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AGRICULTURE & INNOVATION



# EIP-AGRI Focus Group

## Mixed farming systems: livestock/cash crops

**MINIPAPER 3: The perspective of specialised farmers across Europe**

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## 1. Introduction

The mini-paper explores the view of European farmers on Mixed Farming systems. The farmer is the key stakeholder in farm development, either in specialisation or in re-connecting crop and animal production. The farmer is in most cases the owner of the farm business, is responsible for the strategy and is manager and employee at the farm as well, so his perspective on mixed farming systems is important for any attempt to re-introduce the MFS concept in European agriculture.

Obviously, because most European farms are specialised, it is important to understand the drivers for specialisation first. If MFS should be re-introduced, it should outweigh the benefits of specialisation to get farmers into it anyway. Moreover, if specialised farmers would like to develop a MFS, what are the barriers they could encounter? And how could they overcome these barriers or deal with them?

## 2. Current situation: specialised farms and regions

As said in the introduction: European agriculture has specialised at farm and even at regional level. This development started mainly from the 1950s and is still going on. Why could this happen? And how does it translate to drivers for specialisation at farm level?

The availability of (cheap) chemical fertilisers and imported (protein) feed allows farms to specialise into crop or livestock production. Moreover, the protectionist agricultural policy of the EU and the communist countries guaranteed stable product prices and incomes, reducing the risk of specialisation. Although this protectionist policy is now replaced by a liberal, open market policy (e.g. removing price subsidies, market interventions and production quota systems), specialisation is still enhanced: because of the increased economic competition between production areas, specialised farms are concentrated regionally, depending on soil and climatic conditions, infrastructure and supply chain organisation.

From a specialised farm point of view, re-introduction of a new production activity is often very unattractive. It often requires new hardware (equipment, buildings), knowledge and skills, networks, chain partners etc. Moreover, in a specialised region, these requirements are difficult to get: all partners of the farmer are specialised as well, e.g. education, suppliers, advisors and cooperatives. Additionally, the economies of scale play an important role in the ongoing specialisation: in most cases, spending the investment budget in the existing (specialised) business is much more efficient, compared to the start of a (relatively small) new activity besides the current business. Combining crop and livestock production could also increase the seasonal labour peaks (plant and harvest time) and the exchange of workforce is limited by the requirements of specialist skills. Another barrier is the sectorial regulation and administrative schemes: for a mixed farm, the bureaucracy and administrative workload probably doubles, compared to a specialised farm.

However, although specialisation has obvious advances for farmers, it also has a downside. Due to the withdrawal of market intervention policies, the market volatility has increased, causing high income risk for specialised farms. Moreover, specialised crop farms all over Europe have problems with maintaining organic matter content and soil fertility. While specialised livestock farms (and regions) are facing increased costs and difficulties to get protein-rich feed, due to the increasing pressure on the use of imported (GMO) soybeans. These challenges result in a renewed interest in the mixed farming system throughout Europe.

### 3. Innovation process and fail factors to develop MFS

Knowing that the majority of European farms is specialised, the challenge is to realise the benefits of MFS without losing the main advantages of specialisation. In this paragraph, the cooperative MFS is explored.

#### The cooperative MFS

As argued before, re-introduction of livestock production on an arable farm, or arable production on a livestock farm could be quite difficult and costly. However, could cooperation between specialised farms, exchanging feed, manure, land, labour and knowledge be a promising way to organise MFS without losing the advantages of specialisation?

#### Need for structure and guidance over participating farms

First of all, through feed, land and manure markets, specialised livestock and crop farms are already connected. Dairy farmers already buy feed, directly from arable farmers or from traders and other commercial actors. They also sell manure to arable farmers, directly or via brokers/traders. In some countries, specialised dairy farms also rent land to specialised arable farmers to grow cash crops. However, these types of exchange between arable and livestock do not make a MFS in our view: the input-output relationships for feed and manure are not part of a MFS idea, but mainly for financial purposes. In most cases, these relationships are not structural and there is no mutual exchange (manure for feed). Moreover, several examples across Europe show that such relations allow specialised farms to intensify and specialise even further: dairy farms can have more cows per hectare if they outsource feed production to arable farmers and arable farmers can grow more cash crops if they rent land from dairy farmers.

