Organic Knowledge Network on Monogastric Animal Feed

OK-Net EcoFeed

Description of innovation groups

Deliverable number	*D.3.1*
Dissemination level	**Public**
Delivery date	*11/10/2021*
Status	*Final*
Lead beneficiary	*ORC*
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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 773911. This communication only reflects the author's view. The Research Executive Agency is not responsible for any use that may be made of the information provided.

Document Versions

Version	Date	Contributor	Summary of Changes
0.1	18/12/2018	Lindsay Whistance	First draft
0.2	21/12/2018	Bram Moeskops	Revision
0.3	21/12/2018	Lindsay Whistance	Final Version
0.4	22/07/2021	Request for revision by REA	The submitted Deliverable D3.1 was actually named “Synthesis report on Innovation Group Framework” not "Description of Innovation Groups", and had contents different from the declarations in the DoA and the Data Management Plan. The DMP defined specific requirements for Deliverable D3.1 “Description of innovation groups”, with DMP Annexes 5 and 6 outlining detailed data that should be collected and published. The consortium failed to comply with these DMP requirements, and did not present the promised descriptions of innovation groups.
0.5	08/10/2021	Lindsay Whistance	Revision
1.0	11/10/2021	Ambra De Simone	Final Version

Executive summary

The objective of OK-Net EcoFeed Task 3.2 was to “develop a common framework to collect data about all Innovation Groups (IGs) and their relevant context factors”. The framework covers “essential information about possible causes of unsatisfactory performance of organic monogastrics systems in terms of feeding” and identifies the predominant challenges and solutions which are used when addressing these issues throughout the value chain. Additionally, the collected data includes a survey of methods and tools for knowledge exchange used by the IGs, systems used to overcome language barriers as well as considering gender aspects. The data were collected through Innovation Group meetings in eight European countries and supplementary interviews. The IG meetings were predominantly face-to-face with one on-line survey and were followed by Science Bazaars in each country. Interviews were completed through face-to-face meetings, electronically or by telephone. The meetings were attended by 100 IG members, 72% of whom were farmers and 28% were advisors and feed companies. Of the three Thematic Groups represented in the project, pigs were the focus in six groups, layers in five and broilers in five.

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I. Introduction

Current European organic legislation requires that farmers should be "*primarily obtaining feed for livestock from the holding where the animals are kept or from other organic holdings in the same region*" (Council Regulation EC, 2007). Updated legislation that comes into force in 2021 states that for monogastrics, "*at least 30 % of the feed shall come from the farm itself or, if this is not feasible or such feed is not available, shall be produced in cooperation with other organic or in-conversion production units and feed operators using feed and feed material from the same region.*" (Regulation EU, 2018).

A key component of OK-Net EcoFeed is to engage with the organic monogastric farming and feed industries to identify current availability of regional, organic feed for pigs and poultry in order to assess how current availability can be increased. To facilitate this, Innovation Groups (IGs) were established under the three Thematic Groups of Pigs, Layers and Broilers. IG meetings were then held in each of eight EU countries with further data being gathered through interviews. Data collection included current practice, challenges, potential innovative solutions and where and how knowledge is exchanged.

II. Method

In each country, Innovation Groups were initiated as part of the OK-Net EcoFeed project though members in France and Denmark were recruited from existing pig and poultry groups. After participants had been recruited by the facilitator, the main approach to data collection was to undertake a series of Innovation Group meetings. Countries covering more than one Thematic Group were free to combine them within one IG if they wished to do so. Group membership is voluntary and all groups are open to new members joining. The aim of the first IG meeting was to discuss relevant innovations and ideas and to begin to gather information needed for the monitoring framework. IG meetings were carried out in eight different European countries (see Figure 1) between 7th February and 16th April 2018, seven of which were face-to-face and one was an on-line survey where poultry farmers were keen to avoid any risk of spreading avian influenza during the winter/spring high-risk period. Meetings followed an agreed protocol (see Annex 1). Group management and data collection was carried out by IG facilitators in each country.

Figure 1 Countries participating in OK-Net EcoFeed Innovation Groups. Pin colours represent the three Thematic Groups. Pink = pigs, blue = layers and yellow = broilers. https://www.mapcustomizer.com/

IG meetings were followed by a second meeting that was designed as a Science Bazaar and these took place between 14th June and 20th September 2018. Both IG groups and other interested stakeholders were invited. The aims of the Science Bazaar were to formally report back to the group the outcome of the first IG meeting, to present relevant scientific information and to discuss potential innovative solutions as well as any associated challenges or bottlenecks (see Annex 2). Relevant, up-to-date scientific information was presented by a scientist and the relevance of the information was determined by its inclusion in a mapping library, created and populated by project partners (in WP2, D2.1). Official meetings were then supplemented with face-to-face, telephone or electronic interviews to collect outstanding quantitative and qualitative data required for the data framework (see Annex 3 and Annex 4, respectively).

Ten IG meetings (see Table 1) and 9 Science Bazaars were held with a total of 100 group members attending these events. Where meetings were attached to larger organised events, such as conferences, the number of other contributors was not recorded.

Table 1 Details of first Innovation Group meetings

Partner	Country	Facilitator	Thematic Group	Meeting type	Location	Date	No. attendees
ICROFS/ Aarhus University	Denmark	Sanna Steenfeldt	Layers	Face to face	On farm	20/03/2018	8
ICROFS/ Aarhus University	Denmark	Sanna Steenfeldt	Broilers	Face to face	On farm	14/06/2018 to 11/07/2018	6
AIAB	Italy	Eugenio Papi	Layers, Broilers	Face to face	AIAB office, Padua	15/03/2018	6
ITAB	France	Fiona Marty, Thierry Mouchard	Layers, Broilers	Conference call	-	16/04/2018	13
Bioland	Germany	Elias Schmelzer	Pigs, Layers, Broilers	Face to face	Poultry Conference, Malchin	27/02/2018	10
Soil Association	UK	Jerry Alford	Pigs, Layers, Broilers	Online	Survey	Completed by 28/03/2018	19
Danube Soya Association	Serbia (Austria)	Jovana Djisalov	Pigs	Face to face	DSA office, Novi Sad	26/03/2018	8
Ecovalia	Spain	Ángela Morell Pérez	Pigs	Face to face	Ecovalia office	21/03/2018	6
Scania	Sweden	Maria Wivstad	Pigs	Face to face	EPOK office, Skepparslöv	07/02/2018	12
ITAB	France	Antoine Roinsard, Thierry Mouchard	Pigs	Conference call	-	04/04/2018	12

III. Innovation Groups: size and composition

Including facilitators, Innovation Group sizes currently range between six and 31 members (see Table 2). The largest group size was the UK IG where the three themes of pigs, layers and broilers were all addressed within one facilitated group. IGs consist predominantly of farmers, advisors and feed companies with some IGs including individuals from other stakeholder groups. The Austrian/Serbian group was focussing on the quality of small-scale, on-farm processing of soya beans and so included members of this stakeholder group. The Spanish IG also had as members, a nutritional scientist from the University of Córdoba, a representative of the CAAE certification body and a representative of the Fundación Monte Mediterráneo, an organisation focussing on managing the Dehesa system, using organic methods. As stated, group membership is voluntary and all groups are open to new members joining so that IG composition may change over time.

