
  - **Experts could learn from each other** so that they can give broader advice themselves. Advisors themselves do not have all the knowledge, but they are often a sounding board for farmers. **P2P exchanges and demonstrations for advisors** could play a role in this
  - A local **'knowledge hub'** was also discussed, which would create a role for farm demonstrations and p2p learning.
- The **AKIS seems to be mainly concerned with technical knowledge exchange and not with personal, psychological, or behavioural development**. If adoption of sustainable farming practices is desired, changes in worldviews and how farmers place themselves in their jobs and their environment is very important. This type of support for farmers is lacking and should be included in

general advice for farm management. **How can the development of vision/mission, and awareness of farmers´ own standards and values framework be integrated more into the AKIS? Can P2P exchanges and demos play a role in this?** As an example, within the non-formal training for bio-dynamic farmers, inter-vision moments are used to further develop prospective farmers on a personal level. These are examples of p2p exchanges.

- **Career coaching** could also be given a role in the AKIS. It remains important to start from the needs of the farmer, although many farmers may say that they do not need this.

Sub-Group 3: Horticultural Group AKIS workshop results (AKIS mainly discussed in general)

Farmers have a strong link with demo farms and local research centres, farmer organisations, auctions and suppliers. Amongst these actors, there is good feedback on what the needs are for farmers to innovate. These actors often form the bridge towards policy, research and education. They have a clear knowledge broker function.
Finance institutions and private advisors are the actors whose impact on the AKIS is less known, because they are less integrated.

Barriers and opportunities in the AKIS

Innovation potential is dependent on:

- The type of farm and farm managers
- The time availability
- The risks associated with the innovation
- The cost-profit balance and the availability of financing
- The timing (is it on the moment of generation turnover?)
- How well the innovation is developed
- The availability of a legal framework

Young and old farm managers have different barriers and other connections with the AKIS. Young farmers, for example, are strongly influenced by the formal educational system in which they were involved. Older farmers might have more linkages with other actors and colleagues in the AKIS. There is an opportunity to bring these two knowledge-spheres together by **promoting more interaction between young and old farmers.**
Suppliers have a strong influence on farmers, but farmers know their **advice is not impartial and therefore check their advice with other farmers, farmer organisations and local demonstration farms and research centres**. The role of these actors to critically evaluate new information should be supported.
Many farm managers lack the economic and financial knowledge to ascertain if information and advice from AKIS actors is applicable and suitable for their farm. This economic and financial knowledge should be introduced in the farm education on all levels, also in (non- formal) lifelong education for farmers.

Annex 2 – WP5 AKIS Workshop Guide

NEFERTITI STRUCTURED AKIS WORKSHOP: Mapping local AKIS and role of Farm Demonstrations and Peer to Peer Learning

1. WORKSHOP - INTRODUCTION

Objective

This guide, prepared by WP5 of NEFERTITI, sets out procedures to organize and implement a NEFERTITI AKIS-Farm Demo workshop. The overall objective of the workshop is to explore how to integrate NEFERTITI farm demo activities (demos) and peer to peer (p2p) learning in the local AKIS[1] system and to remove bottlenecks in the dissemination of results from practice-oriented research to end-users, as well as leverage synergies, improve innovation, and foster sustainability of the AKIS through multi-actor "ownership". In short, it is meant to collect actors insights on **"how can farm demos and p2p learning help support and strengthen local AKIS?"**

Background materials and worksheets

This guide is based on a more complete workshop that was held in Almeria, Spain[2], on November 8, 2019. There is also an explanatory video available (thanks to Tomas Alföldi from FiBL) at https://www.youtube.com/watch?v=8xURGGTRzYQ . We strongly suggest you watch the video before you read further in this guide. The workshop protocol has been adapted for NEFERTITI local AKIS so that they can hold a "mini" workshop. This guide contains simple worksheets (Annex 1) for each step of the workshop and an optional pre-workshop survey for participants on their local AKIS (Annex 2). Suggested number of participants is 8-9 people and it is expected that approximately 2.5 to 3 hours is necessary.

Usefulness for your local AKIS

NEFERTITI local AKIS will be able to better determine the best ways to integrate farm demos and p2p learning in their specific agricultural contexts and local AKIS. The workshop gives local AKIS coaches a "snapshot" of the state of their local AKIS as the project nears an end. It helps to consolidate the community, and may contribute to the sustainability of the local AKIS in the future. Several subject matter related local AKIS may wish to carry out a joint workshop.

Specifically, **local AKIS will explore the following questions**:

- What is the structure of the local AKIS?
- What are the main opportunities/barriers to promote agricultural knowledge and innovation?
- What role does/could p2p learning and farm demos play in the transmission of agricultural knowledge and innovation? Specifically, are demonstration activities a useful tool to promote knowledge exchange, co-creation, and learning?
- What actions could be carried out in the short and medium term to improve the local AKIS, particularly with respect to the NEFERTITI approach to farm demos and p2p learning?

[1] **AKIS means Agricultural Knowledge and Innovation System. It includes farmers, advisors, supply companies, technicians, cooperatives, professional organizations, journalists, researchers, trainers, technology centres, etc. which are involved and are active from their respective positions in the transmission and dissemination of agricultural knowledge and innovation.**

[2] **The workshop outcomes, while not a scheduled deliverable, are complementary to other outcomes of WP5 and feed into T5.5, which are recommendations to the Commission on AKIS and P2P and Farm Demos. It was carried out in concert with a "NEFERTITI Week" of farm demo activities in Almería, Spain, in relation to the water and nutrient hubs.**

Below in paragraph 2 you find a very compact scheme of the workshop and preparation. Paragraph 3 will give a more detailed description including the methodology.

2. WORKSHOP - COMPACT DESCRIPTION

Preparation Workshop	
Preplanning and selection participants	Optional: survey annex 2
Prepare organisation, roles, setting up	

Workshop		
10'	Introduction	
35'	Activity 1 (Group): mapping local AKIS, identify barriers & strengths	Flipcharts/photos, Worksheet 1.1, 1.2, 1.3
15'	Activity 2 (Plenary): sharing	
20'	Coffee Break – coordinators consolidate barriers	Worksheet 2.1
30'	Activity 3 (Group): identify strategies & actions including P2P and farm demos	Worksheet 3.1
30'	Activity 4 (Plenary): feedback and improve/consolidate	Worksheet 4.1
15'	Vote and Close	Menti or hand vote

After the workshop	
Send WS materials to Cynthia: cgiagnocavo@ual.es	Worksheets, Maps, Photo's, Menti results

3. WORKSHOP -DETAILED DESCRIPTION - METHODOLOGY/PROTOCOL

3.1. Preplanning and selection of participants – selection of 8-12 participants

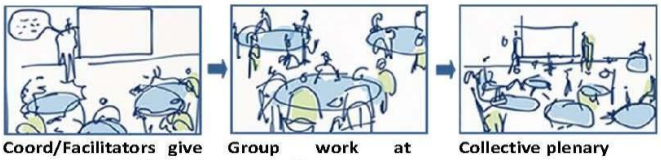
Eight to twelve (or more if you prefer) participants should be chosen for their experience and role in the local AKIS. It is important that all participants are close to knowledge/innovation transmission in their professional activity, both by occupation and by sensitivity.

Suggestions for participants: Farmers must be represented, individually and/or through associative bodies or cooperatives. Input or tech providers may be relevant or other SMEs involved in the value chain. Also, advisors, whether they work independently or for a supply company, public administration, etc., should be included. This workshop is a particularly good opportunity to involve local AKIS ecosystem actors and regional or local administrations. Public and private entities involved in issues related to agricultural training and experimentation, as well as technology companies in the auxiliary industry and of an innovative nature that pay special attention to the transmission of knowledge to/from farmers and advisors should be considered. It is also useful to have academic representation that contributes to building the theoretical body of the activity and the development of formal products such as reports and articles, both for academic and technical publications. Specialized journalists, innovation managers from different public and private entities may also be included. Attempts should be made to maintain gender balance, with special attention to women farmers, as well as young farmers and their representatives. In general, keep in mind a balanced representation of professions and gender.

Invite participants a month or two before the workshop with an explanatory email in which the objectives and structure of the workshop are described. A few weeks before the workshop the optional Google survey can be sent to all participants (see survey Annex 2). The survey serves multiple purposes. First, it provides background knowledge that lays a foundation for the workshop and guides the organizers on focal points and trends, and guides the organisers and the participants in the subject matter and the scope of discussion. It also prepares participants to be open to the possibility of introducing suggestions for improving their local AKIS and sustaining farm demos beyond the project life. A few weeks prior to the workshop, it is useful to have the NEFERTITI project visible in the local agricultural press and blogs.

3.2. Organisation of the workshop

The structure of the workshop includes an introductory session followed by two alternating group work sessions and plenary sessions (that is, first a group session followed by its plenary, and then a second group session followed by its plenary). These sessions will be held sequentially as indicated below (with group work and plenary sessions being repeated):



Coord/Facilitators give a clear explanation of the activity | **Group work at worktables** | **Collective plenary**

3

3.3. Role, functions and personnel responsible for the workshop

Role	Functions	Personnel
Coordinators	Presents project, programme, objectives, and activities, controls agenda time	1-2 people
Facilitators	Introduce and check that activities run accordingly with the established programme and dynamics.	Coordinator(s) + 1 person
Spokesperson	Guides the discussion per table and explains each group´s results to all Workshop participants during the plenary sessions.	1 per work group
Secretary	Keep a record of the discussion held in the different worktables and ensure completion of worksheets. Photos should be taken of Maps.	1 per table 1 or 2 during plenary sessions

3.4. Setting up the workshop

- Participants are given names tags with table numbers, and an authorization to be signed, giving permission to non-commercial use of images for the NEFERTITI project.
- Organise the room to allow for group work and plenary presentations, as well as space to exhibit group work. Make sure that flipcharts, various stickers, coloured pens, printed Worksheets, etc., are at hand.
- Planning the seating arrangements is an important task: create a balanced, multi-actor environment at each table. The groups do not change during the sessions but the spokesperson and note-taker/secretary per table can be rotated.
- All members' opinions should be considered, and the final decision made by consensus. If some topic of special interest arises on which there is no agreement by all the members, these "not agreed" topics should be included on the worksheets and presented in plenary.

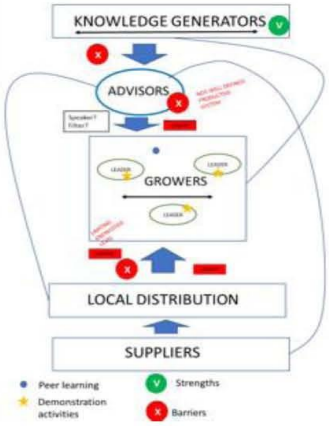
3.5. Opening workshop and development of activities

▪Delivery of material to participants. Obtain signatures and image permission, name tags, table number.
▪Reception of participants + Opening of the workshop
▪Introduction to the workshop (10´)
The workshop should be introduced by the workshop coordinator/facilitators with a presentation of NEFERTITI, and the objectives, and programme of the Workshop. Facilitators are in charge of clearly introducing all the workshop's activities by means of a Power-Point presentation, ensuring that the objectives of each session are met within the established time, as well as resolving any possible doubts related to the workshop's dynamics.

ACTIVITY 1 - Group Session. Preparation of maps of the innovation and knowledge system. Identification of barriers and strengths/p2p and demos (35´)

Mapping: In the "mapping exercise" examples may be shown to participants in order to illustrate the exercise. Care should be taken not to pre-influence how the "map" should appear. To "draw" the map, post-its of different shapes will be used to characterize the different actors and different colours for barriers and strengths should be available (bright stickers work well too). They identify both successful and unsuccessful knowledge and innovation flows and indicate where bottlenecks and barriers occur, as well as where p2p learning and demos take place.

***No worksheet for Mapping (free form on large flipchart paper), but each group to take clear photos of MAPPING! Example below:**



Barriers affecting knowledge and innovation generators and intermediaries, the strengths/opportunities presented by the local system, and the p2p learning initiatives or demo activities on farms identified in Worksheets 1.1, 1.2 and 1.3, should be detailed on the map and the worksheets. These worksheets will be gathered by the secretary to provide information during the café break to make a list for Café worksheet 2.1.

ACTIVITY 2 - Plenary. Sharing (15´) After the maps have been made, the table spokesperson explains the mapping proposed by their table. The spokesperson identifies the main opportunities/strengths for, and barriers to, knowledge/innovation transmission in the local AKIS, and where p2p and on-farm demo activities play a role. All the maps are displayed and grouped throughout the workshop so that participants can visualize them and brainstorm. The timekeeper should carefully control the time, giving each group 5-7 minutes.

Coffee break; networking and contact (20´) Coordinators/secretaries collect worksheets 1.1, 1.2, and 1.3 and any observations during Activity 2 Plenary. After a consolidation and merging process, to be reflected in Café worksheet 2.1, identified barriers (2-3 per working table) are presented to the workshop participants on a flip chart/blackboard/screen to be used in the next group session.

ACTIVITY 3 - 2nd Group Session. Designing strategies and actions to overcome barriers and take advantage of opportunities, matching p2p learning and demo activities (where it works within AKIS, where it could work, challenges and implementation strategies (30´)
In the café break the barriers have been grouped and are explained in the second group session to the participants, with the help of a poster or blackboard. The different worktables choose and work with 2-3 of these items (randomly chosen

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by choosing small folded papers). Worktables design strategies and actions (and note them down on a worksheet) to overcome the barriers in a time horizon of 0 to 3 years. In addition, they identify opportunities for p2p learning and demo activities on farms that could contribute to the improvement of the local AKIS. Finally, they establish concrete actions that could improve the local AKIS, especially for producers, and the implementation of p2p learning and demo activities in the field in the next 2 years.

ACTIVITY 4 - Plenary. Group exhibitions and feedback between groups (30´) Each group will post their results on the wall (alongside their respective barrier sheet) and the group spokesperson will explain them to the rest of the groups. During the plenary the rest of the participants can intervene to enrich the results of other groups, detect synergies, overlaps, etc. A consolidated list of barriers and actions should be noted by one of the coordinators/technical secretariat so that a mentimeter can be created for the end of the closing workshop. Coordinators to design mentimeter ahead of time, and load up:

1. Consolidated list of top Barriers; and

2. Consolidated list of strategies/actions presented in Activity 4-Plenary, including, but not limited to, p2p and demos.

