State of Art and questionnaire result in Hungary

Summary and Conclusions of O1-O2 – Hungary

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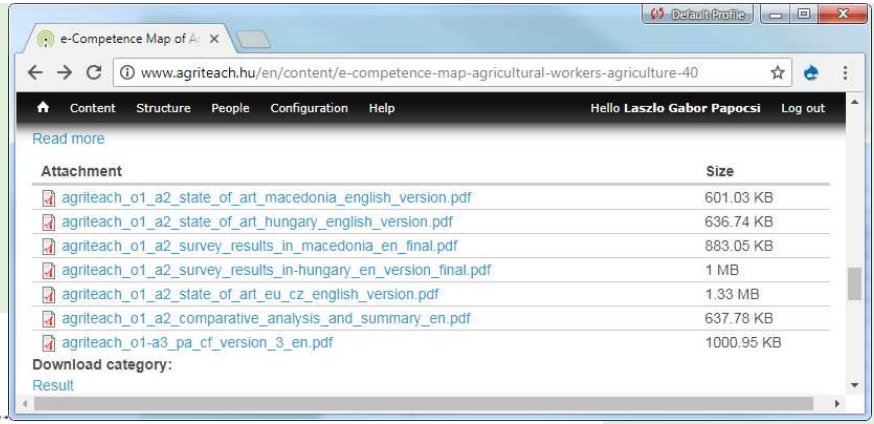
14-15 May 2018 Prague, CZ

State of the art



CONTENTS

1 General information ....
1.1 Summary country profile 3
1.1.1 Natural features of agriculture 4
1.1.2 Agriculture in economy 5
1.1.3 Main sectors and trends in Agriculture 5
1.2 ICT related characteristics 7
1.3 Tradition and background 10
1.4 Policies and strategies 11
1.4.1 The Digital Agriculture Strategy in Hungary 11
1.5 Educational system 12
2 ICTs in agriculture 16
2.1 Precision agriculture 17
2.1.1 Obstacles to the spread of precision farming 18
2.1.2 Agro ICT Cluster 20
2.2 e-Government services 20
2.3 Farm management systems 22

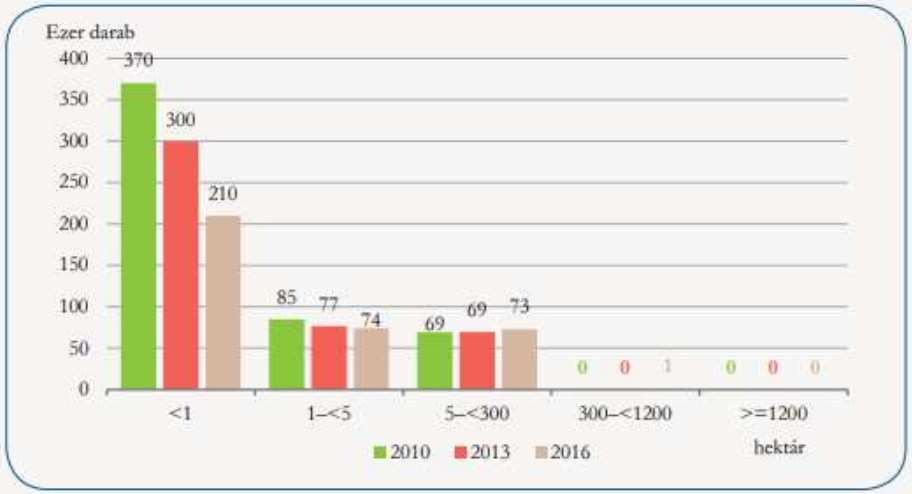
Farm structure survey 2016, published early 2018

- More than three-quarters of the agricultural area of approximately 6 million hectares is used.
- Corporate farms manage average of 248 hectares of agricultural land.
- Individual farmers manage an average of nearly 7.6 hectares. 7.1 % of individual farmers (about 25,000 farms, between 20-200 hectares) use over 50% of land.
- In most of the counties there is an average farm size is between 10-15 hectares
  - Low average area (5.6 hectares) is typical of Szabolcs-Szatmár-Bereg county
  - Jász-Nagykun-Szolnok county farms run on average 25 hectares
  - Bács-Kiskun and Hajdú-Bihar counties are mainly medium-sized estates
  - Békés County is characterized by large-scale farms

