

Figure 12 shows the scores for the spurs and Figure 13 shows the scores for the activities.

In general, the range of results between farms was quite large, probably due to the wide variety of farm types that were included, with the highest mean scores for “Food Security “and “Animal Health and Welfare” (Figure 12). “Fertiliser Management” scored relatively well; N, P and K balances were relatively low, with means of 112, 0.5 and 6 kg/ha respectively. These values are lower than the surpluses reported for Italian farms by Penati et al (2011), who reported N surpluses of 137 and 186 kg/ha, and P surpluses of 24 and 30 kg/ha for farms with and without grazing respectively. For “Energy and Carbon”, the overall score is rather low; it is known that on Italian farms, the farm machinery fleet is often oversized and also the greenhouse gas control activity scored poorly (Figure 13). The lowest results were obtained in the “Biodiversity” spur despite different management, geographical areas and answers. Biodiversity tended to be higher in small, mountainous farms, than in big farms on the plain. In general there is a good final result for “Social Capital”, where the employment activity scored high, and “Farm Business Resilience”, which could be due to family managed farms, and capacity for change. In “Water Management”, only one farm has a relatively high value, this is the only one that has invested in water recycling; all the others have a poorer result although there is a variation in types of irrigation, geological conditions and type of crops. Despite farmers’ concerns about water management, the activity scores showed that few farms have a water management plan. Avoidance of winter grazing, erosion and cultivation boosted the Soil Management score (Figure 13).

3.7 Romania (Catalin Dragomir)

The Romanian dairy sector has a large proportion of small businesses, many of which can be characterised as semi-subsistence, low-input farms. The distribution of dairy livestock is as follows (data valid for 2010):

- 60% in very small farms (1-2 cows),
- 20% in farms of 3-5 cows,
- 6% in farms with 6-10 cows,
- 10% in farms with 10-100 cows
- 4% in farms with more than 100 cows

There are no specific data available on the low-input farms, but because of their large proportion in total livestock, they are the main determinant of the national averages. Data on the overall dairy cows sector in Romania are presented in Table 9. There is limited data on this topic and so the figures given here are unofficial and are based on data from the website of the ministry of agriculture and internal reports from INCDBNA.

There are several aspects that qualify many Romanian dairy farms as low-input: very low proportion of concentrates in diets, scarce or no use of fertilisers, lower stocking rate, etc. Often, just one or

two supplementary feeds are used that usually originate from the farm itself (typically cereals or a cheap by-product such as bran).

Milk production in Romania is also characterized by a large heterogeneity: from big modern farms to families with 1-2 cows kept in a traditional system; diverse geographical & climatic conditions (from fields to high mountains, from rather dry to more rainy areas), diverse quality of pastures and produced milk, etc. There are various patterns of cow feeding including silage plus concentrates in the lowland areas, grazing or hay and smaller quantities of concentrates in higher areas. In the lowland areas, the nutritional value of the pasture tends to decline fast from the end of July because of the climatic conditions (in these areas pasture area is small anyway). Generally, the cows are housed from October to April but the housing period is variable because of the variety of geographic conditions.

Concerning the breeds used in the dairy sector, the most widespread in Romania are Romanian Black-Spotted (derived from Holstein-Friesian), Romanian Red-Spotted (derived from Simmental), Brown Swiss and a few newly imported breeds. There is a high degree of hybridisation between these breeds because of the decentralisation of the national breeding system (including official milk recording).

The inputs of concentrates and fertilisers are rather proportional to the size of the farm. Many of the small enterprises have potential for organic production (in Romania known as “ecologic”) but their small size (and weak financial power) prevents them from gaining certification.

There are two main marketing channels of dairy products in Romania. The most important is selling the milk to dairy processing factories, which have large collection networks across the country. Another marketing channel is on-farm processing of milk and selling dairy products directly to consumers (in vegetable markets or small shops). In general, this marketing channel is characteristic of the traditional / local products. The first channel is used by larger farms, whereas the second is used by the smaller-size businesses. The price of milk at the farm gate is rather low (0.25 Euro/l on average) and proportional with the farm size and technology level (ranging from 0.17 to 0.35 Euro/l). As previously mentioned, many animals are in semi-subsistence systems and this means that their production is intended for home consumption and only the surplus is sold; many owners have another source of income as well. There is a tendency for livestock concentration in bigger farms and for milk production to be the main source of income of the farms’ owners/tenants.