Closing of the workshop (15´) The facilitators + coordinator condense results of the workshop. A collective vote is taken with the application Mentimer (or by show of hands) on the relevance, on a scale of 1-7, of identified barriers and strategies/actions. including but not limited to p2p learning and demo activities.

Voting on mentimeter—save the results. Or simply take a hand count and save the result.

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ANNEX 1 Worksheets

Activity 1-Groups: Barriers, strengths, and opportunities for p2p learning and demo activities are indicated in tables below. The ideas collected are used by the group to contribute to the local AKIS map.

Worksheet Group Activity 1.1. Identified barriers from worktable groups:

BARRIERS/BOTTLENECKS in existing AKIS	MAIN ACTORS that are involved
1. Text, text 2. Text, text 3. Text, text 4. Text, text 5.	[Identify type of actor: farmer assoc., advisors, public admin, Univ, etc.]

Worksheet Group Activity 1.2. Identified strengths from worktable groups:

STRENGTHS in exisiting AKIS	MAIN ACTORS who are involved
1. Text, Text 2. Text, Text 3. Text, text 4. Text, text 5.	[Identify type of actor: farmer assoc., advisors, public admin, Univ, etc.]

Worksheet Group Activity 1.3. Identified opportunities/locations for p2p learning and demo activities from worktable groups

OPPORTUNITY FOR P2P LEARNING AND DEMOS in AKIS	AGENTS to organise p2p and demos
1. Text, text 2. Text, text 3. Text, text 4. Text, text 5.	[Identify who will be the main driver behind action]

***No worksheet for Mapping (free form on large flipchart paper), but take clear photos of MAPPING!**

CAFÉ: during café and after Activity 2-Plenary, coordinators collect all worksheets from Activity 1 and create a consolidated list of barriers from worksheets and also from Mapping presentations. They create a consolidated list of Barriers on a Worksheet, as well as in a visible place (flipchart, blackboard).

Café Worksheet 2.1 which should be also written somewhere visible for whole group

CONSOLIDATED BARRIERS
1. Text, text 2. Text, text 3. Text, text 4. Text, text 5. ...

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Activity 3-Groups:

Worksheet 3.1 Summary of strategies and actions to overcome assigned barriers/take advantage of opportunities as discussed within the working groups – include, but do not limit to, where p2p and demos can be utilised.

STRATEGIES/ACTIONS
1. Text 2. Text 3. Text 4. Text 5. .....

Final Activity 4-Plenary:

Worksheet 4.1 – Consolidated strategies and actions and actors to be involved

CONSOLIDATED STRATEGIES/ACTIONS
1. Text 2. Text 3. Text 4. Text 5. ....

Coordinators to design mentimeter ahead of time, and load up options to evaluate: a) Consolidated Barriers; and b) Consolidated strategies/actions presented in Activity 4-Plenary, including, but not limited to, p2p and demos. Voting on mentimeter—save the results.

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ANNEX 2 -Survey

Online questionnaire of the workshop Agricultural Knowledge and Innovation Transfer in the [add definition local AKIS] in [add local AKIS location].

The aim of the workshop is to try to characterize how agricultural knowledge and innovation is transmitted, who the main actors are, what strategies for action could be taken to support the local agricultural knowledge and innovation system, and what role peer to peer learning and farm demos could play in this regard.

As a preparatory activity for the workshop we would like to ask you to fill in this short questionnaire for which we will only need your previous experience and knowledge.
The results of the questionnaires will be used as a starting point in the development of the workshop.

Thank you very much for your collaboration.

1.- Name and affiliation
.....
*2.- If you had to define your **main** role in the knowledge and innovation system of [define local AKIS area], it would be qualified as*
- *User*
- *Generator*
- *Broker/mediator*

3.- On a scale of 1 to 7, how would you, in your role as an end-user, rate your ease of access to available information and knowledge relevant to your work in the sector?
(1 is very complicated, 7 is very simple) .....

Any comment?.....

4.- On a scale of 1 to 7 and in role as a knowledge generator, how would you rate the ease with which your information reaches users
(1 is very complicated, 7 is very simple) .....

Any comment?.....

5.- In your opinion, what are the sources from which farmers receive the most effective and useful information and knowledge? Please choose three of the following options:

- *Neighbours and relatives*
- *Growers*
- *Advisors from the cooperative*
- *Suppliers (warehouses, seed companies, irrigation tech suppliers, etc.)*
- *Public/private research or experimental centres (specify which one)*
  .....
- *University*
- *Official training programmes*
- *Agriculture Unions*
- *Free lance advisors*

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- *Social networks*
- *Web pages*
- *Vocational Training centres*
- *Books, magazines*
- *Other (specify) .....*

6.- Among the above options, which are the most used sources of knowledge in the sector, even if they are not the most useful (ordered from highest to lowest)
Source 1 .....
Source 2 .....
Source 3.....

7.- What in your opinion are the most important barriers to the transmission of knowledge?

- *The information available is not independent*
- *Too much information*
- *Information is contradictory*
- *Information is untested*
- *I have no possibility to access the information in an easy way*
- *The information is not relevant because it's not about what I care about*
- *The information is too complex and I don't understand*
- *The information is too generic*
- *Others (specify) .....*

8.- Could you suggest some way to improve the transmission of agricultural knowledge?
.....

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Annex 3 – Women and Digitalisation Hub AKIS discussion results

EVALUACIÓN DE LA WEBINAR: LA MUJER EN LA HORTICULTURA Y LA DIGITALIZACIÓN

Almería se caracteriza por ser un modelo de agricultura familiar donde la mujer juega un papel relevante, aunque a menudo no se perciba la verdadera dimensión de su aportación. Sin embargo, se está produciendo un cambio en el papel desempeñado por la mujer, aumentando su visibilidad, tal y como se ha demostrado el pasado 28 de enero cuando se celebró de forma virtual la jornada **"La mujer en la horticultura y digitalización"**, donde quedó patente que ellas son las principales gestoras de la explotación agraria, socias de cooperativas y de empresas de comercialización, llevando a cabo negocios innovadores y exitosos, pasando a tener un rol más activo y relevante.

Este webinar fue organizada por la Universidad de Almería (UAL), coordinada por Cynthia Giagnocavo, directora de la Cátedra Coexphal-UAL, Gladys Sanchez, investigadora de la Cátedra Coexphal-UAL y el Catedrático de la UAL Rodney Thompson, y moderada por Noemí Algarra de COEXPHAL. El tema principal abordado en el webinar y posteriormente cuestionados a los participantes, es el papel de la mujer en la digitalización.

Este seminario se enmarca en el proyecto H2020 NEFERTITI, cuyo objetivo principal es el desarrollo de demostraciones para fomentar el aprendizaje entre iguales y la innovación en el ámbito del fertirriego. Gracias a la participación y colaboración de agricultores, personal de asociaciones o cooperativas agrícolas o pertenecientes a la industria auxiliar, investigadores, técnicos, docentes y estudiantes, los cuales tuvieron la oportunidad de intercambiar impresiones sobre el papel de la mujer en la implantación de la digitalización en la agricultura protegida.

Entendiendo la digitalización como un proceso no sólo para crear una página web para vender productos, sino también el hacer uso de programas de gestión en las explotaciones, técnicas de riego y abono, control de clima en entornos digitales, uso de sensores para monitorizar la temperatura del suelo, herramientas y aplicaciones digitales que incorporadas a procesos clave nos definen esa transformación.

Cabe destacar el dinamismo en el que se desarrolló el evento, en el cual hubo diferentes intervenciones y en diferente formato: presentaciones con diapositivas como la que llevó a cabo la Gerente de **Setacor, María Rosas Alcántara**, videos grabados y editados en las fincas como el de **Lola Gómez Ferrón, Gerente de Clisol**, (https://youtu.be/fZ5HCi-3zac) y **Francisca Escobar agricultura de la cooperativa Vicasol** (https://youtu.be/OOTohxhkvRc) e, incluso, transmisión en directo desde el invernadero llevado a cargo por **Trinidad Díaz Rodríguez, agricultora de la cooperativa Cabasc**. En esta ocasión, Gladys Sánchez de la Cátedra Coexphal-UAL se encargó de la gestión y organización de los videos, haciendo entrevistas a los participantes. Por otro lado, es importante destacar las entidades y empresas que apoyaron esta iniciativa: Coexphal, Cajamar, Hispatec, Almería SmartAgriHubs, y tres proyectos europeos H2020: NEFERTITI, IoF2020 y SmartAgriHubs.

Francisca Escobar. Cooperativa Vicasol

Lola Gómez Ferrón. Gerente Clisol

Trinidad Díaz Rodríguez. Cooperativa Cabasc

María Rosas Alcántara. Setacor

Durante el desarrollo de esta y con el fin de evaluar el conocimiento y la importancia que tiene la digitalización para los asistentes, se realizaron una serie de preguntas posteriormente evaluadas por los organizadores, obteniéndose una serie de datos relevantes por parte de los participantes, los cuales destacaron, con un porcentaje del 65% del total de los encuestados, la importancia del uso de herramientas digitales para la producción de hortícolas en invernaderos (Figura 1).

Por otro lado, entre los asistentes el 49% poseen un nivel medio de conocimientos TIC y herramientas digitales usadas en invernaderos (Figura 2), en efecto, más del 90% tiene conocimientos en el uso de sensores y sus ventajas, además de, herramientas para el control de riego. De igual manera, denotan la utilidad del uso de estas herramientas como apoyo a las decisiones que toman diariamente en el cultivo y para incrementar la producción y la eficiencia en el uso de recursos, lo que va a repercutir directamente en rentabilidad y la sostenibilidad de la actividad agrícola.

En esta línea, la transformación digital es considerada como el futuro de la agricultura, y por tanto la aplicación de las TIC, alrededor del 70% de los encuestados utiliza esa a la que llamamos **'agricultura digital'** incorporando nuevas tecnologías en el invernadero, las cuales han llegado al mundo agro para ayudarles a aumentar su rentabilidad y productividad. Así mismo, los agricultores intervinientes en la conferencia utilizan herramientas digitales para aumentar la eficiencia en el consumo de agua, contando con tecnología de precisión, muestra de ello es la incorporación de sensores posibilitando la automatización y el control del fertirriego (Figura 3).

Las mujeres mantienen una posición desfavorable en competencias digitales y, según los datos obtenidos (Figura 4), se cree que están significativamente subrepresentadas (53%), siendo las tres causas o motivos principales la falta de apoyo (41%), seguida de la falta de conocimiento (17%) y la falta de información (10%), (Figura 5).

Entonces, nos cabe preguntar ¿cuál es el futuro de las mujeres en una agricultura orientada a las TIC o digitalizada? A la luz de la importante contribución económica y social de las mujeres en la agricultura, se trata de un tema que tiene el potencial de ser un escollo en la consecución de un sector robusto, competitivo e innovador, sin olvidar objetivos más amplios de las políticas españolas y europeas de igualdad e inclusión. Por tanto, el concepto de inclusión en cooperativas y asociaciones agrícolas se considera un medio fundamental para apoyar a la implementación de las diferentes tecnologías en las actividades agrícolas, seguido de cerca por el aprendizaje entre iguales y las demostraciones en fincas (Figura 6).

Actualmente desde la Cátedra COEXPHAL-UAL en Horticultura, Estudios Cooperativos y Desarrollo Sostenible, se está trabajando en diversos proyectos europeos que tienen un interés para l@s agricultore@s de las cooperativas, y sigue con sus objetivos de colaborar con el sector y apoyar la innovación.

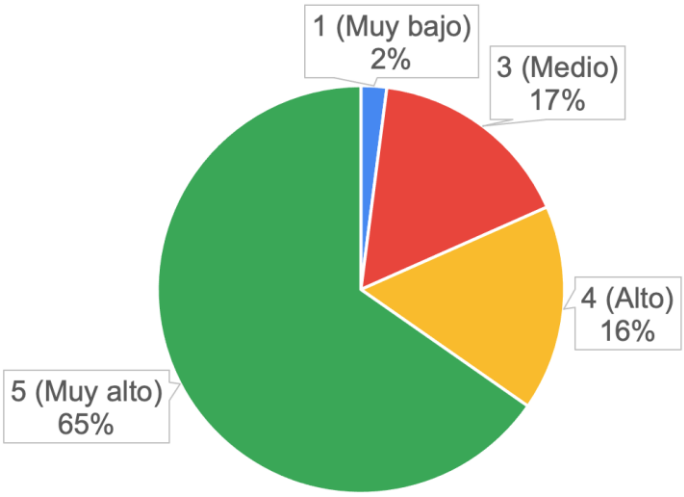


Figura 1. Importancia de la aplicación de tecnologías digitales en el invernadero, de 1 (muy bajo) a 5 (muy alto).

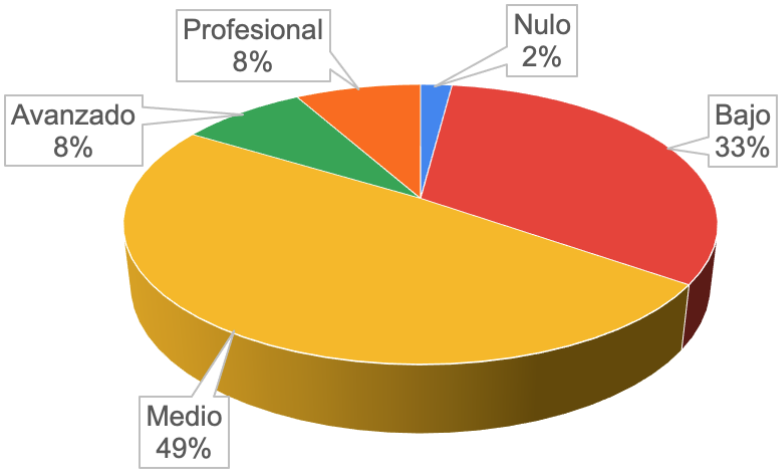


Figura 2. ¿Cómo calificaría su nivel general de conocimientos sobre las TIC y herramientas digitales en los invernaderos?