Table 2 Innovation Group members at the beginning of the project.

Country	Thematic Group	Farmers	Feed advisors	Feed companies	Other
Denmark	Layers	4	1	1	
Denmark	Broilers	3	1	1	
Italy	Layers, Broilers	5	1	4	
France	Layers, Broilers	7	2	2	
Germany	Pigs, Layers, Broilers	6	1	3	
UK	Pigs, Layers, Broilers	27	1	3	
Serbia (Austria)	Pigs	1	1	0	6
Spain	Pigs	4	0	1	3
Sweden	Pigs	10	1	2	
France	Pigs	5	1	1	

Of the 72 farmers, 22 were female (see Figure 2). Age ranges of the group members were noted (see Figure 3) with the overall average age for males being 46 and that of females being slighter higher at 48 (data missing for Germany and UK). The number of years that farmers have been fully certified as organic ranged from one year to more than 40 years. The exception to this was one pig farmer in Scotland who has recently relinquished organic status for pigs due to an inability to source any regional organic feed.

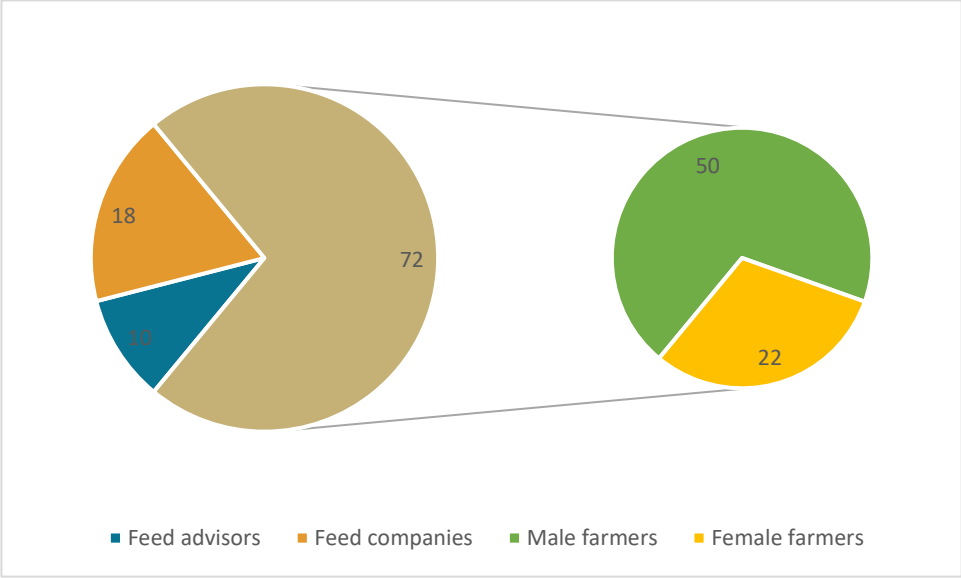

Figure 2 Major Innovation Group members by profession

Farm sizes varied between 1.4 and 1400 hectares with land ownership ranging between 30 and 100 percent of the total area farmed, except for one farmer who rented all the land farmed. Advisors in IGs have been offering advice on organic feed for between four and 20 years and feed companies have been selling organic feed from three to 22 years. In Serbia, no IG members are from feed companies since there are currently no feed companies providing organic feed for pigs and poultry.

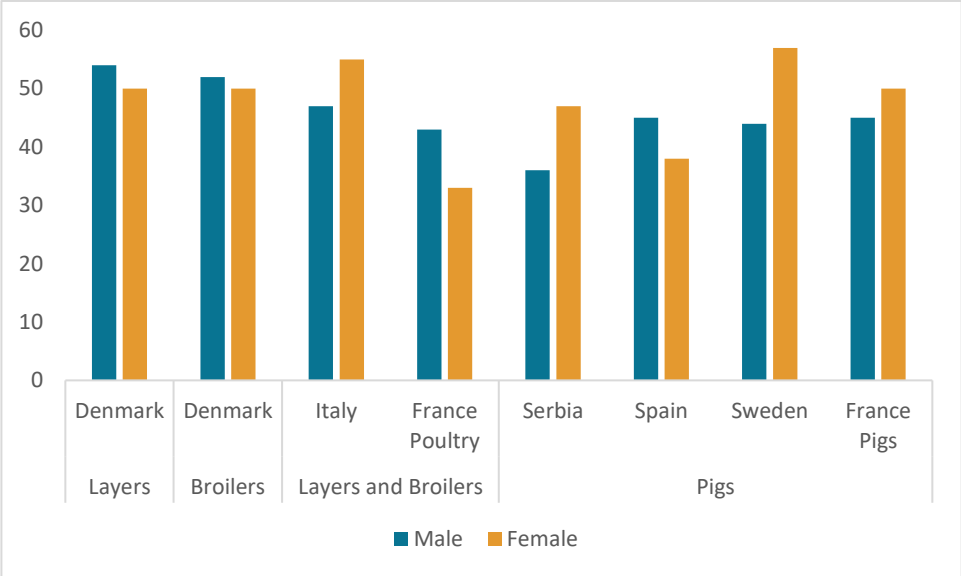

Figure 3 Mean ages of group members in each country (data missing for Germany and UK)

III.1 Target Animal Enterprises

The Target Animal Enterprise (TAE) data indicated a wide range of herd and flock sizes represented in the groups. Recorded herd and flock sizes represent the mean number of animals present on farm in a year. Sow numbers ranged from 10 to 168 whilst growing pigs (piglets and fatteners) were managed in larger numbers from 270 to 3,600. The largest pig TAEs were based in Sweden and the smallest in Serbia. In general, poultry was kept in much larger numbers compared to pigs. Mean broiler flock sizes ranged between 1,000 and 57,600 in each production cycle. The largest broiler flocks were in Denmark where individual group size is restricted to 4,800 individuals, so the flock of 57,600 is divided into 12 separate groups. This farm produces around 250,000 birds annually. Mean layer flock sizes were the largest of the three Thematic Groups represented in the project with mean flock sizes ranging from 250 to 171,000 hens. As with broilers, the largest layer flocks were in Denmark where group size is restricted to 3000 individuals, so the flock of 171,000 is divided into 57 groups.

Typical stocking density was recorded for land used for pasture and for growing animal feed. Stocking density varied as widely as did herd and flock sizes within and across groups. For layers, stocking density ranged between 36-296 birds /ha and for broilers, this was 80-1,000 birds /ha. For the 1,000-bird /ha farm in UK, the majority of the 170 hectares of land was used for producing feed for the dairy herd and followers. Stocking density of pigs ranged as follows; sows 1.1-6 /ha; weaners 6-65 /ha and growers 0.9-38 /ha, where the low grower stocking density of 0.9 /ha was recorded for the Dehesa system in Spain.

In addition to the TAE, other animal enterprises (OAEs) were recorded for some farms in all countries other than Germany, Italy and Serbia. For farms in UK, Sweden and France, the predominant OAEs were beef or

dairy cattle, ranging from 20 beef cattle to 600 milking cows and heifers. One broiler farm in Denmark has 16,100 sows, piglets and fatteners and a small layer farm, also in Denmark, has 10,000 ducks, 1,500 turkeys and 1,200 geese. The pig farm in the Dehesa system in Spain is again noteworthy in its number of OAEs, though numbers of each are relatively low. On this farm, OAEs include 400 sheep, 20 suckler cows, 12 dairy goats, five horses and five donkeys.