Therefore, a cooperative MFS requires some kind of structure and central guidance over participating farms. On a very small scale of 2-5 farms, this could be in a more or less informal agreement between participants. This very direct cooperation between farmers could work for some (younger?) farmers, but many farmers like the individual freedom and won't like to share responsibility at strategic, tactical and even operational level. In this respect, there are big differences between farmers, sectors and regions. Moreover, small-scale cooperation requires quite intensive communication between farmers, which limits the distance between participating farms. The costs for logistics could also limit the distance, because small scale cooperation often causes inefficiency in transport (small volumes, transport by tractors).

On a larger scale, more formal organisational formats will develop: in some countries, cooperatives take this role (France, Netherlands), in other countries cooperative advisory services will do (Denmark). In former communist countries, cooperatives are still not popular amongst farmers, while commercial companies are favourite. This could be a barrier for MFS development across specialised farms, unless they become shareholders of such companies or get other commercial benefits. Large scale cooperation could be even at country-scale: the cooperative organisation replaces the farmer-to-farmer contact, the logistics are much more efficient, so distances are less limiting for the MFS concept.

#### **Communal – an example from Galicia**

*In Galicia, there are forms of land ownership called "communal" with an ownership strategy of being owner of the land when you live in the town it comes from ancient German rules of ownership. There are excellent examples of cooperation, usually related to forest land, helped by the administration that makes the use of land profitable to the owners. All these lands were taken by the government between the thirties and seventies of the last century and with the establishment of the democracy came back to the descendents of the owners after claiming.*

### Need for shared interests and benefits

The power of the cooperative format is that it serves the interests of all participants: the profit of the cooperative is returned to them. The basic pre-condition for any cooperative is therefore that it has to be profitable on average. Therefore, a cooperative MFS should add to the profitability of specialised farms over all. This is not a very easy requirement, especially on short term. For example, when market prices for feed are high, dairy farmers will profit from long term cooperation with arable farmers, but their arable partners better could sell the feed to the market. This underlines the fact that MFS should always combine mutual benefits: if the arable farmer gets manure or land for cash crops in return for feed production, the relationship could be more structural. Another important added value of a cooperative MFS is the potential to increase and guarantee a certain quality, partly because of the more personal and structural relationships and mainly because of the brokering role of a cooperative to match and even manage supply and demand within the cooperative. For instance, depending on the feed strategy, dairy farms could require different feed inputs. If the cooperative has information about feed production from all participating arable farmers, they could make the optimal match. The same could work for manure, because livestock farms produce different types and qualities of manure, that could be optimised for arable farms with different crops and different soils.

### All activities in a cooperative MFS has to be profitable

In this way, participating farms could still be specialised and maintain the benefits of specialisation, but also profit from some MFS benefits. However, the market risks of specialised farms are difficult to solve in a cooperation between arable and dairy. Arable farms are already spreading their risk over several crops, so they won't benefit much from adding another activity to their business, in contrary to dairy or pig farms. Therefore, there are two strategies to solve this within a cooperative structure: a profitable cooperation between two profitable businesses or a profitable cooperation between multiple businesses that are profitable at different moments. In general business terms, any activity that is not profitable for several years, will be shut down or excluded from the cooperation. Therefore, the current crisis in dairy production could put pressure on any (cooperative) MFS initiative when there is no clear perspective on improved profitability in the near future.

### A cooperative MFS needs 'holistic' knowledge about MFS

As said, the cooperative MFS requires some kind of structure and central guidance over participating farms, enabling additional benefits to all participating specialised farms. Although specialised farmers in such cooperatives don't have to develop knowledge and skills, the cooperative certainly needs people that are able to have a basic understanding of the MFS concept and both crop and livestock production.