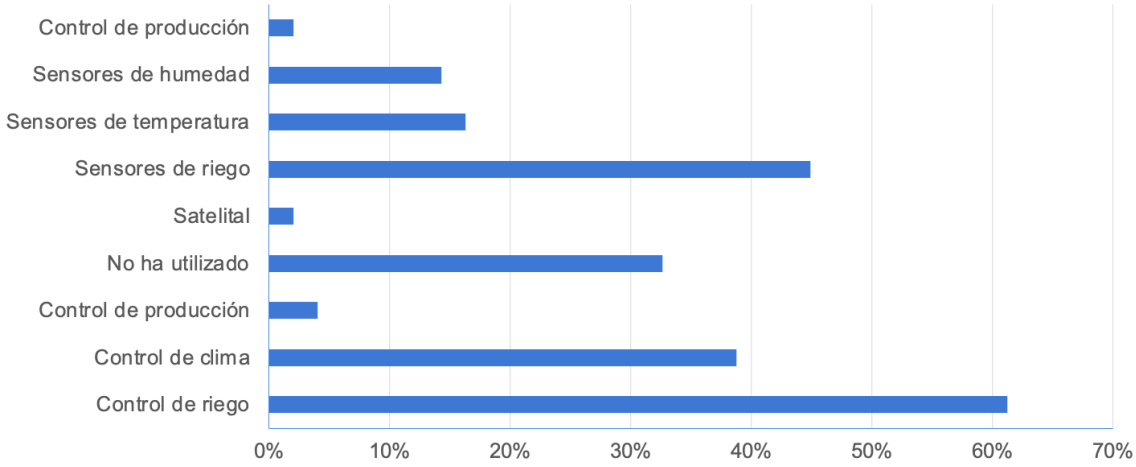


Figura 3. ¿Cuál herramientas digitales ha usada para mejorar el desarrollo de la actividad?

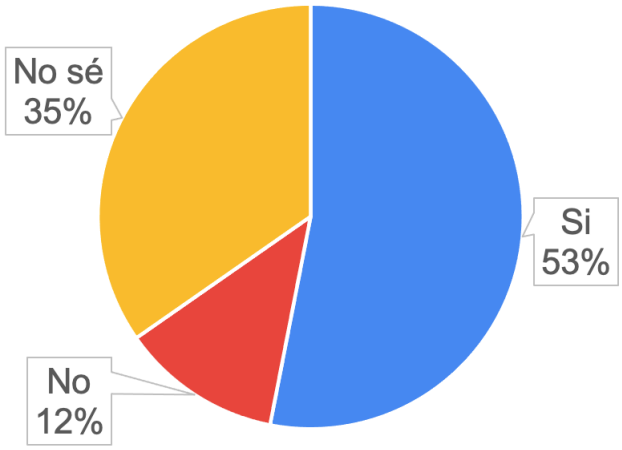


Figura 4. ¿Piensa que las mujeres están infrarrepresentadas en la implementación y usos de la digitalización en los invernaderos?

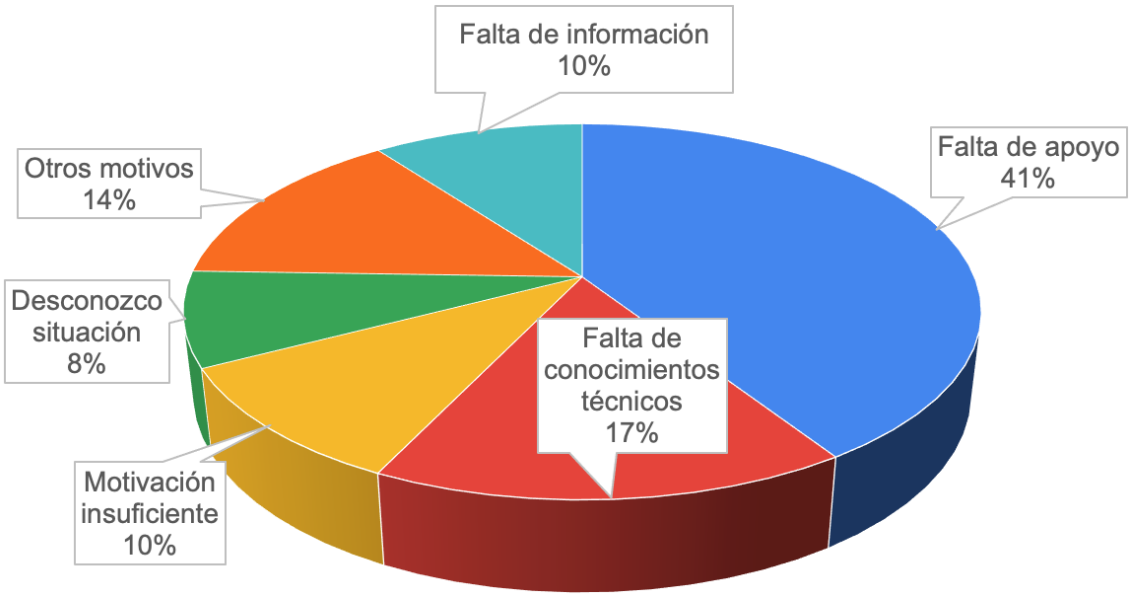
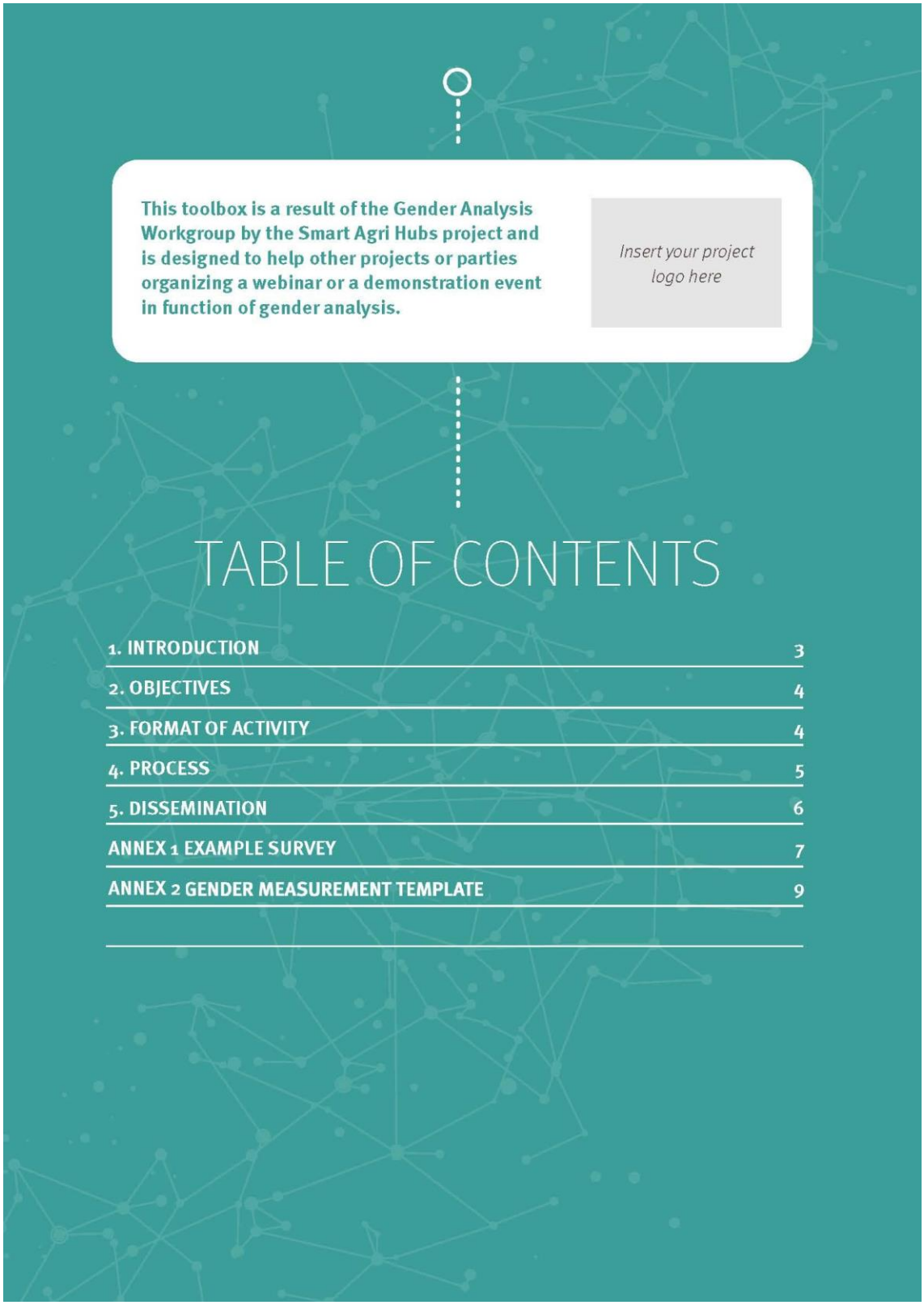


Figura 5. ¿Porqué cree que están infrarrepresentadas las mujeres en la implementación y usos de la digitalización en los invernaderos?

Figura 6. ¿Qué medios se pueden utilizar para mejorar la participación de la mujer en la adopción de tecnologías digitales en invernaderos?

Annex 4 – Virtual Demo and AKIS Hub discussion Guidelines Women and Digitalisation



This toolbox is a result of the Gender Analysis Workgroup by the Smart Agri Hubs project and is designed to help other projects or parties organizing a webinar or a demonstration event in function of gender analysis.

Insert your project logo here

TABLE OF CONTENTS

INTRODUCTION TO GENDER MAINSTREAMING IN SAH

The future of the agri-food sector will be more digital and includes more forms of technology. What does this mean for women and gender balance within the agri-food sector?

The Commission's study Women in the digital age (2018) found that fewer women are interested in participating in the digital sector, be it higher education, jobs or entrepreneurship, stating that 24 out of every 1000 female tertiary graduates have an ICT related degree, of which only six go on to work in the digital sector. The numbers are not improving as the study's findings show a decrease in this number when compared to 2011.

The SAH and IoF2020 Gender Taskforce was asked by The European Commission to focus on women working in ICT related to the agri-food sector. A workplan, attached as ANNEX 2, was devised to address this issue and describe what proactive measures can be adopted to encourage gender inclusion in ICT in the agri-food sector.

In this workplan, several activities or events that DIHs and CCs could carry out were identified, including encouraging the SAH ecosystem, on a voluntary basis, to identify barriers and needs concerning women in agri-tech, through the organization of a webinar (perhaps in collaboration with synergy projects/ international networks) to highlight the importance of gender inclusivity in SAH/ IoF 2020 (either in response to identified barriers/ needs, or in order to gain more insight on this issue).

In order to help organizations determine what they already do and what they can improve on in relation to gender issues, a Gender Measurement Template was designed by the Gender Taskforce. It can be used for further inspiration and can be found as ANNEX 3 in this toolbox.

A pilot webinar was held by Almería SmartAgriHub DIH, combining digitalization content from SmartAgriHubs, and virtual and presential farm demonstrations from the NEFERTITI project, and IoF2020. NEFERTITI is part of the FARM DEMO trio of projects and promotes peer to peer learning amongst farmers.

Women farmers were chosen for excellence as leaders who could participate in effective peer to peer learning about digitalization in agriculture. Given the success of the webinar, it was suggested that an easy to use organizing tool-kit, including a short interactive survey, was prepared for voluntary adoption by DIHs and/or CC events.

3

OBJECTIVES

The aim of this activity is three-fold:

1. to showcase agri-tech women as people who are excellent in their domain, such as farmers, advisors or agri-business actors, thereby encouraging digitalisation up-take through peer to peer learning and role models;
2. to understand how digitalization of agriculture can be more inclusive by eliciting feedback from interested farmers, advisors and other stakeholders, and thus learning about existing barriers and opportunities, as well as good practices that can be implemented.
3. to identify existing best practice gender equality success stories so that we can disseminate them to the SAH ecosystem and the agri tech community.

FORMAT OF ACTIVITY

The format of this activity can be either a virtual or physical farm demonstration. The format is divided into two parts: the first part of this activity should result in an event with valuable content about topics in digitalisation and/or the agri-tech domain presented by female experts. The main focus should be on the content of the presentations and the digitalisation of agriculture. The second part of the activity acts as a valuable addition, where insights can be obtained on barriers and opportunities for women in agri-tech and what positive action may be taken going forward. The use of a short survey gives feedback to the SAH DIH or CC so that the DIH may plan further events or activities, or take other positive action to encourage inclusion.

4

PROCESS

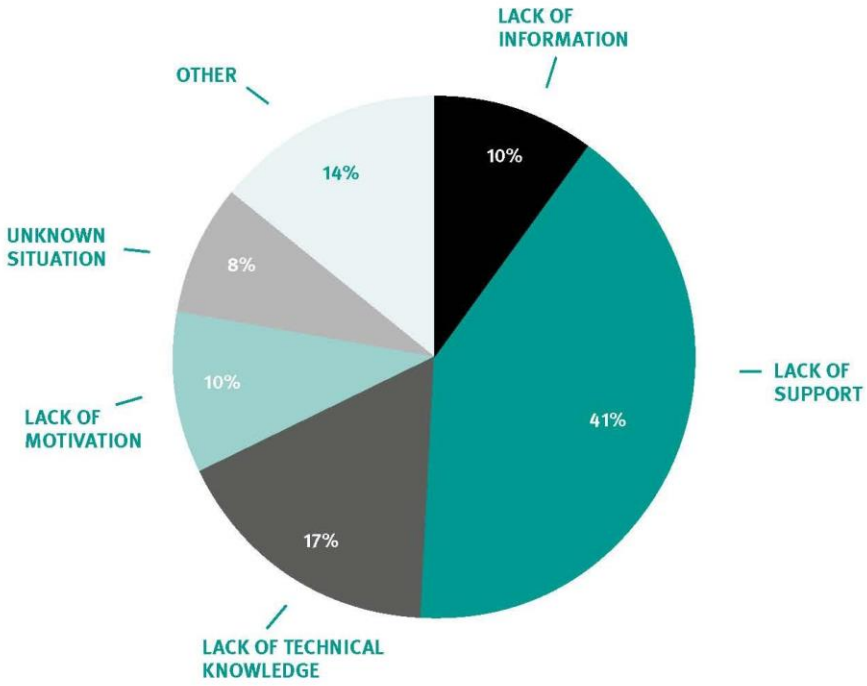
The following steps provide a recommended guideline for successfully organizing your activity.