III.2 General farm data

The general farm type for all associated farms was livestock and pasture though all but one farm recorded the growing of cereals and/or other crops. Horticulture (4), fruit growing (1) and forestry (1) were also recorded for six farmers. A pig farm in Spain is unique in the group since the Dehesa system, largely consists of permanent pasture and oak trees, where pigs graze and feed on acorns in mast years. Crops grown for animals (see Table 3) varied between countries with French farmers growing the greatest variety of crops.

Table 3 Crops grown on farm as animal feed

Crops grown on farm (Dry Matter Tonnes per hectare)	Italy, Layers and Broilers	DK, Layers and Broilers	France, Layers and Broilers	Germany, Pigs, Layers and Broilers	UK, Pigs, Layers and Broilers	Serbia, Pigs	Spain, Pigs	Sweden Pigs	France, Pigs
Beans	8	3-3.9	-	2.5-4.5	-	-	-	2.5-3.5	-
Peas	4	2.5-3	1.5	-	-	4.7-4.9	-	-	-
Soya	3.5	-	-	-	-	2.6-2.8	-	-	1
Barley	-	3-4.25[1]	3	-	-	4.5-5	-	3.5-4.5	2.5
Wheat	-	3.4-5.5	4	-	-	-	-	3.5-5.5	-
Rye	-	8-10	-	-	-	-	-	2.8-5	-
Oats	-	3.5-4.75	-	-	-	-	-	3-4	-
Triticale	-	-	4	-	-	4.2-4.3	-	5.5-6	3
Maize	-	-	6	-	-	9-11	-	-	6
Rapeseed	-	14-28[2]	-	-	-	-	-	2-2.5	1.5
Clover ley	-	-	-	10-11	-	-	-	-	-
Faba beans	-	-	1.5	-	-	-	-	-	2.5
Lupin	-	-	-	-	-	-	-	-	1.5
Lentils	-	-	1.5	-	-	-	-	-	-
Alfalfa	-	-	12	-	-	-	-	-	-
Spelt	-	-	4	-	-	-	-	-	-
Barley whole crop	-	-	-	-	10[3]	-	-	-	-

[1]Layers only; [2] Broilers only; [3]Other data missing for UK

Farmers were asked if they needed to balance the use of land between access for animals and food production. Unsurprisingly, responses ranged between 'yes' and 'no' but the reasons for the responses were varied. For example, a Swedish 'yes' farmer noted, "*Often at the farm, the farmer's first priority is pasture to the animals, then grain for feed, grain for food, and at last protein crops*", whereas the Spanish farmer with the Dehesa system qualified a 'yes' with "*in our region we work with long life cycles production, to this end we need to control the grass production (principal protein resource) on the land through managed grazing and land use*". Poultry farmers in Italy, France, Germany and UK did not find it necessary to balance land between access for animals and food production. A UK broiler farmer stated, "*No, the enterprise is 137 ha in size and the poultry occupy 18ha. Most of the arable land is devoted to growing feed for the birds*." For poultry farmers in Denmark, a 'no' was qualified with the response that "*the number of m^2 (4-6 m^2 per bird) is mandatory for outdoor areas and are always allocated and fenced. The remaining available ha are used for growing raw material for feed*."

III.3 Origins of feed

Innovation Group farmers were asked to record the origins of three categories of feedstuffs (fresh, preserved/stored and protein) fed to their TAEs and whether this feed was homegrown organic, purchased organic or purchased non-organic (see Table 4). It was not easy for all farmers to categorise feedstuffs in this way and some bought compound feeds where nutritional content was less easy to categorise. Additionally, in Denmark, compound feeds may have up to five percent non-organic feed content further increasing the difficulty of simple categorisations. In France, in the pig IG, this process appeared to be simpler, perhaps because farmers are part of a network where feed is produced locally and sources of all feedstuffs are known. The small pig farm in Serbia (5 ha with 30 pigs) was able to grow all feed required for their TAE and other larger farms (e.g., layer farms in Denmark) recorded their farms as being up to 100 percent self-sufficient in fresh and cereal feedstuffs for their TAEs and up to 88 percent self-sufficient when protein sources were considered. One UK farmer (layers) is, in theory, able to grow sufficient protein on farm for the TAE. However, despite beans growing well on the farm, there are no opportunities for de-hulling or toasting them. The beans are therefore sold and peas are then purchased as feed for the TAE.

Table 4 Origins of feed for the Target Animal Enterprise

Origins of feed (%)	Italy, Layers and Broilers	DK, Layers and Broilers	France, Layers and Broilers	Germany, Pigs, Layers and Broilers	UK, Pigs, Layers and Broilers	Serbia, Pigs	Spain, Pigs	Sweden, Pigs	France, Pigs
Homegrown organic		*			*		*		
Fresh	100	100	100	50	100	100	100	100	100
Preserved	50-100	100	0-100	50	-	100	-	47-100	45
Protein	-	0-45	0-20	-	-	100	-	-	30
Purchased - organic									
Fresh	0	0	0	45	0	0	-	0	0
Preserved	0-45	0	0-100	45	0-100	0	0-50	0-53	55
Protein	-	55-95	80-100	-	-	0	-	-	68
- non-organic									
Fresh	-	-	-	5	-	0	-	-	0
Preserved	-	-	-	5[2]	0-100	0	-	-	0
Protein	0-5	5[1]	3	-	-	0	-	5	2[3]

*Compound feed purchased; [1]5% in purchased compound feed; [2]Maize gluten and potato protein; [3]Yeast for weaners and lactating sows

III.4 When is monogastric feed production regional?

For monogastric farmers to comply with organic regulations, a proportion of "feed should be produced in the same region", but there is no accompanying definition of what is a region in this context. The term region is legitimately used at several levels e.g., climatic regions, geographical regions,

administrative districts, etc, so in order to understand IG responses group members were asked to consider when they believed feed to be regionally produced (see Table 5). Respondents were encouraged to respond in distances (km) or administrative divisions (e.g., country, village, etc.,), however alternative responses were also offered. The assessment of what was regional/acceptable fluctuated between EU, country and more local levels, typically depending on the current availability/value of different feed components.

Table 5 IG members' views of when feed production is regional

Innovation Group	Farmer	Advisor	Feed Company
DK, Layers	In DK as minimum In the same region, close to the farm would be optimal. If there is lack of protein sources some years it is OK to consider EU as a region.	In DK	From DK and also Europe. As close to Denmark as possible, but the need exceeds what is produced in the regions in DK.
DK, Broilers	For protein it could be Europe as it is very difficult to obtain sufficient protein in DK. For cereals, DK as minimum, but in the same region close to the farm would be optimal. If co-operatives could be made, it could be one of several solutions to increase the possibility for more local-grown raw material.	In DK	From DK and also Europe. As close to Denmark as possible, but the need for organic raw materials exceeds production in DK
France, Layers and Broilers	Same region - 300 kms	Same region and neighbour city Cooperative collect	-
Italy, Layers and Broilers	50 km	Same village	250 km
Germany, Pigs, Layers and Broilers	200 km For high-dose amino acids, availability in the EC would be sufficient. Other feedstuffs should at least come from own country, preferably from own region	The closer the more local Availability within the EC is decisive	Depends on the value of the feed required, Preferably from own country but availability within the EC would be preferable to all conventional feeds.
UK, Pigs, Layers and Broilers	Up to 50 km, within the same authority area, within the same country	-	-
Serbia, Pigs	Within 100 km.	When it is produced within one country	-
Spain, Pigs	Up to 150 km.	Better to consider the production of food at country level or EU level, although the concept is more adapted to what is produced in the same province or region.	Up to 200 km
Sweden, Pigs	In Skåne, southern part of Sweden.	Up to 300 km.	Up to 100-150 km
France, Pigs	Maximal distance for a farmer to deliver to another by tractor.	Region or country	-

III.5 Limiting factors to growing or sourcing regional organic feed.