3.7.1 Characteristics of the case study farms

The 14 farms undergoing the rapid assessments were selected using the institute’s network of connections, and aimed to cover various geographical areas and rearing conditions: use of pasture, tethered; various breeds. The geographical position of the 14 farms is represented in Figure 14. It should be noted that in Romania, the geographical position also relates to the breeds, use of pastures, feeding strategies, etc. As selection filters, although no thresholds were used, the farms with low levels of concentrate and fertiliser use were eligible. On the other hand, small herds (e.g. less than 5-10 cows) were not considered because they tend to disappear following the

concentration of livestock in bigger farms (natural tendency and agricultural policies) and the data provided by these farmers are too scarce and inaccurate, hindering the production of valid assessments. Moreover, such small farms have a very low capacity to absorb research results. Also, most of the large farms can be characterised as conventional, therefore such farms were not selected for rapid assessments. Thus the farms selected are small and medium farms, not small semi-subsistence farms. Consequently, as observed in Table 9, their average size is higher than the national average. No organic farm was selected, as this kind of dairy system is poorly represented in Romania, therefore all 14 farms are close to the definition of a low-input dairy farm.

One farm was selected for its innovative approach: the owner studied abroad and is adapting its equipment for more efficient use and is selling milk and dairy products directly at the farm gate to a well-defined pool of customers. This is one of the few farmers performing soil analysis and he is proactive in acquiring and valorising new knowledge in the field.

The breeds encountered in the 14 farms were in line with the breeds used at national level. One farm uses mainly Montbeliarde and is an example of the farmers who opted for imported breeds in their attempts to increase milk yield. With few exceptions, the farms chosen did not take part in the national official milk recording scheme.



Figure 14 Geographical distribution of the 14 Romanian farms used for rapid sustainability assessment

Most of the 14 assessed farms sell their milk to processors, with two exceptions – one farm selling the milk through a street dispensing machine, and one farm selling milk and dairy products at the

farm gate. Therefore it can be concluded that, in general, the assessed farms integrate into the first type of marketing channel and are dependent on sales to processors.

The low input dairy farms are spread virtually all over the country with no particular concentration or absence (see Figure 14). There are some regions known for their traditional dairy products and in these areas most of the farms are low-input. The geographic distribution of the 14 assessed farms did not follow a particular pattern; as a minimal condition it covered all the main regions of the country.

The visits revealed a series of good examples that could be extended to other farms: diversification of marketing channels, arrangements with local community to have access to the common land (e.g. access versus maintenance or improvement), biogas installation in order to save energy, and a plan to ensile brewers grains using bacterial ensiling additives not commonly used any more in Romania.

There are some cases of new feeds being used, for example alternative sources of vitamins and minerals, use of feed-grade turnips (as a farmer-conducted feeding trial), use of various varieties of corn, wheat and alfalfa (in order to compare them) and resuming the use of some forgotten crops such as millet and sorghum. Except for brewery grains and bran (both of which are very popular), awareness of the potential use of industrial by-products as feed is quite low. Herds selected for the project were relatively small and yields were relatively low. Farms ranged from 10 – 160ha of owned or tenanted land (mean 58ha), and in addition 11 of the 14 farms grazed some common pasture. Permanent pasture constituted a relatively small proportion of the farms' owned or tenanted land (0 – 38%) and labour input was high.

Table 9 Characteristics of the population of Romanian dairy farms and of the 14 selected farms

		Population mean ²	Mean of selected farms	Range of selected farms
Farm size	ha	3.8	81.65	25 - 232
Herd size	No. of adult cows	1.3	39	20 - 70
Stocking rate	Livestock units/ha	Unknown	0.99	0.1-2.4
	Grazing livestock units/forage ha		1.00	0.09 – 2.62
Milk sales	l/cow/year	3210	3865	2000 - 6000
Level of concentrate fed to milking animals	kg/cow/year	Unknown	635	0 - 1460
Total purchased concentrate per cow ¹	kg/ cow/year	Unknown	510	0 - 2100
Mineral N fertiliser input	kgN/ha/year	Unknown	7.09	0-33.4
Milking cows per Annual Labour Unit	Milking cows per Annual Labour Unit	Unknown	10	5 - 20

Labour input per unit area	Annual labour units/100 ha	Unknown	6.37	1.10 – 16.0
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¹ Data from the tool - may include some concentrate fed to other livestock on the farm, therefore not necessarily directly comparable with the line above

² No specific values for low-input dairy systems are available. As the low-input farms reflect the traits of the Romanian dairy systems overall, comparison is made with the country average figures. There is limited data on this topic therefore the figures are based on data from the ministry of agriculture website and internal reports of INCDBNA.