1. Identify a topic that will be of interest to your agri-digital ecosystem.
2. Identify leading agri-tech women, of all ages, who can address these topics (eg. farmers, advisors, agri-tech business entrepreneurs, public sector leaders, etc.). Previously organized activities chose well known, award winning women, and respected farmers, thus attracting a wider audience.
3. If necessary, contact agri-cooperative organisations and associations for a varied list of women speakers who can address a topic of interest. SAH also has a list of women ambassadors who may provide interesting insights.
4. Choose an experienced and neutral (non-political) moderator, or alternatively, the DIH or CC coordinator or leader may take such role.
5. Use multi-media (e.g. videos, live streams on the farm and presentations for the content event).
6. Have a first round of questions on the content of the activity.
7. Have a second round of questions on barriers and opportunities for increased participation of women.
8. Let the moderator ask both the invitees and the attendees about their experience.
9. Introduce a short gender survey (i.e. Annex 1, made context-specific to your DIH farming system).
10. Recommended length is 1.5 hours.
11. Report to your RC leader about the webinar or farm demo activity.
12. Disseminate the results of this activity on the SmartAgriHubs Innovation Portal and your local agricultural ecosystems to help maximize the impact and increase awareness of women in agri-tech, digitalisation of agriculture, and peer to peer learning.

5

DISSEMINATION

Local dissemination is important for a DIH or CC or other agricultural related entity. For example, both agri-tech content and the survey results could be published in local agri-trade magazines, the local press and through the social media channels of your ecosystem as well as the broader SAH ecosystem. Good practices may be highlighted or ideas on how women farmers and agri-tech actors can be further involved in digital initiatives may be suggested. If barriers are evident, solutions could be suggested to be resolved by the DIH and/or agricultural ecosystem. Below, an example of a graphic from a survey was published in the local agri trade magazine:



Example - Figure 2. Why do you think women are under- represented in the implementation and use of digitalisation in greenhouses?

6

ANNEX 1 EXAMPLE SURVEY

Please feel free to use this survey as an example, posting it on Google Docs or using other options like Mentimeter, Survey Monkey, etc. You can copy the questions or change them to adjust the survey to your needs and what's applicable for your topic. You can also add your own questions and/or leave example-questions out of your survey.

1. What is your main occupation?
   a. Agriculture
   b. Agricultural company
   c. Agricultural association or cooperative
   d. Agricultural technical advice
   e. Research
   f. Student
   g. Agricultural services
   h. Public administration
   i. Other ...

2. In which locality is your workplace located?
   .....

3. How would you rate your overall level of knowledge of digital tools in greenhouses?
   a. Professional
   b. Advanced
   c. Medium
   d. Under
   e. Null

4. Do you know of any digital tools used in greenhouses?
   a. Sensors
   b. Climate controller
   c. Irrigation controller
   d. Decision support system
   e. Quality management system
   f. Prediction
   g. Other ...

5. Have you used any digital tools in your farm or business to improve the development of the activity?
   a. Yes
   b. No

6. Which one?
   ...

7. In your opinion, the use of digital tools in greenhouses is most useful for:
   a. Contributing to environmental sustainability
   b. Save time
   c. Increasing profitability
   d. Increasing productivity
   e. Other ...

8. In general terms, how important is the application of digital technologies in the greenhouse for you? 1 = low 5 = high
   a. 1
   b. 2
   c. 3
   d. 4
   e. 5

9. Do you think that women who implement and use digitalisation in greenhouses are under-represented?
   a. Yes
   b. No
   c. I don't know

7

If you answered no, skip question 10 and continue to question 11.

10. If so, why do you think so?
    a. Lack of information
    b. Lack of technical knowledge
    c. Lack of motivation
    d. Lack of support
    e. Other ...

11. What means can be used to improve women's participation in the adoption of digital technologies in greenhouses?
    a. On-farm demonstrations
    b. Encouraging networking among women (peer learning)
    c. Inclusion of woman in different areas of agricultural cooperatives and associations
    d. Other...

12. Gender
    a. Man
    b. Woman
    c. Other

13. Educational level
    a. Primary education
    b. Secondary education of vocational training
    c. University degree
    d. Master
    e. Doctorate

14. Are you provided with the tools and means to keep a good life-work balance?
    a. Yes
    b. No

Please give some more information about your answer

...

15. Age
    a. Less than 20
    b. 20-30
    c. 30-40
    d. 40-50
    e. 50-60
    f. More than 60

16. Do you have other comments or suggestions that you would like to share with us?
    ....

Thank you very much, this survey will help us to improve future activities!

8

ANNEX 2 GENDER MEASUREMENT TEMPLATE

Gender measurement template

1. **Self-assessment question**
   a. Do you as DIH/ UC/ FIE/ RC/ CC have a strategy concerning gender? If yes, what is it? If no, why not?
   b. How do you as DIH/ UC/ FIE/ RC/ CC ensure that both women and men can provide inputs, access and participate in project activities?
   c. How is gender included as a topic in the evaluation / monitoring of the DIH/ UC/ FIE/ RC/ CC?

2. **Why is it important?**
   1. In general: The Commission's study Women in the digital age (2018) found that fewer women are interested in participating in the digital sector, be it higher education, jobs or entrepreneurship, stating that 24 out of every 1000 female tertiary graduates have an ICT related degree, of which only six go on to work in the digital sector. The numbers are not improving as the study's findings show a decrease in this number when compared to 2011. The study also found that if more women were to enter the digital jobs market, it could create an annual EUR 16 billion GDP boost for the European economy.

      i. Strategy: A strategy statement can set new expectations for the attitudes and behaviour of both women and men and be used as a benchmark for measuring progress.
      ii. Access: Access for both women and men ensures that DIH/ UC/ FIE/ RC/ CC foster gender equality and mainstreaming across IoF2020/ SAH policy. Gender equality results that are linked to or built into ordinary systems or structure tend to have a better chance of becoming permanent.
      iii. Evaluation/ Monitoring: Assessments such as evaluations and monitoring allow DIH/ UC/ FIE/ RC/ CC to develop the most appropriate work plan and tools to implement gender mainstreaming and measure progress.

   2. For IoF/ SAH ecosystem: 'Diversity is a key driver of innovation and is a critical component of being successful...' (Forbes). Having a more gender balanced DIH/ UC/ FIE/ RC/ CC will, therefore, likely have a positive influence on IoF2020 and SAH.

3. **What are key actions to consider? What are key actions to consider What are key actions to consider?**
   1. Using the gender neutral guidelines developed by WP1 of SAH for all written and oral communication.
   2. Gender equality vision statement
      i. Build a short, compelling vision statement for gender equality that portrays a specific result

·9

for organisational change for your DIH/ UC/ FIE/ RC/ CC.

1. Ensure that the gender equality vision has a clear focus.
2. Widely disseminate and communicate the statement in simple terms both within and outside your DIH/ UC/ FIE/ RC/ CC.

3. Set goals
   i. Define measurable goals and indicators.
      1. Define a clear set of responsibilities, timelines, action plan and monitoring mechanism to achieve identified goals.
      2. Undertake consultation with the Gender Taskforce and people within your DIH/ UC/ FIE/ RC/ CC.

4. Ensure someone in your DIH/ UC/ FIE/ RC/ CC with the authority to monitor, oversee and promote the implementation of gender equality.

5. Create awareness and ensure an open and transparent environment which invites people to talk about gender issues. (Make it a recurring item during meetings)

6. Establish an independent complaint and appeal mechanism to protect rights for gender equality and consider complaints related to gender-based discrimination. Make sure this is available, safe and visible for everyone.

7. Actively participate and respond to requests of the gender task force from IoF2020 and SAH.

4. What are key actions to consider?

a. Considering Gender balance as a 'tick-the-box' exercise.
b. Gender balance is not considered as a priority and therefore it will not receive the needed attention.
c. The one with the oversight responsibilities is not taken seriously or has a vague/weak mandate and authority to monitoring gender equality strategies.
d. Gender equality strategies' efforts are conducted without a clear measurement framework – thus producing results which are not robust and comparable through time.
e. Monitoring efforts are not conducted regularly
f. Gender equality complaint and appeal mechanisms are not known or accessible.

5. Good practice examples

a. Women in Food and Agriculture (https://www.wfasummit.com/)
b. Womens Committee COPA (https://www.copa-cogeca.eu/)
c. Empowering Women in AgriFood (https://www.eitfood.eu/news/post/applications-open-for-ewa-empowering-women-in-agrifood)

Genovate: http://www.genovate.eu/media/genovate/docs/GENOVATE-gender-and-diversity-toolkit.pdf

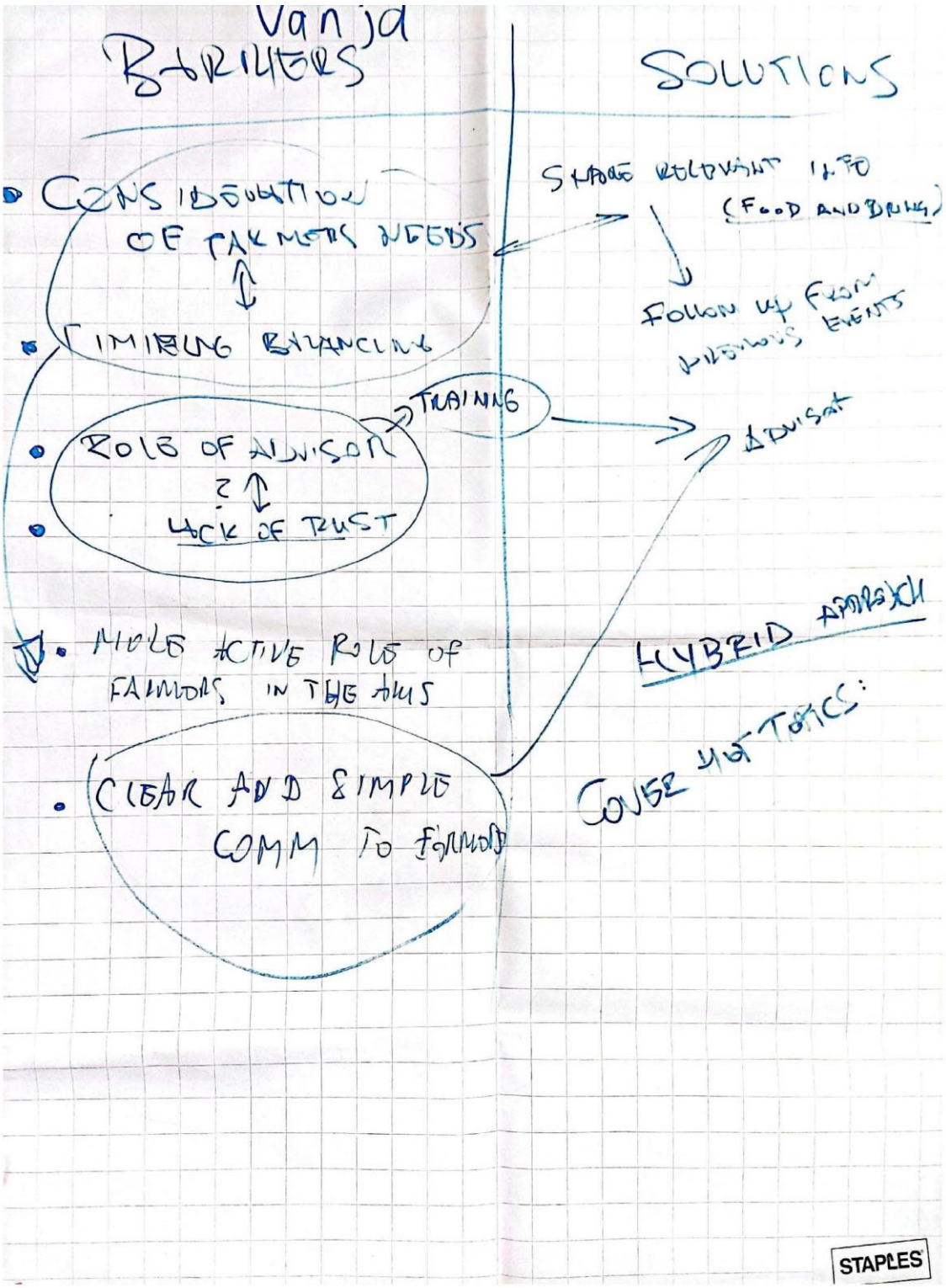
Satin/ Genovate Gender app: gender mainstreaming checklist http://www.gdtoolbox.eu/toolbox/tools-and-methods/gender-app/