Currently, people from coops have specialised knowledge as well and don't know much about the other production sectors. In practice, this often results in advices to farmers that benefit only one production activity and could be negative for the other activity. For instance, intensive dairy farms in Northwest Europe are optimised on the highest milk production per cow, with a certain amount of silage maize. However, silage maize production puts quite some pressure on soil quality. So, the dairy advisor will advise to add more maize to the feed ration, while the arable advisor advises to grow less or even no maize at all. This makes clear that the 'management' requires knowledge and skills about MFS, both for MFS at farm level and at cooperative level, to 'design' the MFS and to manage it.

### Opportunities for cooperative MFS development

How could a cooperative MFS meet the needs described before? Where could the knowledge come from? And what could be the design and management principles for a cooperative MFS?

### Organic agriculture as a source of knowledge

Because the knowledge system (education and research) in most countries is specialised as well, the question is where these skills and competences have to come from. Organic agriculture could be an interesting knowledge source, because MFS is part of the holistic philosophy of organic farming. Moreover, organic farming cannot use chemical fertilisers and has to use organic feed inputs. Another basic feature of organic farming is the focus on soil management, including a balanced crop rotation with root crops and cereals, grass and leguminous crops. Such knowledge is valuable for sustainable MFS design for conventional farms as well: a sustainable soil-related production activity depends on sustainable soil management to maintain soil quality on long term.

### Three main design and management principles

The CanTogether case studies show several cooperative MFS approaches to link specialised livestock and arable farms at regional level. However, in some cases, the cooperation resulted in a higher level of specialisation and even worse environmental impacts. In contrary, the short-term economics are quite positive in these cases. Therefore, the question is: how could MFS initiatives overcome this short-term economic focus?

In general, interests tend to conflict on short term, but will converge on the long term: if environmental problems are not solved, farmers also will understand that this will have negative impact on their businesses, for instance through more restrictive regulation. Another example is the conflict between good soil management and short term economics: most farmers know that good soil management is very important for the profitability of a farm in the future. Therefore, MFS initiatives should start from the long term interests and work with farmers (and other actors) who are willing and able to think and act from that point of view.

A nice example of such a long term issue across (specialised) farming in Europe is the concern about soil quality and productivity. In intensive agricultural areas, soil condition is threatened by intensive land use, while soil quality in extensive areas is threatened by soil depletion through low inputs. A real concern of farmers and other actors about soil quality on long term could favour the interest in MFS concepts. This general concern is shared by arable and dairy farmers, although the reasons, problems and solutions are sector, region and even farm specific.

**In large parts of Europe, arable farms grow mainly cereals and oilseed rape.** *Due to the large farm size and the high energy costs, sometimes also due to erosion risk, these farms are also applying low-tillage systems. However, such farming systems became largely dependent on herbicides to control weed populations. Currently, weed resistance for common herbicides is a growing problem all over Europe. The limitations for fertiliser input (nitrogen) result in an additional problem with soil fertility. For instance in France, farmers are introducing leguminous crops in the rotation with cereals and oilseed rape, allowing better weed control and improving soil fertility. Most leguminous crops are sold for feed purposes, like alfalfa, soybean and peas.*

In several countries, farmers have a growing interest in the ecological principles and processes in agricultural systems, realising that agriculture needs to make more use of nature, because chemical inputs are gradually restricted and modern technology is not always positive for soil and animals. The concept of MFS suits very well to this approach, because it could put various crops and animals in natural functions towards each other. For instance, the function pigs could have in transforming organic waste in pork and manure, or the role of cows or sheep to make money from peat land that is only suitable for grassland. For extensive agricultural regions, for instance in Southern Europe, animals could also play an important role to collect organic matter and nutrients from the landscape and concentrate it on agricultural land. This principle is used in early stages of agricultural development and could possibly restart the agricultural development in some European areas.

