GOOD AGRICULTURAL PRACTICES IN THE LANDS OF BIOSPHERE

The results of the first investigation

Original document of the University of Catania

“BUONE PRATICHE AGRICOLE NELLE TERRE DELLA BIOSFERA I risultati della prima indagine“

Translated by the volunteers (Alessia Döring, Rebekka Fackler, Karla Fischer) of the association Giacche Verdi Bronte, 03.03.21

Organized by the Department of Agriculture, Food and Environment (Di3A) of the University of Catania as part of the project "Good Agricultural Practices in the Lands of Biosphere", promoted by the “Giacche Verdi” Association of Bronte, the promoter group Lands of Biosphere, the foundation Manfred-Hermsen-Stiftung, Nabu and Lipu Italy.

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1. Introduction

The present report, created as part of the work between the association Giacche Verdi Bronte and the University of Catania, has the purpose to illustrate the results of the questionnaire elaborated in the area of the project "Good agricultural practices in the lands of biosphere" which arose from the cooperation between the association Giacche Verdi Bronte, the promoting group of "Lands of Biosphere", the foundation Manfred-Hermsen-Stiftung and the associations Lipu Italy e Nabu, with the technical and scientific support of the Department of Agriculture, Food and Environment from the University of Catania.

The questionnaire, given to a sample of farms located in the territory of the Reservation MaB***Lands of Biosphere: the fluvial valleys of the Etna (Sicily)*** which is in the process of approval, aimed to collect the level of knowledge of good agricultural practices for the conservation and protection of biodiversity as well as critical issues and problems of farmers and their degree of satisfaction and approval of the funds of the Common Agricultural Policy (CAP).

Farmers are, in fact, the key stakeholders of this European policy, that, through the financial support of the first and second pillar, aims to contribute to business development and income stabilization. Farmers are also the ones who, if properly involved, supported and trained, can develop their ecological knowledge and provide services that benefit ecosystems, environment and society.

It is widely known, in fact, the impact of the current food system, from field to table, is responsible, according to the IPCC, for about 21-37% of total greenhouse gas emissions. The largest contribution to this estimate comes from agricultural production, with crop and livestock activities and changes in land use, such as deforestation and peatland degradation.

These data are partly the result of a process, still on-going, of abandonment of traditional agricultural methods: unlike the model of industrial agriculture, which is oriented to maximize production through the use of monocultures, fossil fuels and chemical inputs, this new model is generally based on ecological principles, able to ensure the regeneration of soil fertility, the preservation of biodiversity and the production of healthy and nutritious food for the community.

The CAP, from the Treaty of Rome until today, through the various reforms that have followed (MacSharry reform, Agenda 2000, Fischler reform, the Health Check, CAP 2014-2020) has also changed profoundly, seeking to adapt to changes in the rural, agricultural, food and forestry sectors and to incorporate the aspects of environmental sustainability related to food production and consumption. Specifically, the CAP 2014-2020, which will remain in force through the transitional regulation (Reg. 2020/2220) until December 31, 2022, has attempted to simultaneously pursue the objectives of competitiveness of agricultural enterprises and remuneration of public goods, i.e. environmental goods. With regard to public goods, despite the validity of the general principles of greening, the increase in bureaucratic-administrative burdens and the modesty of the measures foreseen with respect to the objectives to be achieved in terms of protection of biodiversity and the fight against climate change have aroused numerous criticisms from scholars, environmental associations and farmers. Pillar II agri-environmental and climate measures mitigate the effects of environmental pollution, biodiversity loss, climate change, and natural resource consumption to a still very limited extent (Kleijn et al., 2006; Pe'er et al., 2017, 2019, 2020). In addition, the green payment's calculation as a share of the basic payment, were seen as problematic from farmers due to different adjustment costs for different types of farms and different territorial specificities.

Italian agriculture is, for example, already characterized by a large percentage of farmers adopting good agricultural practices capable of producing public goods, which go beyond the mandatory requirements of crop diversification, maintenance of permanent grassland and introduction of ecological areas.This is even more valid for Sicily, the first region in Italy with surfaces that have been cultivated organically (370,622 ha in 2019) and number of organic operators (10,596 units in 2019) (SINAB, 2020), whose traditional agricultural landscapes cover a high environmental and cultural interest. In particular, the Etnean rural landscape, focus of this study, is characterized by a strong physical variability of the environment, where different types of crops determine the high vocation of agricultural and pastoral agroforestry territory. These are cultivation systems with high and intra-specific biodiversity that are able to guarantee not only economic-productive functions but also ecological-environmental ones.

Through the evaluation of the results of the questionnaire, the working group intends to contribute to the debate on the launch of the new rules of the CAP 2021/2027, so that it can be truly aligned with the European Green Deal and the strategies Biodiversity 2030 and From Farm to Fork, but above all responsive to the needs of small farmers. In fact, the main CAP payments per hectare are in favor of larger farms and landowners, who are not necessarily farmers (Neill and Hanrahan, 2013; Valenti et al., 2020). It is necessary to create new perspectives for small family farms that, in the face of a very important role of protection and development of the territory, receive much less support than large "industrial" farms. Identifying which good agricultural practices are already being adopted by the farmers in the studied area and what challenges need to be addressed to help them operate in a way that is favorable to biodiversity, without jeopardizing the profitability and competitiveness of their economic activity, have become the key objectives of the project.

The development of agroecological practices on a large scale, together with the enhancement of local food products and short supply chains, traced and distinctive, allow, in fact, to counteract the various phenomena of environmental degradation mentioned above and revitalize rural areas.

2. The territorial contest of this project

The territorial context, referred to, of the project is represented by the area of the river valleys of Simeto and Alcantara, between Etna and Nebrodi, in North-Eastern Sicily. The area concerned has been subjected to a study of feasibility by the promoters of its proposed establishment as a Biosphere Reserve (RB) within the Man and Biosphere (MaB) program of UNESCO and divided into three zones according to the "standard" model of RB (core area, buffer area and transition area). This preliminary framing, of approximately 120,000 ha in area, includes the following elements:

- the Simetorivervalley;
- the river valley of the Alcantara
- 26 municipalities in the provinces of Catania and Messina (Adrano, Biancavilla, Bronte, Calatabiano, Castiglione di Sicilia, Centuripe, Cesarò, Fiumefreddo di Sicilia, Francavilla di Sicilia, Gaggi, Giardini Naxos, Graniti, Linguaglossa, Maletto, Malvagna, Maniace, Mascali, Moio Alcantara, Motta Camastra, Paternò, Piedimonte Etneo, Randazzo, Roccella Valdemone, San Teodoro, Santa Domenica Vittoria, Santa Maria diLicodia);
- 3 Regional Natural Parks (NebrodiRegional Park, Alcantara River Park, Etna Regional Park)
- 4 Nature Reserves (R.N.O. "Forre laviche del Simeto", R.N.O. "Fiume Fiumefreddo", R.N.O. "Oasi del Simeto", R.N.O. "Bosco di Malabotta");
- 9 Natura 2000 Network sites(S.I.C. "Lago Gurrida e Sciare di S. Venera", S.I.C. "Forre laviche del Simeto", S.I.C. "Bosco del Flascio", S.I.C. "Tratto di Pietralunga del Fiume Simeto/Contrada Valanghe", S.I.C. "Fiume S. Paolo", S.I.C. "Alta valle del Fiume Alcantara", S.I.C. "Torrente S. Cataldo", S.I.C."Rocche di Roccella Valdemone", S.I.C. - Z.P.S. "La Gurna".

The recognition as RB would simplify the sustainable development of the territory and its local population, encourage traditional activities (agriculture, crafts, tourism) and increase the awareness of the need to save natural and cultivated biodiversity, the quality of ecosystems and cultural and landscape diversity.

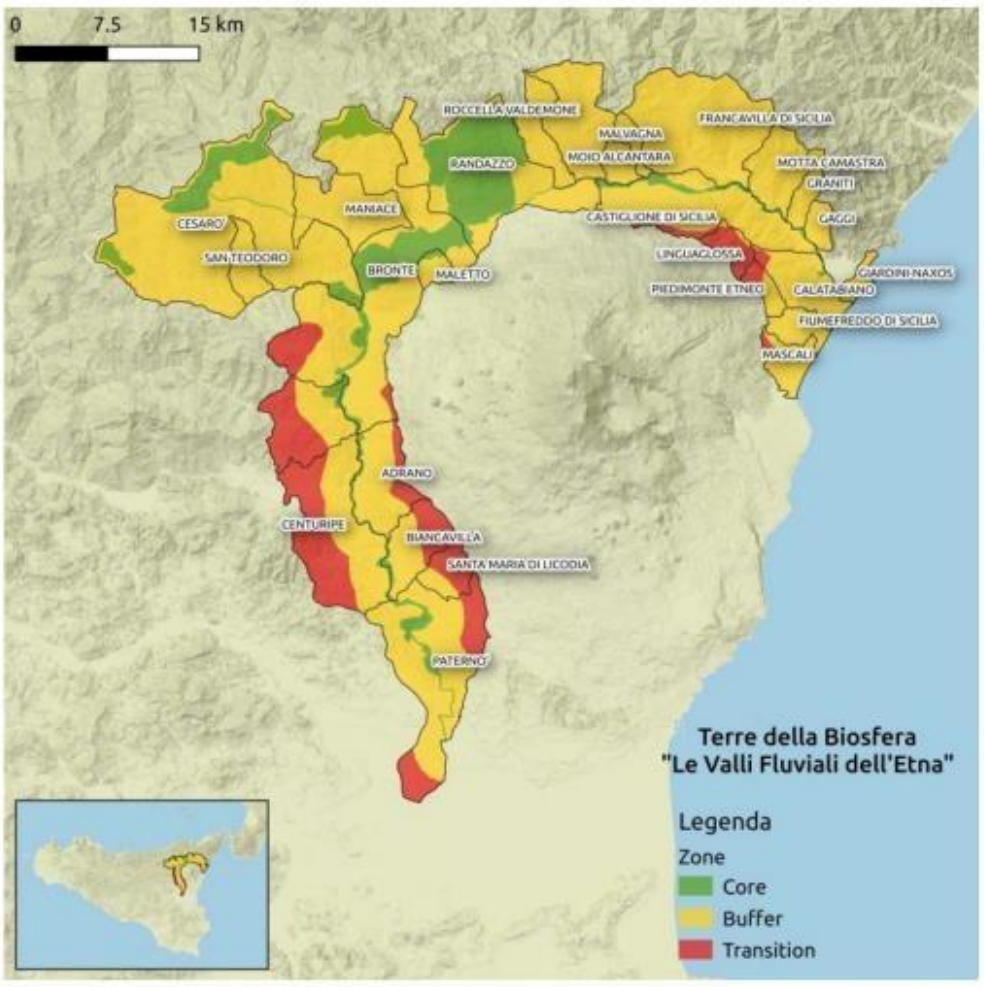


Figure 1. Proposed zoning of the Reserve "Lands of Biosphere: the fluvial valleys of Etna".

In the sector of agriculture, in order to achieve these sustainability goals, it is necessary to refer to the latest available scientific knowledge on agroecology and

ensure their concrete implementation and applicability in the regional context through model projects and consultations.

3. The questionnaire

The questionnaire used was divided into three sections with a total of 65 questions:

- section 1 - questions about business activities;
- section 2 - questions about contributions received from the European Union;
- section 3 – questions about good practices regarding the preservation of biodiversity

The questionnaires were distributed through the intervention of a third person, trained to simplify the compilation of the questionnaires by the farmers. The interaction between "multiplier" and respondent allows, in fact, to win more easily the trust of the respondent, to optimize the process of detection and to submit more complex questions.

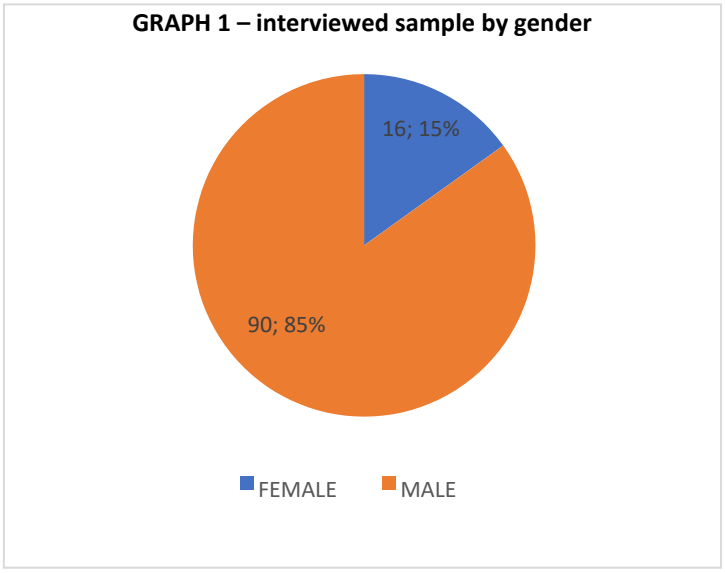
The questions were of different types:

- open questions;
- closed questions;
- graded questions

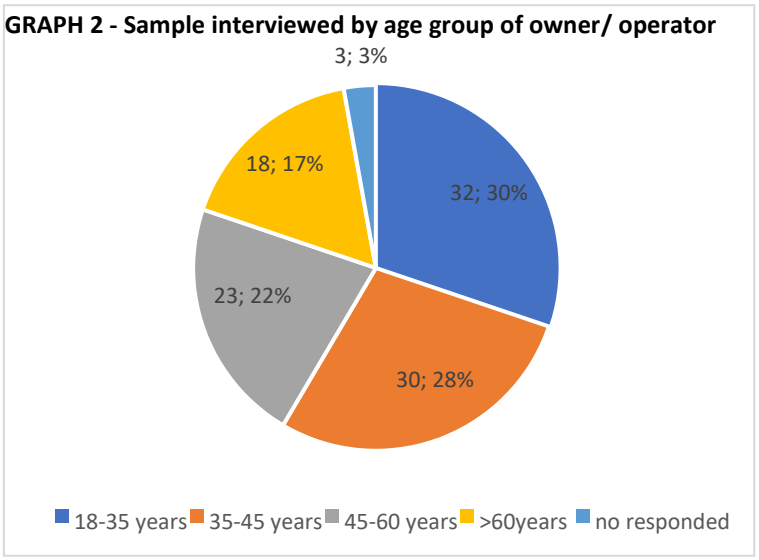
In questions having several options, the user could choose between "little," "low," "medium," "high," and "very much" on a 5-way Likert scale. The choice to apply a five-point scale versus a seven-point scale was made to avoid excessive ambiguity for farmers. Responses were analyzed respecting as much as possible the original structure of the questionnaire and according to the main aspects of interest of the project. The results were represented in graphic form and commented. It should also be noted that since the questions are not mandatory, the response rate varies for each individual question

4. Characteristics of the interviewed people

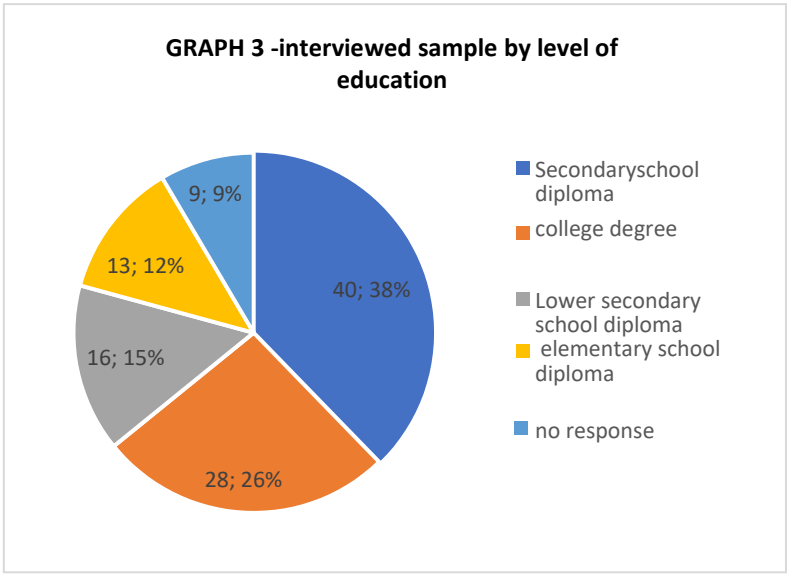
The target of the survey is represented by agricultural entrepreneurs. Graph 1 shows the distribution of the interviewed sample by gender: a predominance of males can be observed, since only 15% of the sample is made up of female owners and/or tenants.



Graph 2 shows the distribution by age group: questionnaires were filled out mainly by adults between 18 and 60 years old. Farmers over 60 years old, on the other hand, represent 17% of the sample.



With respect to the level of education of the farmers surveyed (Figure 3), 38% of the sample had a secondary school diploma, 26% a college degree, 15% a lower secondary school, and 12% an elementary school diploma. Nine farms did not respond to the question.



The variety of respondents, by gender, age group and level of education, ensures a good representation of the sample, with respect to the characteristics of the population of the survey area.

5. Analysis of the data

5.1 Business information

Farm's location

As shown in Figure 4, the companies in the sample are located mainly in the province of Catania and secondarily in the province of Messina. Only one company is located in the province of Enna. They are distributed in 22 municipalities (Table 1): among these, the municipality of Bronte has the highest number of interviewed companies.

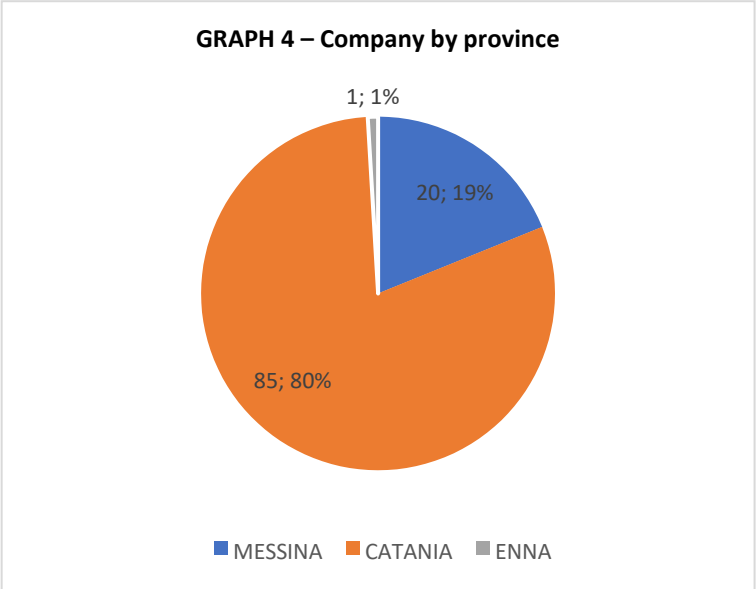


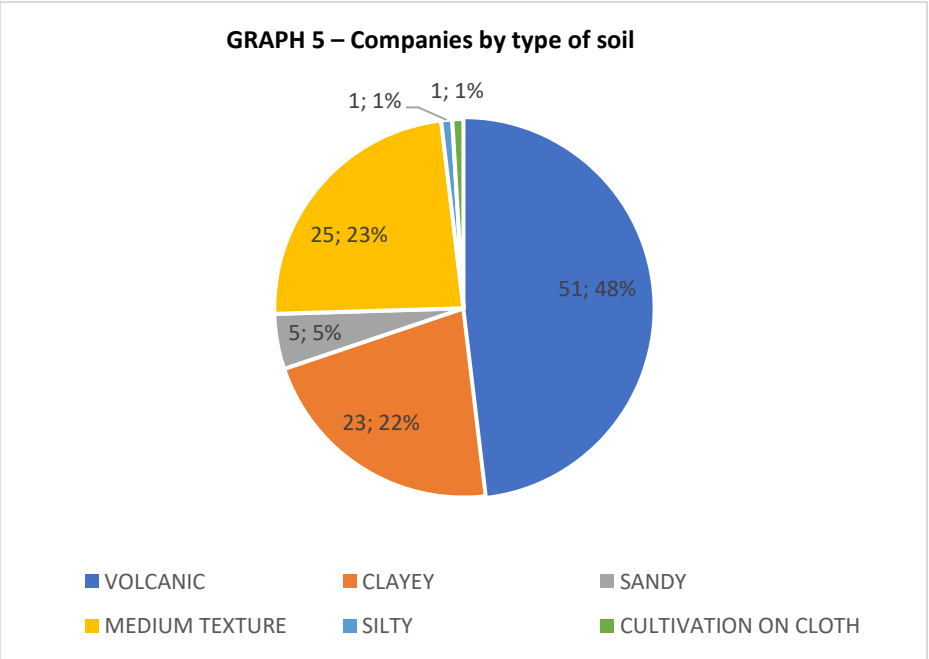
Table 1. Companies surveyed by municipality

Municipality	Companies n.
CALATABIANO	1
CENTURIPE	1
GIARDINI NAXOS	1
GIARRE	1
MASCALI	1
SANT'ALFIO	1
ADRANO	2
CASTIGLIONE DI SICILIA	2

FIUMEFREDDO DI SICILIA	2
FRANCAVILLA DI SICILIA	2
LINGUAGLOSSA	2
MOIO ALCANTARA	2
RIPOSTO	2
SANTA MARIA DI LICODIA	2
MANIACE	3
SANTA DOMENICA DI VITTORIA	3
CESARO'	6
PIEDIMONTE ETNEO	6
ROCCELLA VALDEMONE	6
RANDAZZO	7
PATERNO'	9
MALETTO	12
BRONTE	32
TOT.	106

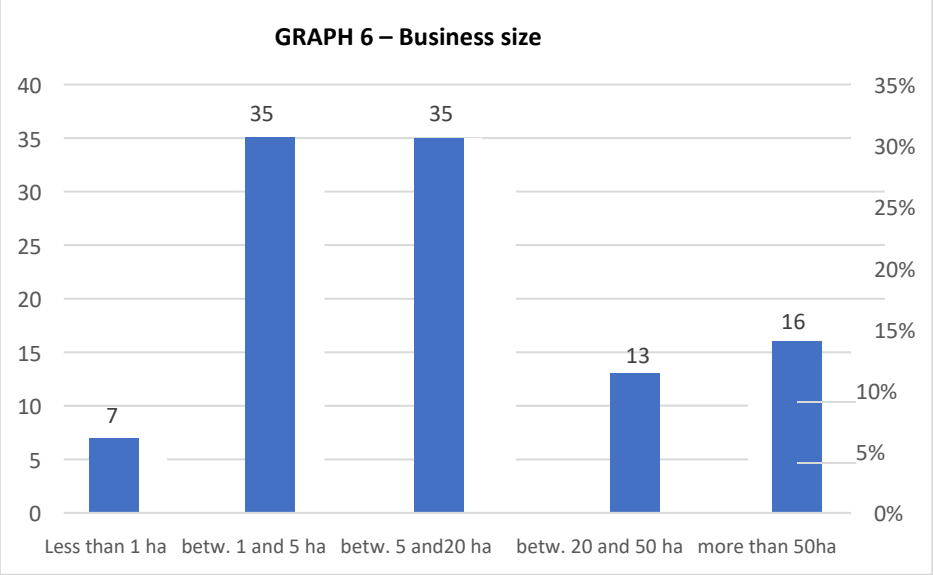
Type of soil

The farms in the sample are located in a territory characterized by a particular pedological variability. The classification shown in graph 5 has been made on the basis of the texture of the soil that gets cultivated and shows a prevalence of the "volcanic" type, followed by "medium texture", "clayey", "sandy" and, finally, "silty". Moreover, only one company does its cultivation outside of the soil.