3.7.2 Results of the sustainability assessment

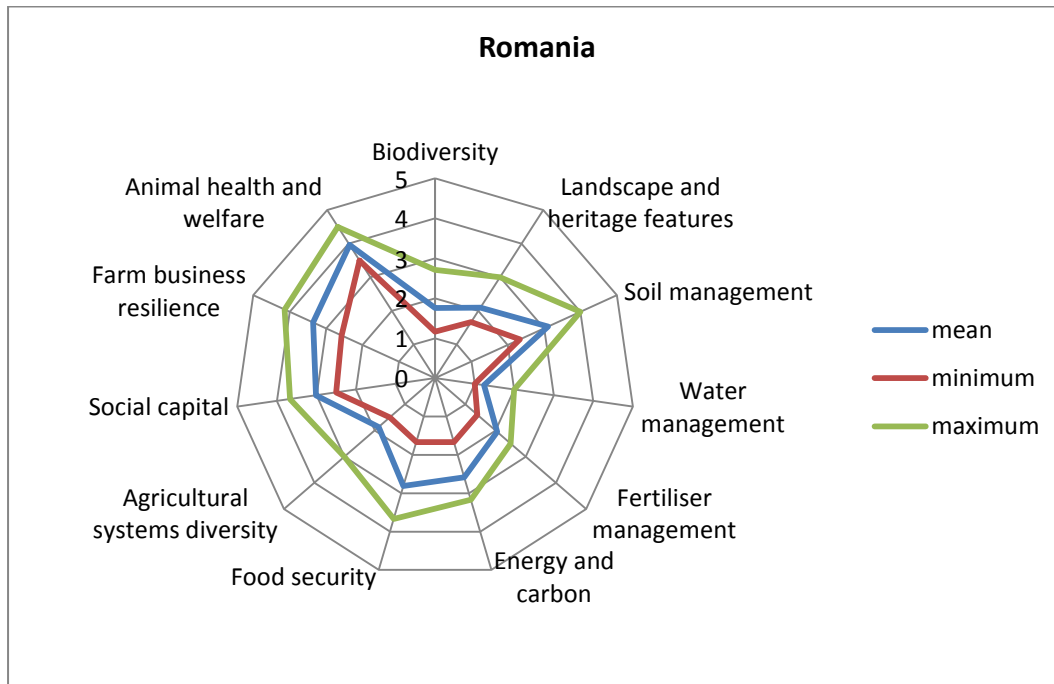


Figure 15 Spur diagram for Romania

In Romania, the highest mean scores were registered for “Animal Health and Welfare”, “Farm Business Resilience” and “Soil Management” spurs whereas the lowest scores were recorded for “Water Management”, “Biodiversity” and “Agricultural Systems Diversity” (Figure 15).

“Animal Health and Welfare” had not only the highest average score, but also a low variability of the answers. This could be explained by the fact that the ratio of animals to workers is very low, therefore animals receive more care. The second highest score, although moderate, was recorded for “Farm Business Resilience”. This can be explained by the small to medium size of the herds, cheap price of labour (the family of the owner often contributes), low costs for farm maintenance, low pressure on cash flow (e.g. purchase of feeds is limited, no investments are made and therefore there are no bank loans to return). The range of scores is moderate, as the business resilience depends on factors such as proximity to big cities and access to pasture.

The third highest score was recorded for “Soil Management”, also with a moderate variability of individual scores. Although the assessed farms do not focus heavily on soil management (e.g. only

one farm performs soil analyses at the farmer's initiative), animals do not graze in winter and, in general, there are no serious problems with soil erosion.

The lowest average score registered for "Water Management" is largely determined by the fact that, in many areas, there is no functional irrigation system available, farmers cannot apply corrective measures because they lack financial power and there are no strict rules related to water management with which to comply.

The second lowest score registered for "Biodiversity" can be explained by the fact that farmers are not aware of the importance of this criterion. Also, there are no specific rules imposed.

Scores for "Fertiliser Management" were quite low, influenced largely by a lack of nutrient planning. N balance values were not high (mean 84, range 23 – 127 kg/ha) and P and K balances were also low (mean 3 and 6 kg/ha respectively).