Of the limiting factors to growing or sourcing regional organic feed, a lack of land and weather conditions were most common. Poultry farmers were more likely to consider weather as a limiting factor (see Table 6) though this is not clear why. Danish farmers noted that soil type can also affect any benefits from rain since sandy soils require irrigation and clay soils become waterlogged with similar levels of rainfall.

Table 6 Limiting factors to growing or sourcing regional, organic feed recorded by farmer in IGs.

Limiting factors for growing/ sourcing organic feed	DK, Layers and Broilers	France, Layers and Broilers	Italy, Layers and Broilers	Germany, Pigs, Layers and Broilers	UK, Pigs, Layers and Broilers	Serbia, Pigs	Spain, Pigs	Sweden, Pigs	France, Pigs
Altitude below 300 m	YES	YES	YES			YES		YES	
300 – 600 m		YES	YES	YES			YES		YES
Mean annual rainfall (mm)	789	800	-	275	750	351	600	750	800
Lack of land		YES	YES		YES	YES		YES	YES
Weather	YES	YES	YES	YES	YES				
Lack of soil inputs			YES			YES			
Lack of storage		YES				YES			
Lack of equipment		YES					YES		
Lack of seed						YES	YES		
Terrain too steep							YES		
Poor soils, erosion							YES		

III.6 Plants that can be grown in each region, past and future trials

Innovation groups members were asked what type of protein they believed could be grown in their region (see Table 7). Some IG members used this opportunity to comment on potential protein sources that may be produced following further improvements in, for example, technology and plant breeding.

Table 7 Possible sources of protein that can be grown/produced regionally.

Innovation Group	Farmer	Advisor	Feed Company
DK, Layers and Broilers	Sunflower, beans, pea, lupin, oat for dehulling, rape seed, oilseed radish, clover grass (for green protein concentrate), eventually soya beans if new varieties can be developed to a temperate climate. Mussels, starfish in the Danish Fjords. For starfish the quality of the product varies with the different seasons of the year and it is very important that the company producing the starfish meal, compensate for this variability if they want to deliver a uniform quality product.	Sunflower, beans, pea, lupin, oat for dehulling, rape seed, clover grass (for green protein concentrate), eventually soya beans if new varieties can be developed to a temperate climate Mussels, starfish in the Danish Fjords, and insect larvae	sunflower, rapeseed, beans, lupin, peas – however, the legumes mentioned are low in essential amino acids and not really useful. In the long-term green protein concentrate, mussels and starfish and insect larvae (as dried meal), but the applicability is dependent on development of new technologies for production and drying at acceptable cost levels.
France, Layers and Broilers	Soya (but we need better varieties) ; pea and faba beans (but difficulties in crop rotation)	Peas, Faba, Soya, fish	-
Italy, Layers and Broilers	Soya beans, beans, peas	Soya beans, Fava beans, peas	-
Germany, Pigs, Layers and Broilers	Plants with progress in breeding for methionine.	soy, alfalfa, clover, corn gluten, potato protein	Plants with progress in breeding for methionine. This would be optimal for legumes, as they are an important component in crop rotation in organic farming
UK, Pigs, Layers and Broilers	Peas, Field beans, Sunflowers, Lupins, Lucerne (data not available for Scotland)	-	-
Serbia, Pigs	Our region is good for soybean and peas production.	Soybeans is the best choice, because Serbia is one of European leaders in soybean production, with optimal agro ecological conditions. Also, peas.	-
Spain, Pigs	Natural grasslands, Leguminous plants, Cotton cake, Beetroot, Chestnuts, Gramineous plants, Sunflower cake, Rapeseed, Figs, Sub products from olives, sprouts and shoots	The most common cultivated species are peas, beans, vetch and chickpeas. There is potential for the cultivation of insects.	-
Sweden, Pigs	Faba beans, Rapeseed, Peas, Lupins	Faba beans, peas, rapeseed, lupins, ley crops	-
France, Pigs	Soya, lupins, rapeseed, sunflower, hemp, faba beans	Peas, Faba beans, Lupins, Soya, alfalfa, clover	-

When asked if they, or someone they know, has carried out any innovative feed trials, French, Serbian and Spanish pig and poultry farmers said 'no'. The Spanish pig farmer further noted that the Dehesa system is a traditional system where there "*is a balance between the free ranging grazing and mast feeding which is the essential factor endowing the protected product with fat of a type which is impossible to imitate by any other production method*". However, several novel ideas were recorded including the utilisation of by-products from existing food industries as well as "*trials to improve the production of sprouts and shoots*" and "*trials to appreciation of the natural grazing (alimentary) behaviour, in order to improve grazing techniques with pigs to avoid problems of over-grazing and soil erosion, while to promote animal well-being and production*". The Serbian pig farm has recently gained organic status but is active in visiting farms in other European countries who "*are supporting us and sharing with us innovations and knowledge in organic pig production*." However, a lack of funds and expertise were both barriers to carrying out trials.

Farmers in other countries said 'yes' to carrying out innovative trials. Poultry farmers in Italy have knowledge of trials with algae, pollen and by-products from the food industry. Future plans include finding "*a rough animal type with good production and low needs*." Danish poultry farmers have trialled the feeding of higher quality silages, small-scale feeding of insects and the de-hulling of oats. Further, a Danish broiler farmer has trialled reducing protein content in feed to avoid waste and to slow down growth rates and would like to continue to do so. However, before diets with a lower protein content can be fully implemented, greater knowledge of different genotypes with different growth potential and the specific nutrient (amino acid) requirements of different age groups is required. Danish layer farmers noted that since the planting up of 70 percent of outdoor runs is now mandatory, "*development of methods/technologies that could use part of the plants (trees, bushes, herbs, vegetables) could contribute with nutrients during spring, summer and autumn and increase the amount of local grown material to feed the layers*." They further noted ideas for systems and technology that improved the use of home-grown raw materials through feeding trials "*with different home-based strategies to assess the options for optimal feed composition to cover nutrient needs at different ages*." For German IG farmers, the focus was on trialling plants with better amino acid profiles to build on existing trials with, for examples, peas, beans, soy and alfalfa. In the UK IG, farmers have trialled making their own compound feed on farm (as pellets) and plan to trial the sprouting of grains as well as heat treating beans to improve usability.

III.7 Potential solutions and challenges to current problems.