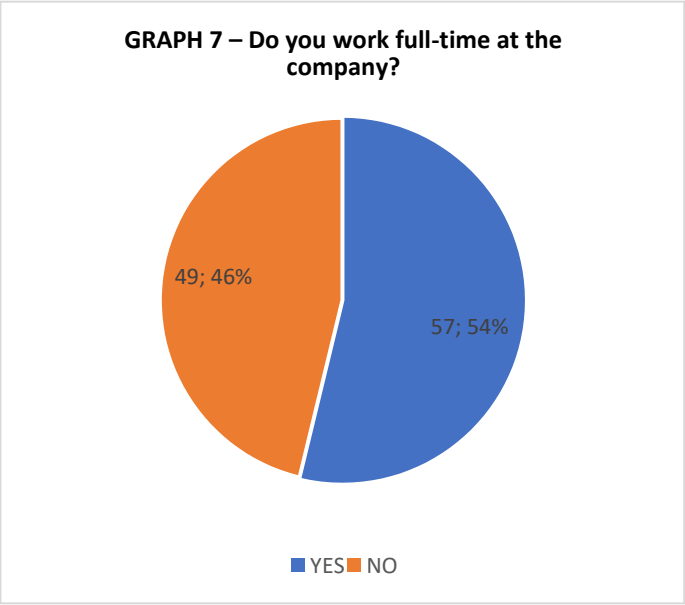
Total surface area

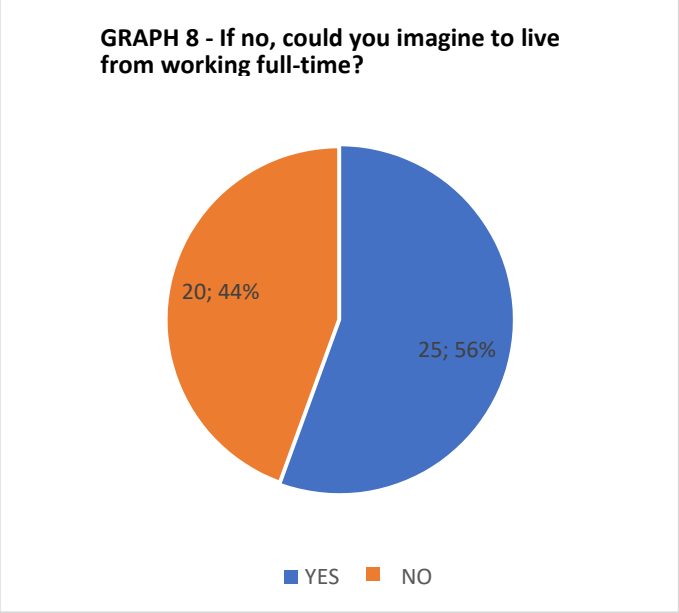
Farms have an average size of 26.3 ha, ranging from particularly small units (less than 1 ha) to larger units (over 50 ha). The majority of them, however, have an average size: between 1 and 5 ha and between 5 and 20 ha.



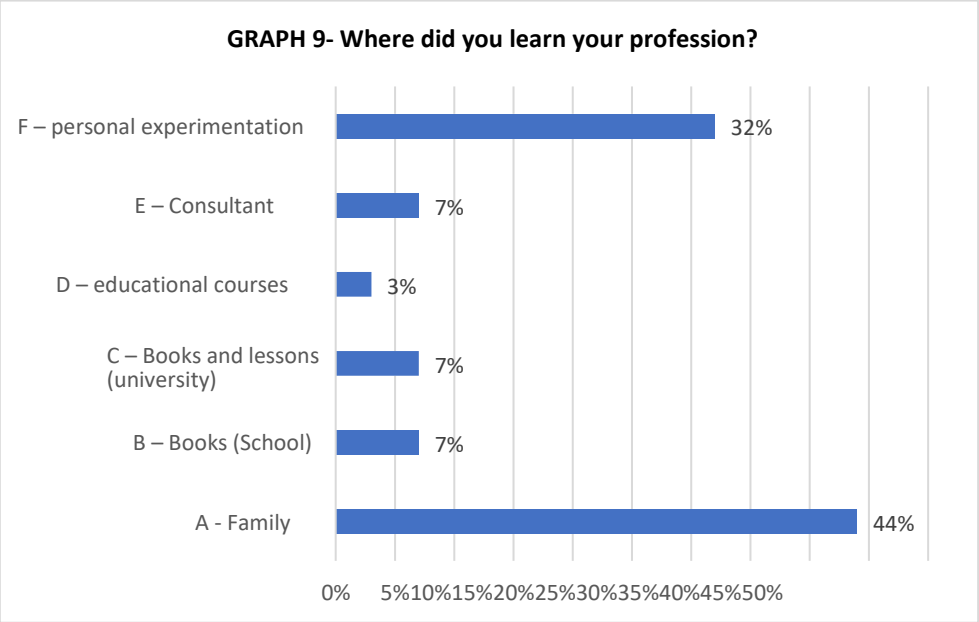
Labor in the company

Regarding work in the company, 57% of the respondents work full time and 46% do not. Those who responded negatively were asked if they could imagine living only from their work and 56% said yes, while 44% said no.





Respondents acquired the knowledge to work in agriculture primarily within the family and through personal commitment and their own aptitudes to develop technical solutions to specific business needs. School, university and training courses were found to be of little relevance in comparison.



In line with the above, with the exception of 5 companies that did not respond, 95 companies are family owned and 6 are not.

When asked about the interest of children in succession and taking over the business, 79 out of the total sample answered. Of these, the 40 farmers who responded positively also expressed the extent to which from 1 (a little) to 5 (a lot) their children were willing to continue farming (Figure 12).

GRAPH 10- Is your company family owned?

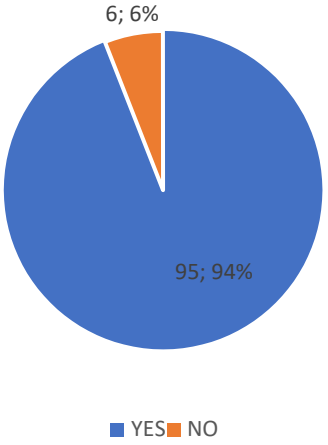
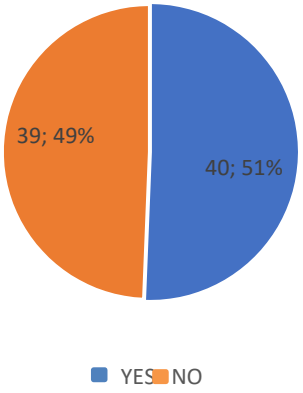
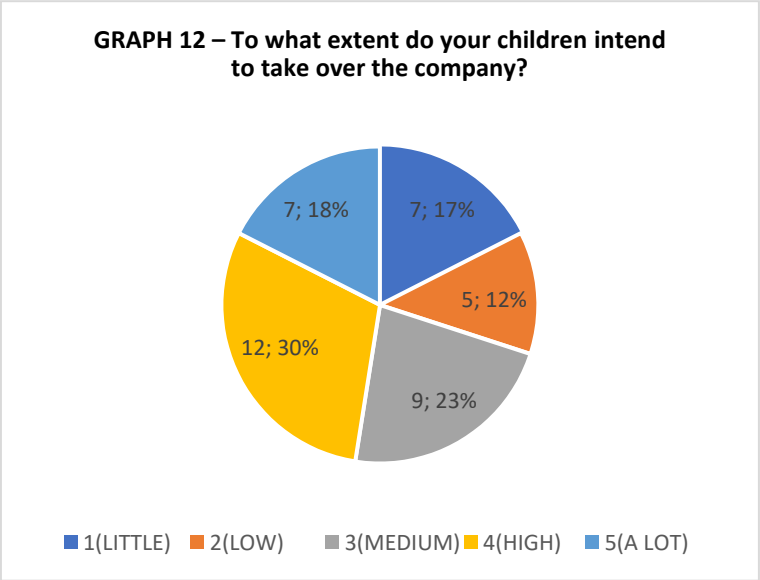
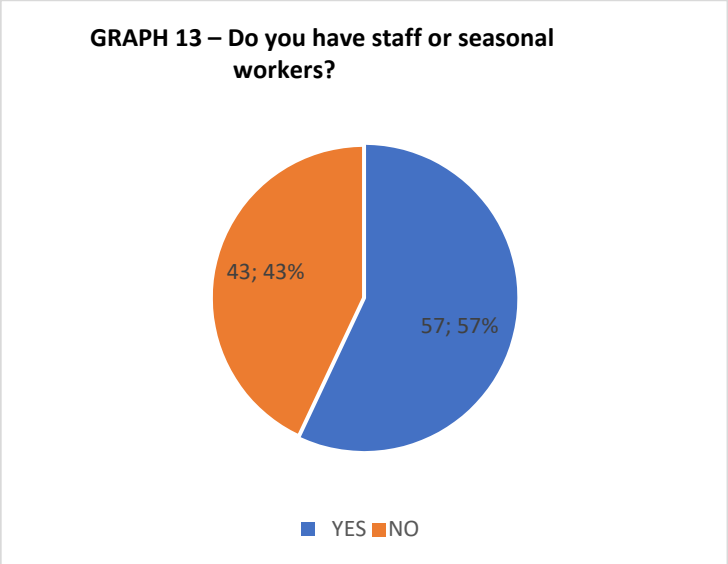


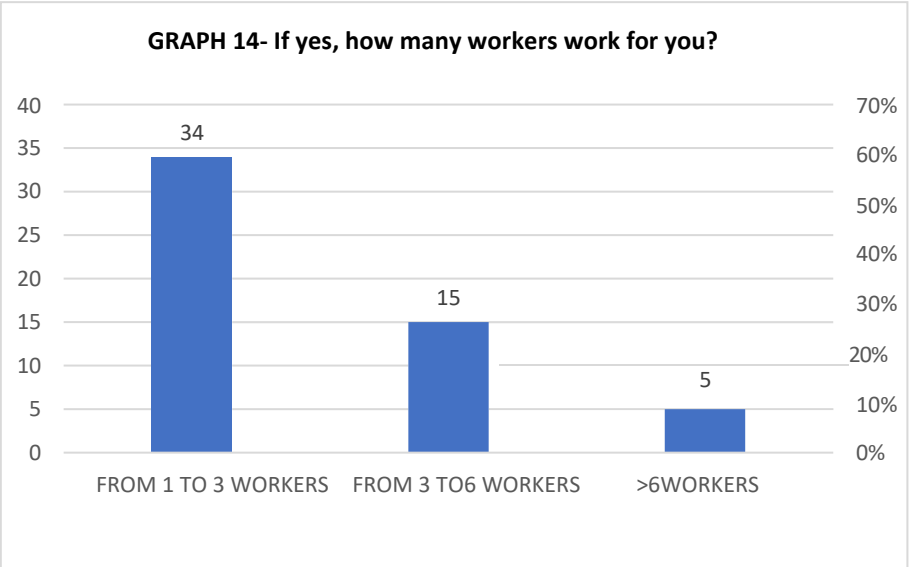
GRAFICO 11 – Do you have children that would like to take over the business?

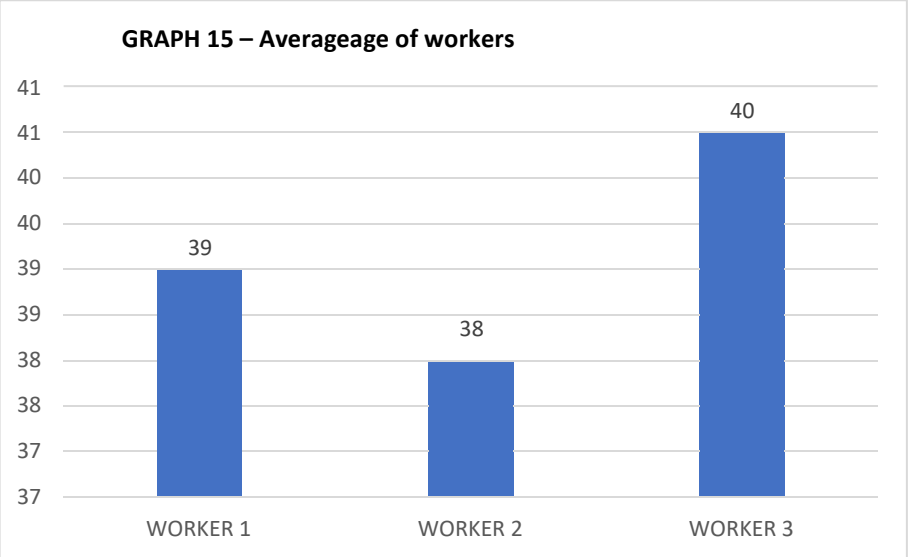




57 companies said that they have stuff employed and specified the number of their workers and their age (graphs 13,14,15).

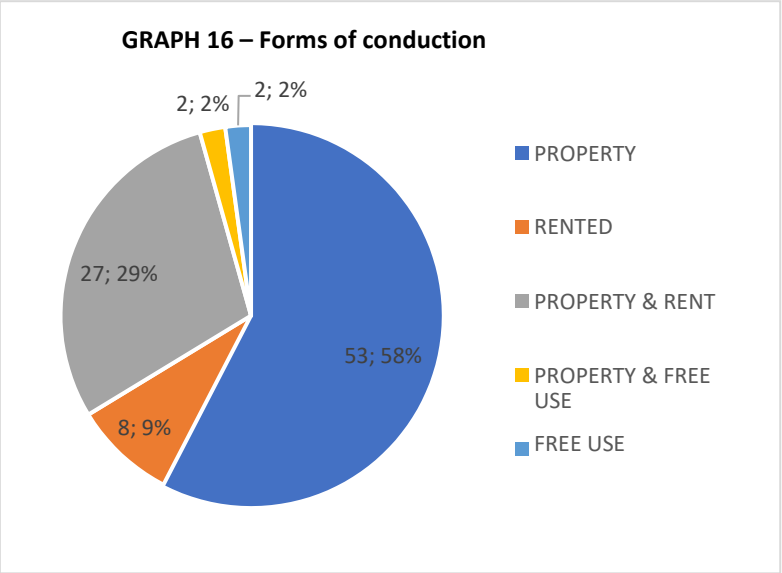






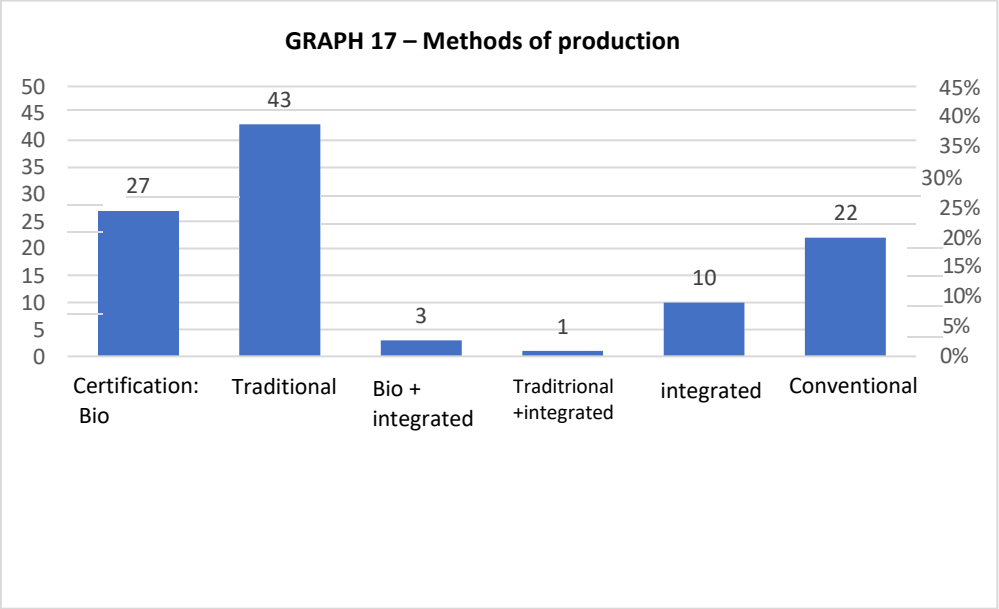
Form of conduction

Fifty percent of the companies own land, while the remaining part is divided between rent (8%), free use (2%) and mixed forms (property and rent, 26%; property and free use, 2%). The form of conduction was not detected for 13 farms in the sample.

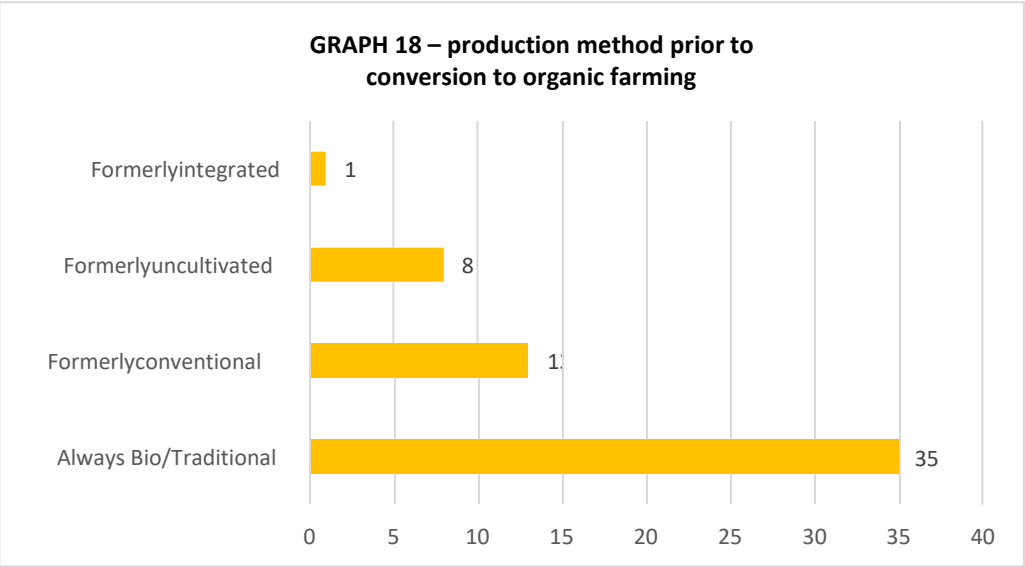


Methods of production

43% of farms adopt the "traditional" production method, i.e. according to the ancient practices of tillage and without the use, in general, of synthetic plant protection products; 27% adopt the organic production method in compliance with the requirements of EC Reg. 834/2007 on organic production and labelling of organic products and subsequently; 21% adopt the conventional method; 9% adopt the integrated production model; 4% adopt combinations of several production methods depending on the crops.

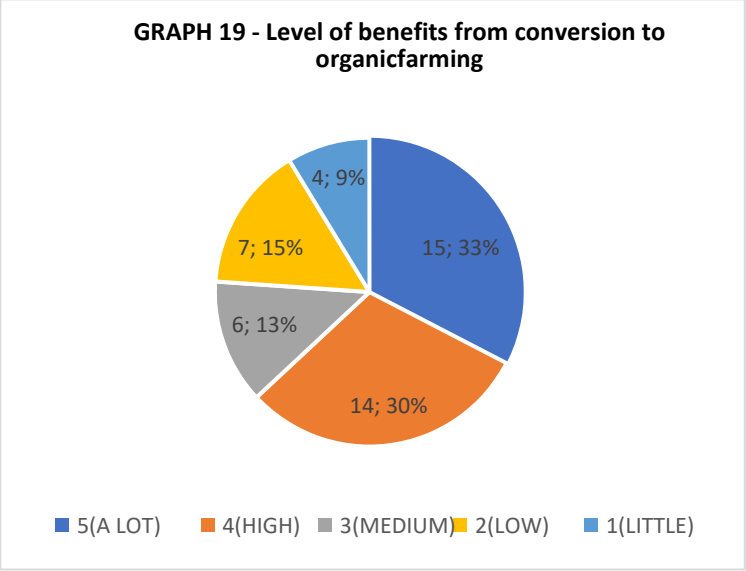


For the farms that produce organically or traditionally, with the exception of 13 that did not express an opinion, the method adopted before conversion was also recorded (graph 18). It can be seen that 35 farms did not go through a real conversion period, having always cultivated with organic and/or traditional methods, 8 began their activity on abandoned and/or uncultivated land, 13 worked with conventional methods and 1 cultivates according to the integrated production model.



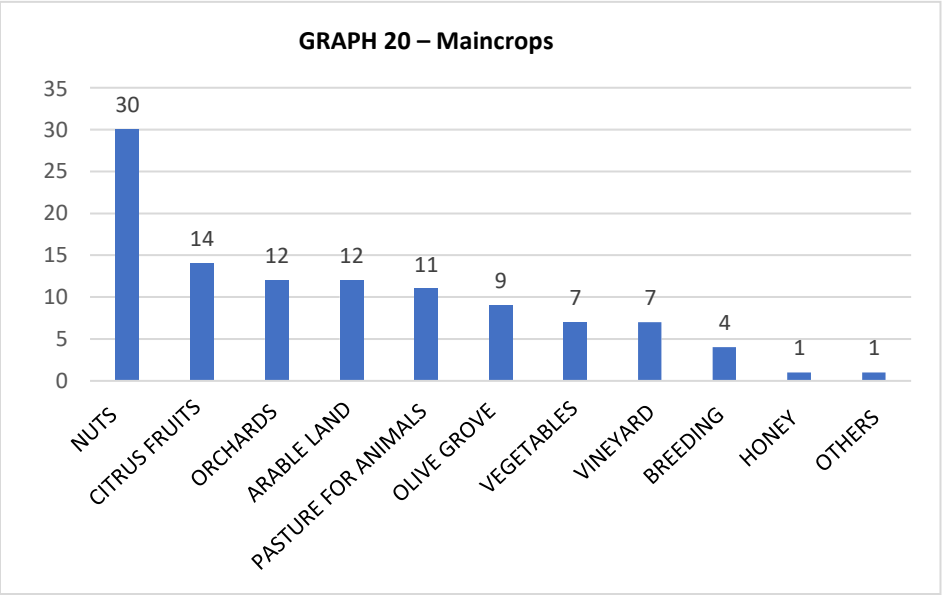
In addition, 66% of organic and conventional farms answered that they had gained benefits from converting to the organic production model. The remaining farms (24%) did not answer the question. Specifically, Figure 19 shows the level or degree of benefits for the farms: 15 out of 46 farms (33%) indicated "very much", 14 (30%) "high", 6 (13%) "medium", 7 (15%) "low" and 4 (9%) "very low".

"low" and 4 (9%) "little".