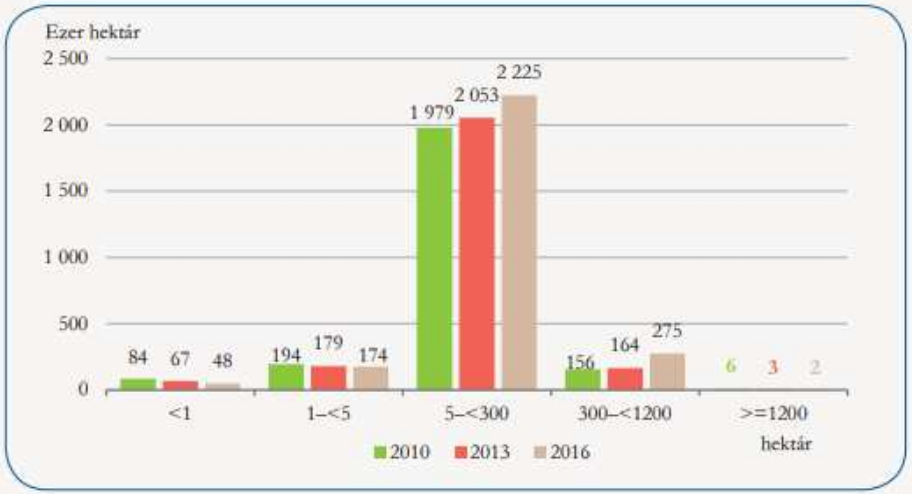
Number of enterprise farms

Size of enterprise farms

Number of private farms



Size of private farms



Age and education of farmers

- In 2016, 31 per cent of farmers were over the age of 65, while those under the age of 35 were 5.3 per cent.
- By 2016, the proportion of people with higher education has risen from 2.6 to 3.4 percent compared to 2010.
- The proportion of secondary school graduates increased from 6.1 to 10 percent, but **three quarters of farmers still rely on their practical experience only**.
- 6.4 per cent of farmers under the age of 35 have a higher education degree compared to 3.2 per cent in the oldest age group, but even below the age of 35, 69 per cent do not have any agricultural qualifications

How many people work in agriculture in 2016?

- Business organizations reported **97,000** permanent (this has been a constant increase of 21 percent since 2010) and 57,000 temporary employees.
- In individual farms, there are nearly **18,000** permanent ones 71,000 temporary employees. The number of permanent employees is nearly twice that of 2010.
- According to the data, some **711,000** family members have performed unpaid agricultural activity

File:Average utilised agricultural area per holding, 2010 and 2013 (¹) (hectares) YB16.png