Nine Science Bazaars took place in the eight countries with IGs. Focus areas of the meetings included identifying potential solutions to current problems along with any associated challenges or bottlenecks. Topics discussed were varied and, in some cases, what was believed to be a problem in one country was thought to be a solution in another. This was particularly the case with soya where growing appropriate soya varieties was in focus in Serbia, whilst Danish IGs highlighted that weather conditions in DK are not conducive to soya bean production and since Soya typically was sourced from outside EU, this was considered a problem. The topics discussed in each meeting are as follows:

In **France**, the Pig IG considered many approaches to addressing the organic protein availability issue. In order to create a resilient crop system, diversification of feedstuffs was considered important but challenges included learning how best to use such feedstuffs in pig feed. This would require training for farmers, agronomists and nutritionists as well as good communication with advisors. Categories of feedstuffs discussed included the grazing of legumes for sows and finishers along with the feeding of dried forage and how best to manage such forage crops including assessing nutritional values and on-farm drying. A Lack of information and missing digestibility values were both issues for the toasting of legumes. Plant breeding, with a focus on amino acid content, was discussed and further potential crops and plant products named during the meeting were soya, vicia, seaweed, by-products from the brewing industry and organic yeast with availability being a common challenge. Natural additives that increase feed efficiency were also in focus,

along with amino acid supplements though the appropriateness of the latter in organic systems was questioned.

The use of animal products in feed was also considered including casein, for which availability was a challenge. The challenges raised to feeding pigs with Black soldier flies (*Hermetia illucens*) were legislation, regulation, sanitation and the resulting flavour of products. The pigs themselves were also considered in the form of selecting slower-growing animals though this would require an acceptance by the industry of an increase in pig age at slaughter alongside increased costs and extra planning. In terms of appropriate animal breeds, there was interest in the Duroc breed.

The poultry IG in **France** considered all the topics raised in the pig IG apart from the toasting of legumes, the role of soya and vicia and the need for increased communication and training with advisors, agronomists and nutritionists. Further plant products identified for poultry feed included dried nettles, rice blotch, meal (from mustard or flax) and seeds and sprouted seeds (sunflower, amaranth, quinoa, lentil, lupin, Blé poulard and fonio). Challenges were lack of information, appropriate storage, assessing amino acid content, hygiene and extra workload. Along with casein and black soldier flies, slaughter house waste, fishmeal and slugs were considered with the same challenges of legislation, regulation, sanitation and resulting product flavour. Local poultry breeds and other breeds that 'do better on less' were considered a potential solution though a challenge to this was gaining cooperation from breeders.

The pig IG in **Sweden** discussed the need for the updating of nutritional requirements and recommendations for all stages of pig production within different breeds as well as understanding any health consequences of feeding less crude protein. In terms of plants, rye, faba beans, pulses and grass/clover leys were discussed along with the following challenges of ergot, how best to grow, optimum varieties, assessing nutritional values, in what proportions they should be added to feed and how best to process them. By-products from the brewery, distillery and dairy industries were discussed as well as non-food grade potatoes and other vegetables. Associated challenges were industry cooperation and logistics. Mussel meal may also be a potential pig feed though the nutritional content and economic viability require further investigation.

The pig IG in **Spain** is focussing very specifically on the feeding of organic pigs in the Dehesa system. Topics discussed at the Science Bazaar and elsewhere were therefore potential solutions for this system. Overall, food industry waste and by-products were seen to offer the best opportunities to feed pigs, supplementing the grass and acorns. These included yeast, seed oil toasts, grape and olive pomace, mulberry leaves and fruit and vegetables including olives, oranges and courgettes. However, nutritional information for these feeds is lacking and the geographical and seasonal availability must also be considered. Understanding different preserving methods, the cost of processing and logistics are further challenges. Novel feeds including algae, insects and earthworms were noted, though no challenges were recorded.

As with the Swedish group, the Spanish IG identified the need for increased knowledge of the specific nutritional requirements for each production/life stage of organic pigs including amino acid requirements for piglets. They further identified the need for a handbook detailing all processing aids, digestibility enhancers and nutraceuticals permitted in organic farming.

The **Serbian** IG is focussing on an investigation of different varieties of soya bean that are best suited to growing in the region as well as processing methods that optimise nutritional and functional properties of the bean, including eliminating trypsin inhibitors. Challenges for the group include learning how to grow crops successfully to organic standards and to enable on-farm processing of the beans. A current lack of marketing opportunities is an identified bottleneck.

The mixed IG in **Germany** identified different solutions and challenges for each of the three Thematic Groups. For broilers, managing the amino acid methionine was the focus of discussion. This included precision feeding

at different life stages, breeding chickens for reduced methionine requirements, breeding plants with appropriate methionine levels and finding alternative and novel sources such as cabbage and fungi/bacteria respectively. Expense, availability, processing and plant breeders' involvement were considered to be challenges. Further alternative and novel feeds discussed were meat/feather/bone meal, corn starch and duckweed though the novelty itself, the legal status, acceptability, the lack of equipment and lack of industry involvement were all identified as challenges.

For layers, forage (alfalfa, clover), herbs (nettle) and vegetables (cauliflower) were all discussed as potential solutions along with a focus on fresh forage in outdoor runs. No challenges were recorded.

for these approaches but for the production of worms as a feed, the identified challenges were hygiene control, expense and how to manage nitrogen-entry around the housing system.

Rearing pig breeds appropriate to organic pig production was considered to be one solution to help move towards the feeding of 100 percent organic and regional feed. Feedstuffs identified were soya bean and forage plants though current infrastructure, availability of toasting machinery, de-oiling processes and forage-management on farm were all identified as challenges. A further challenge identified by the farmers was the need for appropriately designed housing systems to improve ease of feeding such diverse feedstuffs. Feed companies could both present and experience further challenges given issues with size, specialisation, regulation and steering levies.

The layers IG and the broilers IG had a joint Science Bazaar in **Denmark**. Alternative protein sources (i.e., alternatives to soya) in general, raised challenges of supply, reliable quality, access to land and sustainable supply. Animal products identified as potential feedstuffs were starfish meal and mussel meal. Insects as feed was also mentioned but discarded as an appropriate area to focus on, given that it is currently prohibited as a pig or poultry feed. For Danish poultry producers, feed from plants was the main focus and named plants were wheat, oats, rye, triticale, lucerne, grass/clover ley, rape, maize, lupins, peas, beans, sunflowers, hemp and seaweed. Challenges identified with these included understanding what are their amino acid profiles, the dehulling of beans and seeds, the management of toxins, bio-refining, and the presence of heavy metals in sea-derived feeds. When considering forage as a 'green protein', more knowledge is required, for example, in terms of digestibility and how to incorporate them into feed plans. For homegrown feed, processing, logistics, storage, collaboration with feed companies, chemical analysis of feedstuffs and ration planning were all raised as challenges. As to collaboration with feed companies, it is common practice in Denmark for farmers to sell feedstuffs and to buy them back, for example, as a component in compound feeds. Further challenges to product homogeneity were identified with the changing animal diets including bird size, meat quality, yolk colour and meat and egg flavour.