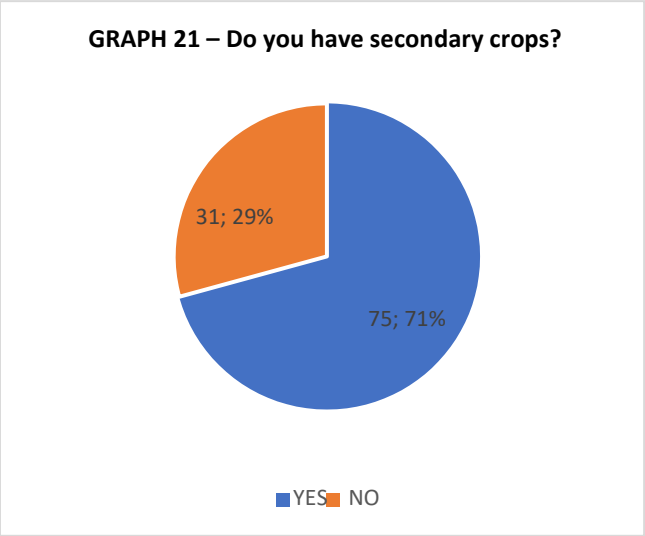


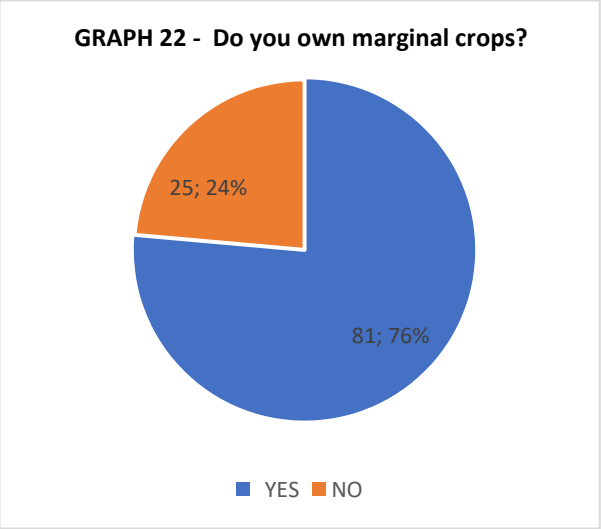
Production addresses

The main crops of the sampled farms, shown in Figure 20, have been grouped into 12 categories. Among nuts, pistachio, almond and hazelnut groves are the most important. With regard to citrus fruits, the farms in question produce mainly oranges and lemons. Among orchards, strawberries, peaches, apples and pears prevail. In a few cases, these are specialised and monoculture farms, but in general there are mixed or specialised farms, in exclusive or associated appreciation.



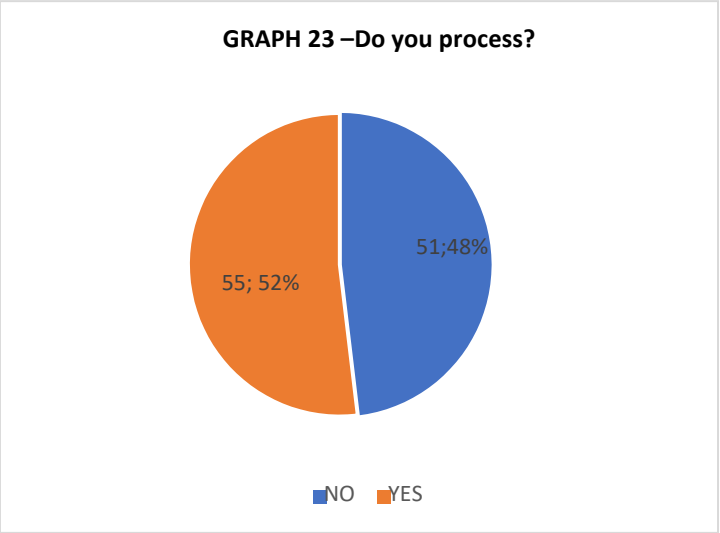
Moreover, as can be seen from Graphs 21 and 22, most farms also have secondary and marginal crops such as small olive groves, orchards and vegetable gardens. This was to be expected, since the sample surveyed consisted mainly of family farms, for which the coexistence of several crops has a subsistence as well as a commercial and technical-agronomic significance.

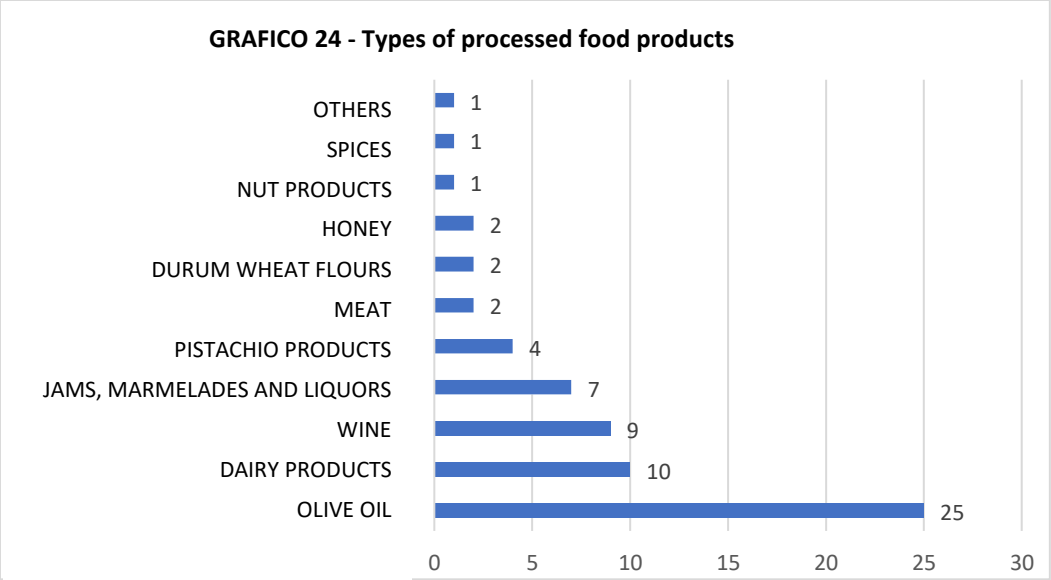




Processed Products

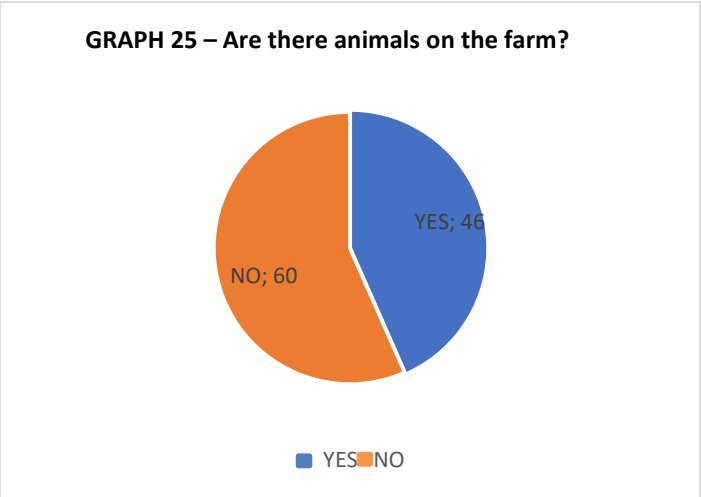
As shown in Graph 23, 52% of the sampled companies process their products, while 48% do not. The types of food products obtained are shown in Graph 24.





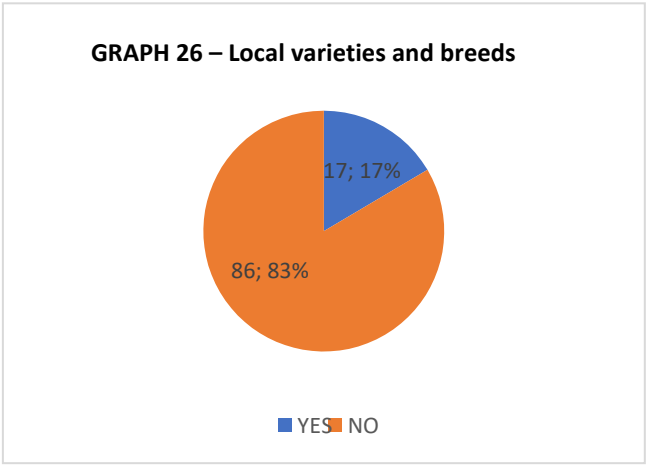
Presence of animals on the farm

Out of the total sample, 46 farms own animals and 20 of these are those that raise them for the sale of live animals or for the production of meat, milk and/or cheese. The remaining part, instead, use the production of their animals for their own consumption or own pets.



Local varieties and breeds

With regard to local genetic resources, 17 farms rear native animal breeds or cultivate local plant varieties (Sicilian hens, Ragusan donkeys, Comisana, Sardinian and Belice Valley sheep, local varieties of durum wheat). This data confirms the situation of progressive numerical reduction of indigenous Sicilian populations, which, cultivated and/or bred using traditional techniques, can make a decisive contribution to soil and environmental protection and, in general, to maintaining the local economy, traditions and culture.

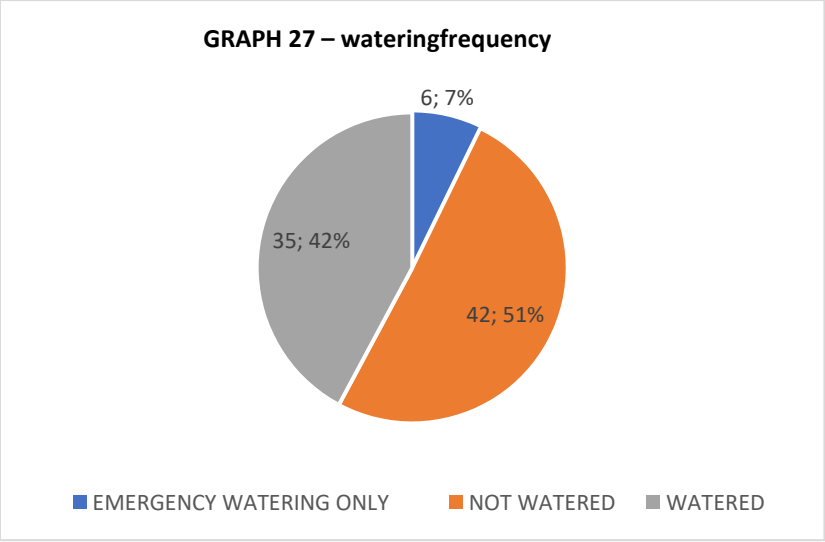


Access to seeds

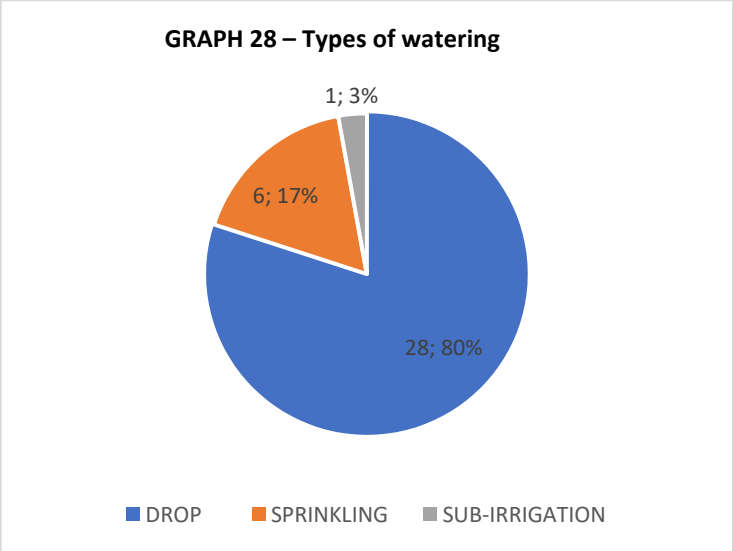
When asked about the ease of access to seed, a high percentage of farms did not respond (45%), 40% said they had easy access and the remaining 15% had difficulties of varying intensity. Holdings that self-produce seed (3) and those that do not sow seed (5) are excluded. In addition, of the 39 farms that said they had easy access, 20 use non-chemically treated seed, 8 use treated seed, 4 did not answer and 5 said they did not know if the seed they used was chemically treated or not.

Watering

With regard to watering management, 42 farms cultivate without watering, taking advantage of minimum rainfall, 35 farms water frequently, 6 farms water only in case of emergency, i.e. when weather conditions occur that affect the yield, and 23 farms did not respond.



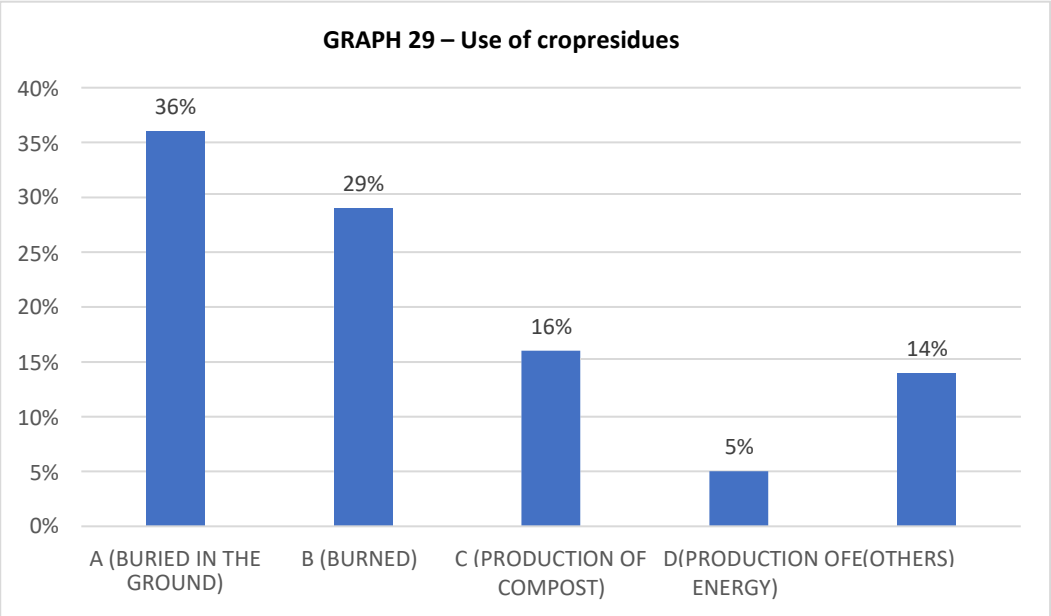
In the sample farms that water, the most common types of watering systems are drip and sprinkler. Only one farm uses sub-irrigation.



Use of crop residues

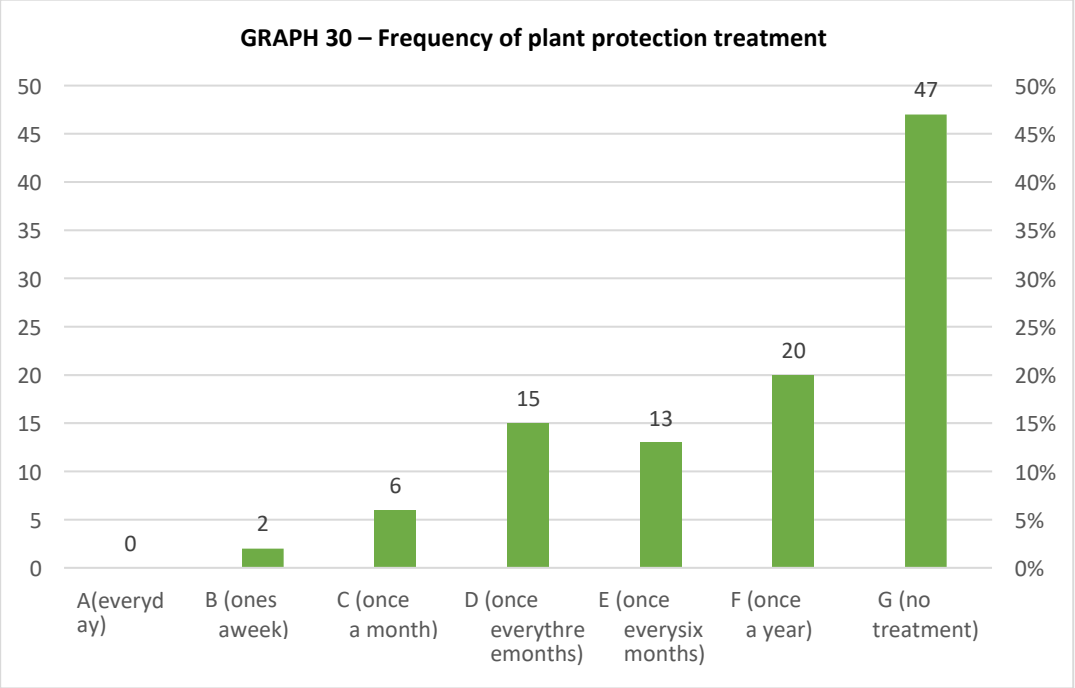
Crop residues are used for a variety of purposes, and graph 29 illustrates the response percentages for each category (burial, combustion, compost production and energy production). From the answers given, it is possible to appreciate the effort made by farmers in the management of their crop residues: the most frequent use is the burial of residues after chopping, followed by combustion in the field, composting, other (item valued mainly through the reporting of natural mulching practices and domestic heating) and energy production. While landfilling, composting and energy production are positive practices, field burning of crop residues, which is still widely used (29%), implies a number of disadvantageous consequences for the environment including the release of pollutants into the atmosphere, damage to soil microflora and the loss of organic matter in the soil surface layer.

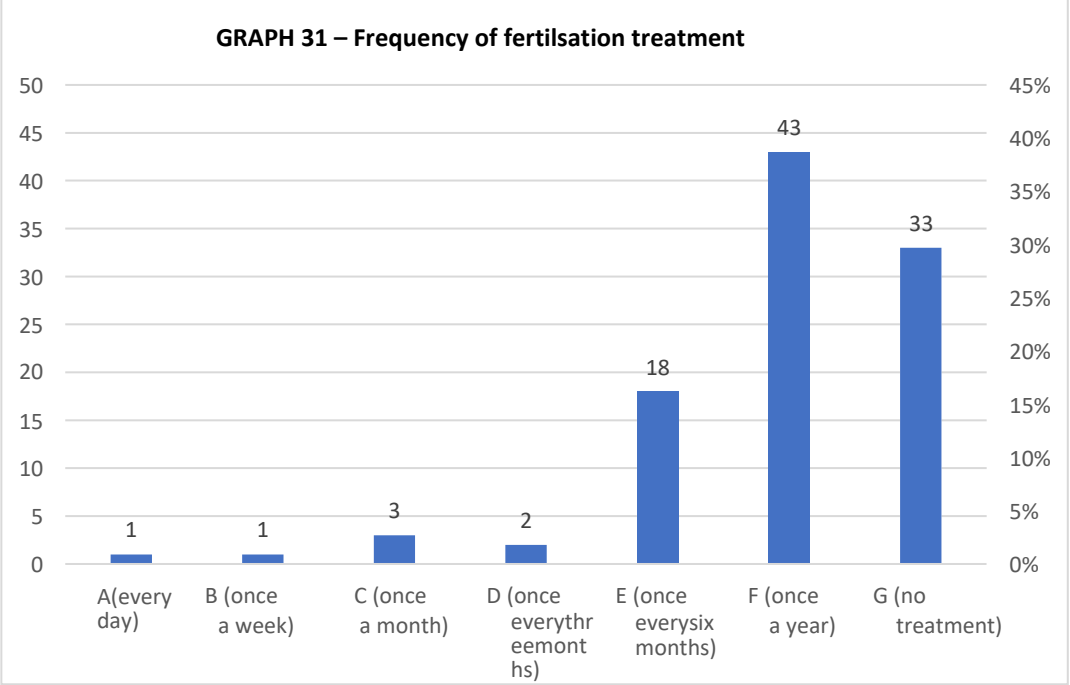
It is probably still adopted because of the speed of residue removal, the reduction in weed load and the elimination of certain biotic adversities (e.g. phlebotrys in olive trees).



Plant protection and fertilisation treatments

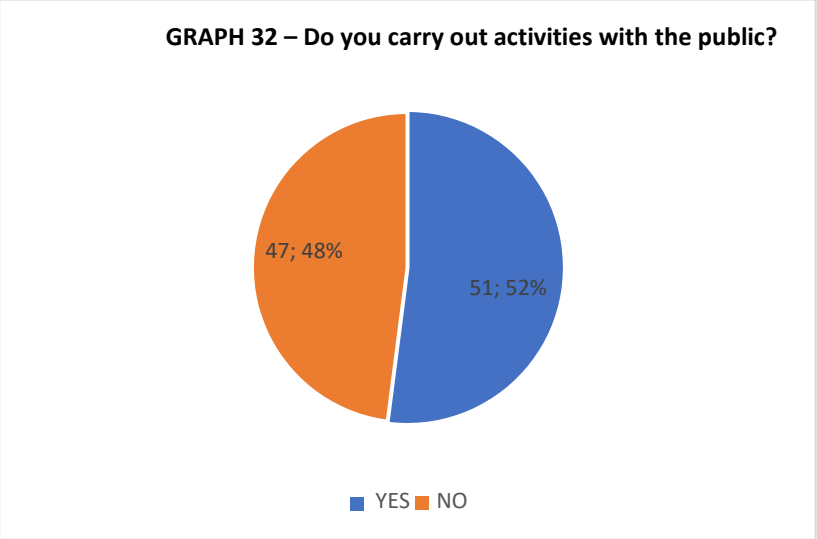
The frequency of plant protection and fertilisation treatments on the farms is shown in Graphs 30 and 31. For plant protection treatments, the most frequently given response category was no treatment, which is the best option from an environmental point of view. For fertilisation treatments, no treatment is the second most frequently given response. The non-response rate is minimal for both questions: out of the total sample, only four farms did not answer for plant protection treatments and two for fertilisation treatments. In both cases, therefore, there is a tendency to limit the use of external inputs, which farmers themselves recognise as contributing factors to soil degradation, contamination of water bodies and loss of biodiversity.


GRAPH 30 – Frequency of plant protection treatment
50
45
40
35
30
25
20
15
10
5
0
50%
45%
40%
35%
30%
25%
20%
15%
10%
5%
0%
0
2
6
15
13
20
47
A(everyd ay)
B (ones aweek)
C (once a month)
D (once everythre emonths)
E (once everysix months)
F (once a year)
G (no treatment)

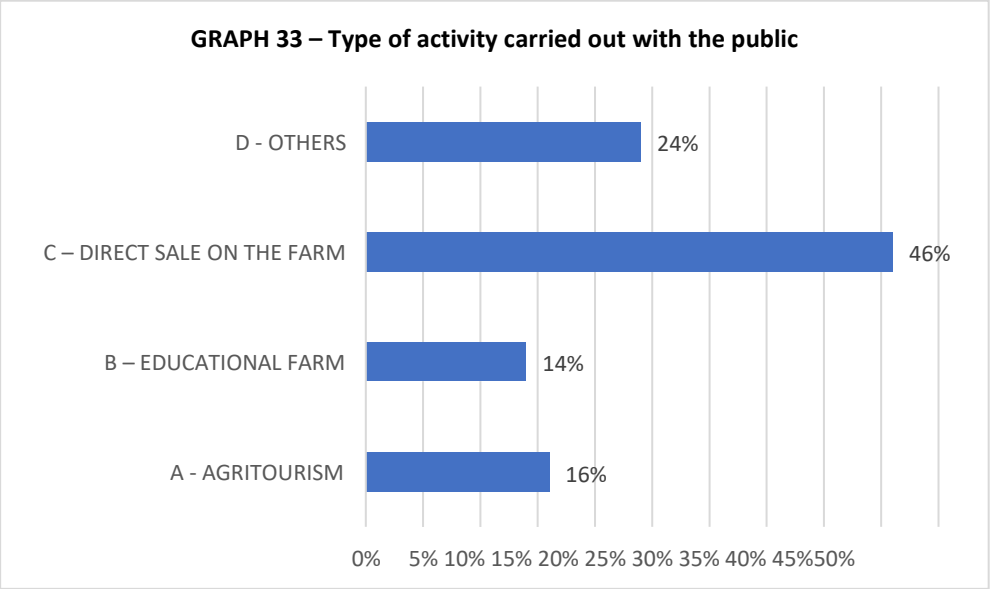

GRAPH 31 – Frequency of fertilsation treatment
50
45
40
35
30
25
20
15
10
5
0
45%
40%
35%
30%
25%
20%
15%
10%
5%
0%
1
1
3
2
18
43
33
A(every day)
B (once a week)
C (once a month)
D (once everythr eemont hs)
E (once everysix months)
F (once a year)
G (no treatment)

Activities with the public and marketing

The respondents, with the exception of 7 who did not express their opinion, answered the question on carrying out activities with the public as shown in Figure 32.