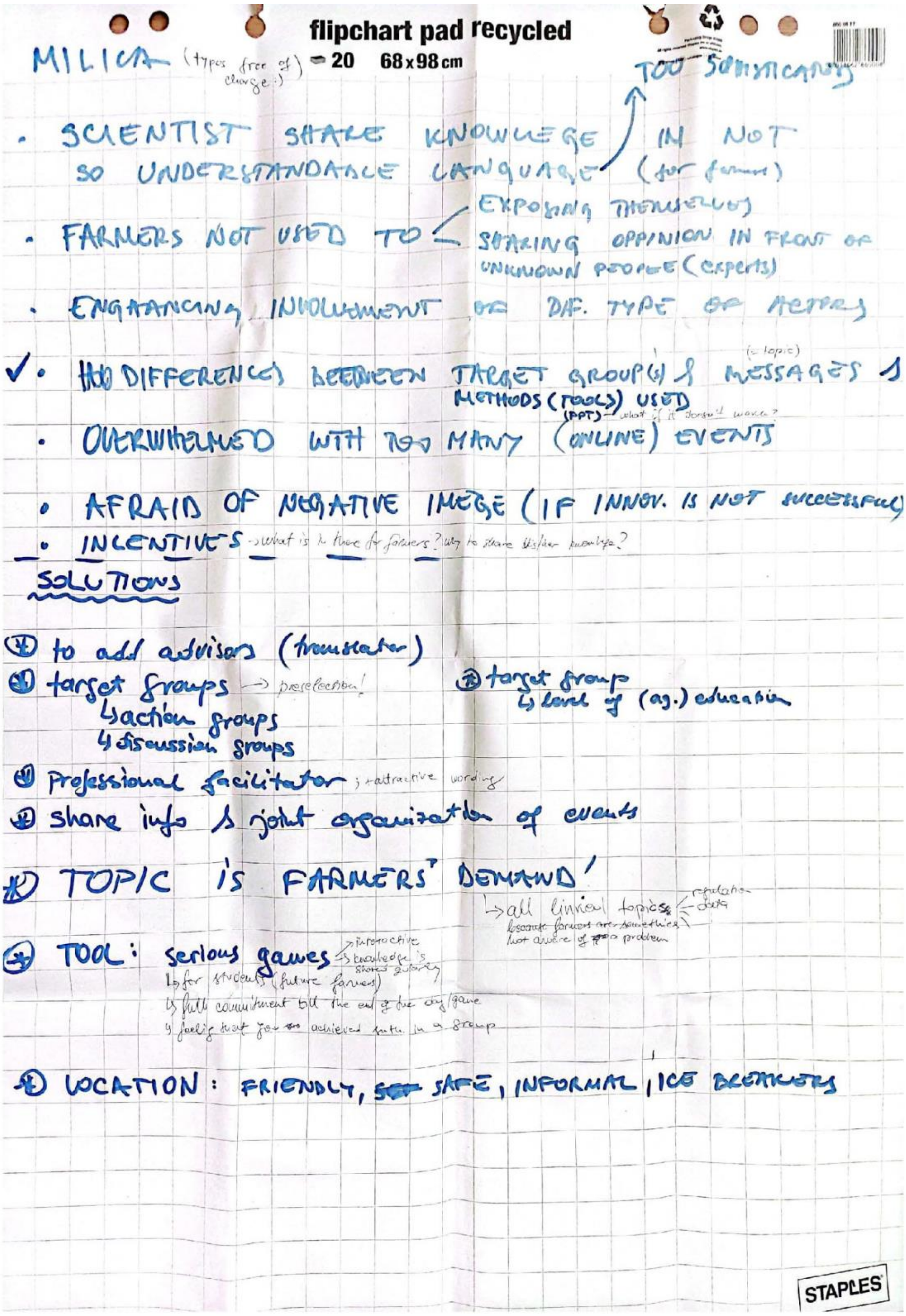
Measuring Tools (how to boost and measure change): http://www.gdtoolbox.eu/sv/files/2013/05/Matajamt_Handbok_webb1.pdf

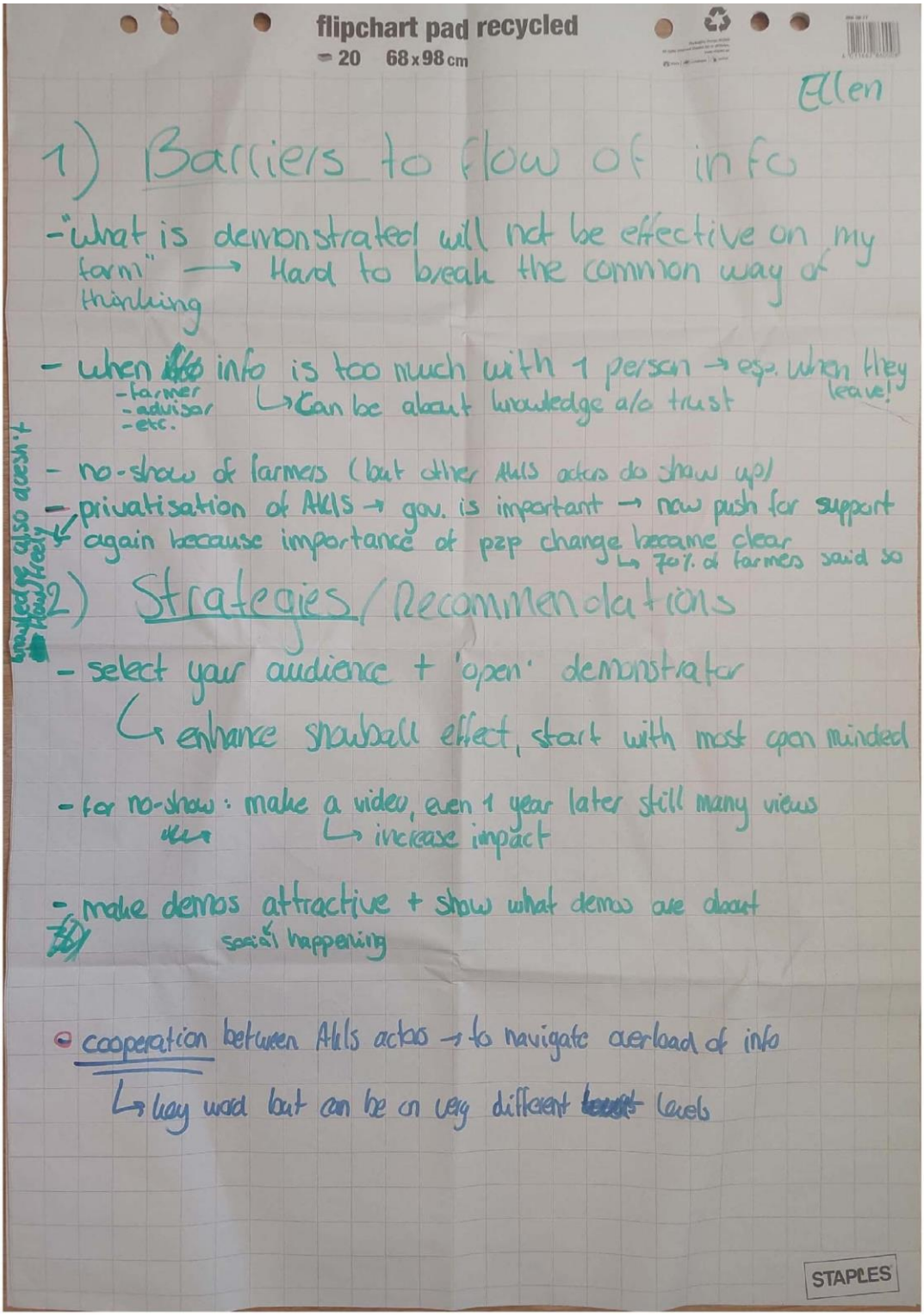
10


February 2022
SMART
AGRI
HUBS

Annex 5 – AKIS Interactive Sessions - 5th Annual Meeting NEFERTITI




flipchart pad recycled
20 68x98cm
MILICA (types (free of) charge)
TOO SOPHISTICATED
SCIENTIST SHARE KNOWLEGE IN NOT SO UNDERSTANDABLE LANGUAGE (for farmer)
FARMERS NOT USED TO EXPOSING THEMSELVES / SHARING OPPINION IN FRONT OF UNKNOWN PEOPLE (experts)
ENGAGING INVOLVEMENT OF DIF. TYPE OF ACTORS
NO DIFFERENCES BETWEEN TARGET GROUP(S) & MESSAGES & METHODS (TOOLS) USED (PPT)
OVERWHELMED WITH TOO MANY (ONLINE) EVENTS
AFRAID OF NEGATIVE IMAGE (IF INNOV. IS NOT SUCCESSFUL)
INCENTIVES
SOLUTIONS
to add advisors (translator)
target groups → preselection!
action groups
discussion groups
target group
level of (ag.) education
Professional facilitator
share info & joint organization of events
TOPIC IS FARMERS' DEMAND
TOOL: serious games
for students (future farmers)
LOCATION: FRIENDLY, SAFE, INFORMAL, ICE BREAKERS
STAPLES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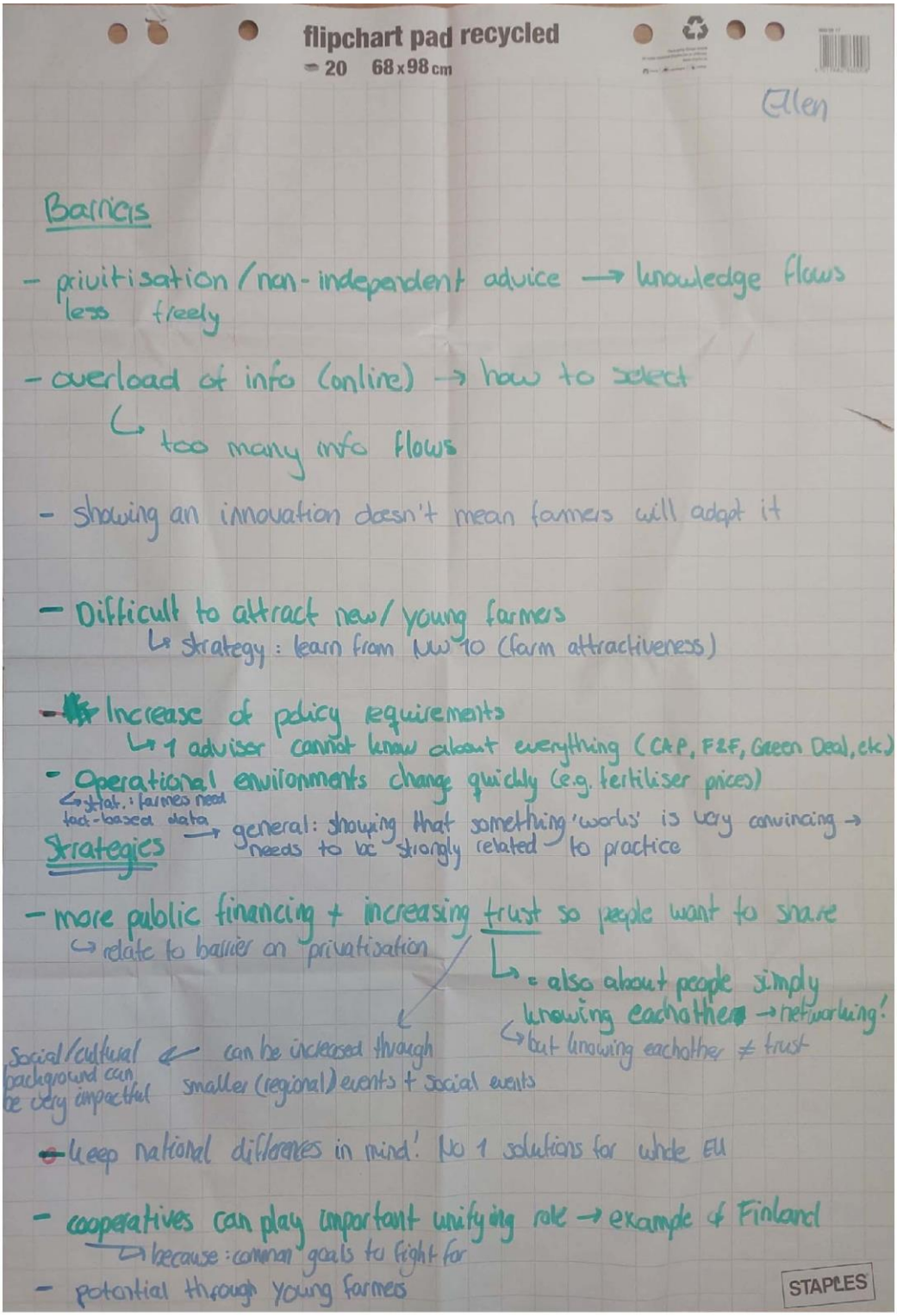
Ellen
1) Barriers to flow of info
- "what is demonstrated will not be effective on my farm" → Hard to break the common way of thinking
- when info is too much with 1 person → esp. when they leave!
-farmer
-advisor
-etc.
↳ Can be about knowledge a/o trust
- no-show of farmers (but other AKIS actors do show up!
- privatisation of AKIS → gov. is important → new push for support again because importance of pep change became clear
↳ 70% of farmers said so
knowledge also doesn't flow freely
2) Strategies/Recommendations
- select your audience + 'open' demonstrator
↳ enhance snowball effect, start with most open minded
- for no-show: make a video, even 1 year later still many views
↳ increase impact
- make demos attractive + show what demos are about
social happening
- cooperation between AKIS actors → to navigate overload of info
↳ easy word but can be on very different levels
STAPLES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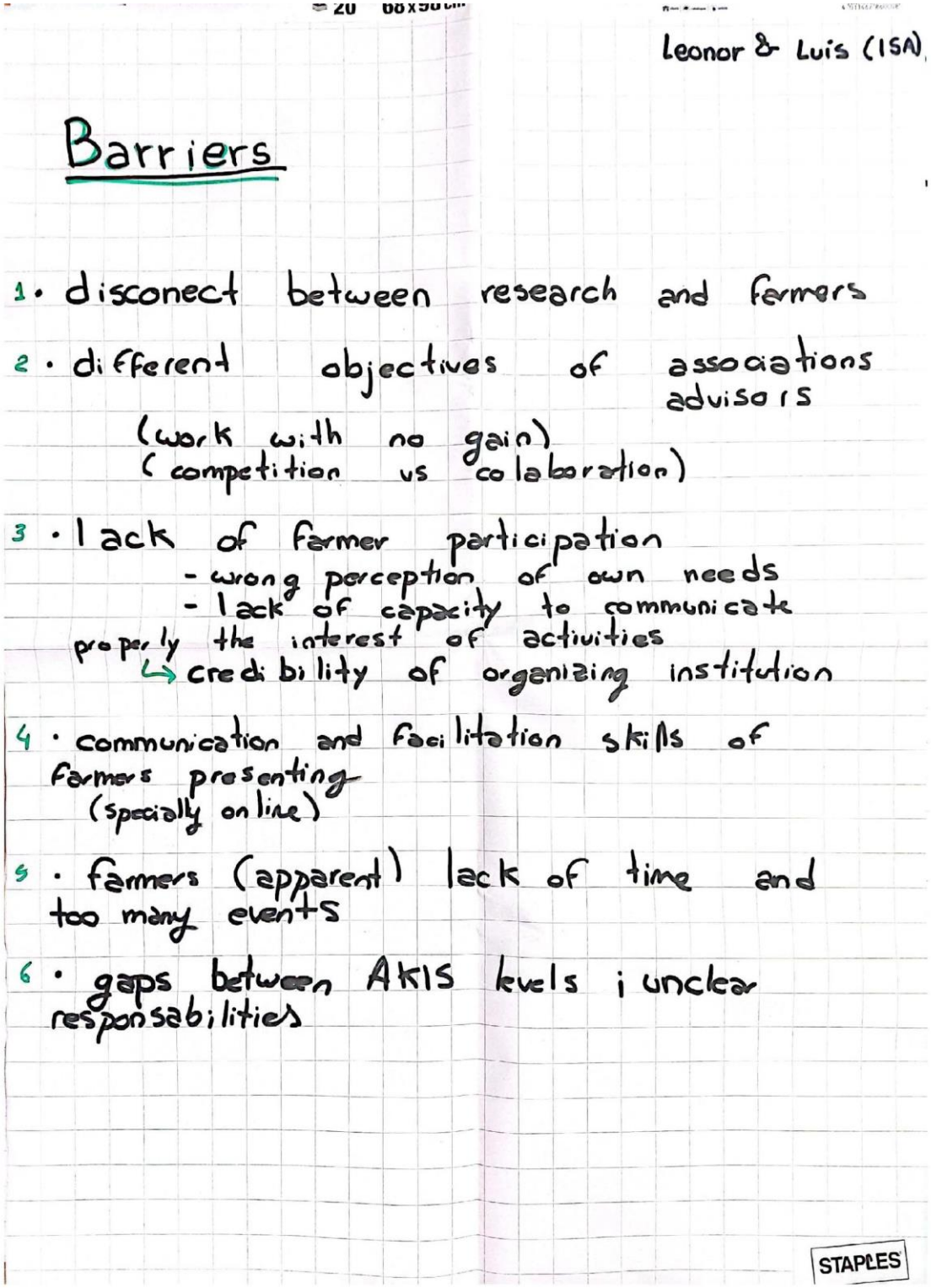
Ellen
Barriers
- privitisation / non-independent advice → knowledge flows less freely
- overload of info (online) → how to select
↳ too many info flows
- showing an innovation doesn't mean farmers will adopt it
- Difficult to attract new / young farmers
↳ strategy: learn from NW to (farm attractiveness)
- Increase of policy requirements
↳ 1 adviser cannot know about everything (CAP, F2F, Green Deal, etc.)
- Operational environments change quickly (e.g. fertiliser prices)
↳ strat.: farmers need fact-based data
Strategies → general: showing that something 'works' is very convincing → needs to be strongly related to practice
- more public financing + increasing trust so people want to share
↳ relate to barrier on privatisation
↳ = also about people simply knowing eachother → networking!
↳ but knowing eachother ≠ trust
Social/cultural background can be very impactful ← can be increased through smaller (regional) events + social events
- keep national differences in mind! No 1 solutions for whole EU
- cooperatives can play important unifying role → example of Finland
↳ because: common goals to fight for
- potential through young farmers
STAPLES