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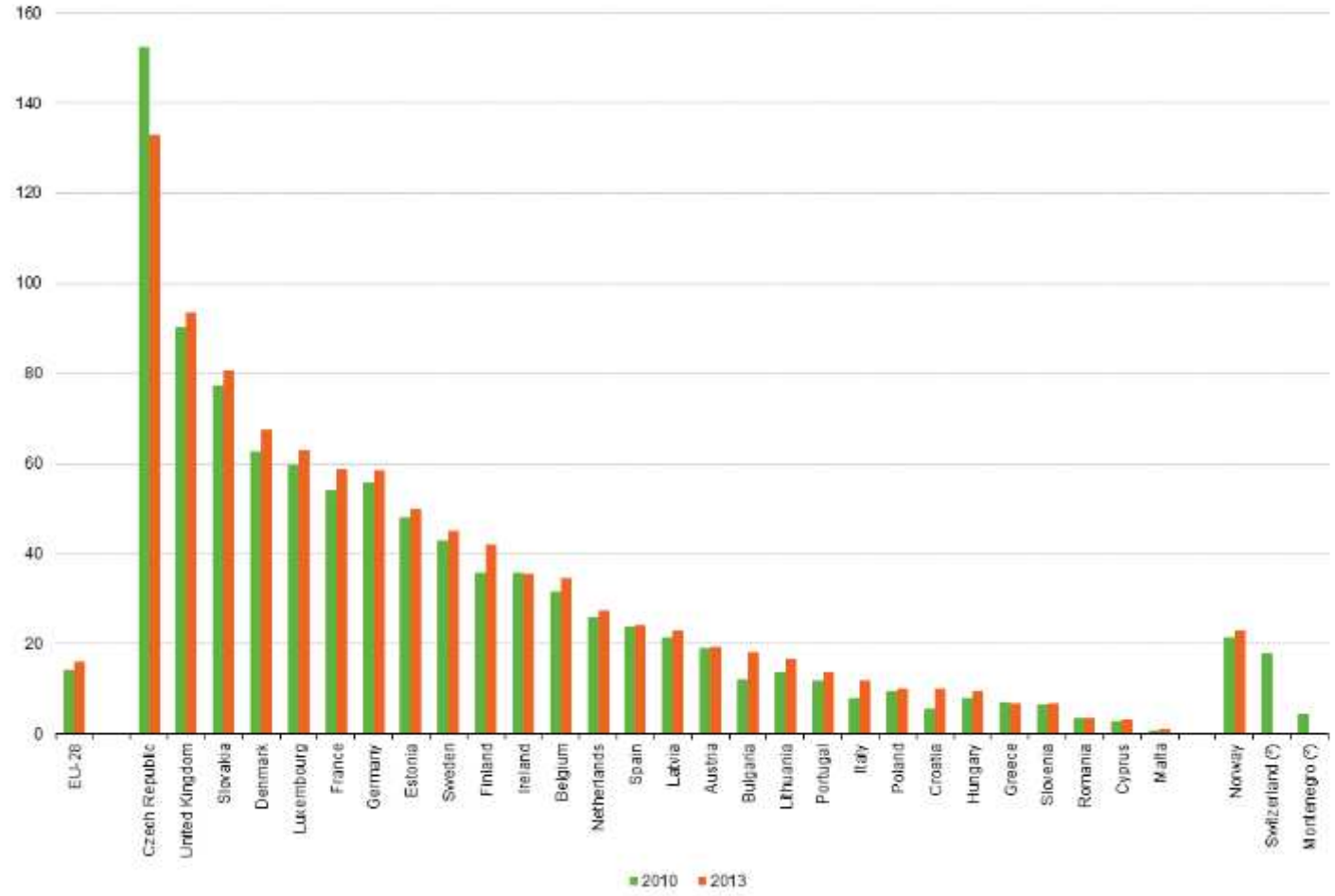