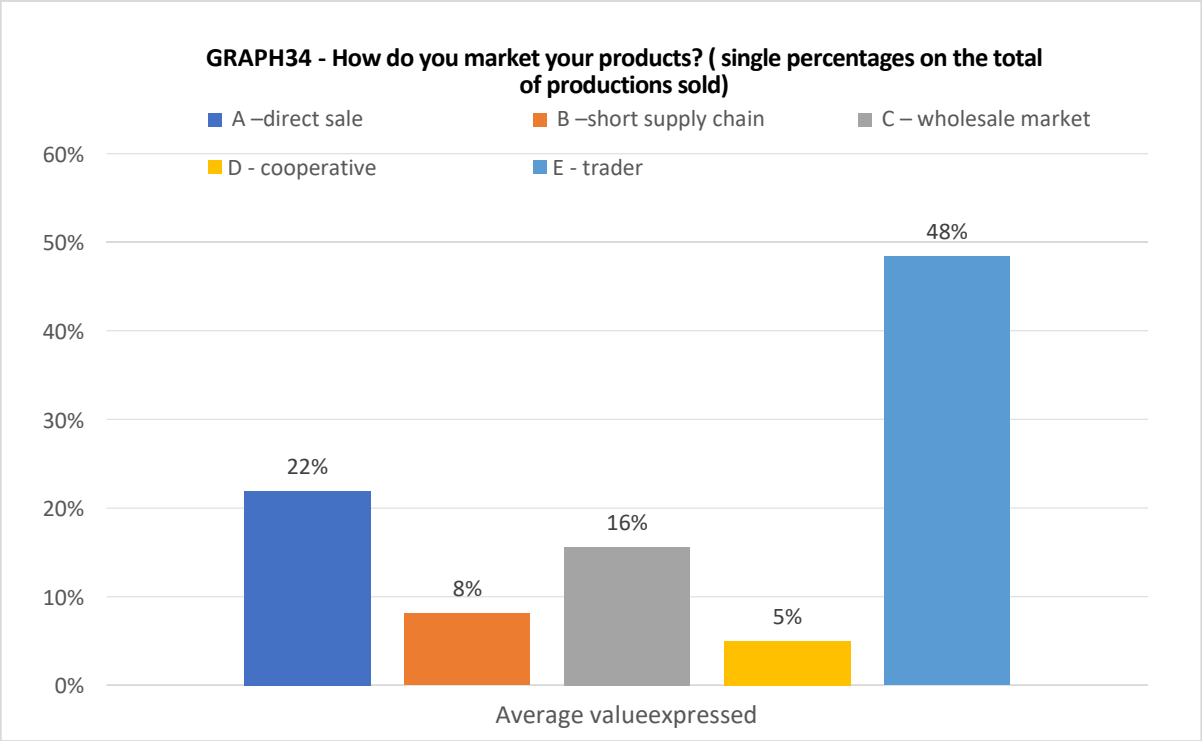


Those who carry out activities with the public also indicated the type(s) of activity, in the case of multifunctional farms. Direct sale on the farm" was the most common type of activity with the public, followed by "other", "agritourism" and "educational farm". With the item "other", some interviewees valorised activities such as horse riding, participation in fairgrounds and festivals, "pick up your own" plant sales, tastings and guided tours.



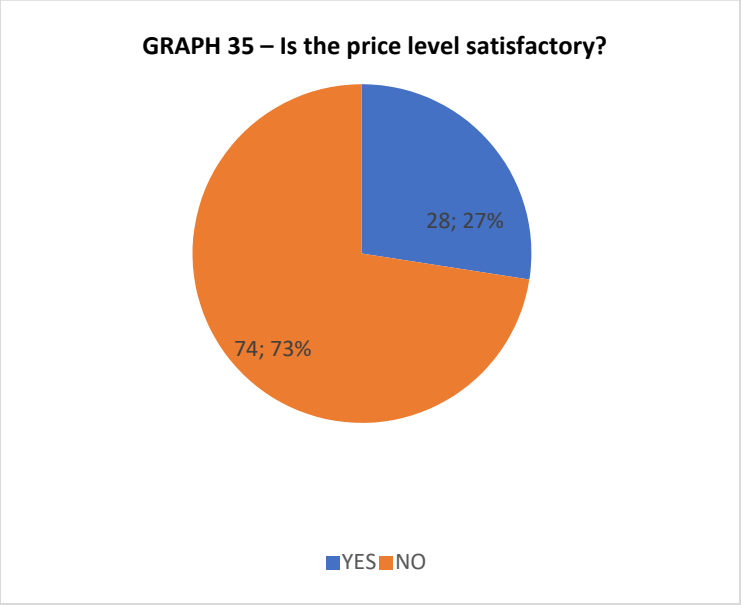
Afterwards, farmers were asked the question "How do you market your products? Express the individual percentages of sales (direct sale on the farm, through short supply chain, wholesale, through a cooperative, through a trader) out of the total production sold'. For the evaluation of the answers given to this question, the average of the percentage values expressed by the respondents for each single item was calculated (graph 34). The highest average value was found in the trader category, followed by direct sale, wholesale market, short supply chain and cooperative. For a more critical view of the results, the minimum value expressed, the maximum value expressed and the prevalent value expressed were also calculated for each response category. In all the items, the minimum value expressed was 0 and the maximum value 100. With respect to the prevalent value, this was also 0 for all categories, with 52, 89, 77, 96 and 41 farmers attributing this value to direct sales, short chain, wholesale market, cooperative and trader respectively. It can be deduced, therefore, that the sale of the products of the farmers in the sample analysed is more

linked to the relationship with traders, while the other experiences of trade, especially cooperatives and short chain, are more limited:

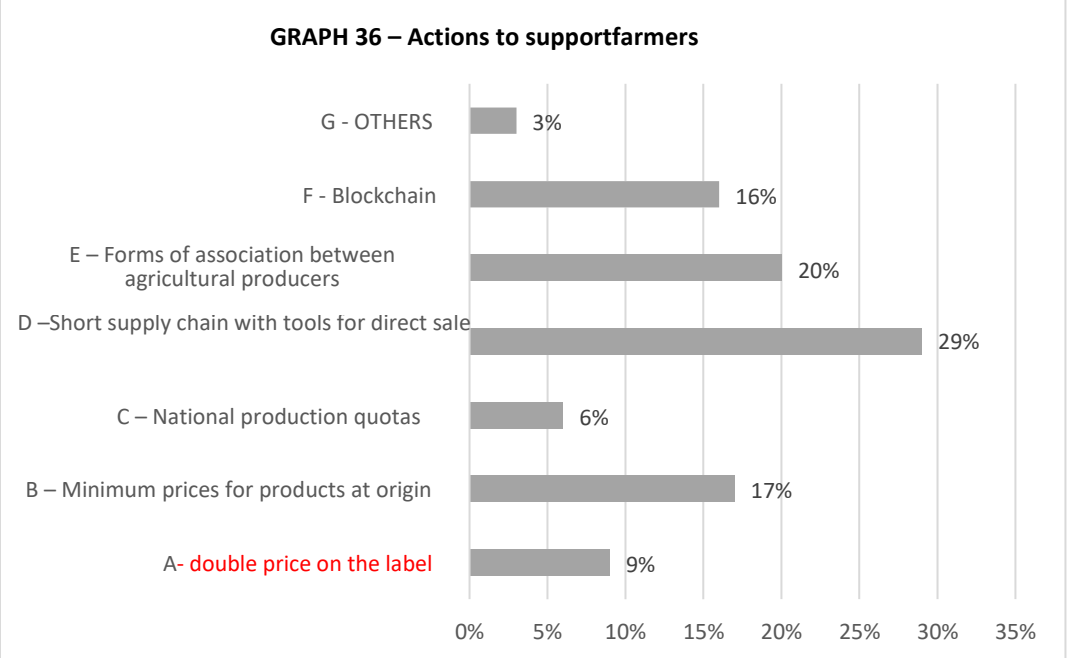


Price level and farmers' income

To the question "Do you consider the price level satisfactory?", 74 farms answered no, 28 yes and 4 gave no answer. This distribution highlights a situation of economic uncertainty for most small producers and the need to reorganise local supply chains, control imports and ensure a fair selling price.



With the exception of two farms that did not reply, all the others indicated the different actions that, in their opinion, among the proposed options, could support their income.



The spread of short supply chains, the creation of forms of associationism, minimum prices for products at origin and the use of blockchain technology were the most appreciated categories. Through the category "other", the following actions were indicated:

- decrease in the import of products from abroad;

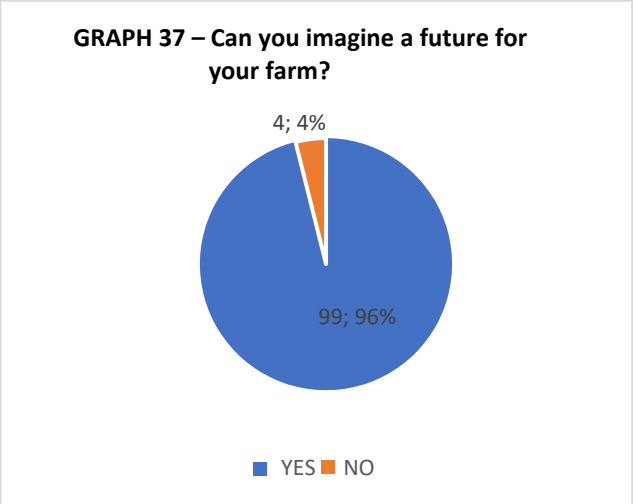
- increased controls to combat counterfeiting of Sicilian and Italian food products;

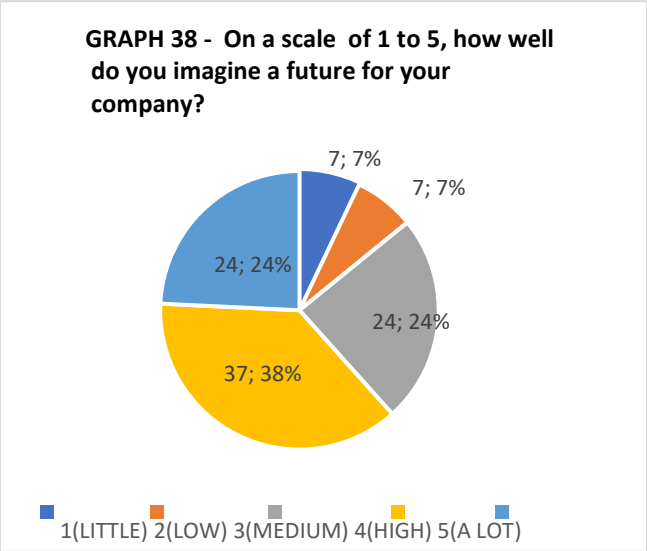
- enhancement and promotion of typical products;

- fight against the concentration of bargaining power of large-scale retail chains in the local food chain;

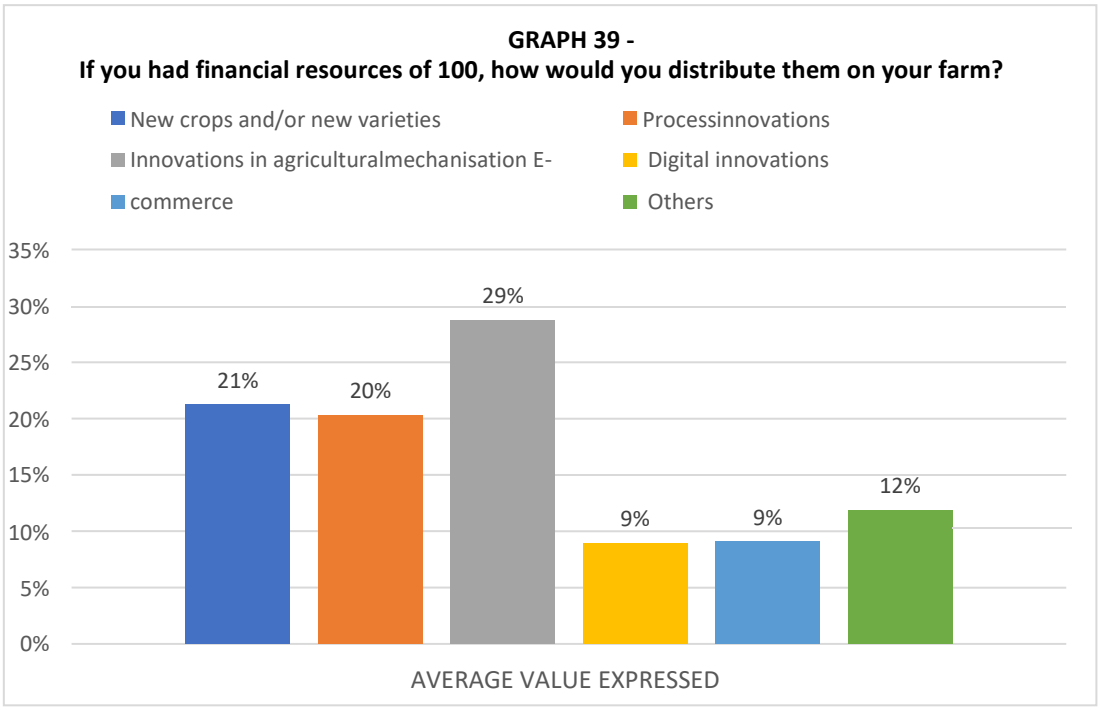
- reducing the complexity of the supply chain by reducing intermediate steps.

In spite of the difficulties, when asked about their ability to immagine a future for their company, 99 companies responded positively, also indicating to what extent, from 1 (a little) to 5 (a lot).



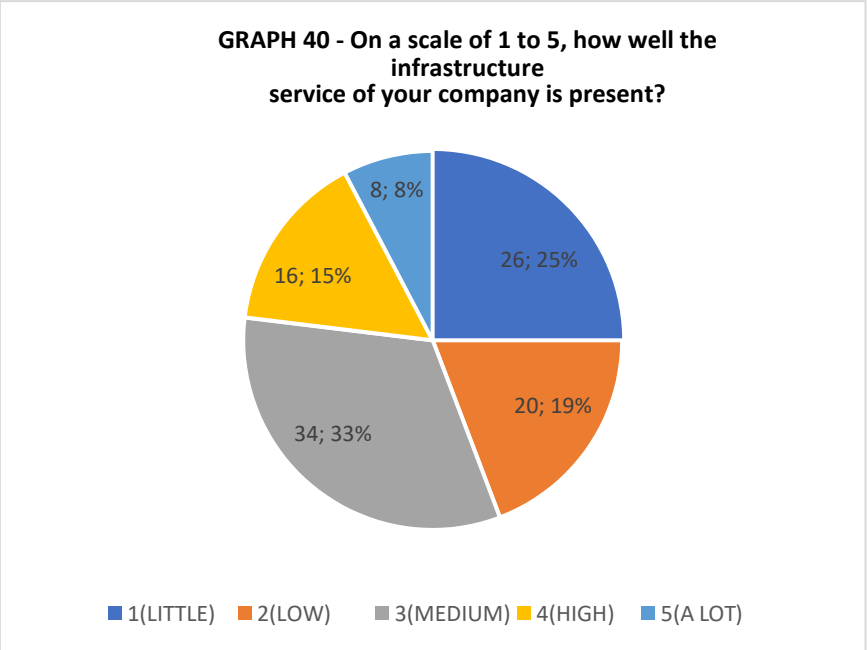


The farmers interviewed were also asked to hypothesise the investment of certain financial resources available to them. Each one of them divided the resources equal to 100 between the following types of investment: new crops, innovations for agricultural mechanisation, e-commerce, process innovations, digital innovations and others. It can be seen that the highest average values were found for innovations for agricultural mechanisation, and the lowest for digital innovations and e-commerce. In all items, the lowest value expressed was 0 and the highest was 100, with the exception of e-commerce for which the highest value expressed was 80. With respect to the prevailing figure, it too was 0 for all categories, being 46, 46, 25, 65, 63 and 74 the farmers who attributed this value respectively to new crops, process innovations, innovations for agricultural mechanization, digital innovations, e-commerce and other. It can be seen, therefore, that the farmers in the sample are less attracted by digitalisation and e-commerce and more attracted by the possible changes in structure that are implied by process innovations, new crops and/or varieties and agricultural mechanisation.



Infrastructure serving farms

Similarly, the efficiency and competitiveness of the markets depend on the optimisation of the infrastructure network, both tangible and intangible, available to companies. In this regard, the companies in the sample, with the exception of three that did not express themselves, gave a value from 1 (little) to 5 (very much) on the presence of local infrastructure: it emerged that for 33% of the companies, the infrastructure is present on average, for 26% it is not very present, for 20% it is present to a low degree, for 15% it is present to a high degree and for only 8% it is present to a high degree.

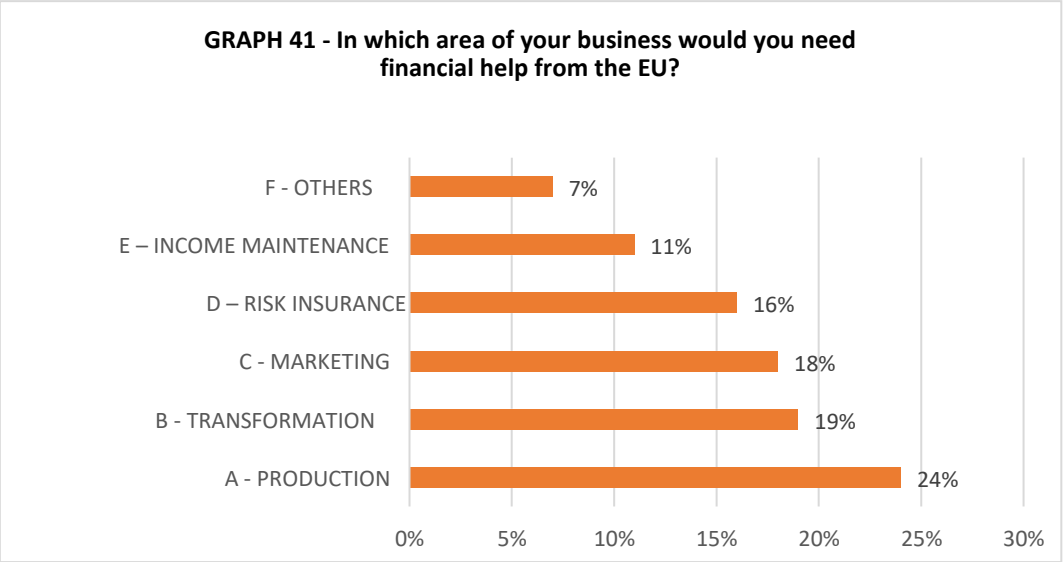


5.2 Financial contributions of the European Union

Critical business functions

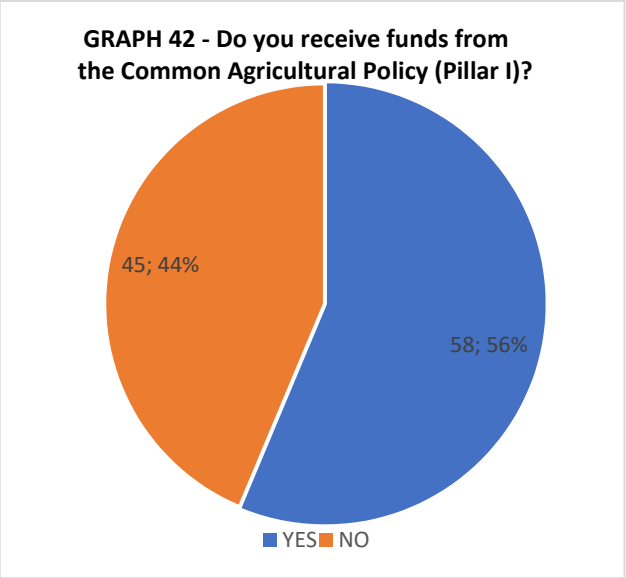
When asked which business function most requires financial support from the European Union, the companies responded by choosing several options at the same time. As illustrated in Graph 41, production is the business area in which the greatest need was expressed, followed by processing, marketing, income maintenance insurance and other. Under the category other, some companies highlighted the need for support in the following areas:

- consumer attractionstrategy;
- promotion and marketing of their products;
- extension of the farm's agricultural area;
- structural and organisational adaptation to integrate their activities with new services (agri-tourism, educational farms, social agriculture, etc.).



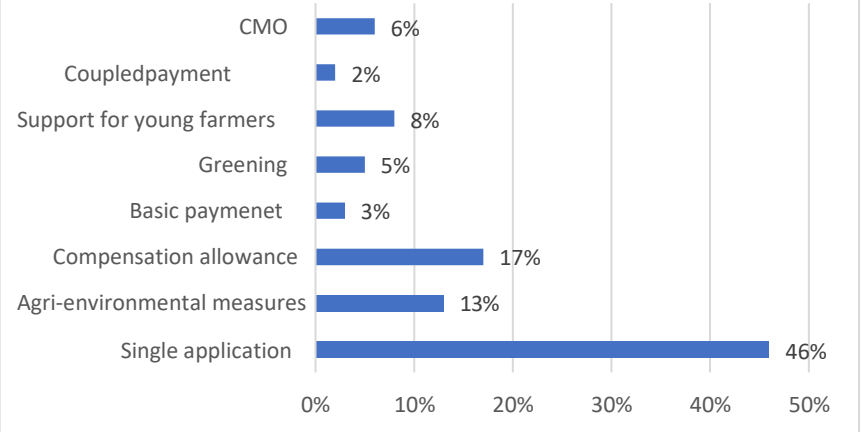
CAP funds

Funds from the first pillar of the CAP (direct payments to farmers and agricultural market management measures implemented under the CMO) are received by 58 farms out of the total sample. The remaining farms in the sample do not receive the funds (45) and a small number did not reply (3).



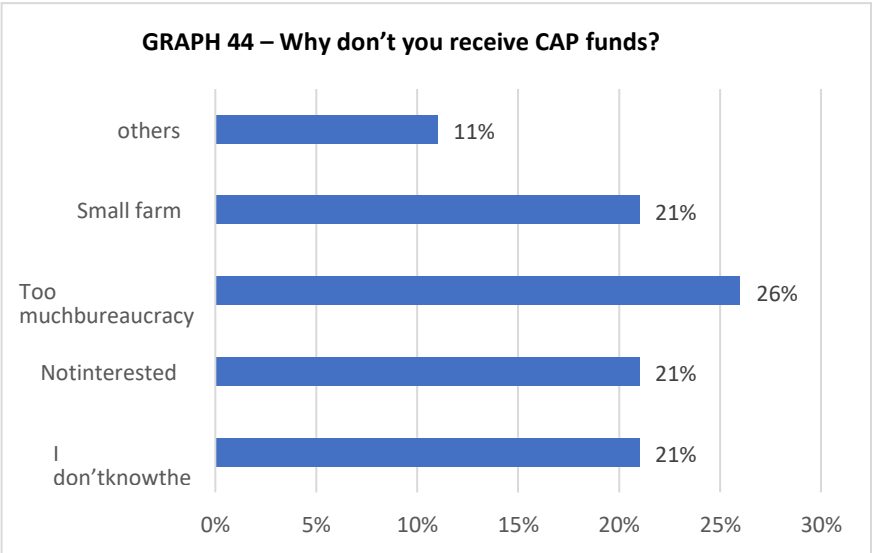
Graph 43 shows the types of received funds, of which the single application is the most widely perceived (by 45 out of 58 companies).