Finally, MFS development and design has no blue-prints. The diversity in agriculture, farmers, soil, climate, infrastructure, policies and economics across Europe requires tailor-made solutions, developed and managed in close cooperation with local farmers, supported by advisors, supply chain actors and other relevant stakeholders. Such local MFS will have different set-ups, different objectives and different performances. This variety could make MFS initiatives difficult to compare across Europe, but very successful from the local actors' point of view.

### Innovation, learning and network approaches

Although there are still needs for further research on MFS, the main challenge is to work on innovation in practice. This requires a different approach, closely interacting with stakeholders, such as farmers, advisors, suppliers and cooperatives. In such interaction, learning is the key process: all participants have different knowledge and experience, which could contribute to the objective of the innovation process. This learning process requires facilitation to support the development of a common knowledge base and a common language, but also to develop common objectives, related to the interests of the different stakeholders.

For existing MFS, network and learning approaches could be very useful as well. MFS have to deal with different issues, compared to their specialised colleagues, so a network of MFS could help them quite well. In such networks, conventional and organic farmers could participate, and some experts could be in as well. A peer learning approach is very suitable for this purpose. A successful peer learning process requires proper facilitation, e.g. by an advisor. A peer network could benefit from e-tools, especially if the distance between participants limits the live interaction. For MFS, a peer learning network could primarily aim at existing MFS throughout Europe. However, the network could also give access to farmers and other actors who are interested in MFS, sharing experiences and examples from existing MFS.

In innovation, change is more important than increasing knowledge. It is important to understand the factors that enable or hinder change. The theory of Planned Behaviour mentions three main categories: attitude (the perceived benefits of change), ability (perceived knowledge, skills, experience to act in a different way) and the role of the context (pressure from outside to change or not to change). For MFS, this mini paper suggests that the benefits of specialisation still outweigh the benefits of MFS in most cases, affecting the attitude of farmers. It also shows the lack of experience and good examples of MFS, although most farmers have a basic understanding of the MFS concept. Moreover, the context does not enhance MFS development as well. If anyone would like to promote MFS to farmers, all drivers should be targeted effectively.

## 4. Needs for research

### More attention to socio-economic aspects of MFS

There is an overwhelming number of research and innovation projects on MFS, across Europe. Several projects are very recent or still ongoing. In general, MFS are often studied and promoted from an agro-ecological point of view. However, the key issues and barriers for MFS development are partly socio-economic issues, such as skills and competences, the role of the agricultural knowledge and innovation system, the economics and the policy framework. Therefore, new research and innovation projects on MFS should pay much more attention to these issues.

### Explore long term effects of MFS and show them to farmers

From the farmers' point of view, the long term effects of MFS could be the most convincing arguments. For instance, the risk profile of MFS in comparison to specialised farms or the effect of a different cropping system and organic manure on soil quality are potential benefits of MFS, but how to make these benefits clear to farmers? A comparison of existing MFS data with specialised farms could help to answer some of these questions in relatively short time. However, the policy and economic context has changed drastically, so comparing the risk profile of MFS and specialised farms over the past decade(s) is not very relevant for the future. For such issues, (environmental-) economic modelling and scenario studies could be very helpful, although outcomes could be difficult to communicate to farmers. Moreover, these modelling studies could also include long-term effects on the regional economy and environment.

For impact of various MFS characteristics on soil quality, existing models could be helpful, e.g. on organic matter dynamics. However, such models have limitations and outcomes could be difficult to communicate to farmers. Long term experiments could be much more relevant for this purpose, and even support model development. Such experiments could be based on research stations, but in some cases a proper monitoring programme of real farms (specialised and MFS) could work as well.