Organic poultry producers in the **Italian** IG face specific challenges related to the centralised storage systems for animal feed in Italy. Large organic producers require industry support whilst small producers have a very small market share and consequently very little influence so that logistics, mixing and delivery of feeds all present challenges. Plants identified as offering solutions to organic protein availability were sunflower, soya and maize. Soya can be grown successfully in some regions in Italy but availability is a challenge. For sunflower and maize, assessing nutritional values, finding organic sources and managing mycotoxins are challenges, some of which could be overcome by better cooperation with storage companies (maize and mycotoxins) as well as encouraging local arable farmers to grow feed for poultry that can be delivered to feed companies. As a feed additive, camelina oil was discussed though information is lacking on protein content, amino acid profile and linolenic acid content.

For the **UK** mixed IG, insect protein – both produced and foraged – was discussed with much interest though legislation banning the production of insects is a current challenge. In terms of plant-based protein sources,

wheat, forage, oilseed rape, soya, legumes (lupins, beans and peas) and the sprouting of seeds were raised as solutions. Identification of - and access to - wheat varieties with appropriate protein content is a challenge, as is the balancing of protein with the amino acids, methionine and lysine. In UK, there is also a lack of machinery for heat treating beans to increase protein availability. In Scotland in particular, organic pig farmers face challenges related to an absence of feed companies supplying organic pig feed as well as local mills unwilling to produce organic compound feed. As free-range but not organic pork, the farm can source all the feed required within a 20-mile radius of the farm. In effect, the pork producer in Scotland has been forced to choose between organic and regional and is now producing free-range 'local' pork as a consequence.

III.8 Knowledge exchange

The OK-Net EcoFeed project aims to create a knowledge network on monogastric animal feed which can benefit both farmers and the wider industry across countries. Therefore, IG members were asked what their preferred tools and methods of knowledge exchange and interaction were (see Table 8). Meeting up in person, either as face-to-face meetings with other farmers, feed companies, advisors or other professionals or as excursions remains the most popular form of learning and knowledge exchange. The internet and online training were a preferred tool for farmers in Denmark and Sweden, whilst the Serbian farmer preferred training materials in printed form. Social media was mentioned by a Serbian advisor. An advisor in Spain preferred to use the auditing process whilst a French advisor used a tool for formulating diets as a knowledge exchange tool.

Table 8 Preferred tool and methods for knowledge exchange

Innovation Group	Farmer	Advisor	Feed Company
DK, Layers and Broilers	Internet, own networks, farmer groups, local agricultural centres, feed companies,	Farmer groups, workshops, national conferences, projects participation	Farmer groups, workshops, national conferences, direct contact, participating in common projects
France, Layers and Broilers	No preferred methods stated	Farmer training, 'Avifaf' (diet formulation tool)	-
Italy, Layers and Broilers	In person	In person	In person
Germany, Pigs, Layers and Broilers	Field days, stable schools, excursions, professional meetings	Direct contact, phone calls, farm visits	Direct contact
UK, Pigs, Layers and Broilers	Email	-	-
Serbia, Pigs	Direct interaction with other farmers, on-farm presentations and training, printed manuals and guidelines.	Farm visits, seminars, training, promotional material, social media	-
Spain, Pigs	Working examples in the field (seeing is believing)	Farm audits	business
Sweden, Pigs	Studies, excursions, online tutorials, meetings with farmers and advisors, extension material	Face to face, study visits, online tools where you can see inside farms without entering them	Meetings, telephone conversations, using the formulation of feed to discuss things with farmers

France, Pigs	No preferred methods stated	Meeting, networking with farmers, farm visits, technical days, mailing	-

IV. Discussion and Conclusions

The objective of Task 3.2 was to gather relevant data on Innovation Groups to gain an understanding of relevant context factors, particular challenges faced by group members and potential solutions and challenges to feeding regional organic feed. Additionally, tacit knowledge and information sources developed or preferably used by practitioners was also gathered. Knowledge of the groups was gathered through interviews, using a purpose-designed common framework, and Innovation Group meetings with 100 members attending across the 10 IGs in eight European countries.

The majority of group members (90 out of 100) identified as farmers (72) and farm advisors (18), highlighting a positive engagement with the issue of sourcing regional and organic monogastric feed at and close to farm level. The remaining group members are feed companies who represent opportunities to help address challenges both at farm level (where they process feed for farmers) as well as challenges identified further along the feed chain.

Farmers joining the IGs, come from diverse systems with context-specific factors influencing the availability of 100 percent organic and regional feed for their pig and poultry systems. These include the centralised storage systems for animal feed in Italy, the absence of organic feed companies in Serbia and Scotland and climatic factors inhibiting the growing of high-quality protein sources. Nevertheless, some common themes of potential solutions and challenges emerged from meetings. These include:

1. Understanding the needs of animals at different life stages
    a) Produce a handbook of requirements for each life stage
    b) Are there breeds or lines of breeds that do better under organic regimes?
    c) Can the problem of amino acid/protein balance be better managed?

2. Understanding protein availability in all current and potential feed sources
    a) How to process, store and feed feeds – requires industry involvement
    b) How to use existing feeds more efficiently – toasting, sprouting, etc,
    c) Improving the quality of existing feed sources through plant breeding

3. Innovative feeds (including insects, by products, fishmeal)
    a) Additives or supplements that improve the performance of existing feeds – availability? required infrastructure? legal status? moral acceptability?

Furthermore, there was an awareness amongst most Innovation Groups that a focus on one or a few sources of protein could be replaced with feedstuffs from more diverse sources once their protein and amino acid content was better understood.

In summary, the data framework created for Task 3.2 has achieved the key objective of identifying relevant data for Innovation Groups. This will now be used to inform the work carried out in WP2 (collection of knowledge and best practice), WP4 (evaluation of existing tools and development of new tools) and WP5 (online knowledge platform).

The findings gathered in the data framework will be shared with the project partners and Innovation Group members. This synthesis report (D3.1) will become publicly available after it has been approved and will be

made available on the OK-Net EcoFeed project website. Innovation Group meetings will continue and the information gathered here will help to inform the choice of tools to be trialled on-farm (Task 3.3). Further associated tasks and deliverables include the collection, evaluation and description of tools (Task 4.1) and dissemination and knowledge exchange. This includes the development of a toolbox with relevant tools and materials related to organic and regional feed to be maintained on the Organic Farm Knowledge platform (Task 5.1, see D5.1) and EIP-AGRI Practice Abstracts (D5.3) to help ensure that relevant information is promoted.

V. References

Council Regulation (EC) No. 834/2007 of 28 June 2007 on organic production and labelling of organic products and repealing Regulation (EEC) No. 2092/91 [Online]. [Accessed 01/12/2018]. Available at https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32007R0834&rid=6

Regulation (EU) 2018/848 of the European Parliament and of the Council of 30 May 2018 on organic production and labelling of organic products and repealing Regulation (EC) No. 834/2007 [Online]. [Accessed 01/12/2018]. Available at https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018R0848&from=EN

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Please cite this report as follows:

Whistance LK, Pearce BD, Papi E, Roinsard A, Steenfeldt S, Alford J, Djisalov J, Marty F, Mouchard T, Perez AM, Schmelzer E, Wivstad M, Åkerfeldt M., Moeskops B. (2018) Deliverable 3.1 (D3.1). Synthesis report on Innovation Group Framework. Developed by EU-H2020 project OK-Net EcoFeed ('Organic Knowledge Network on Monogastric Animal Feed'), funded by the European Union's Horizon 2020 Research and Innovation programme under Grant Agreement Number 773911.