File:Key indicators – share in EU-28 total, 2013 (%) YB16.png

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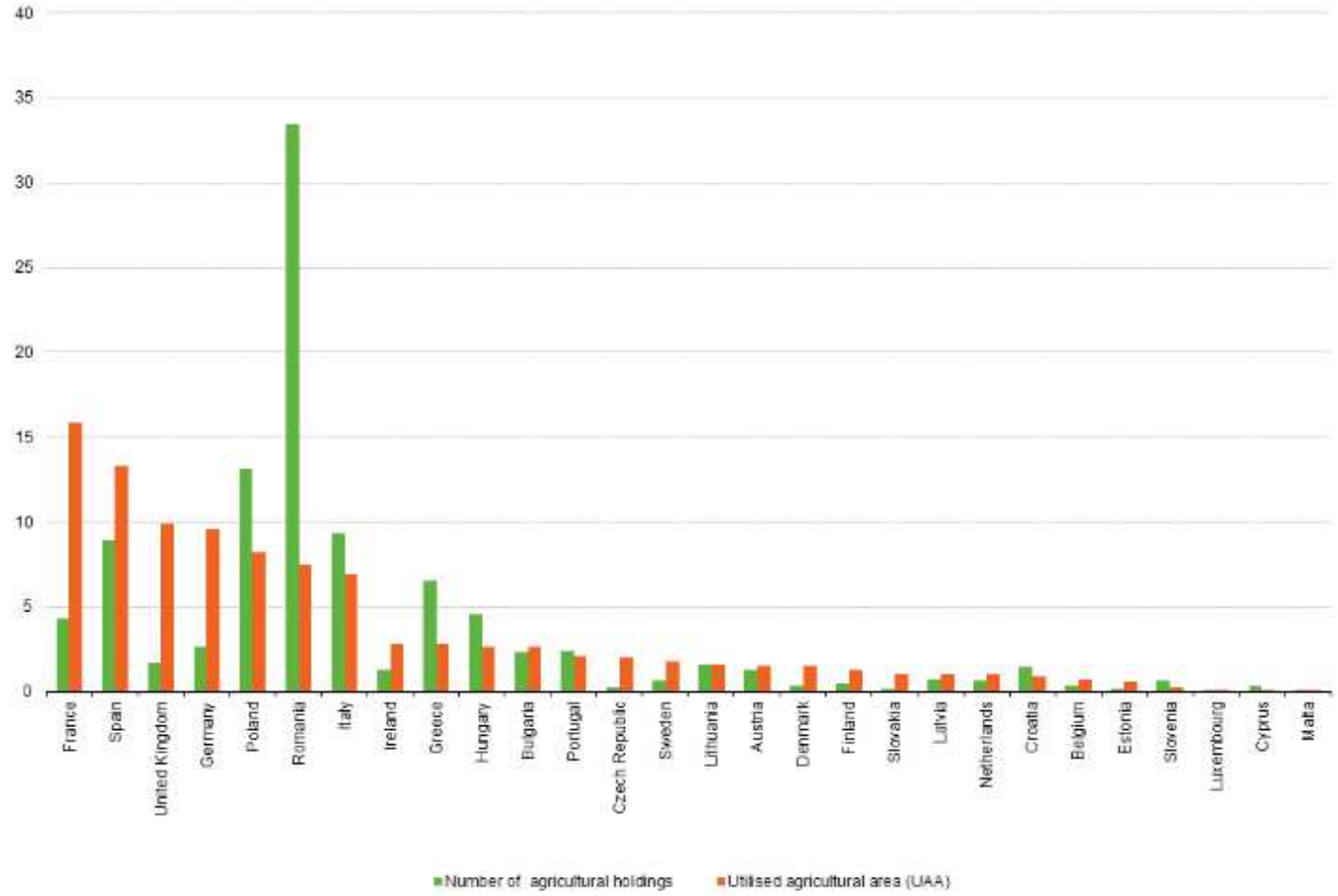