## Risk management strategies for MFS

Risk management is an important issue in MFS development. In theory, multiple activities is an effective strategy to spread income risk. However, as explained in this mini-paper, specialisation is also highly profitable. However, the current situation in dairy farming, caused by overproduction since the quota have been removed, shows how vulnerable businesses are, when depending on one single product. Normally, no business would go into any activity or look for cooperation if there are serious financial concerns, without a clear view on improvement. The question is how MFS could deal with this issue. On short term, the best option is to wait till the situation on dairy production has settled. On the long term, MFS should be tested on such scenarios to prove their economic robustness, but also for the farmers' attitude to cooperation under such conditions. Game theory could be suitable to analyse behaviour of farmers under different conditions and cooperative strategies.

## 5. Recommendations for how to ensure a broader take up

### Interactive design approaches

Because MFS have to be developed for specific situations and because MFS are complex systems, interactive design approaches could be very effective. There are several interactive design approaches available, for instance Bos and Grin (2012). In such processes, all relevant stakeholders (farmers, experts, private and public actors) are (and should be!) involved. They contribute to the design criteria, they will discuss and adapt the design itself and play an important role in the realisation of the design in practice. Such approaches could be part of local/regional operational groups. There is one major point for attention: the design process should not only focus on the technical and agronomical part of the system, but also on the socio-economic part. On the social part, farmers tend to perceive cooperation as a loss of freedom and independency if they have no experience in cooperation, while experienced farmers are much more positive on the social part. This is a serious issue in interactive design of (cooperative) MFS with farmers.

### Participatory learning approaches

The examples of existing MFS and the experience of MFS farmers are important sources of knowledge for MFS development throughout Europe. Because part of this knowledge is tacit knowledge, a participatory learning approach is very suitable to make this tacit knowledge more explicit. First recommendation is to create a peer learning networks between existing MFS: the diversity across Europe could enhance learning options and could also reduce the isolated position of these farms in a specialised world. The peer learning networks could contain both conventional and organic MFS. Such networks require proper facilitation and organisation, to identify learning issues, support the exchange of (tacit) knowledge within the network and organise access to relevant sources of knowledge outside the peer network. This approach could fit quite well in the Operational Group concept of the EIP.

Although a peer network by definition exists of peers (experienced people), it could be valuable to organise limited access for farmers and other actors (advisors, research, policy makers) who are interested in MFS, for instance through seminars, excursions and thematic networks. E-tools, such as web forums, could also be used to interact with external people. EIP could support such approaches as well.

### Educational and training system

The specialist education and training system is not delivering (people with) knowledge on MFS. The teachers and trainers are mainly specialists, and so are the students and trainees. It will be very hard to change the structure of the system, but it might be less difficult to solve the problem in a practical way: projects with teachers or trainers, farmers, advisors etc. could help to increase the knowledge and understanding of 'the other sector' and the pros and cons of cooperation. They also could participate in interactive design processes as experts.

In most countries, organic education and training is much more integrative (holistic). Depending on the social gap between conventional and organic agriculture, it could be very effective to link conventional with organic education and training. There are several successful examples in Europe, such as an organic advisor who is training conventional arable and dairy farmers in soil management.

## 6. Epilogue

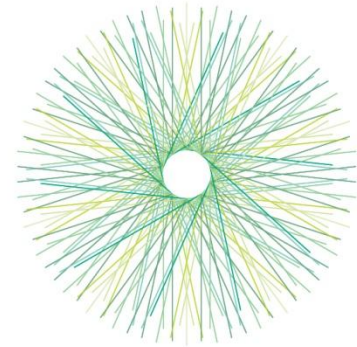
Several times during the focus group meetings, the question came up if farmers were unwilling to go into MFS, because of their conservative attitude, and as a consequence, attempts should be made to change the attitude of farmers. In our view, this is far too simple. As argued in this mini-paper, (professional) farmers are running a farm business to generate a living for their family, and from this perspective specialisation is still an attractive strategy. However, because specialisation also narrows the competences, skills and networks of farmers to a specific production branch, it becomes more and more difficult to imagine the ins and outs of cooperation with another production activity. Moreover, the idea of MFS often suggests a long-term commitment to other farms, limiting the perceived freedom of a farmer. In that sense, it is understandable that (specialised) farmers are generally negative to MFS: they can't imagine the concept and the potential benefits and perceive limitations to their freedom as a farmer. Another issue could be the time horizon: if farmers are challenged to think about long term interests, MFS could become more attractive, e.g. if it contributes to soil quality or the replacement of scarce inputs.