VI. Annex 1

VI.1 Innovation Group Meeting Report Template

OK-Net EcoFeed 1st Innovation Group Meeting Report Template

Name of Innovation Group:.....

Name of IG Facilitator:.....

Date of meeting:.....

Number of attendees: .....

1. Aim

The aim of the meeting is to discuss relevant innovations and ideas and to begin to gather information needed for the monitoring framework (Task 3.2). During this meeting, IGs will also be encouraged to identify the specific character and any likely needs of the group ahead of the testing of innovations in year 2 and 3 (Task 3.3).

2. Description of the IG (short summary of location, members, eg, broiler farmer, feed company, etc. (more detail will be captured later in the data framework).

3. Innovations and ideas identified?

4. Specific character and any likely needs (refer to task 3.3) of the group ahead of the testing of innovations?

VII. Annex 2

VII.1 OK-Net EcoFeed Science Bazaar protocol

Timeline	Activity	Persons responsible
Day begins with	Introduction to the project	IG facilitator
To be followed by	IG facilitators to report on the content of the first IG meeting, including identified problems that are project appropriate	IG facilitator and secretary for taking minutes
To be followed by	Scientist's presentation, focussing on the areas identified by IGs	Scientist and secretary
Ending with	Open discussion on innovations, potential solutions and bottlenecks, to IG- identified problems.	IG facilitator and secretary

1) Facilitators should report the outcomes of the first IG meeting to the scientist beforehand so that they have time to prepare appropriate material to present.

2) In their presentations, scientists should use material retrieved from the mapping library created by Merete Studnitz. The mapping library will be accompanied by a training video/manual on how to navigate the library. Links to these resources will be circulated.

3) Meaningful contributions to the discussion, focussing on previously identified problems, should be noted from all people attending the day. However, contributors who are not members of the IG should be noted as such, to help assess the value of the Science Bazaar to the IG.

4) **For mixed species' IGs the focus animal for each discussion thread must be recorded for TGs to be able to use the information**.

The following list represents the themes and subthemes that have been identified as project appropriate (subject to modification)

Some of the problems identified by the IG members may be outside the focus area of the project, for example, weed control in home-grown crops. In these cases, relevant material will not be found in the mapping library. However, it can be suggested that IG members look at other support materials. For example, weed control has been addressed in the OKNet Arable project and information can be found on the knowledge hub http://farmknowledge.org/index.php/farm-news

- Pigs
  - Sows
  - Piglets
  - Weaners
- Broilers
- Layers
- Feeding and Ration planning

    - Nutritional value of organic feedstuffs
    - Nutrient needs
    - Forage
    - Roughage
- Processing and handling of harvested feed
- Economics
    - Production of animal products
    - Price/availability

So, for recording minutes, the secretary should note the following for each theme/subtheme discussed:

- Thematic Group, i.e., broilers, layers or pigs
- IG or non-IG participant
- Details related to innovations discussed, including solutions and bottlenecks.

Additionally,

A photo and 2-3 sentences about the event should be put on the OKNet EcoFeed dropbox for social media use

Participating scientists should be requested to provide feedback on the mapping library and its accompanying training material.

VIII. Annex 3

VIII.1 Data Framework 1. Quantitative data

PART ONE: The Innovation Group: quantitative information

Practice partner information	
Practice partner Eg, Soil Association	
Country	
Facilitator name	
Facilitator position	
Type of meeting Eg, stable school/one-to-one	
Dates of IG meetings: to be held: 1. Feb-March 2018	1

2. June-Sept 2018 (Science Bazaar) 3. Feb-May 2019 4. June Sept 2020	2 3 4		
Location of meetings Eg, on farm	1 2 3 4		
Overview (Describe how the group was initiated and its development)	Eg, the group was initiated as part of the OK-NET EcoFeed project, to gather farmer experience of accessing organic feed for monogastrics in the UK. Participants were selected in collaboration with Soil Association, a UK certification body.		
Innovation Group information			
Name of IG group Eg, AIAB layers and broilers			
Name of regions (NUTS3-level) + Find the NUTS code of your regions here. Identify farmers from other IG members. In mixed-Theme IGs, record species with region. Feed merchants: identify base region and regions delivered to.			
Date IG established MM/YYYY			
No. participants in IG	**Male:**	**Female:**	
Age range of male group members (20-29, 30-39, 40-49, 50-59, 60+)	**Lowest:**	**Highest:**	**Average:**
Age range of female group members (20-29, 30-39, 40-49, 50-59, 60+)	**Lowest:**	**Highest:**	**Average:**
Open/closed group (does the group remain the same or can new members join?)	**Open:**	**Closed:**	
Aims of group (Brief overview) Please use same aims reported at first group meeting.	Eg, group aims to identify and locate alternative sources of purchased organic protein and to identify possibilities to increase homegrown percent of protein in feed		

Quantitative interview

NOTE: for mixed species groups, you must note the species, when recording different responses so that appropriate information can be identified for Target Groups.

Abbreviation: TAE = Target Animal Enterprise refers to the animals in focus for the IG. For example, there may be other monogastrics or ruminants on farm (Other Animal Enterprises) that are not in focus.

If there are different ages/production stages included (e.g., sows, piglets, fatteners), please give details for each as a separate TAE.

Farmer information			
No. organic farmers in IG	**Male:**	**Female:**	
Year of conversion	**Oldest:**	**Most recent:**	**Average:**
No. years fully organic	**Lowest:**	**Highest:**	**Average:**
Size of farm (ha)	**Smallest:**	**Largest:**	**Average:**
% land of each farm owned	**Owned:**	**Rented:**	**Average amount of land owned:**
Farmer's own assessment of farm size	**Small:**	**Medium:**	**Large:**

Farm animal and feed information		
Target animal enterprise(s) (TAE)		
Average size of TAE flock or herd/year		
Ha of farm used to produce animal feed including pasture etc, where animals forage outdoors	**Fresh:** (eg pasture)	**Preserved or stored:**
% of total homegrown feed fed to TAE	**Fresh:** (eg pasture)	**Preserved or stored:**
% organic feed purchased for TAE	**Fresh:** (eg pasture)	**Preserved or stored:**
Of which: (% of organic feed purchased)		
Maize		
Beans		
Soybean		
Peas		
Grass/clover (eg silage)		
Grains (please state)		
Others (please state)		

% non-organic feed purchased for TAE	**Fresh:**	**Preserved or stored:**	
Of which: (% of non-organic feed purchased)			
Maize			
Beans			
Soybean			
Peas			
Grass/clover (eg silage)			
Grains (please state)			
Others (please state)			
Are you part of a local feed cooperative or do you have feed agreements with other farmers?	If yes, please explain.		
Other animal enterprises (OAE) on farm. Please state all OAEs and their average group size/annum. Eg, Dairy cows 70; Dairy calves 50.			
% of total homegrown feed fed to OAEs	**Fresh:** (eg pasture)	**Preserved or stored:**	**Protein crop:**
% organic feed purchased OAEs	**Fresh:** (eg pasture)	**Preserved or stored:**	**Protein crop:**
% non-organic feed purchased for OAEs	**Fresh:** (eg pasture)	**Preserved or stored:**	**Protein crop:**