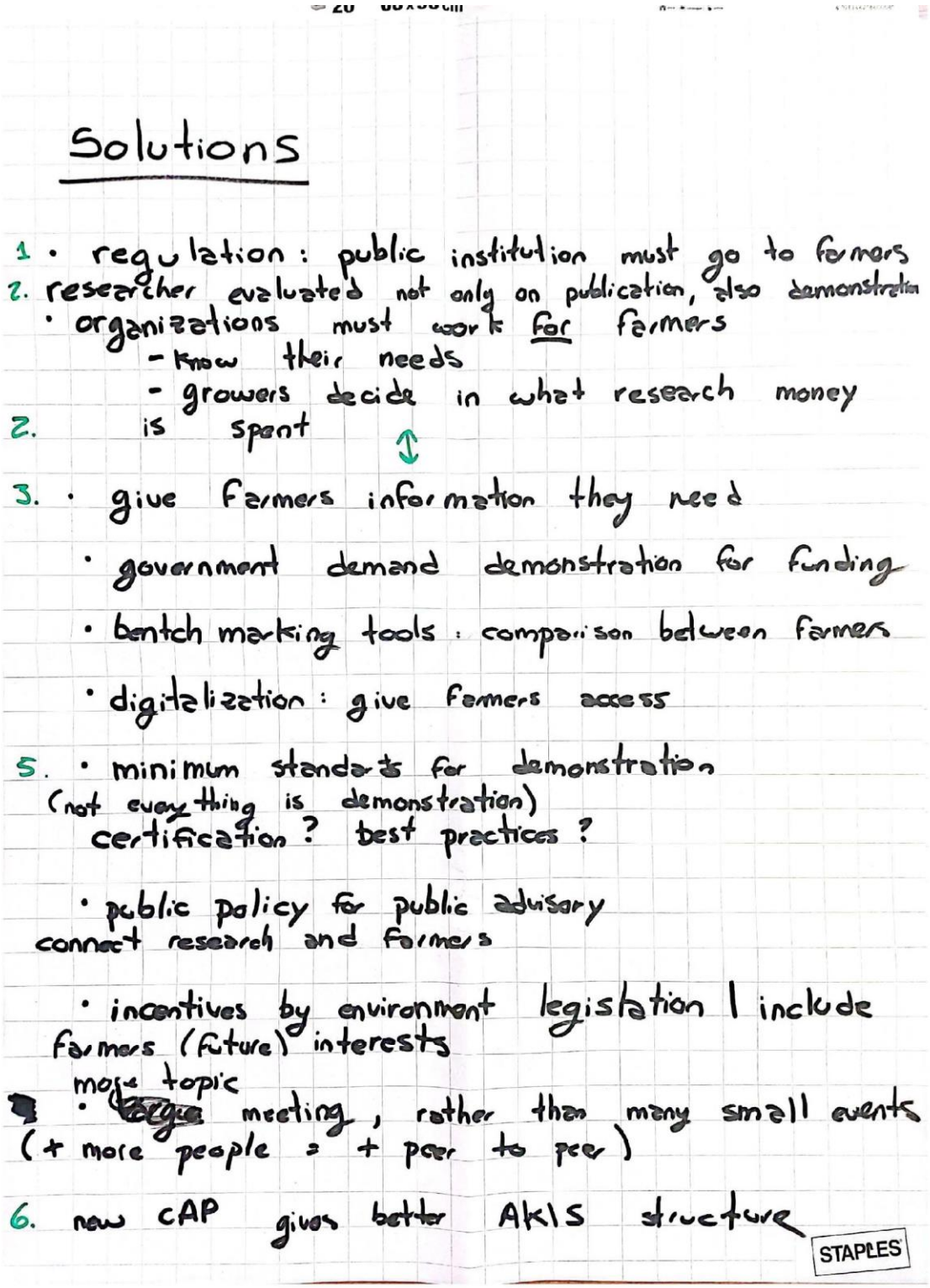


Leonor & Luis (ISA)

Barriers

1. disconect between research and farmers
2. different objectives of associations adviso r s
   (work with no gain)
   (competition vs colaboration)
3. lack of farmer participation
   - wrong perception of own needs
   - lack of capacity to communicate properly the interest of activities
   ↳ credibility of organizing institution
4. communication and facilitation skills of farmers presenting (specially online)
5. farmers (apparent) lack of time and too many events
6. gaps between AKIS levels i unclear responsabilities