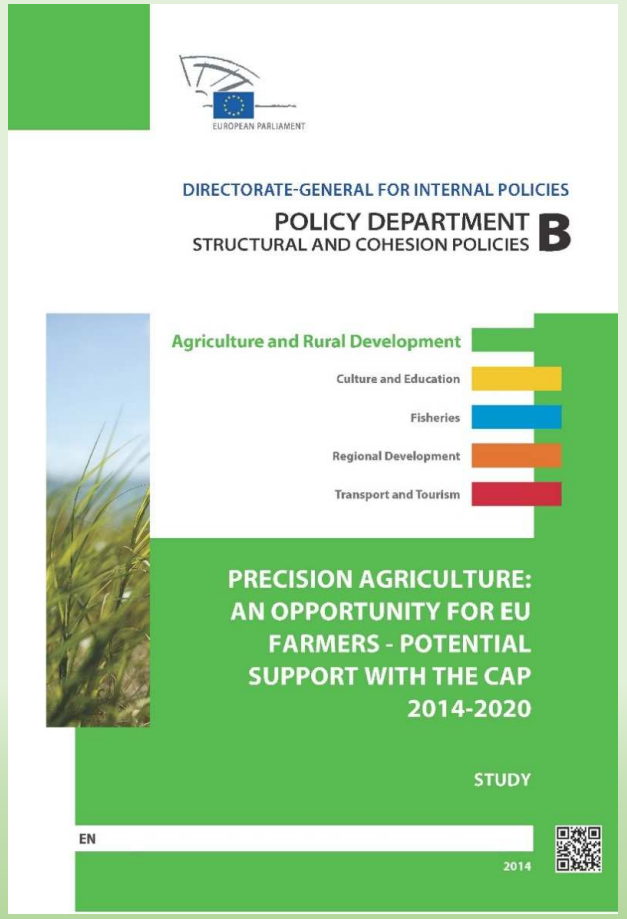
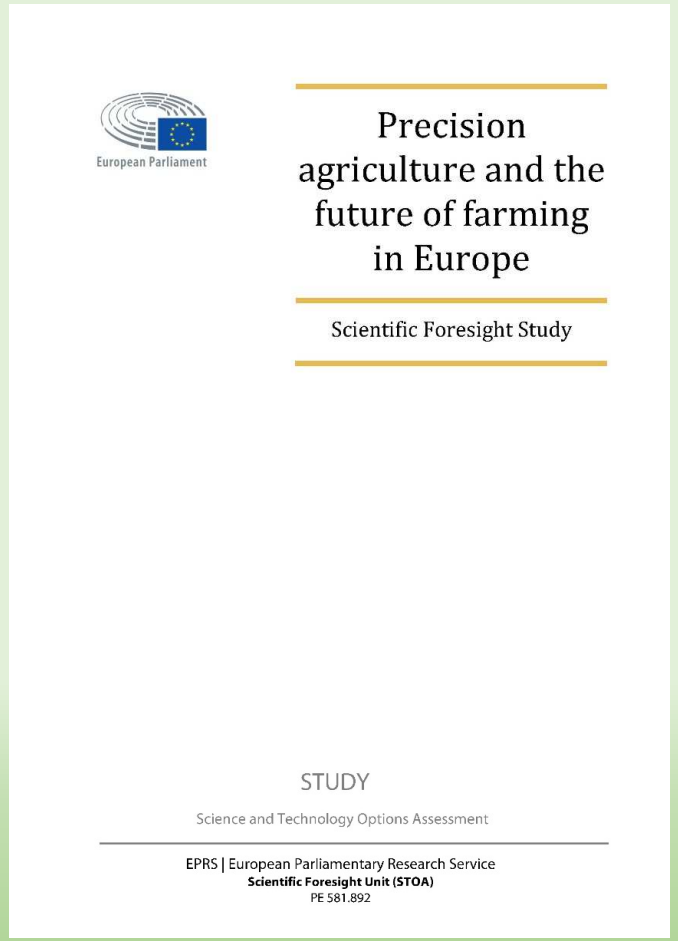
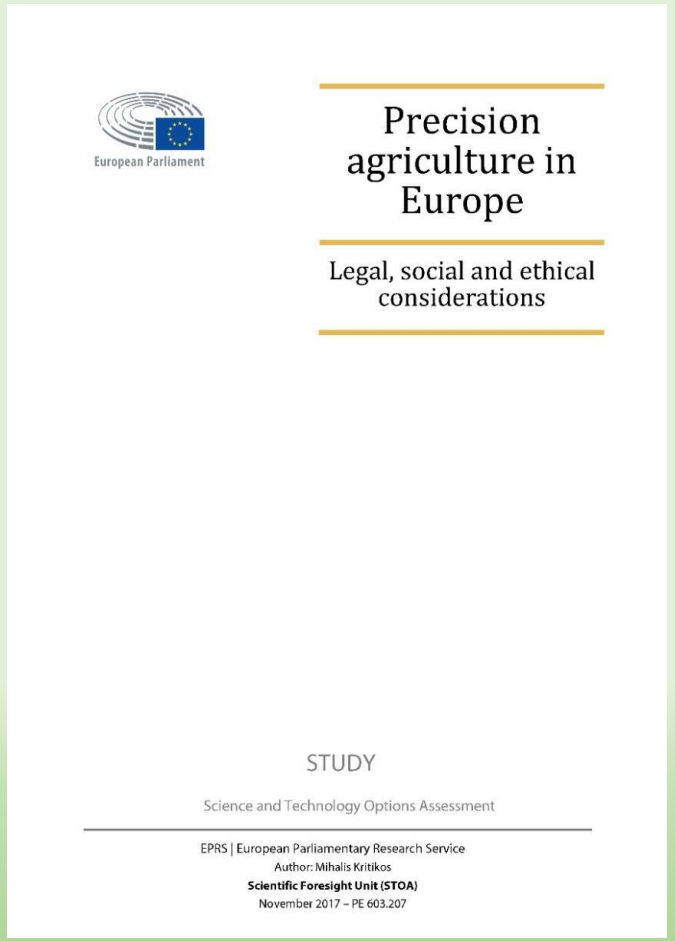