"Agricultural Systems Diversity" also registered one of the lowest average scores, with quite a large range. Whereas the farmers are aware of and practise crop rotation (due to tradition and strong agricultural education before 1990), they restrict their choice to only a few species. This is common in Romanian agriculture, mainly because they lack technical knowledge on alternative crops. Also, they have limited options to market their products, because of lack of investments, and dependence on milk collectors.

The mean values for the activities of the rapid assessment tool are presented in Figure 16. The following activities recorded high scores, which are in line with the general traits of the Romanian low-input dairy sector: ability to perform natural behaviour, information searching and networking, local food, energy & carbon benchmarking, erosion, crop protection and pesticides. Somewhat unexpected high scores were recorded for feeding (as the farmers admitted they lack knowledge on feeding/feeds) and planning (actually the farmers are not used to keeping farm records or written plans). Low scores were recorded for irrigation, water management plan, flood defence (all in line with the general traits of Romanian agriculture), greenhouse gases (a result of the low-input approach), on-farm processing and marketing (a drawback of the local dairy system), historical features and biodiversity action plans (both as a result of low awareness and the lack of a centralized, national-level approach of the subject). Unexpectedly low scores were recorded for genetic heritage (despite the fact that many Romanian farmers still keep animals from old-fashioned breeds for the sake of genetic heritage or by tradition) and rare species (although they try to protect them when they are aware of their existence).

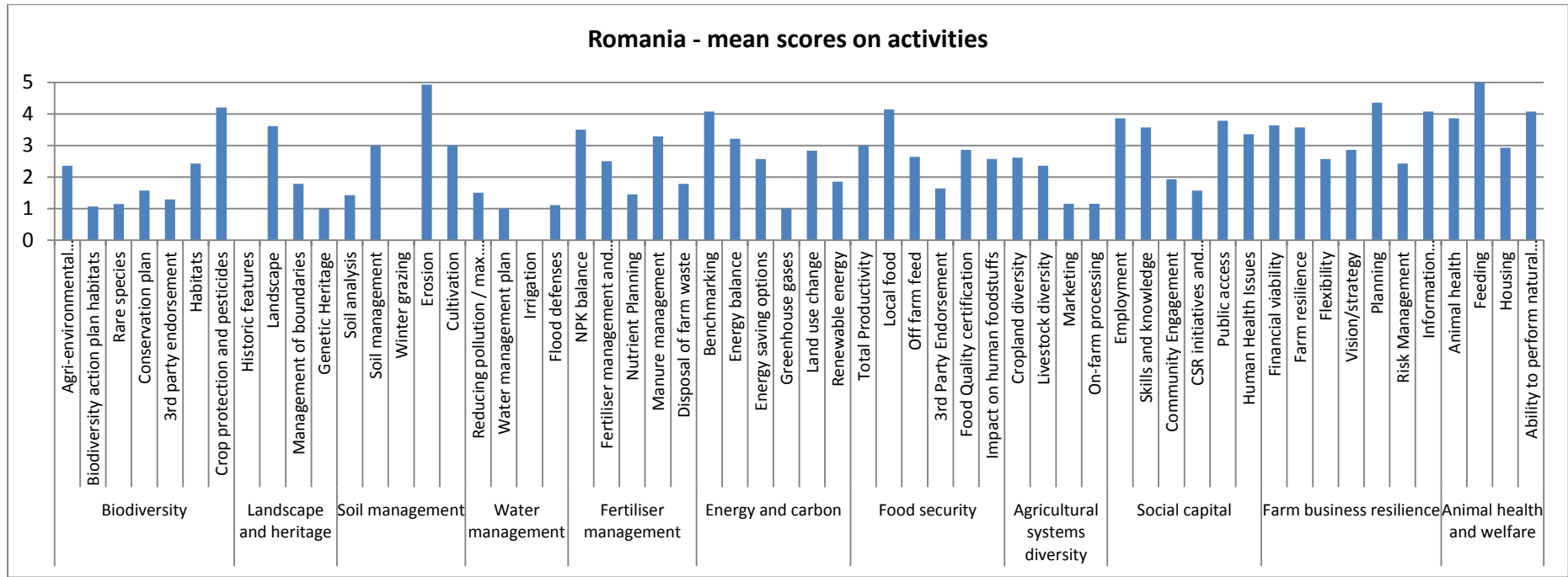


Figure 16 Mean scores for the activities for Romania