Contextual information				
General Farm type (Tick all that apply)	**Livestock**			
	Pasture			
	Cereals			
	General cropping (more than cereals)			
	Horticulture			
	Other (state)			
Annual rainfall (mm)	**Lowest:**	**Highest:**	**Average:**	
Altitude	**Below 300m**			
	300m to 600m			
	600m or above			
Climate type	**Northern Boreal climate** (long and cold winter, short and mild summer, abundant precipitation all-over the year)			
	Northern temperate climate (not extremely cold winter, mild summer, sufficient precipitations)			

	Continental climate (cold winter with high precipitations, hot summers with limited precipitations)	
	Alpine climate (cold and snowy winter, warm summers with sufficient precipitations)	
	Mediterranean climate (mild winter with precipitations, hot summer with limited precipitations)	
	Other, please describe:	
Most limiting factors for growing/sourcing regional organic feed. Please state. If more than one, please score them, with 1 being the most limiting factor	**Eg, Weather (eg, too dry in spring/summer)**	
	Eg, lack of soil inputs for growing crops eg manure, mineral	
	Eg, terrain too steep	
	Eg, lack of storage space	
	Eg, Lack of land	
	Eg, Lack of equipment	
	Eg, lack of seed	
	Eg, lack of own manure	
	Other, please explain: eg, soil amendments	

If grown, typical yields of feed crops produced (Tonne Dry Matter per hectare)	**Crop**	**Yield (lowest to highest)**
	Eg, Winter Beans	2.5 – 4.5
	Eg, Peas	3.0
	Eg, Clover ley	10 – 10.8 t DM/ha
	Others, please state	
Stocking density Provide details of stocking density for all animal enterprises on farm	**Type**	**Typical stocking density per hectare** (only for land used for growing animal feed and for pasture) Eg, 2.5 animals/forage ha
	Layers	
	Broilers	
	Sows	
	Weaners	
	Growers	
	Sheep	
	Cattle	

	Other, please state		
(If required, Livestock Units (LUs) can be calculated later, as long as numbers are recorded here)			
Other IG member information			
Feed companies			
No. organic feed companies			
No. years offering organic feed	**Lowest:**	**Highest:**	**Average:**
% organic feed of total feed sold to organic farmers	**Lowest:**	**Highest:**	**Average:**
% organic protein feed of total protein feed sold to organic farmers	**Lowest:**	**Highest:**	**Average:**
Feed advisors			
No. organic feed advisors			
No. years offering organic feed advice	**Lowest:**	**Highest:**	**Average:**
Seed merchants If answers to these questions are not known, please record as 'not known'. If figures are available but not to hand, please record an estimated figure			
No. organic seed companies in IG			
No. years offering organic seed	**Lowest:**	**Highest:**	**Average:**
How many tonnes of seed did you sell to organic farmers for protein crops in 2017?	**Tonnes**		
Maize			
Beans			
Soybean			
Peas			
Other legumes (state)			
Others, please state			
What percentage of this seed was organic?	**%**		
Maize			
Beans			
Soybean			
Peas			
Other legumes (state)			
Others, please state			
From where did you buy organic seed in 2017 (%)?	**Regional**	**National**	**Imported**

Maize			
Beans			
Soybean			
Peas			
Other legumes (state)			
Others, please state			
To where did you sell the organic seed in 2017 (%)?	**Regional**	**National**	**Imported**
Maize			
Beans			
Soybean			
Peas			
Other legumes (state)			
Others, please state			

IX. Annex 4

IX.1 Data Framework 2. Qualitative data

PART TWO: The Innovation Group: qualitative information

Qualitative interview: NOTE: for mixed species groups, you must note the species, when recording different responses so that appropriate information can be identified for Target Groups. Abbreviation: TAE = Target Animal Enterprise refers to the animals in focus for the IG. For example, there may be other monogastrics or ruminants on farm (Other Animal Enterprises) that are not in focus. **If there are different ages/production stages included (e.g., sows, piglets, fatteners), please give details for each as a separate TAE.**
Farmers
Farmers: You are currently feeding between **x – x %*** organic feed to your TAE. What are the challenges you face to feeding 100% organic feed? ***Data can be determined from Part One feedback.**
Do you believe it is possible to produce sufficient feed organically in your own country, region, farm?
When would you consider feed to be regionally produced? Eg, Same village, same country? Within a certain distance in km/miles?
Is sourcing organic protein a particular issue?
Are any problems of sourcing protein the same at all levels (global, country, region, your farm)? If no, elaborate
(secondary questions to probe further will be informed by responses received in part one. Eg, limiting factors named such as topography, weather, etc,)
What type of protein source do you believe it is possible to produce in your region?
Have you focussed on sourcing or growing more organic feed/protein for your TAE?
How often do you ask for derogations for not using organic seed?
Have you experienced success or difficulties with this? Elaborate, eg, difficulties on farm or along the value chain/
For home-grown feed, do you need to balance use of land between access for animals and food production? Elaborate – protein is a particular focus
What business model or system would make growing, or sourcing more regional feed, more profitable for you?
Have you, or someone you know, carried out any innovative feeding trials?
Do you have new ideas or refinements to develop from earlier trials?
Where do you find information? (eg, internet: extension material, forums, twitter, neighbouring farmer)
If you need to, how do you deal with any language barriers?
What are your preferred tools and methods of knowledge exchange?
Feed Companies

Do you discuss feeding more (up to 100%) regionally grown organic feed with farmers?
Do you help farmers to plan how to feed/source more regionally grown organic feed?
Do you discuss organic sources of protein?
Do you consider how regionally they are produced?
What type of protein source do you believe it is possible to produce in your region?
What do you consider are the challenges to feeding 100% regionally grown organic feed?
Are they the same at all levels (global, country, region, farm level)?
When would you consider feed to be regionally produced? Eg, Same village, region, country? Within a certain distance in km/miles?
What are your preferred methods and tools for interacting with farmers?
Seed companies (state if seed merchants or seed breeders)
Do you discuss feeding more (up to 100%) regionally grown organic feed with farmers?
Do you help farmers to plan how to feed/source more regionally grown organic feed?
Do you discuss organic sources of protein?
Do you consider how regionally they are produced?
What type of protein source do you believe it is possible to produce in your region?
What do you consider are the challenges to feeding 100% regionally grown organic feed?
Are they the same at all levels (global, country, region, farm level)?
When would you consider feed to be regionally produced? Eg, Same village, region, country? Within a certain distance in km/miles?
What are your preferred methods and tools for interacting with farmers?
Feed advisors
Do you discuss feeding more (up to 100%) regionally grown organic feed with farmers?
Do you help farmers to plan how to feed/source more regionally grown organic feed?
Do you discuss organic sources of protein?
Do you consider how regionally they are produced?
What type of protein source do you believe it is possible to produce in your region?
What do you consider are the challenges to feeding 100% regionally grown organic feed?
Are they the same at all levels (global, country, region, farm level)?
When would you consider feed to be regionally produced? Eg, Same village, region, country? Within a certain distance in km/miles?
What are your preferred methods and tools for interacting with farmers?
Any other participants in Innovation Group. Please identify and ask appropriate questions from above
To be asked relevant questions from above