EU studies on PA – the farm size issue







Precision agriculture in Europe: Legal, social and ethical considerations – Nov 2017

- Farming in Europe is very heterogeneous. There is, in general, a **big difference between approaches implemented on large-sized and small-sized farms**.
- Challenges include institutional constraints as well as the reliability, manageability and limited knowledge surrounding the applicability of this technology and its adaptability to all farm types and sizes.
- The degree of mechanisation in agriculture is mostly linked to the size of the farm, thus in countries where the average agricultural area per farm is small, farmers may feel less inclined or simply do not have the financial resources necessary to purchase farming machinery or make use of specialised agricultural services.
- **Smaller and medium size farmers will lack the farm income,** investment capital or specialised technical **knowledge to acquire technological equipment for precision agriculture** and to sustain the cost of precision agriculture services. Adopting technologies involves uncertainty and tradeoffs and information on the costs and benefits of adopting technologies in agriculture is often imperfect.

Precision agriculture and the future of farming in Europe - Dec 2016

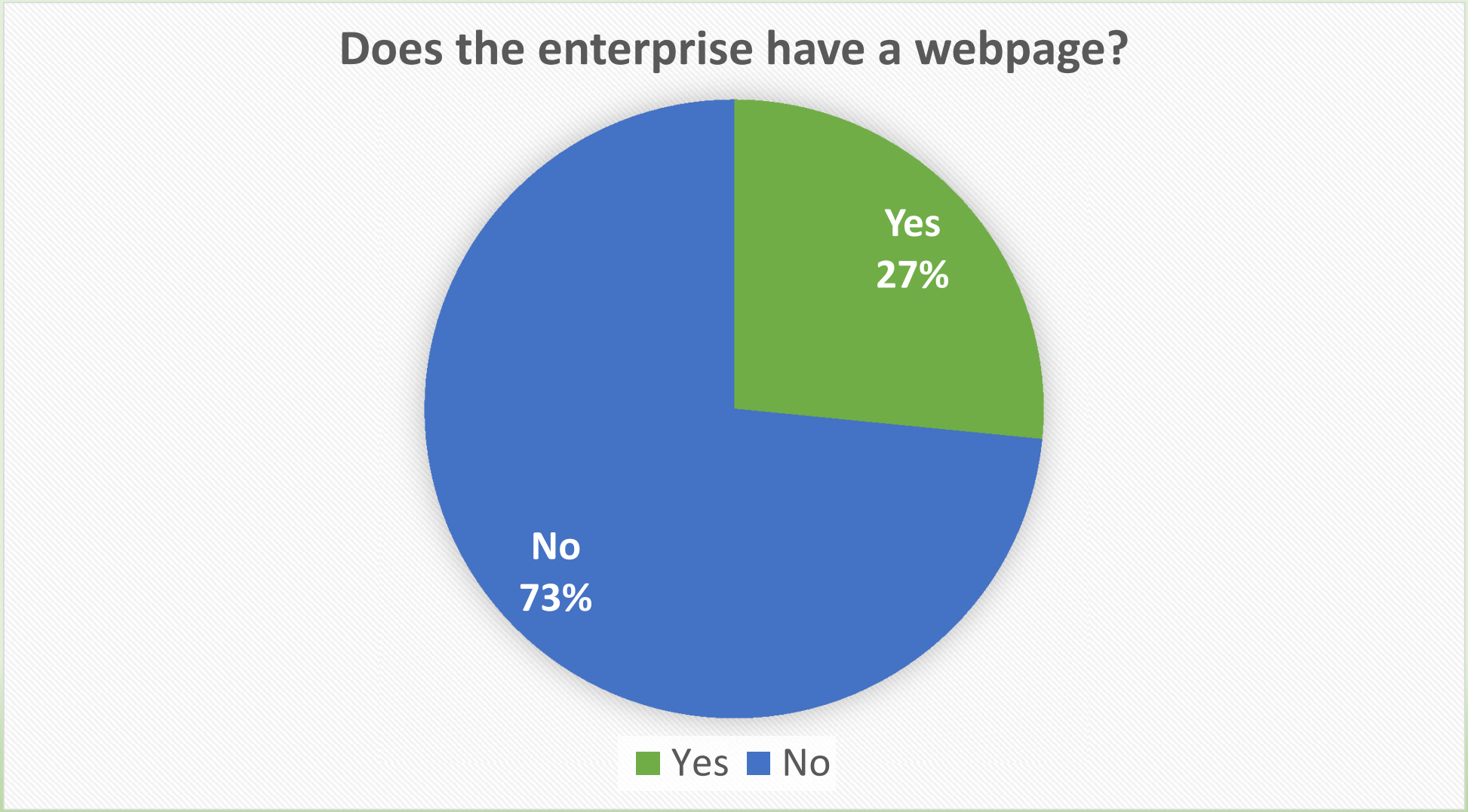
- Policy related process: Farm holding size and number -Farm size will increase because of the required investments in PA technologies and know how. The number of farms will go down, which is the current trend already.
- Despite the wide range of PA solutions being offered it is estimated that only 25 % of EU farms use technologies which include a PA component.
- The critical question here was ‘How can all sizes of farms – from small family farms to large agribusinesses – benefit from these technologies?’