Another factor that could trigger the negative response of farmers to MFS, could be the conventional top-down approach from research and policy makers. As argues in this mini-paper, MFS projects are strongly focused on the ecological benefits, with a blind spot for the practice and perspective of the farmer. Secondly, many MFS designs and concepts are often generic and difficult to adapt to local and farm-specific conditions. Thirdly, many MFS approaches focus on the MFS at farm level, while the cooperative MFS could be much more attractive and feasible.

So, in our view, MFS projects and initiatives should respect the farmer perspective much more. However, the farmers' negative attitude to MFS could be discussed if this is based on a limited viewpoint as a specialised farmer, with the MFS at farm level in mind and only thinking about the short term consequences. There are several approaches and theories to deal with these issues, mainly used in coaching, Human Resource Management, management, group learning and psychology. Some of these approaches are reflective, making people more aware of their behaviour, attitude, norms and values, while other approaches are more actively aiming on a change in mind set, attitude or behaviour. These approaches could be very relevant for MFS, because of the strong social component (cooperation with other farmers). An important notion for any attempt to work on people's behaviour, attitude or believes is that it should be explicitly agreed on by the people involved. It is not a matter of manipulating people from outside, but supporting them to reach self-chosen objectives through personal development.

Finally, the discussions within the Focus Group underlined the enormous diversity in agricultural Europe. Soil and climatic conditions cannot explain the variety in farm structure and agriculture only, also the political framework, market structure, culture and history play an important role. Although specialisation is a trend all across Europe, the appearance of specialised farms greatly differs all over Europe. Therefore, if MFS will develop in Europe, they will look different across Europe as well. Any initiative to enhance MFS should take this diversity into account and utilise it as an opportunity for learning.





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**The European Innovation Partnership 'Agricultural Productivity and Sustainability'** (EIP-AGRI) is one of five EIPs launched by the European Commission in a bid to promote rapid modernisation by stepping up innovation efforts.

The **EIP-AGRI** aims to catalyse the innovation process in the **agricultural and forestry sectors** by bringing **research and practice closer together** – in research and innovation projects as well as *through* the EIP-AGRI network.

**EIPs aim** to streamline, simplify and better coordinate existing instruments and initiatives and complement them with actions where necessary. Two specific funding sources are particularly important for the EIP-AGRI:

- the EU Research and Innovation framework, Horizon 2020,
- the EU Rural Development Policy.

**An EIP-AGRI Focus Group\*** is one of several different building blocks of the EIP-AGRI network, which is funded under the EU Rural Development policy. Working on a narrowly defined issue, Focus Groups temporarily bring together 20 experts (such as farmers, advisers, researchers, up- and downstream businesses and NGOs) to map and develop solutions within their field.

**The concrete objectives of a Focus Group** are:

- to take stock of the state of art of practice and research in its field, listing problems and opportunities;
- to identify needs from practice and propose directions for further research;
- to propose priorities for innovative actions by suggesting potential projects for Operational Groups working under Rural Development or other project formats to test solutions and opportunities, including ways to disseminate the practical knowledge gathered.

**Results** are normally published in a report within 12-18 months of the launch of a given Focus Group.

**Experts** are selected based on an open call for interest. Each expert is appointed based on his or her personal knowledge and experience in the particular field and therefore does not represent an organisation or a Member State.

\*More details on EIP-AGRI Focus Group aims and process are given in its charter on:

[http://ec.europa.eu/agriculture/eip/focus-groups/charter\\_en.pdf](http://ec.europa.eu/agriculture/eip/focus-groups/charter_en.pdf)



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