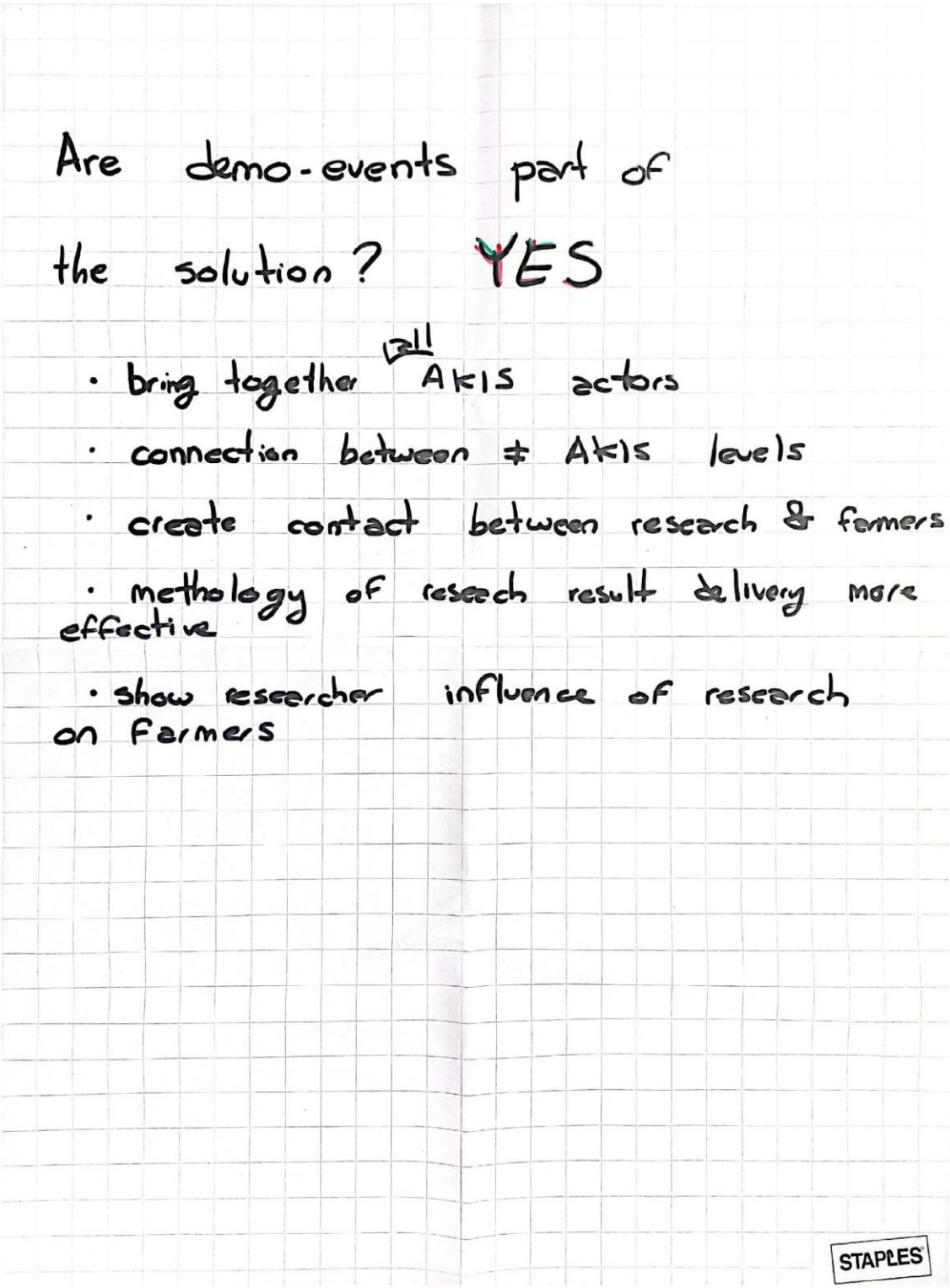
STAPLES

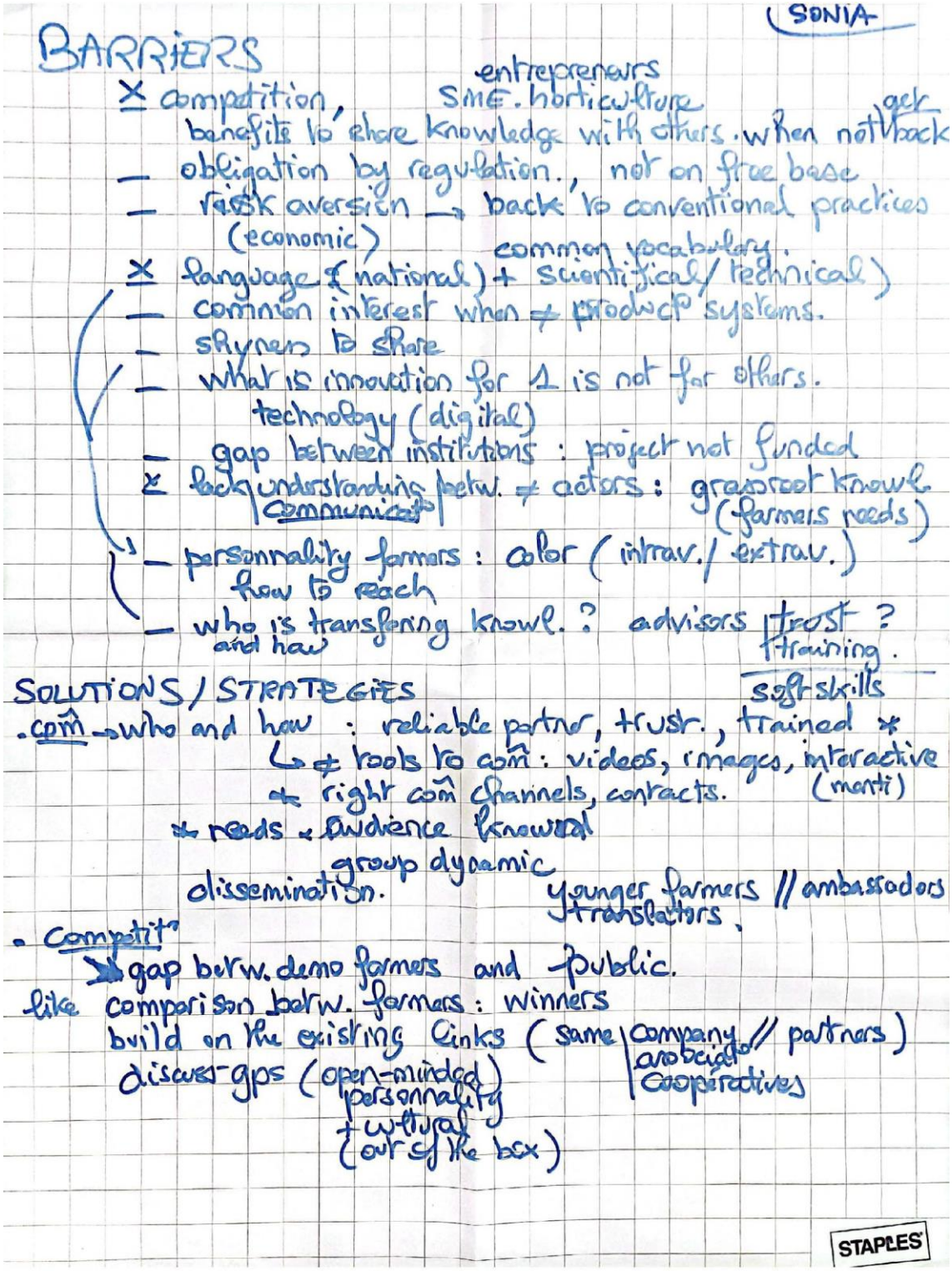


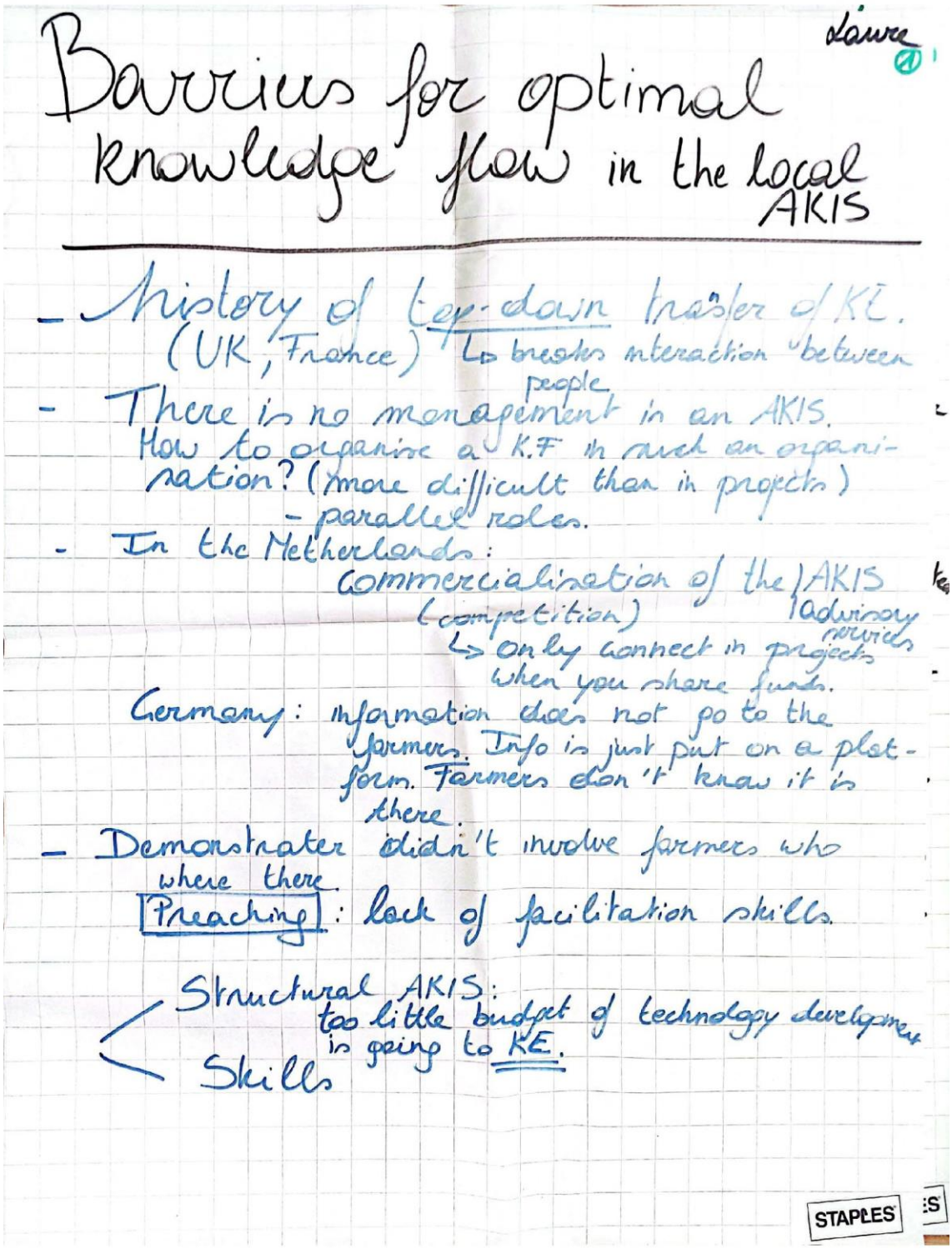
Solutions

1 • regulation: public institution must go to farmers
2. researcher evaluated not only on publication, also demonstration
• organizations must work for farmers
- know their needs
- growers decide in what research money
2. is spent
3. • give farmers information they need
• government demand demonstration for funding
• bentch marking tools: comparison between farmers
• digitalization: give farmers access
5. • minimum standards for demonstration
(not everything is demonstration)
certification? best practices?
• public policy for public advisory
connect research and farmers
• incentives by environment legislation | include farmers (future) interests
more topic
• meeting, rather than many small events
(+ more people = + peer to peer)
6. new CAP gives better AKIS structure

STAPLES


Are demo-events part of the solution? YES
• bring together all AKIS actors
• connection between ≠ AKIS levels
• create contact between research & farmers
• methology of reseach result delivery more effective
• show researcher influence of research on farmers
STAPLES


SONIA
BARRIERS
entrepreneurs
SME. horticulture
competition, benefits to share knowledge with others. when not back
obligation by regulation., not on free base
risk aversion → back to conventional practices (economic)
common vocabulary.
language (national) + scientifical/technical)
common interest when ≠ product systems.
silyners to share
what is innovation for 1 is not for others.
technology (digital)
gap between institutions : project not funded
lack understanding betw. ≠ actors : grassroot knowl. (farmers needs)
communicat°
personnality farmers : color (intrav./extrav.)
how to reach
who is transfering knowl.? advisors trust ? training.
and how
SOLUTIONS / STRATEGIES
soft skills
.com → who and how : reliable partner, trustr., trained *
↳ ≠ tools to com : videos, images, interactive (menti)
* right com channels, contracts.
* needs « audience knowledge
group dynamic
dissemination.
younger farmers // ambassadors
translators,
. Competit°
gap betw. demo farmers and public.
like comparison betw. farmers : winners
build on the existing links (same company // partners)
also acid
cooperatives
discuss-gps (open-minded)
personnality
+ cultural
(out of the box)
STAPLES



Laura

Barriers for optimal knowledge flow in the local AKIS

- History of top-down transfer of KE. (UK, France) → breaks interaction between people
- There is no management in an AKIS. How to organise a K.F in such an organisation? (more difficult than in projects)
  - parallel roles.
- In the Netherlands: commercialisation of the AKIS (competition) → advisory services only connect in projects when you share funds.

Germany: information does not go to the farmers. Info is just put on a platform. Farmers don't know it is there.

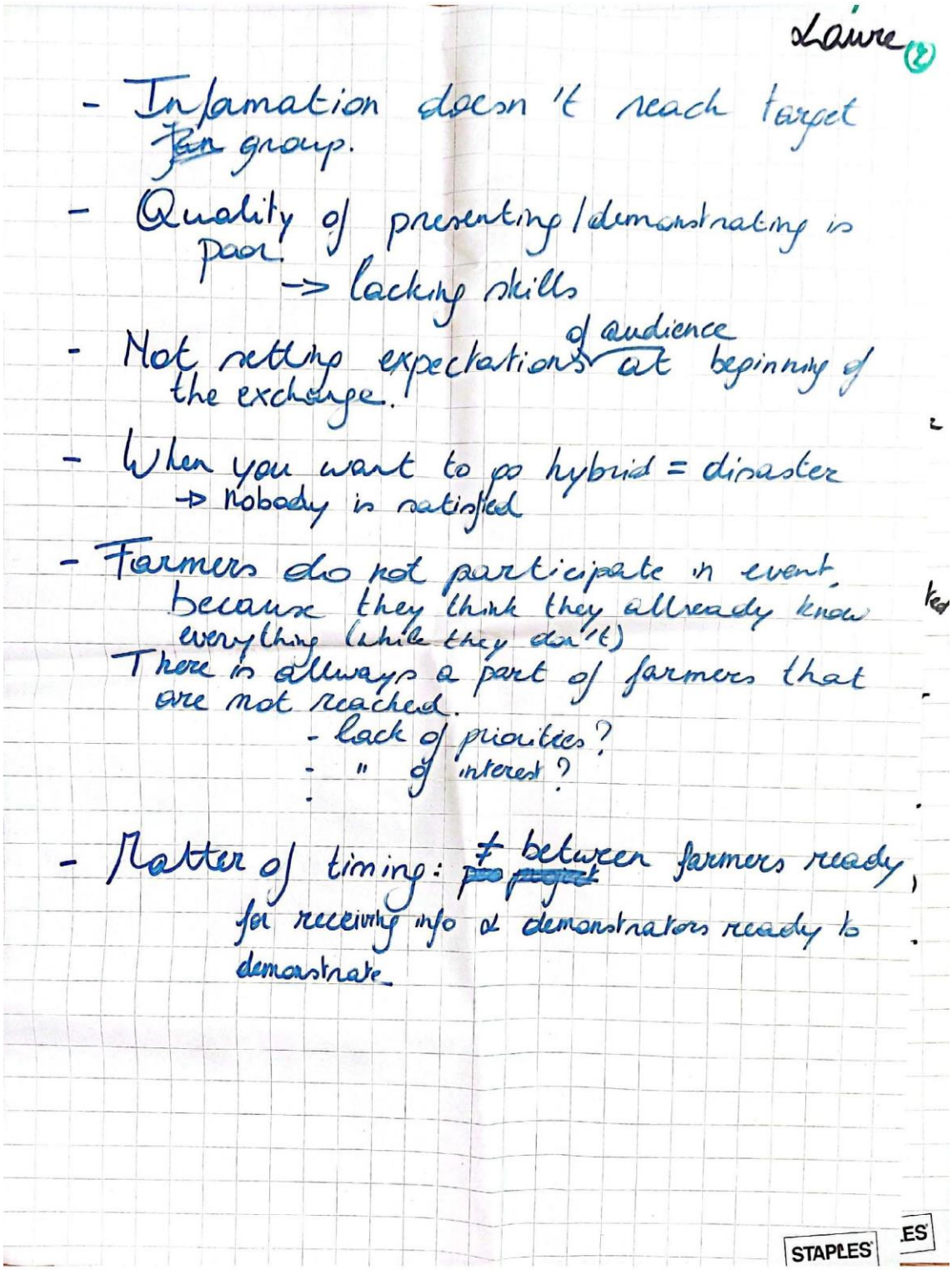
- Demonstrater didn't involve farmers who where there

Preaching: lack of facilitation skills.

Structural AKIS: too little budget of technology development is going to KE.