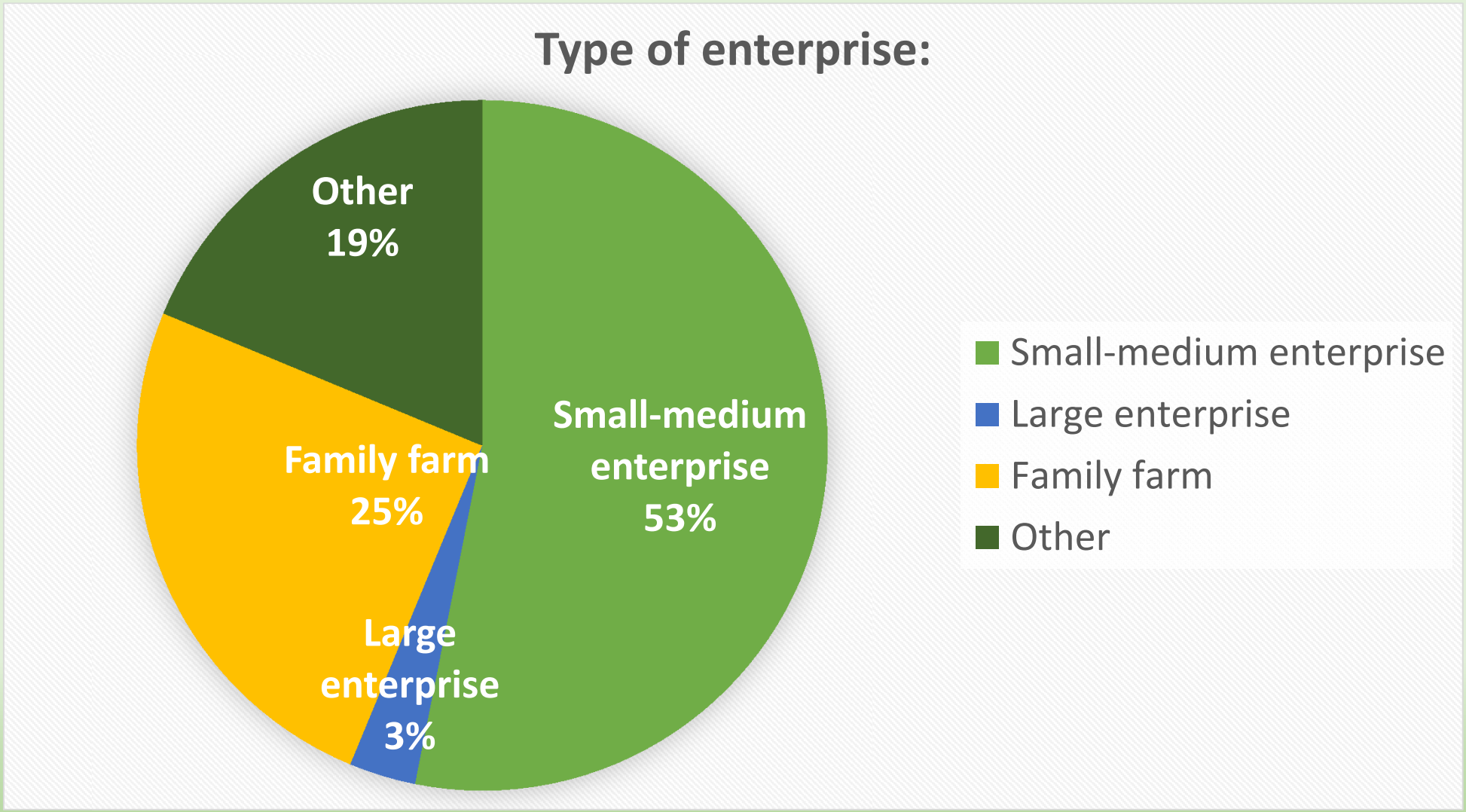
Precision agriculture: an opportunity for EU farmers - potential support with the CAP 2014-2020