GRAPH 43 – Types of received funds (I pillar)



The reasons why companies do not receive CAP funds are too much bureaucracy in submitting applications, the small size of the company and the lack of knowledge about the announcements.

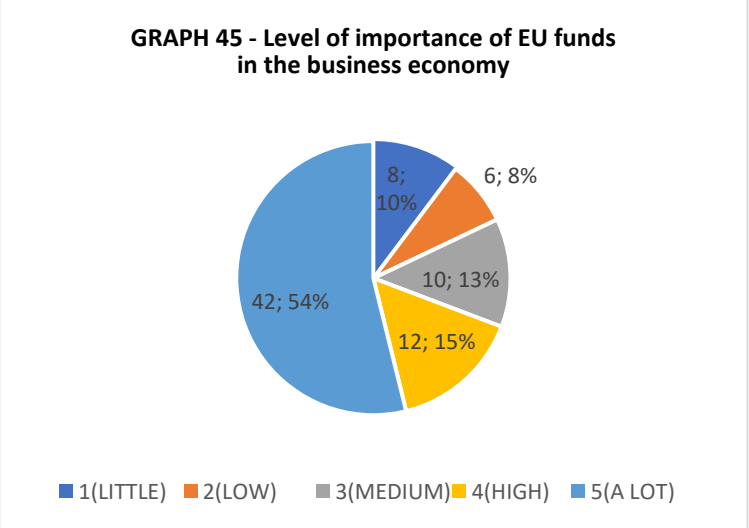
GRAPH 44 – Why don't you receive CAP funds?



These critical aspects therefore underline the need to:

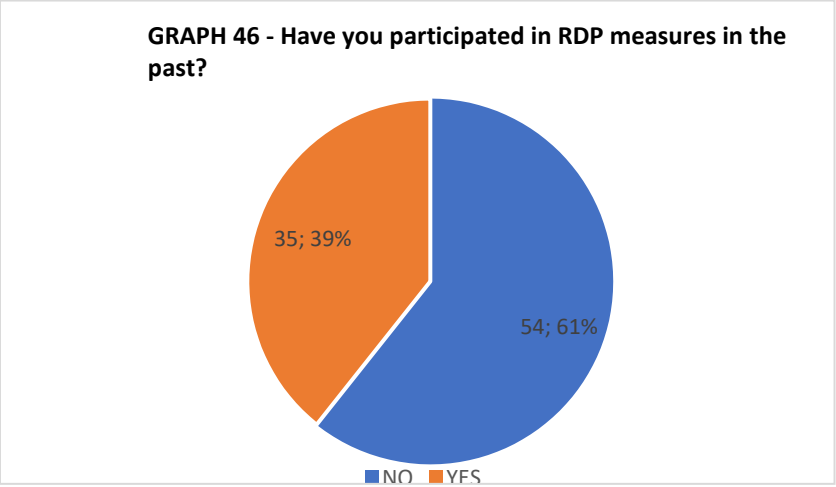
- reduce the bureaucratic burden and the complexity of the system for accessing CAP financial resources;
- increase the efficiency of administrations so that they can accompany entrepreneurial choices;
- stop rewarding rent, which only favours large companies, and consider the diversity of European contexts;
- promote information actions at regional and national level that explain the benefits of the CAP for the EU, European farmers and European citizens.

In spite of the difficulties mentioned above, EU funds play a key role for many companies in the economic management of their business operations: Graph 45 shows that these resources are assigned a value between 1 and 5 (respectively, low and very important). It can be seen that out of the 78 companies responding to the question, 42 companies consider EU funds to be very important, 12 highly important, 10 medium important, 6 low important, and 8 unimportant.



Rural Development Programme

With respect to the Rural Development Programme (RDP) of the Sicilian Region, the questionnaire allowed us to investigate the degree of adherence of the sampled farms to the different measures set out in it, both for the 2014/2020 programming period and for those prior to it. For the period prior to 2014/2020, with the exception of 17 farms that did not answer the question, 54 (61%) farms did not benefit from any of the measures activated and 35 (39%) did.

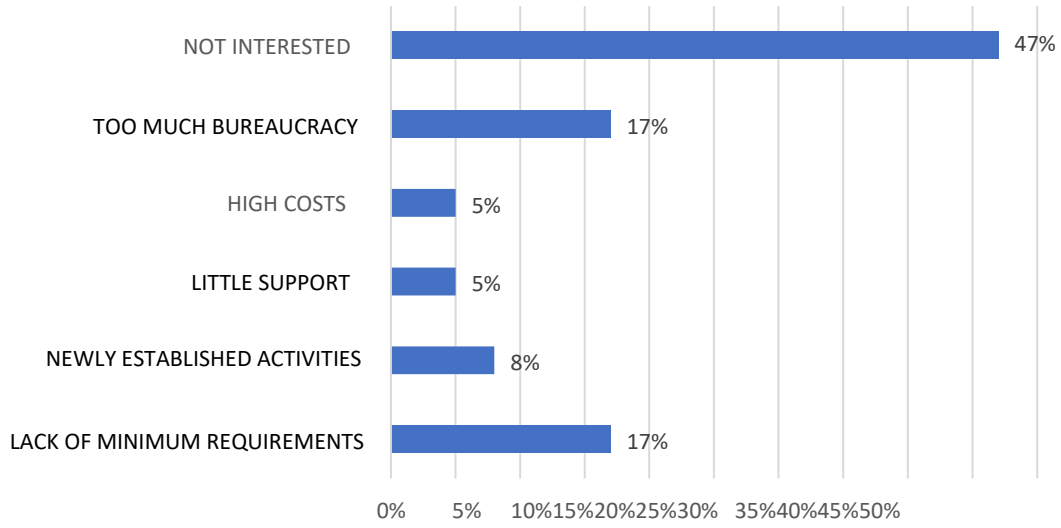


The list below contains the measures received by the 35 farms under Axis 1 'Improving the competitiveness of the agricultural and forestry sector', Axis 2 'Improving the environment and the countryside' and Axis 3 'Quality of life in rural areas and diversification of the rural economy' of the RDP 2007/2013 of the Sicilian Region:

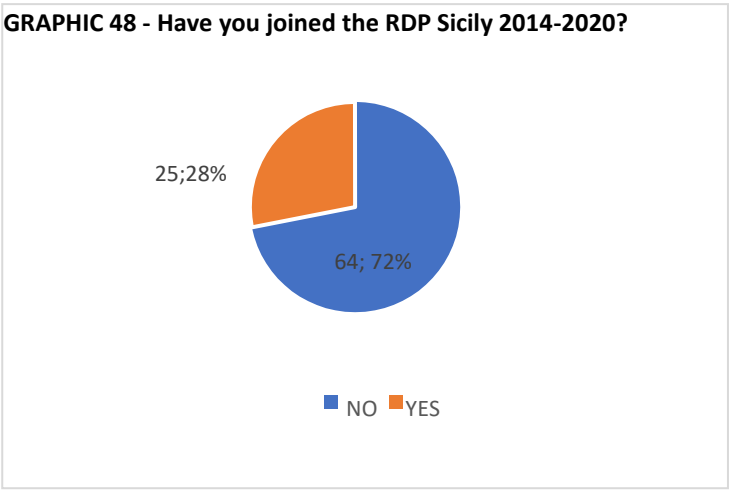
- MEASURE121 - Modernisation of agriculturalholdings
- MEASURE 112 - Setting up of young people
- MEASURE 211 - Compensatoryallowance
- MEASURE 214/1B - Organicfarming
- MEASURE 214/1 - Agri-environmentalpayments
- MEASURE 311 - Diversification into non-agricultural activities

Of the 54 farms that did not participate in the RDP, 36 said they did not do so for the reasons shown in Graphic 47, while the others did not give a precise reason.

GRAPHIC 47 - Why did you not join the RDP Sicily 2007/2013?



With reference to the last programming period (2014-2020), out of the total 64 sample farms that did not participate in any of the RDP measures, 25 did and 16 did not reply.



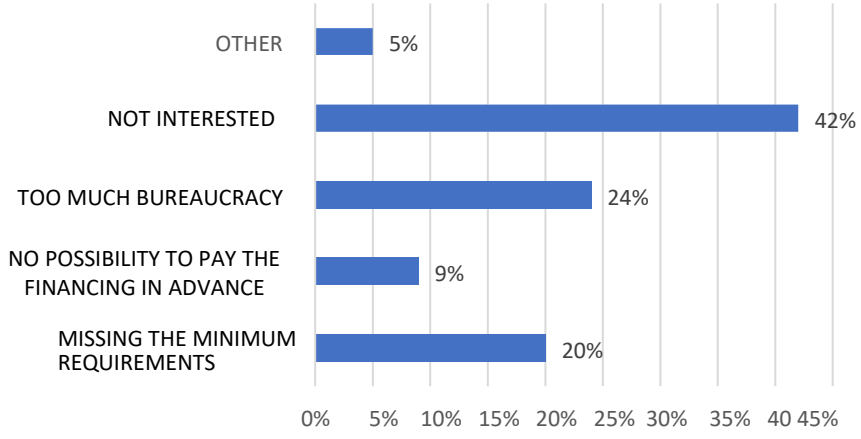
Among the measures to which the 25 companies subscribed, the following were noted:

- MEASURE 4.1 -Support for investments in agricultural holdings;
- MEASURE 4.4 -Support for non-productive investments linked to the fulfilment of agro-climatic-environmental objectives;
- MEASURE6.1-Start-up aid for young farmers;
- MEASURE 6.2 - Business start-up aid for extra-agricultural activities in rural areas;
- MEASURE 6.4 - Investment in the creation and development of extra-agricultural activities;
- MEASURE 11 - Organicfarming

With regard to farms that are not covered by the measures,
the main difficulties in accessing the funding are once again observed:

- -farm size and other access requirements and unachievable qualifying conditions;
- the excessive bureaucratic burdens that force farmers to hire qualified experts to prepare the necessary documents and to carry out the participation procedures;
- the difficulty in paying the financing in advance, which is disbursed by SAL;

GRAPHIC 49 – Why did you not join the RDP Sicily 2014/2020?



According to the indications found, the interviewed farmers show low interest and awareness of these financing devices.

These results, although not representative of the entire spectrum of Sicilian farmers, suggest, however, the need for greater support (informative and technical) for these farmers, who risk becoming increasingly sceptical due to the uncertainty of the benefits and the complexity of the system. Faced with long delays, excessive bureaucracy and the financial commitment to be anticipated, many farms prefer not to participate in the various forms of public contributions.

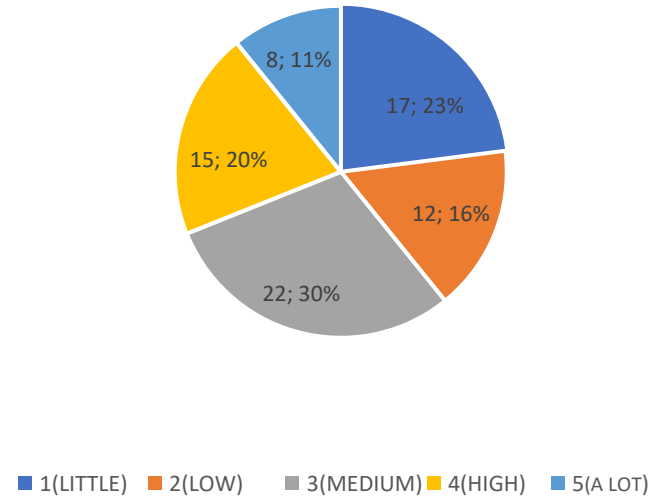
Not to use these funds is undoubtedly a serious shortcoming, especially if we consider that Sicily was the region in Italy that was provided with the largest financial endowment in the 2014-2020 EAFRD programming, for a total of 2,212,747,000 euro and an increase of over 27 million euro compared to the 2007-2013 RDP Sicily.

Main difficulties in accessing RDP funds

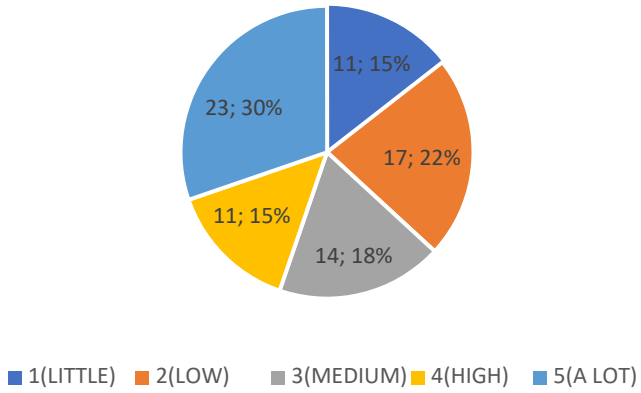
In order to give substantiation to the observations that were made, farmers were also asked to give their opinion on the main difficulties in accessing RDP funds, on a scale of 1 to 5, ranging from not very difficult to very difficult.

The graphics 50, 51, 52, 53 and 54 illustrate farmers' judgements for the items of 'difficulty in farm planning', 'working with trained planners', 'prior knowledge of opportunities/calls', 'regional bureaucracy' and 'correspondence with call access requirements' respectively. Graphic 55 compares the percentages measured for the different types of difficulties.

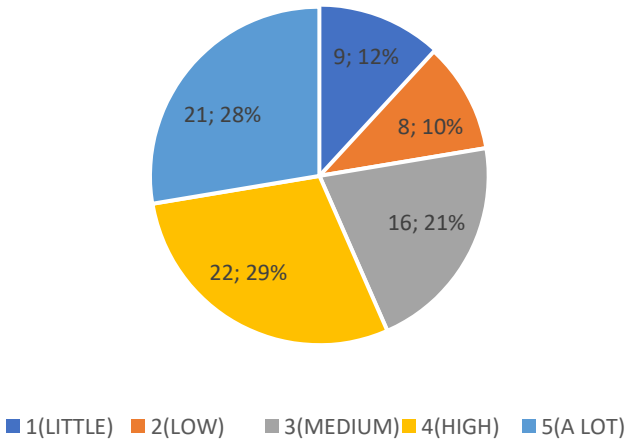
GRAPHIC 50 - Difficulties in farm planning

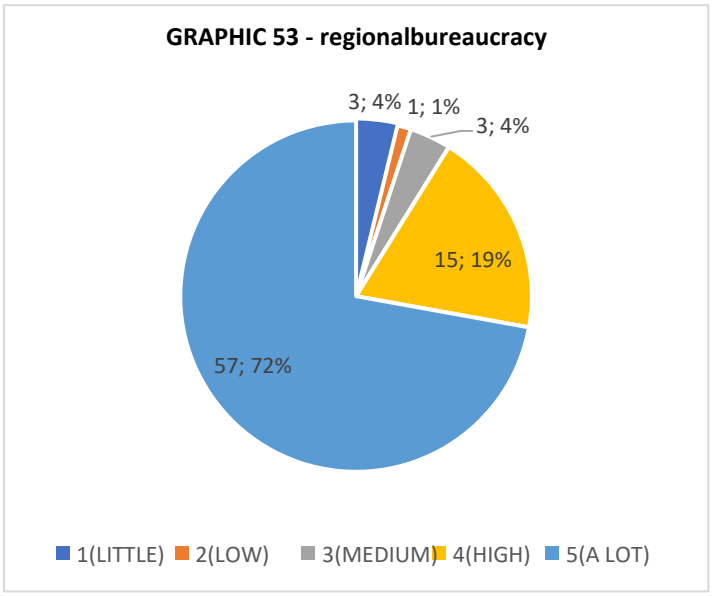


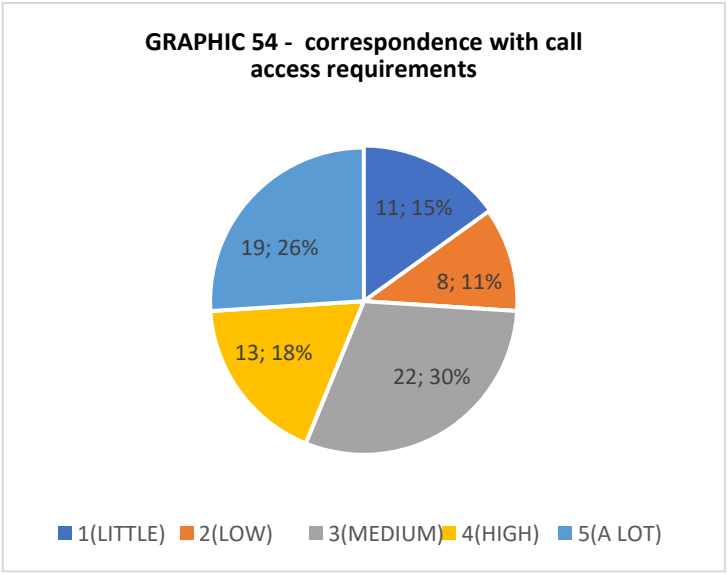
GRAPHIC 51 - Support from trained consultants and planners



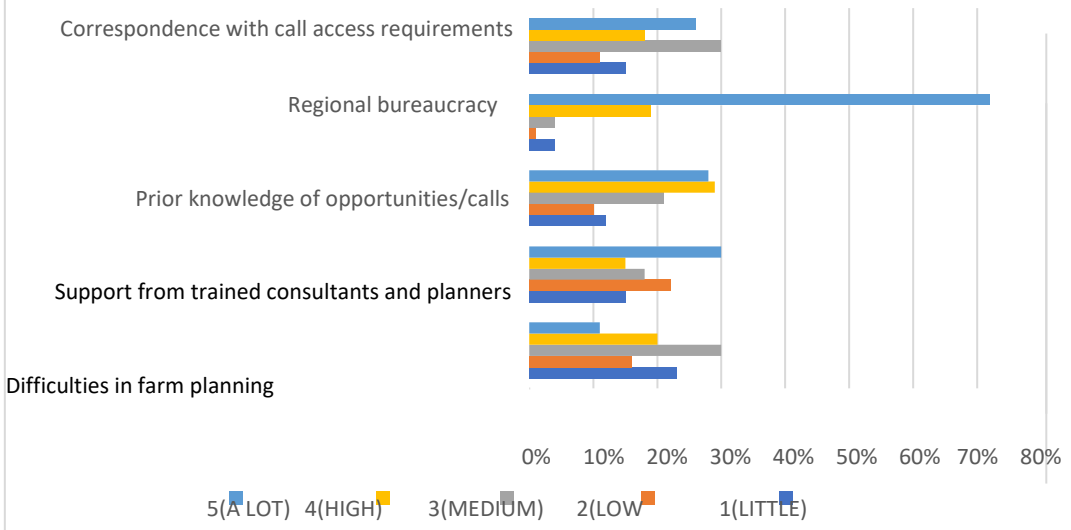
GRAPHIC 52 - Prior knowledge of opportunities/calls




GRAPHIC 53 - regionalbureaucracy
3; 4%
1; 1%
3; 4%
15; 19%
57; 72%
1(LITTLE)
2(LOW)
3(MEDIUM)
4(HIGH)
5(A LOT)


GRAPHIC 54 - correspondence with call access requirements
11; 15%
8; 11%
22; 30%
13; 18%
19; 26%
1(LITTLE)
2(LOW)
3(MEDIUM)
4(HIGH)
5(A LOT)

GRAPHIC 55 - Problems in accessing RDP calls reported by the observerd sample farms



The analysis also included the calculation of the average of the values expressed, the minimum value expressed, the maximum value expressed, the predominant value expressed and the variation coefficient for each category of difficulty (Table 2). In this case, it can be seen that the category with the highest average score (4.5, so above highly difficult) is regional bureaucracy. Following this, lower average scores were found for "prior knowledge of opportunities/calls", "correspondence with call access requirements", "support from trained consultants and planners" and "difficulties in farm planning". The highest prevalent values (5, very difficult) were recorded for the difficulties "support from trained consultants and planners" and "regional bureaucracy". Finally, the standard deviation was calculated to estimate the variability of the judgments made and, therefore, the higher it is, the greater the variability.