Skills

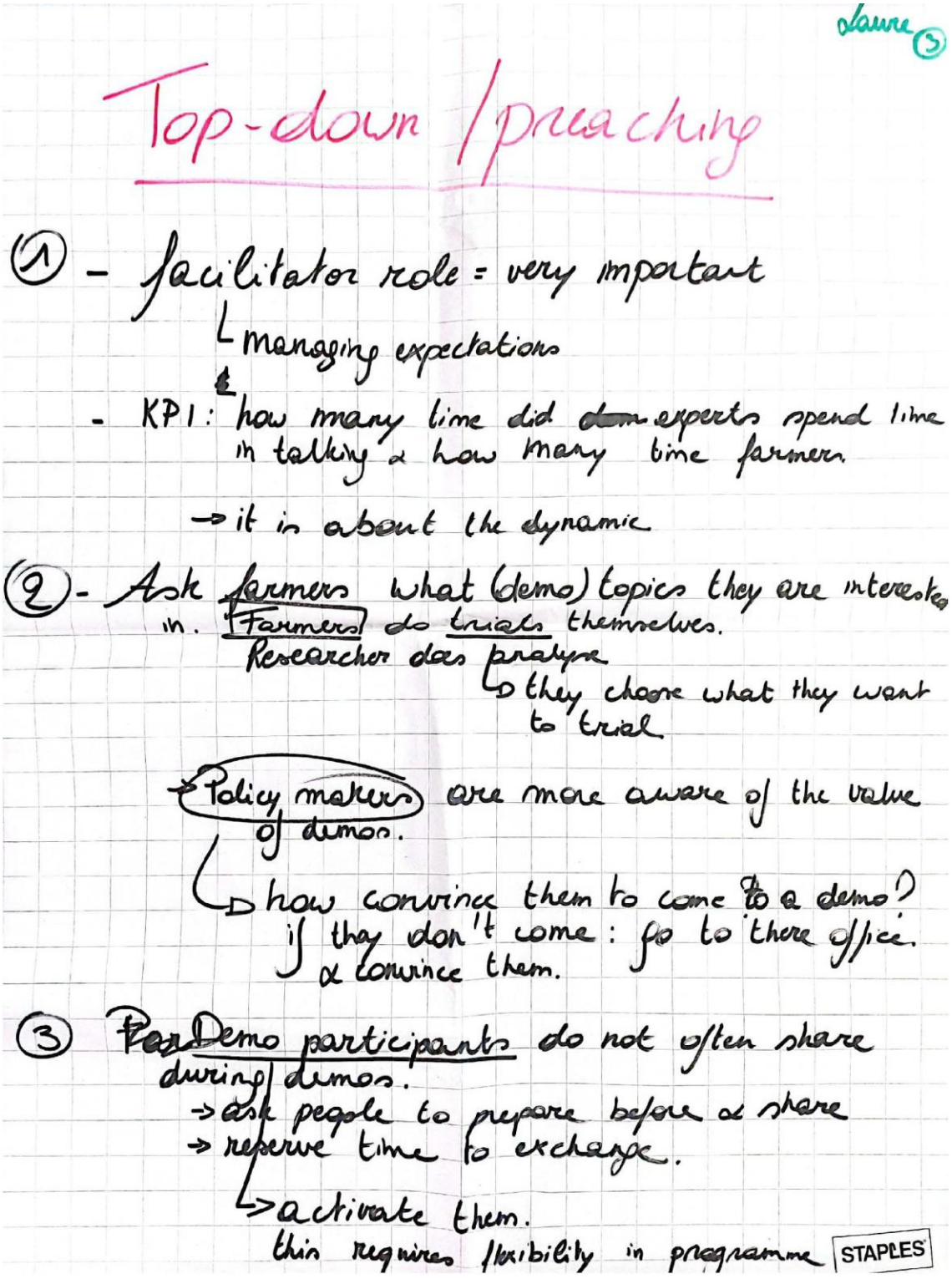
STAPLES

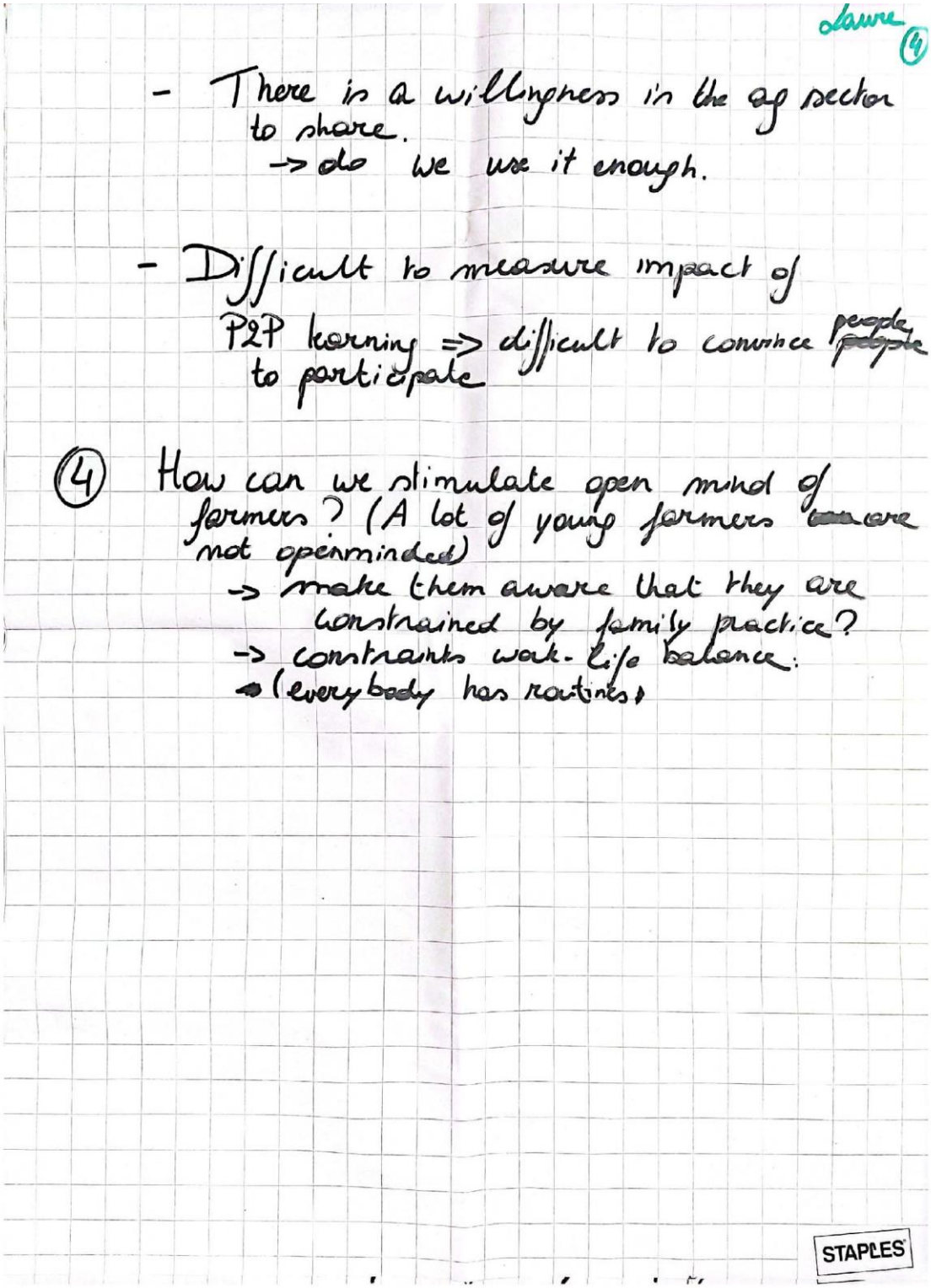


Laure (2)

- Information doesn't reach target group.
- Quality of presenting / demonstrating is poor
  → lacking skills
- Not setting expectations of audience at beginning of the exchange.
- When you want to go hybrid = disaster
  → Nobody is satisfied
- Farmers do not participate in event because they think they allready know everything (while they don't)
  There is allways a part of farmers that are not reached.
  - lack of priorities?
  - " of interest?
- Matter of timing: ≠ between farmers ready for receiving info & demonstrators ready to demonstrate.

STAPLES ES


Laura (3)
Top-down / preaching
(1) - facilitator role = very important
└ managing expectations
&
- KPI: how many time did dem experts spend time in talking & how many time farmers
→ it is about the dynamic
(2) - Ask farmers what (demo) topics they are interested in. Farmers do trials themselves.
Researcher does analyse
└ they choose what they want to trial
→ Policy makers are more aware of the value of demos.
└ how convince them to come to a demo?
if they don't come: go to there office & convince them.
(3) For Demo participants do not often share during demos.
→ ask people to prepare before & share
→ reserve time to exchange.
└ activate them.
this requires flexibility in programme
STAPLES

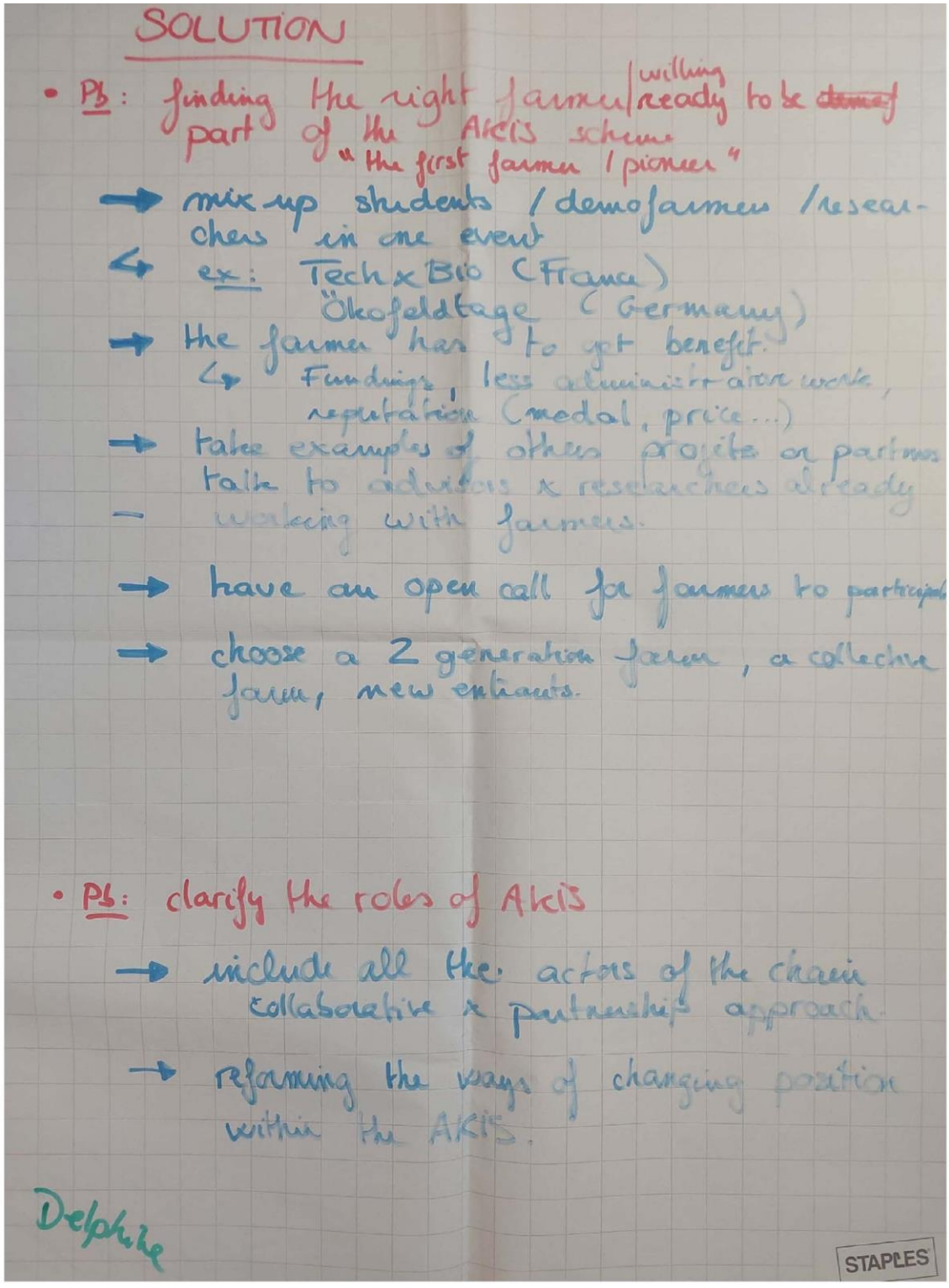

Laure (4)

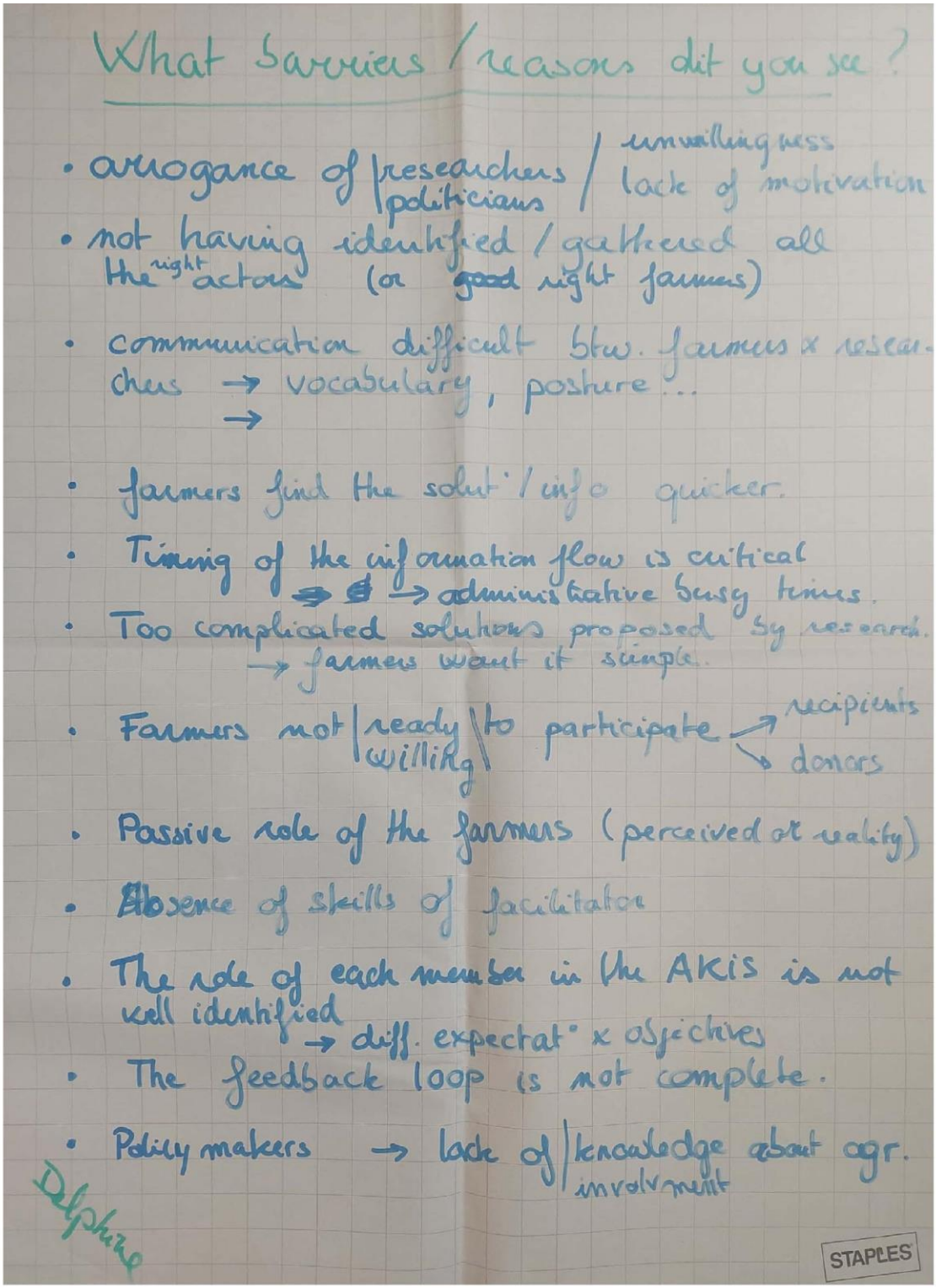
- There is a willingness in the ag sector to share.
  -> do we use it enough.

- Difficult to measure impact of P2P learning => difficult to convince people to participate

(4) How can we stimulate open mind of farmers? (A lot of young farmers are not openminded)
  -> make them aware that they are constrained by family practice?
  -> constraints work-life balance:
  -> (everybody has routines)

STAPLES


SOLUTION
• Pb: finding the right farmer/willing/ready to be ~~demo~~ part of the AKIS scheme
"the first farmer / pionner"
→ mix up students / demofarmers / researchers in one event
↳ ex: Tech x Bio (France)
Ökofeldtage (Germany)
→ the farmer has to get benefit.
↳ Fundings, less administration work, reputation (medal, price...)
→ take examples of others projets or partners
talk to advisors x researchers already working with farmers.
→ have an open call for farmers to participate
→ choose a 2 generation farm, a collective farm, new entrants.
• Pb: clarify the roles of AKIS
→ include all the actors of the chain
collaborative x partnership approach.
→ reforming the ways of changing position within the AKIS.
Delphine
STAPLES



What barriers / reasons did you see?

- arrogance of researchers / politicians / unwillingness / lack of motivation
- not having identified / gathered all the right actors (or good right farmers)
- communication difficult btw. farmers & researches → vocabulary, posture...
  →
- farmers find the solut° / info quicker.
- Timing of the information flow is critical
  ⇒ $ → administrative busy times.
- Too complicated solutions proposed by research.
  → farmers want it simple.
- Farmers not ready / willing to participate → recipients / donors
- Passive role of the farmers (perceived or reality)
- Absence of skills of facilitator
- The role of each member in the AKIS is not well identified
  → diff. expectat° x objectives
- The feedback loop is not complete.
- Policy makers → lack of / knowledge about agr. involvement

Delphine

STAPLES

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