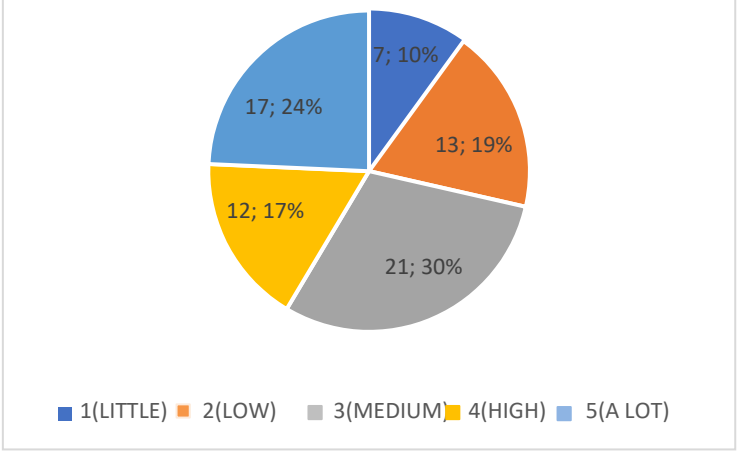
Table 2. Degree of difficulty in accessing RDP funds encountered by farmers

	Difficulties in farm planning	Support from trained consultants and planners	Prior knowledge of opportunities /calls	Regionalb ureaucrac y	Correspondenc e with call access requirements
Average value expressed (from 1 "not very difficult" to 5 "very difficult")	2,8	3,2	3,5	4,5	3,3
Minimum value expressed(from 1 "not very difficult" to 5 "very difficult")	1	1	1	1	1
Maximum value expressed (from 1"not very difficult" to 5 "very difficult")	5	5	5	5	5
Prevalent value expressed(from1"n ot very difficult"to 5"very difficult")	3	5	4	5	3
Coefficient of variation (standard deviation)	1,3	1,5	1,3	0,9	1,4
Number of farmers who have given the judgement	74	76	76	79	73
Number of farmers who did not give a judgement	32	30	30	27	33

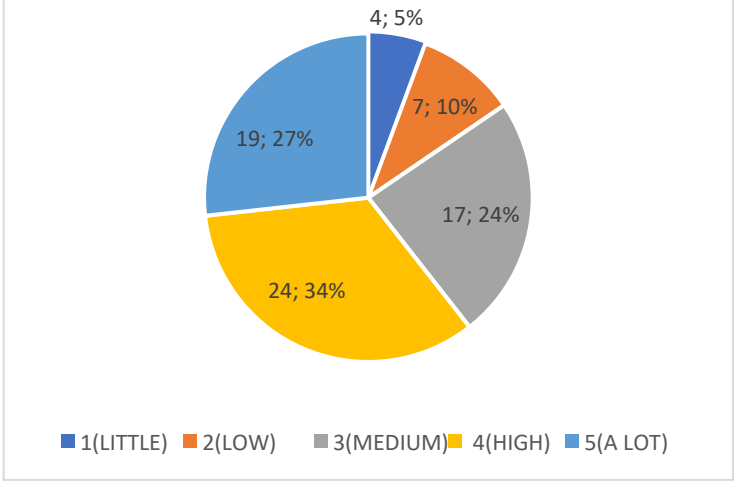
Expectations of farmers in accessing RDP funds

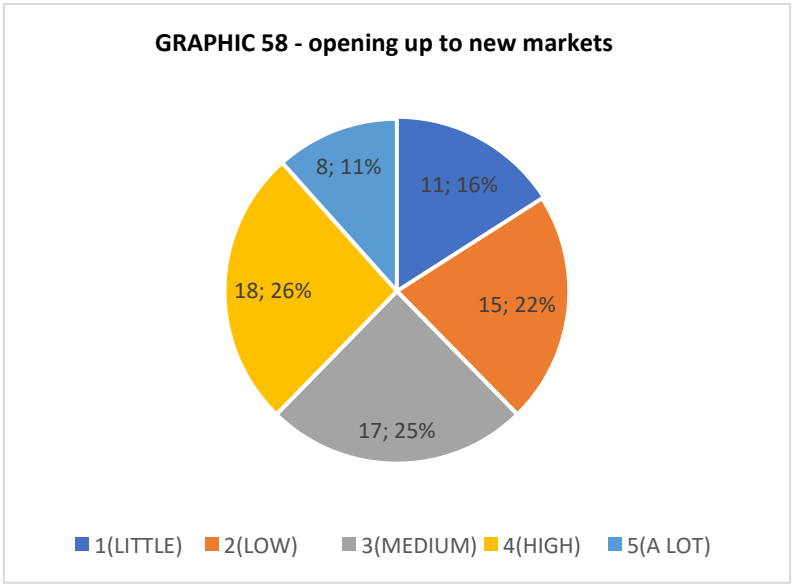
In addition to the difficulties, farmers also gave their opinion on the main expectations in accessing RDP funds, on a scale from 1 (not very beneficial) to 5 (very beneficial). Graphics 56, 57, 58, 59, 60, 61, and 62 illustrate farmers' judgements respectively for the items of "support for investments", "support for growth and innovation", "opening up to new markets", "conversion to agro-industrial use", "additional opportunities for enhancing the value of agricultural production", "additional opportunities for improving the quality of agricultural production", and "additional opportunities for improving the value of agricultural production", "additional opportunities for enhancing the environment and improving quality of life", "making their activity more supportive and integrated" and "implementing certification and transparency". Graphic 63 compares the percentage values

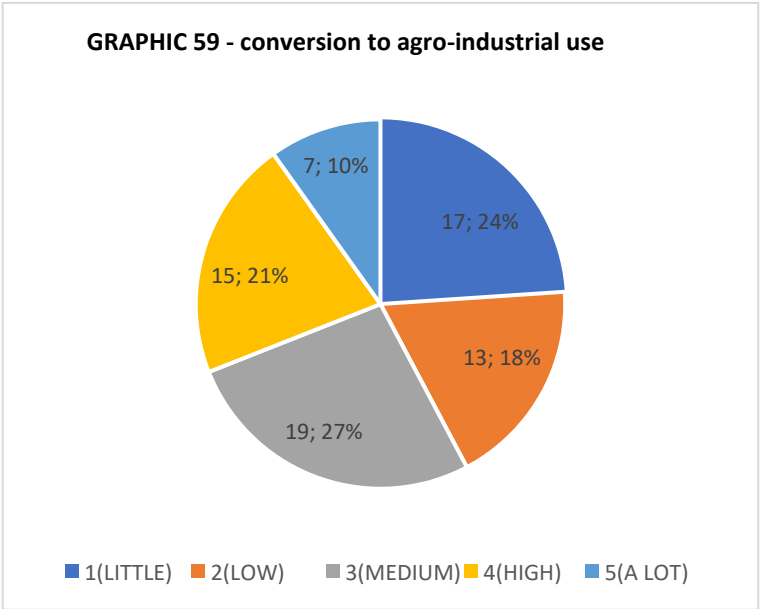
GRAPHIC 56 - support for investments

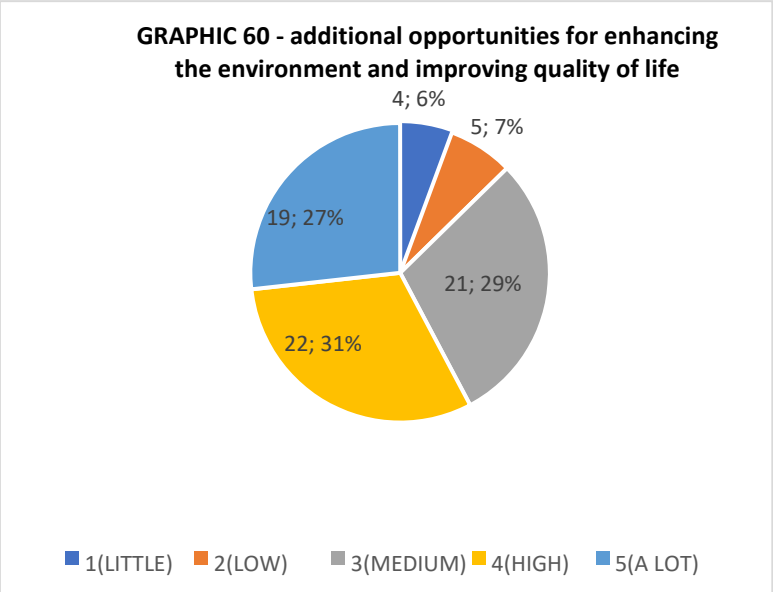


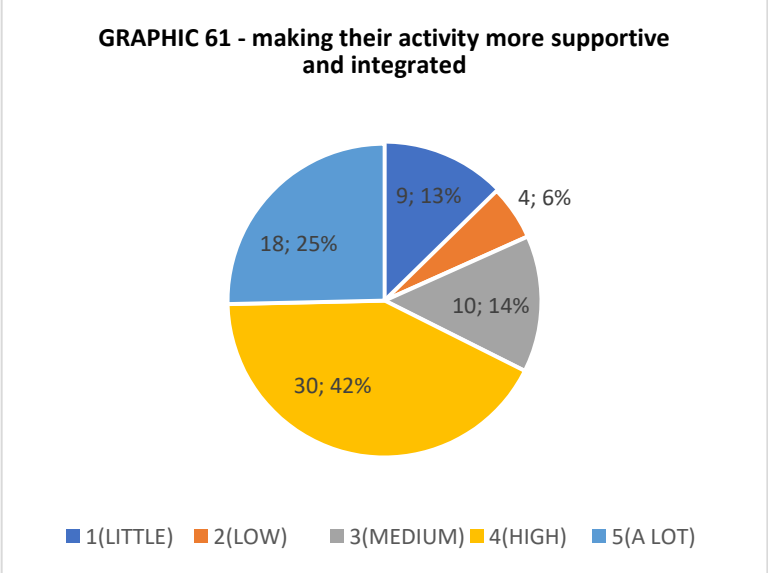
GRAPHIC 57 - support for growth and innovation

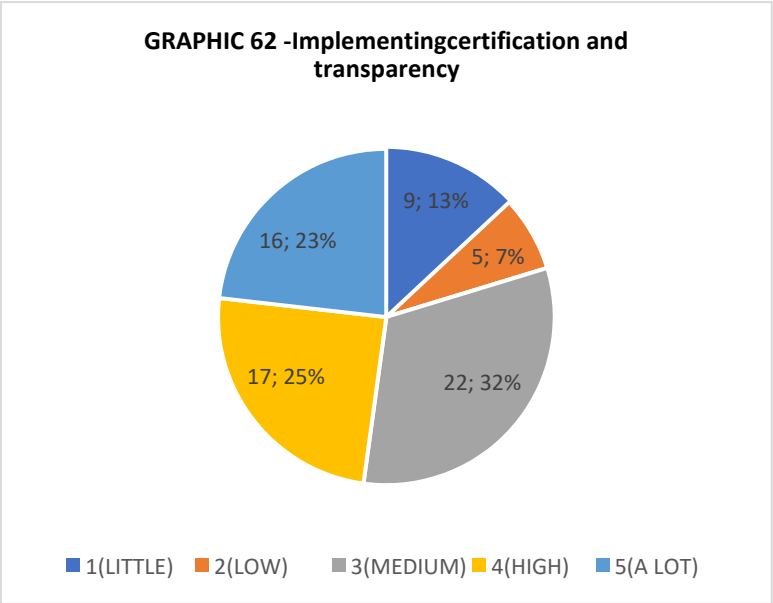


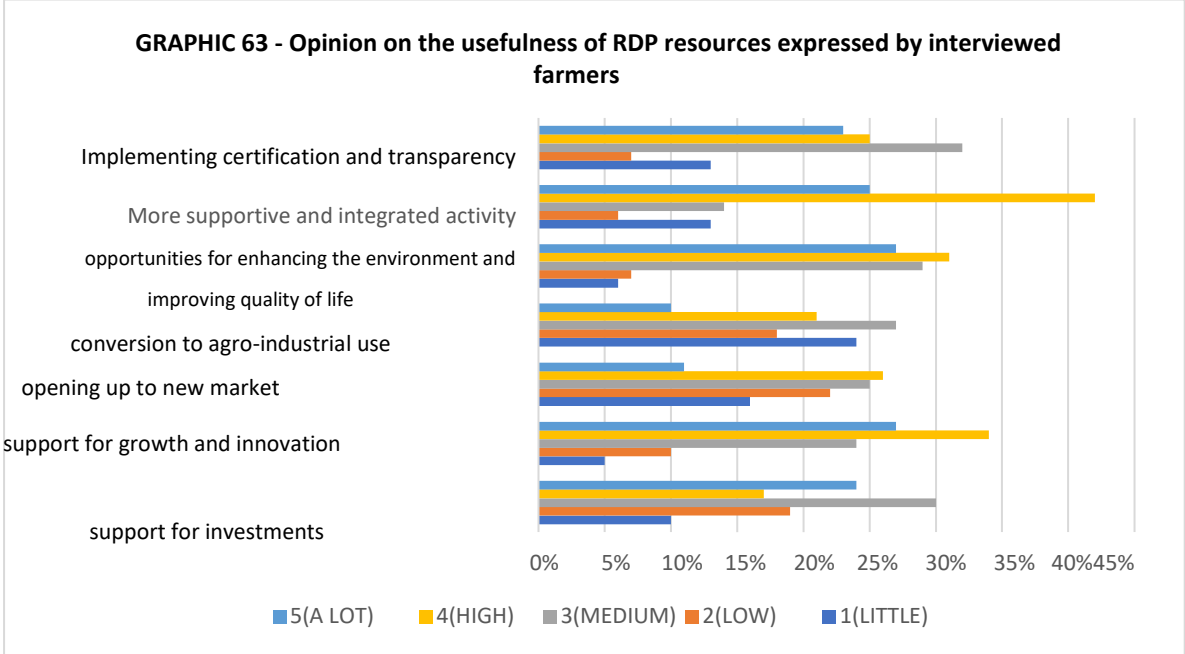

GRAPHIC 58 - opening up to new markets
11; 16%
15; 22%
17; 25%
18; 26%
8; 11%
1(LITTLE)
2(LOW)
3(MEDIUM)
4(HIGH)
5(A LOT)


GRAPHIC 59 - conversion to agro-industrial use
17; 24%
13; 18%
19; 27%
15; 21%
7; 10%
1(LITTLE)
2(LOW)
3(MEDIUM)
4(HIGH)
5(A LOT)


GRAPHIC 60 - additional opportunities for enhancing the environment and improving quality of life
4; 6%
5; 7%
19; 27%
21; 29%
22; 31%
1(LITTLE)
2(LOW)
3(MEDIUM)
4(HIGH)
5(A LOT)


GRAPHIC 61 - making their activity more supportive and integrated
9; 13%
4; 6%
18; 25%
10; 14%
30; 42%
1(LITTLE)
2(LOW)
3(MEDIUM)
4(HIGH)
5(A LOT)





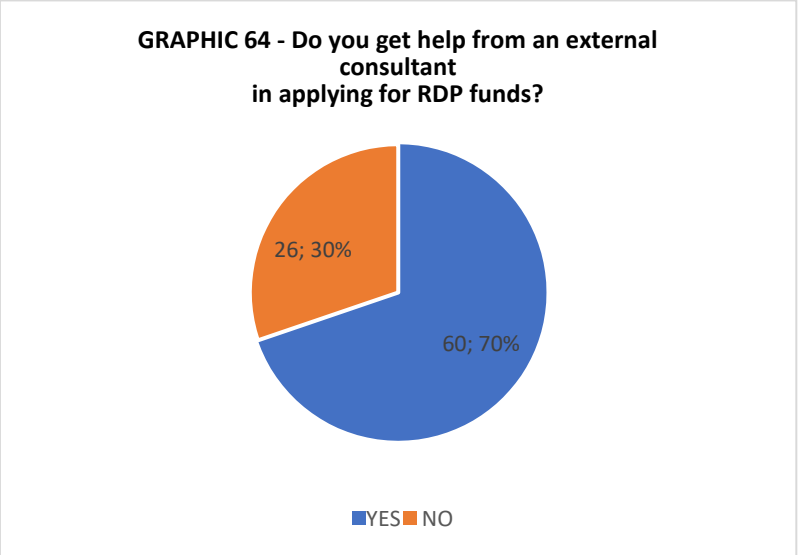
As for the difficulties, Table 3 shows the average of the expressed values, the minimum value expressed, the maximum value expressed, the prevalent value expressed, the standard deviation, the number of farmers who answered the questions and the number of those who did not answer.

Table 3. Degree of advantage in accessing RDP funds experienced by farmers

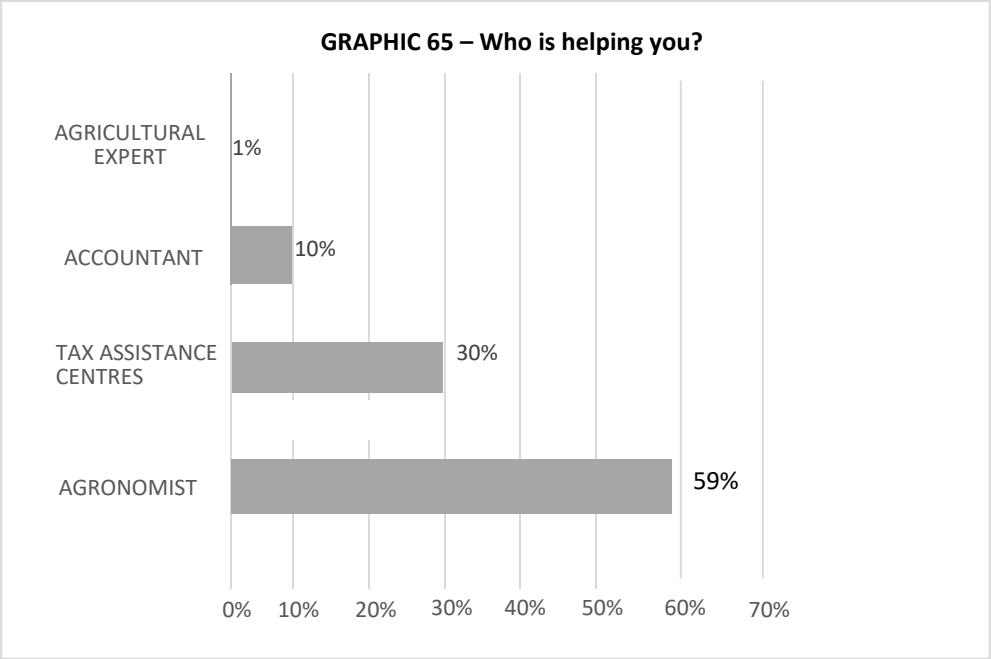
	support for investments	Support for growth and innovation	Opening up to new markets	conversion to agro-industrial use	Opportunities for enhancing the environment and improving quality of life	More supportive and integrated avtivity	Implementingcertification and transparency
Average value expressed (from 1 "not very important" to 5 "very important")	3,3	3,7	3,0	2,7	3,7	3,6	3,4
Minimum value expressed (from 1 "not very important" to 5 "very important")	1	1	1	1	1	1	1
Maximum value expressed (from 1 "not very important" to 5 "very important")	5	5	5	5	5	5	5
Prevalent value expressed (from 1 "not very important" to 5 "very important")	3	4	4	3	4	4	3
Coefficient of variation (standard deviation)	1,3	1,1	1,3	1,3	1,1	1,3	1,3
Number of farmers who have given the judgement	70	71	69	71	71	71	69
Number of farmers who did not give a judgement	36	35	37	35	35	35	37

Technical advice/assistance on accession to RDP funds

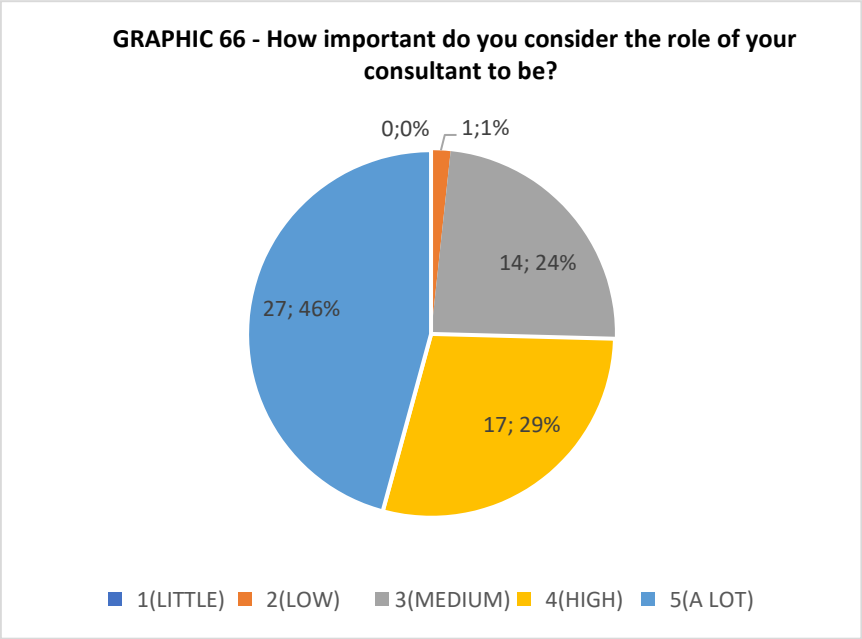
With regard to the possibility of being helped by an external consultant in the decision to apply for RDP funds, 86 sample farms responded, choosing between yes and no. As shown in graphic 64, 70% use advice and 30% do not



The type of consultant that most supports farms is the agronomist, followed by tax assistance centres (TAC), accountants and agricultural experts. It should be mentioned that in this question (graphic 65), respondents indicated several figures at the same time, therefore showing how the consultancy and technical assistance service requires expertise across all the issues that can be addressed in a project.



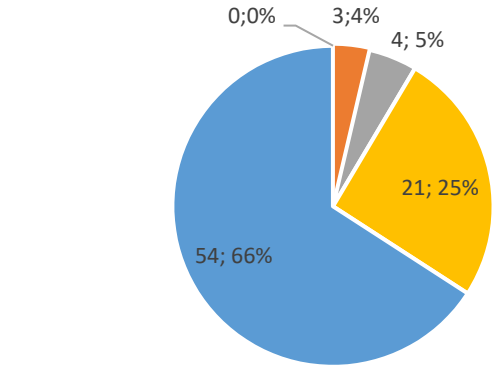
In addition, of the 60 farms that used a consultant, 59 rated the importance of the consultant's role on a scale of 1 (little) to 5 (a lot). For 46% of the companies, the role of the consultant is very important, for 29% it is highly important, for 24% it is moderately important and finally, for only 1% it is of low importance. It can be seen, therefore, that for almost all of the farmers responding to the question, the advisory service is useful and necessary, only one farm gave the value 2 (low) and no one gave the value 1 (little).



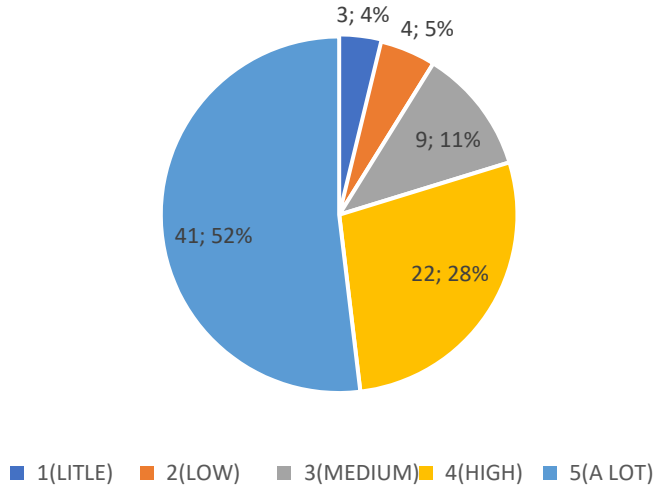
Proposals and suggestions for the new CAP programming 2021-2027

In addition, part of the questions in the questionnaire aimed to assess which aspects; according to the sample farms, should be most reviewed and addressed in the post-2020 CAP. In addition to the problem of complexity of application and bureaucratic burdens, other critical issues concern the ability of the Common Agricultural Policy to pursue the objectives of environmental sustainability, innovation transfer, territorial rebalancing, generational turnover and food security. Farmers were therefore asked to rate, on a scale of 1 (not very much) to 5 (very much), the importance of including and/or incentivising in the next programming period measures on: environmental sustainability and youth empowerment (graphic 67), innovation projects (graphic 68), connection to the territory (graphic 69), bureaucratic simplification and insight in supply chains (graphic 70), conservation of the environment and of biodiversity (graphic 71), and simplification of the procedures for accessing calls/proposals (graphic 72).

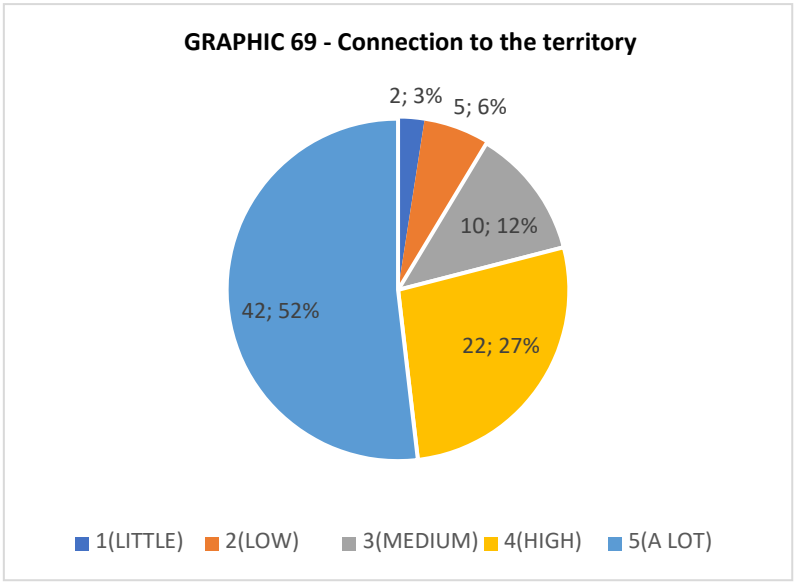
GRAPH 67 –Environmental sustainability and youth empowerment



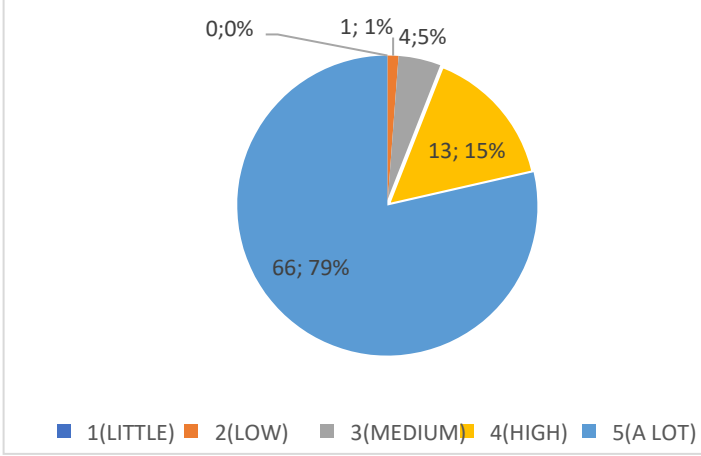
GRAPH 68 – innovationprojects

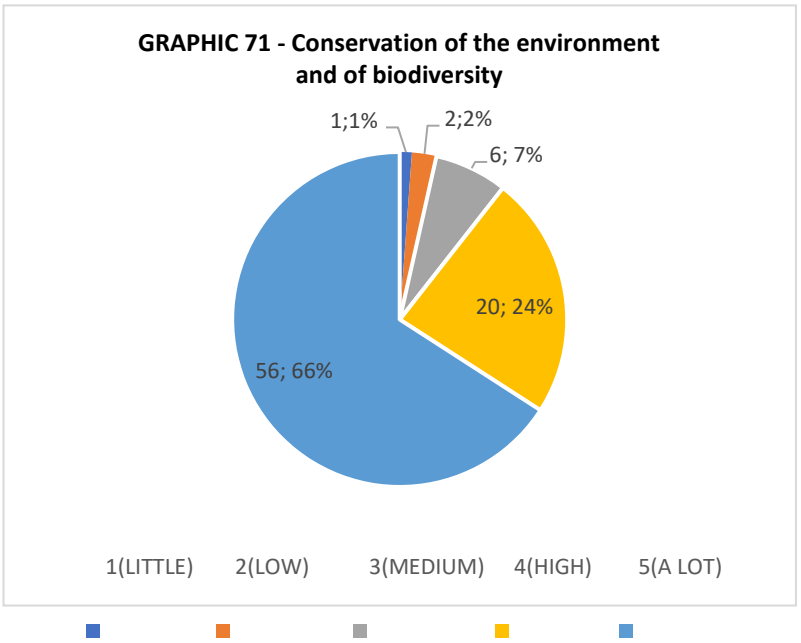


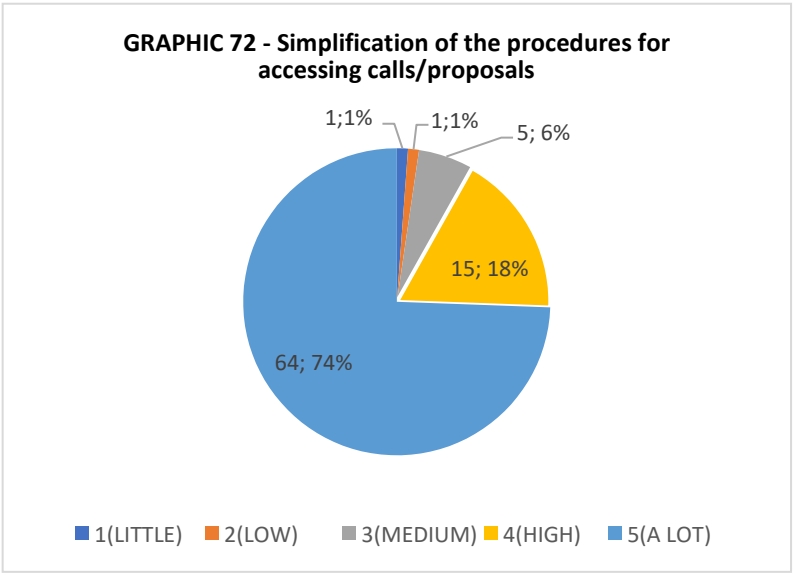
GRAPHIC 69 - Connection to the territory



GRAPHIC 70 – Bureaucracy and insight in supply chains







Generally speaking, all the analysed aspects were evaluated very positively by the respondents. The prevalent expressed value is, in fact, 5 (very important) for all the response categories. Specifically, in line with what emerged from the answers to the previous questions, the most appreciated items were "bureaucratic simplification and insight in supply chains" and "simplification of the methods of accessing calls for tenders", with 79% of respondents rating them respectively and 74% of answers assigning value 5 (very important). Graphic 73 compares the percentage values found for the different types of answers.

Table 4, on the other hand, summarizes the above.

GRAPHIC 73 – Suggestions and proposals for the CAP in the next programming period

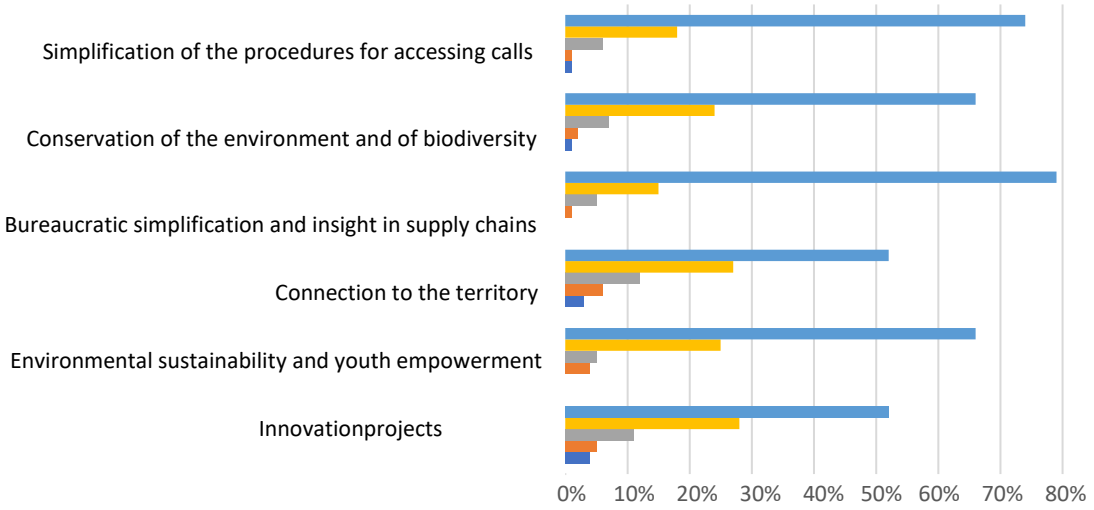
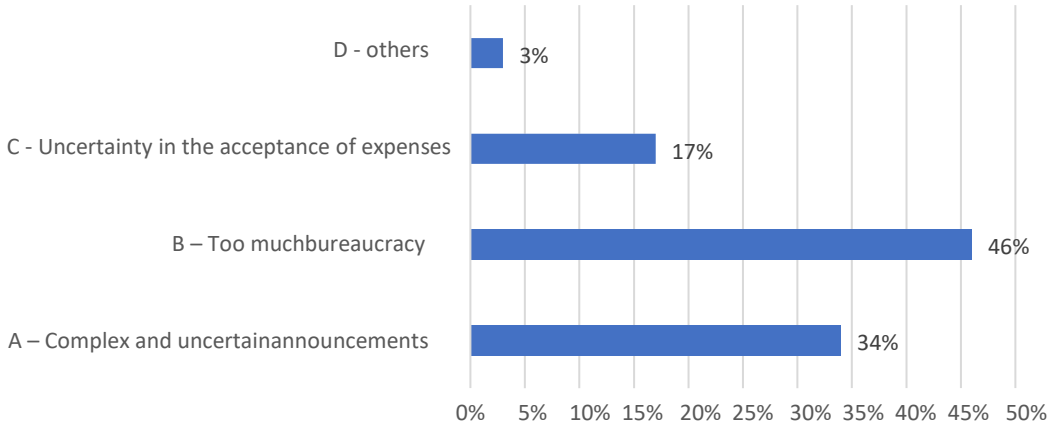


Table 4. Degree of importance of measures to be included/valorised in the next CAP

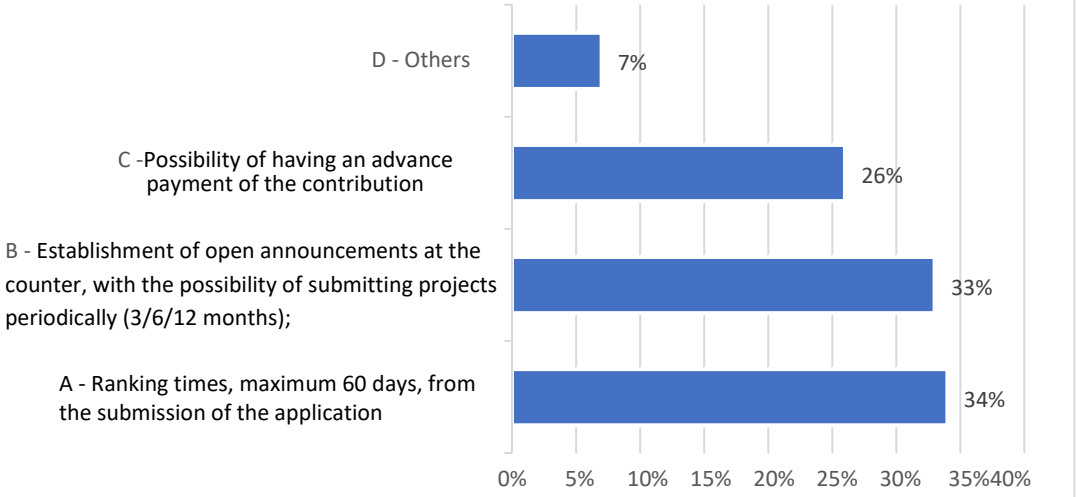
	Environment alsustainability and youthempowerment	Innovation projects	Connection to the territory	Bureaucratic simplification and insight in supply chains	Conservation of the environment and of biodiversity	Simplification of the procedures for accessing calls
Average value expressed (from 1 "not veryimportant" to 5"very important")	4.5	4.2	4.2	4.7	4.5	4.6
Minimum value expressed (from 1 "not veryimportant" to 5"very important")	2	1	1	2	1	1
Maximum value expressed (from 1 "not very important" to 5 "very important")	5	5	5	5	5	5
Prevalent value expressed (from 1 "not veryimportant" to 5"very important")	5	5	5	5	5	5
Coefficient of variation (standard deviation)	0.8	1.1	1.0	0.6	0.8	0.8
Number of farmers who have given the judgement	82	79	81	84	85	86
Number of farmers who did not give their judgement	24	27	25	22	21	20

In conclusion, the respondents, with the exception of 18 who did not give an answer, stated the difficulties that could be overcome through actions of the institutions and some changes that could concretely improve their attitude towards participation in calls for tenders.

GRAPHIC 74 - What obstacles need to be faced on the institutional side regarding EU funds?



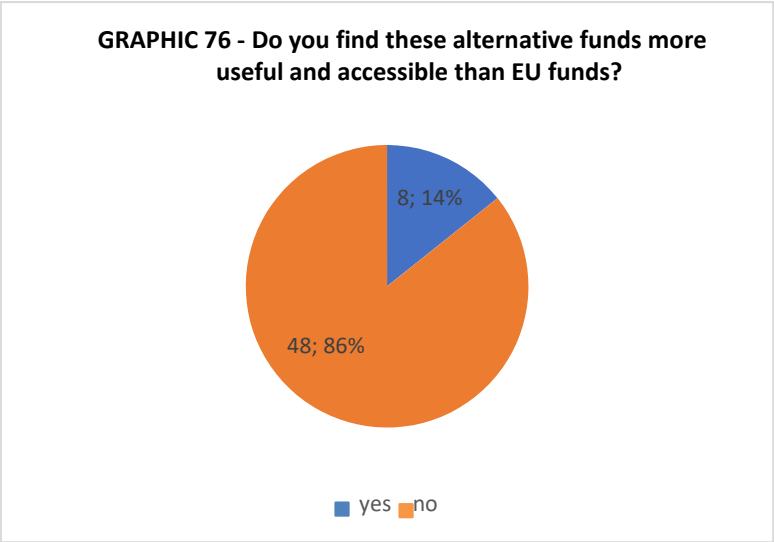
GRAPHIC 75 -What do you propose to change?



Alternative funds to European ones

Two questions in the questionnaire were used to estimate how many farmers do and do not use funds other than CAP funds, both public and private. It was found that none of the sampled farms uses other public funds, while only 11 sometimes use private funds such as venture capital and bank loans. Regarding the greater usefulness and accessibility

of these alternative funds, 48 farmers gave negative feedback, 8 positive and 50 did not respond. For those who gave a negative opinion, the factors that make these funds unattractive are the numerous guarantees required to access a loan and the very high interest rates. For those who gave a positive opinion, the advantages lie in the greater accessibility and immediacy of disbursement.



5.3 Thegood practices regarding biodiversity

This section of the questionnaire was designed to identify good practices adopted by farmers to promote biodiversity and to measure their awareness of this issue. Agricultural and food systems are among the main causes of habitat loss, especially when they are based on monocultures, intensive livestock production and excessive use of external inputs such as pesticides, mineral fertilisers and fossil fuels. In this regard, FAO has estimated that about 75 percent of crop diversity was lost between 1900 and 2000. Today, of the approximately 6,000 species of plants grown for food, fewer than 200 contribute significally to global food production and only nine account for 66% of total production. Similarly, global livestock production is based on about 40 species, with a small group providing the majority of meat, milk and eggs, and almost a third of fish populations are over-exploited. Wild species and species that are not intended for food consumption but support food production (e.g. pollinators, soil micro-organisms, natural enemies of pests, etc.) are also rapidly disappearing. In the awareness of this, the meaning of biodiversity addressed in the project was not only agrobiodiversity (components of biological diversity relevant to agriculture) but, more appropriately, biocultural diversity, which integrates biological diversity with the socio-economic dimension and, therefore,

traditional human knowledge that contributes to the resilience of ecosystems. Particular attention has been paid to the semi-natural elements of the agricultural landscape and to the soil, a resource in which countless species live and work to create the conditions that allow plants to develop, animals to feed themselves and humans to obtain essential raw materials.

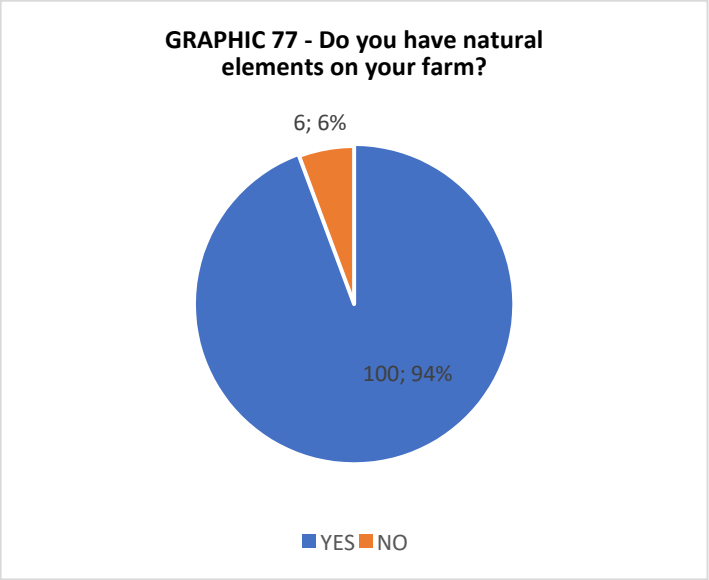
Semi-natural elements

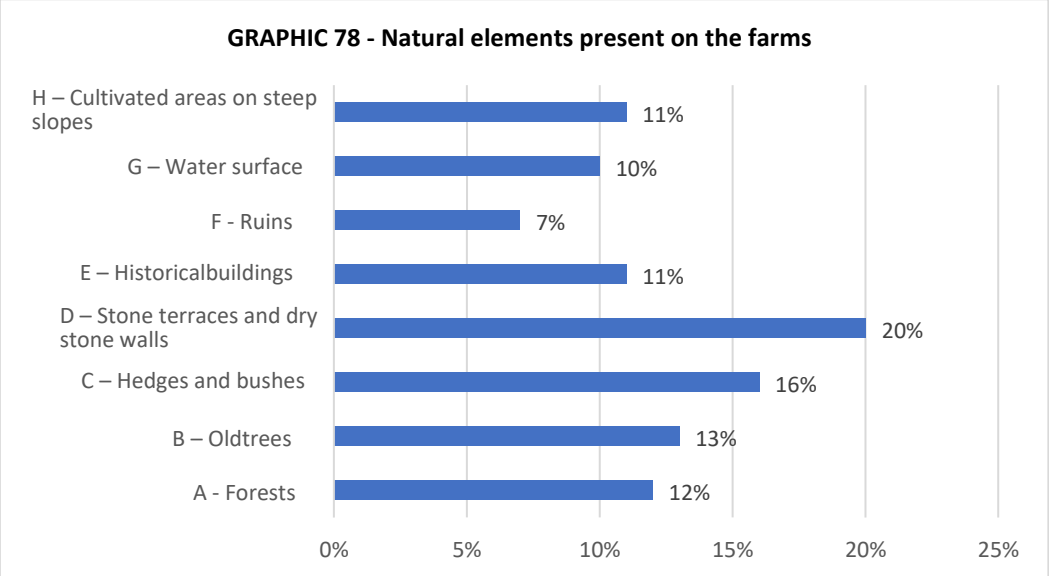
The first of the questions in this section of the questionnaire concerned the existence of semi-natural elements on the farm: farmers were asked, which and how many semi-natural elements existed in their soil. To facilitate the answer, the following list of 7 types of elements was proposed:

A. Forests
B. Oldtrees
C. Hedges and bushes
D. Stone terraces and dry stone walls
E. Historicalbuildings
F. Ruins
G. Water surface
H. Cultivatedareas on steepslopes

According to the answers (Graphic 77), 94% of the sample farms have natural elements on the farm and only 6% do not. On average, each farm has 4 natural elements, with terraces and dry stone walls being the most common type, followed by hedges and bushes, old trees, forests, cultivated areas on steep slopes, historical buildings, water surface and ruins. These data suggest the possibility for the sample farms to be recognised as "high valued natural agricultural areas" (introduced in the early 1990s by

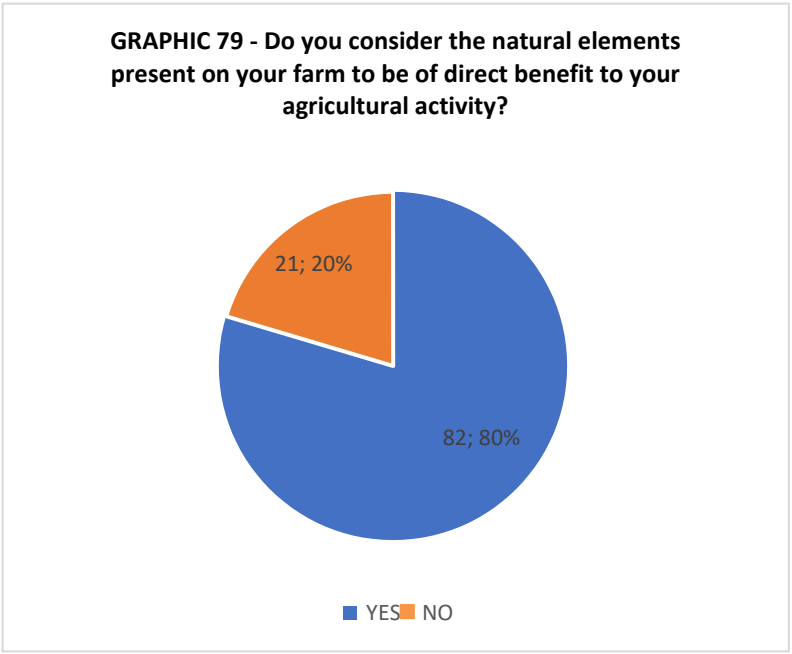
Baldock and others, 1993; Beaufoy and others, 1994, to highlight the positive role of agricultural activity in protecting biodiversity), after estimating their extents.

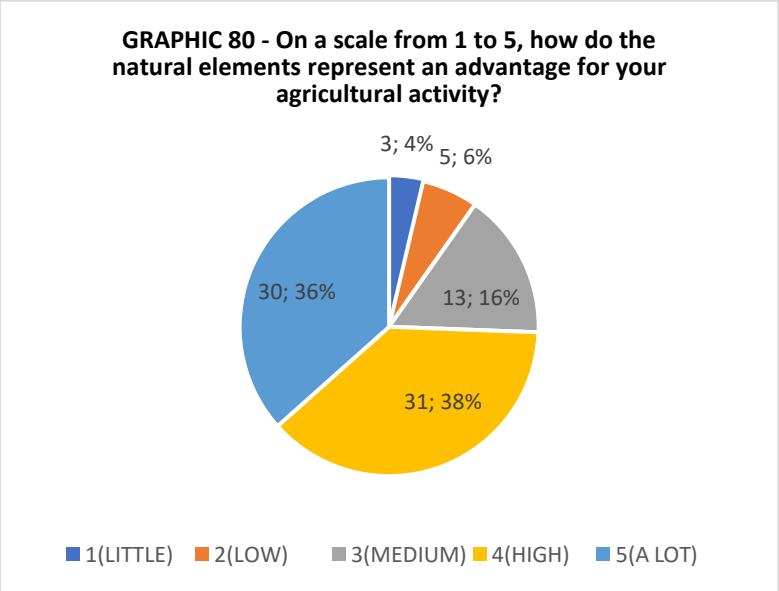


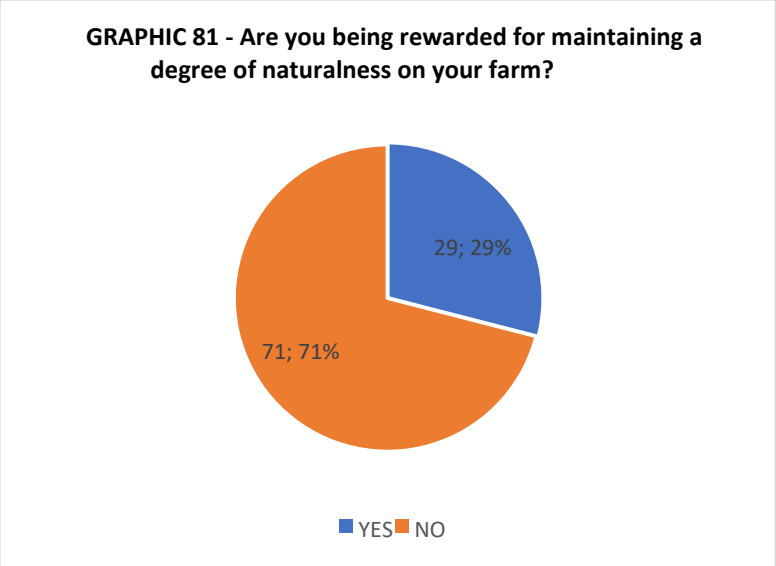


An important point for reflection results from the answers to the questions in graphics 79, 80 and 81. The majority of farmers are aware, to a degree varying from 1 (a little) to 5 (a lot), with the predominance of the last one, of the direct advantage that the presence of natural elements represents for their agricultural activity, but do not feel themselves adequately rewarded for maintaining them on the farm.

GRAPHIC 79 - Do you consider the natural elements present on your farm to be of direct benefit to your agricultural activity?

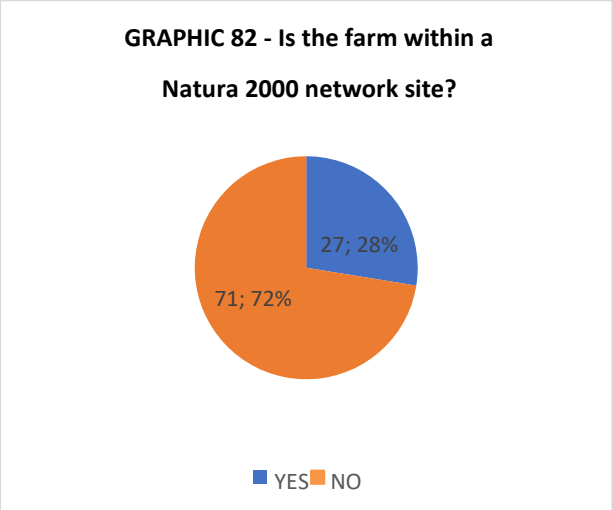






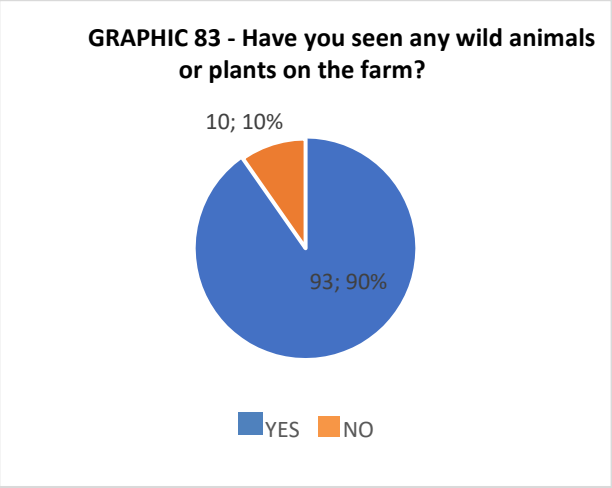
Network Natura 2000

In order to characterise the farms, it was asked whether they were located within areas that make up the Natura 2000 network, an ecological network set up under Directive 92/43/EEC "Habitat" to ensure the maintenance of natural habitats and species of flora and fauna that are threatened or rare at Community level. The same title of the Directive also specifies the objective of conserving not only natural but also semi-natural habitats, including areas of traditional agriculture. Up to now, Sicily is the second region in Italy for the notable number of Natura 2000 areas (245 of which 16 SPAs, 213 SCI-SPAs and 16 SCI-ZSCs coinciding with SPAs). To this question, 27 farms answered yes, 71 no and 8 did not give an answer.



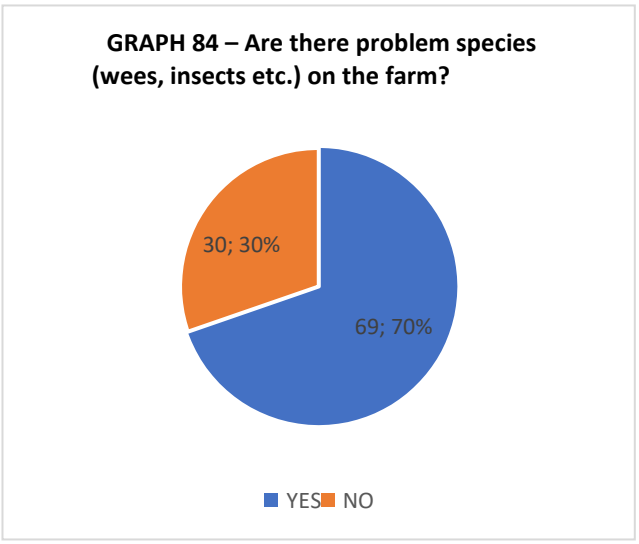
Plants and/or wild animals

Given the good degree of naturalness that was described, many farmers (93) also claimed to have seen wild animals and plants.


GRAPHIC 83 - Have you seen any wild animals or plants on the farm?
10; 10%
93; 90%
YES
NO

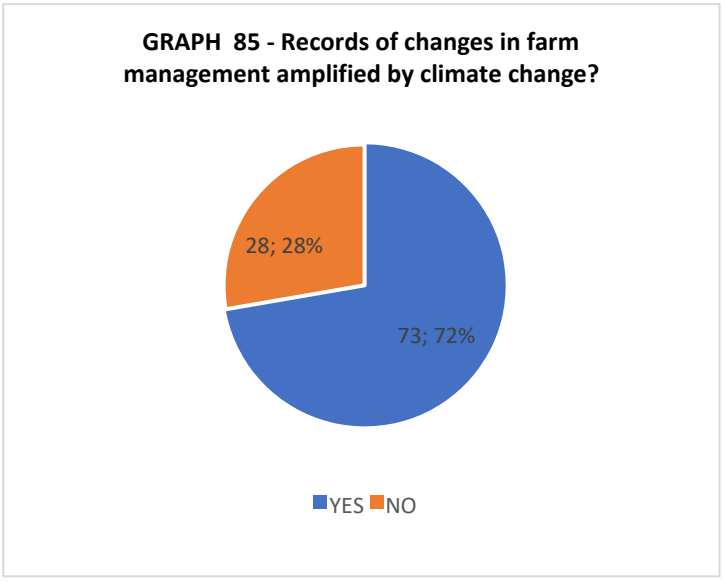
Problem species

Several farms (69) noted the presence of problem species (weeds and various pests).



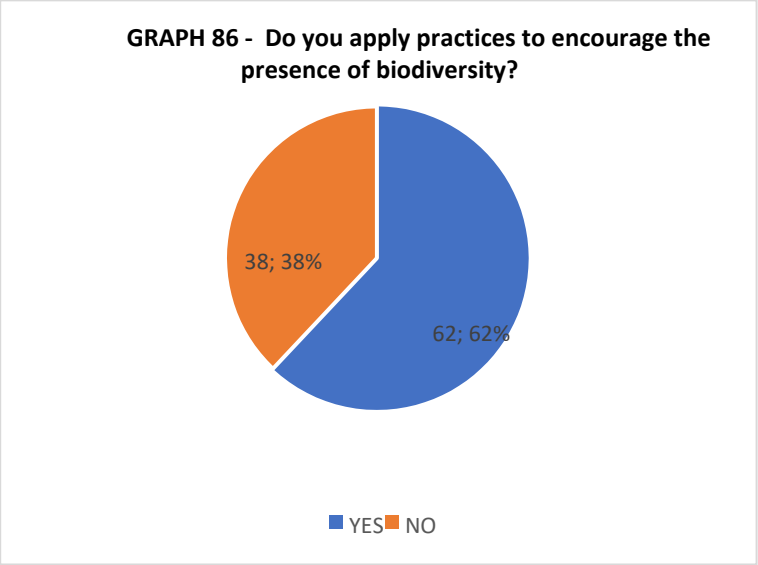
Climate change

The majority of companies (72%) experience problems due to climate change.



Good practices

In response to the question "Do yo apply practices to encourage the presence of biodiversity?", 62 farms answered yes, 38 no and 6 did not answer.



Of the farms that responded positively, 58 indicated the different good practices they had adopted, which are summarised in Table 5. Among these, the creation of refuge areas for wildlife breeding and sustainable land management techniques were the most frequently reported by farmers.

Table 5. Good practices adopted to maintain biodiversity

Goodpractices	number of answers
modification of mowing practices and times to protect plants and animals	1
maintenance of extensivepastures	2
maintenance and management of wetlands	2
naturalfertilisation	5
conservation and restoration of dry stone walls	5
grassing of cultivatedland	5
Restoration of hedges, rows and buffer strips to protect biodiversity.	5
reducing the use of fertilisers and plant protection products	7
recovery and reintroduction of ancient plant varieties and animal breeds	8
adoption of organic and/or natural and/or traditional production methods	9
adoption of sustainable land management techniques	11
creation of refuge areas in the fields for the reproduction of wild animals	12

It was then asked which practices were specifically adopted to increase the level of organic matter in the soil. Of the total sample, 54 companies answered yes, 48 no and 4 did not.

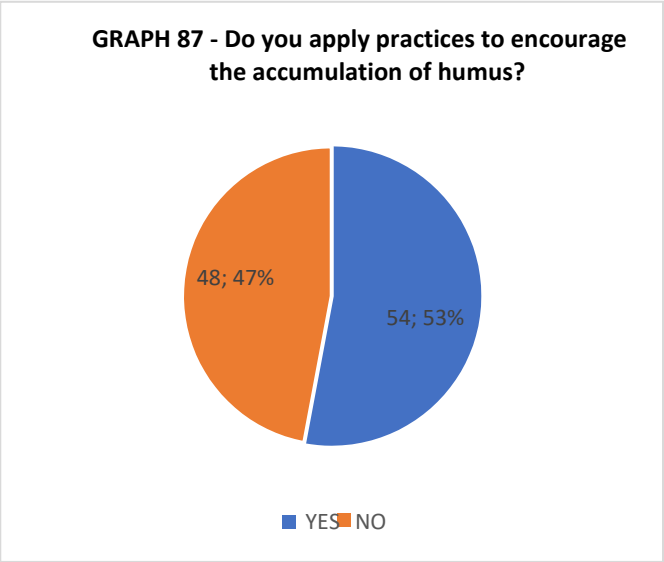
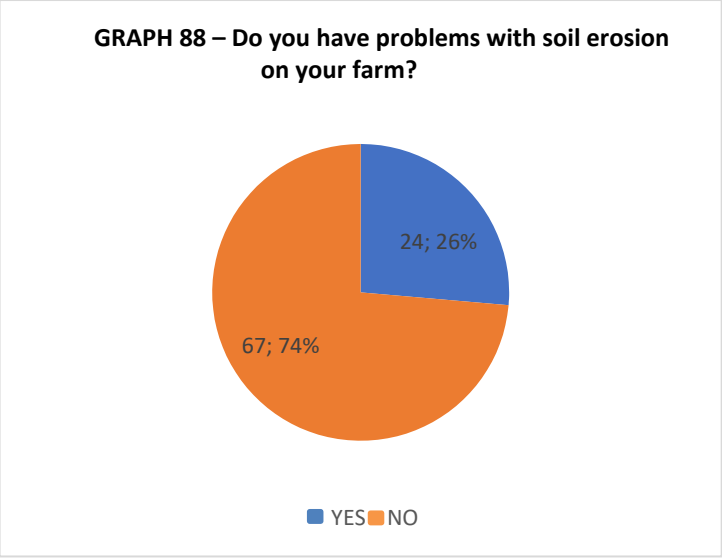
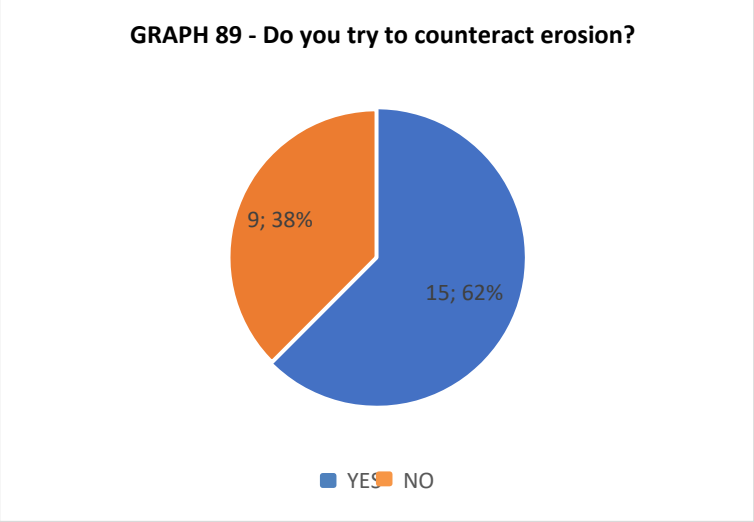


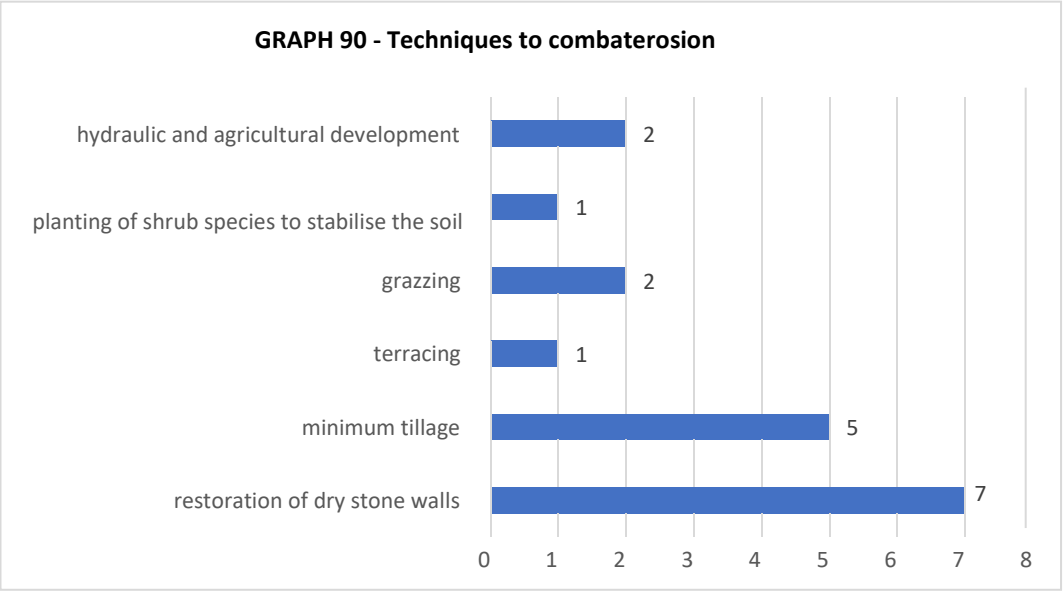
Table 6. Good practice to encourage the accumulation of organic matter in the soil

Goodpractice	Number of answers
croprotations	1
use of organicfertilisers	1
grazing of animals	1
re-use of processing by-products	1
grassland	3
green manure	4
minimum tillage	4
spreading of animal manure	9
use of compost	9
shredding and burying of crop residues	11
pacciamatura con residui colturali	17

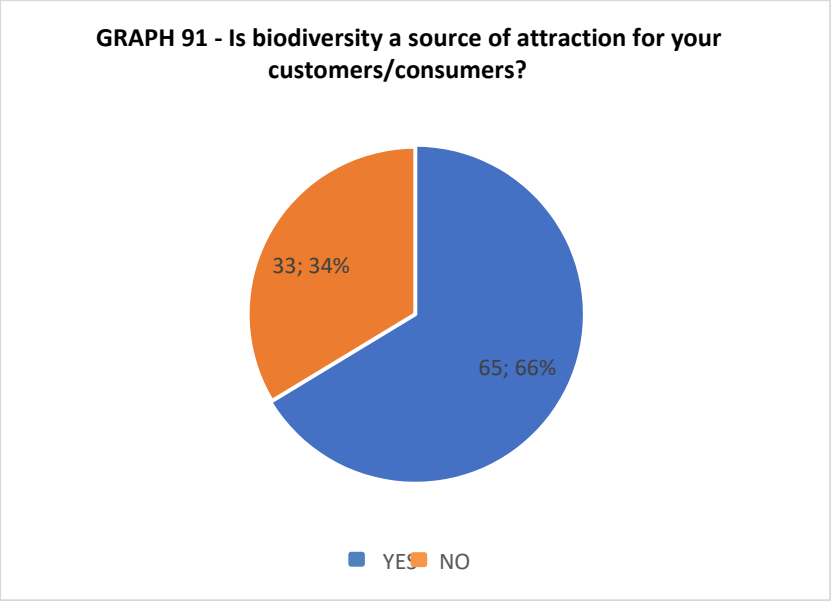
With regard to soil erosion, 67 farmers stated that they did not experience such problems on their farm, 24 did and 15 did not. Of the farms that responded positively, 15 address the problem through the application of the techniques shown in Graph 90 and 9 do not manage the problem at all.

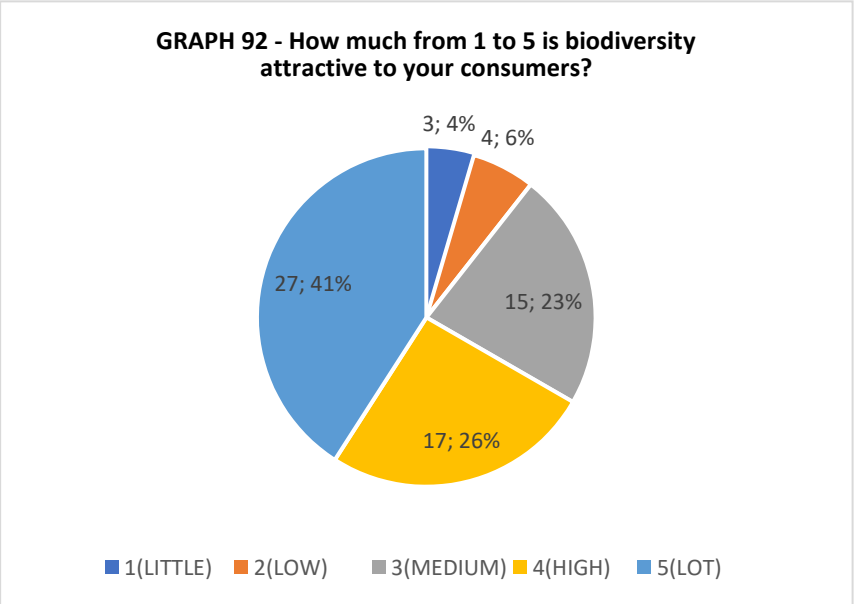


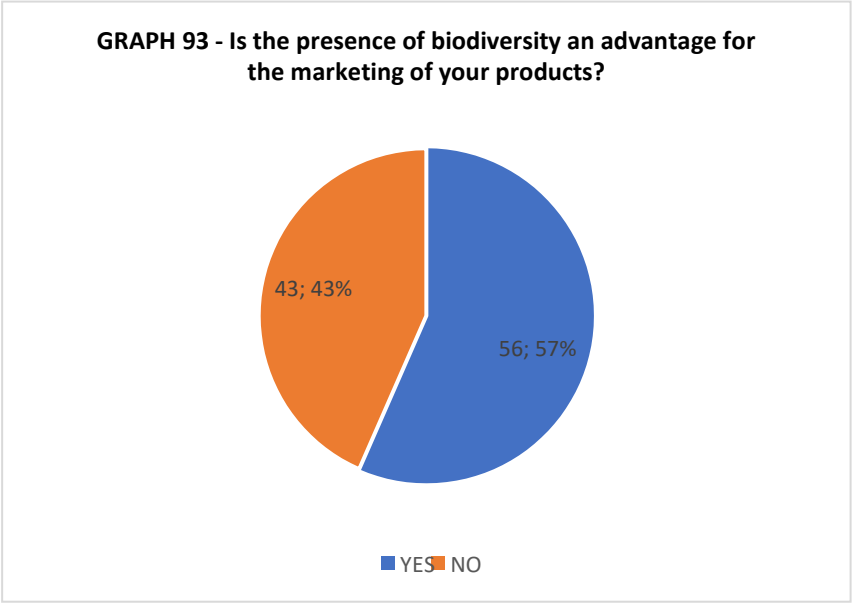



GRAPH 90 - Techniques to combaterosion
hydraulic and agricultural development
planting of shrub species to stabilise the soil
grazzing
terracing
minimum tillage
restoration of dry stone walls
2
1
2
1
5
7
0
1
2
3
4
5
6
7
8

It is also clear that biodiversity loss and its effects on ecosystems have consequences for the economy, markets and farmers' incomes. Biodiversity conservation, while providing clear benefits to the environment and society (ecosystem services such as food, drinking water, climate regulation, erosion control, collective well-being), implies costs that cannot be left to farmers alone, but need to be covered by appropriate external incentives. In this regard, both support through funding (public and private) and the creation of biodiversity markets where consumers are willing to pay a premium price for sustainable, healthy and quality food products are of great help. For 65% of farmers, biodiversity is a source of attraction and for 57% it is also an advantage when marketing their products. The two questions above were not answered by 8 and 9 farms in the sample respectively. The level of attractiveness of biodiversity for consumers, expressed by 66 farms, is shown in Figure 92.







Associations and cooperation in agriculture

The last questions in this section explored, finally, the willingness to communicate the good agricultural practices adopted and the intention of associationism and cooperation among the sampled farmers. The majority of respondents are willing to exchange ideas and experiences regarding good agricultural practices for sustainable land management.

With regard to associationism, the picture is slightly more articulated, with 54% (67) farmers in favour of aggregation, 23% (29) not confident and inclined to cooperation and a further 23% (29) not responding.

The respondents for action are listed in Table 7.

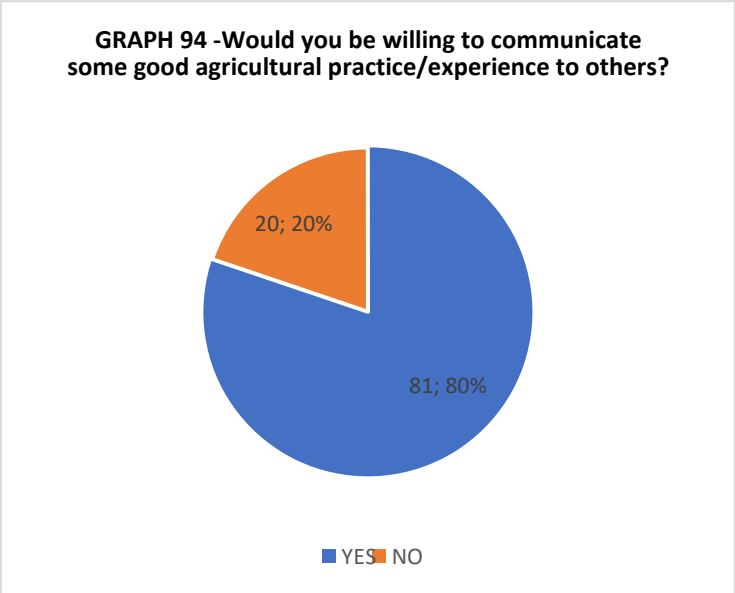


Table 7. Associations and cooperation in agriculture

What do you think about associationism and cooperation in agriculture?	
favourable	67
unfavourable	29
Theydidnotcommen t	29
Proposals for action:	
• Information and training of farmers on the benefits of cooperation	
• Organisation of events promoting the gathering of small producers	
• Regulation of competition and coordination of relations within supply chains	
• Creation of associations capable of linking producers together and centralising the services available to them	

1. Conclusions

On the basis of the data collected and analysed through the questionnaires, it was possible to: determine the main characteristics of the farms in the sample; identify the obstacles that determine the low participation of farmers in the financial proposals promoted by the funds of Pillars I and II of the Common Agricultural Policy; specify the needs and expectations of the interviewees with regard to these economic-financial instruments; and verify the level of exercise of good agricultural practices for the conservation of biodiversity. They clearly emerge:

- the willingness of the farmers interviewed to contribute to the conservation of biodiversity;
- the presence in the territory of companies that apply good agricultural practices in a habitual way;
- the urgency of farms to be supported in promoting their products on the market;
- the request for reduction of bureaucratic and administrative burdens related to access to financing measures;
- the need to diversify the areas of support and the criteria for accessing funding according to company size, type of production and type of territory;
- the need for regular and systematic communication and training of the agricultural and rural population on the content and aims of European, national and regional policy on agriculture, food and the environment;
- the importance of having institutional communication campaigns that explain the role of agriculture in preserving the environment and the various types of initiative

In this way, it is possible to raise the awareness of the population (demand subjects) to these important functions of agriculture so that a "premium price" can be recognised.

The results obtained will be validated through further surveys to provide the socio-

economic information necessary to establish a structured dialogue with decision-makers and to define a strategic plan for sustainable agricultural development in the area under study and in the Sicilian Region.

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