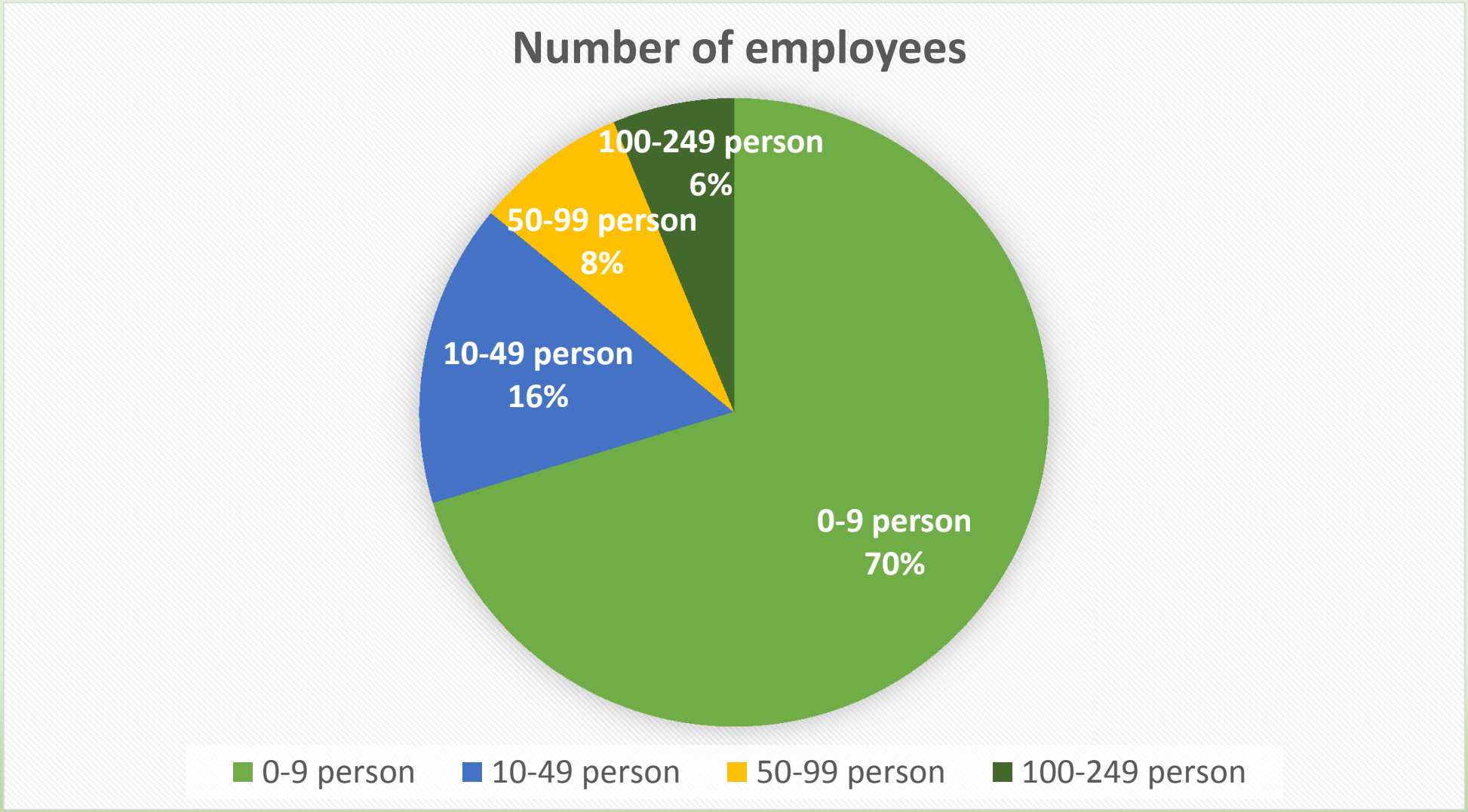
- Precision Agriculture **is used most and most advanced amongst arable farms**, particularly **large ones with large field sizes** in the main grain growing areas of Europe, and where a business approach (to maximise profitability) has long been practised.
- A critical aspect for the PA profitability is farm size, as cost/benefit estimations require a minimum farm size to depreciate the investments over the entire farm.
- Studies demonstrate that auto-guidance systems are profitable when they are implemented on 100 to 300 ha fields.

Questionnaire results

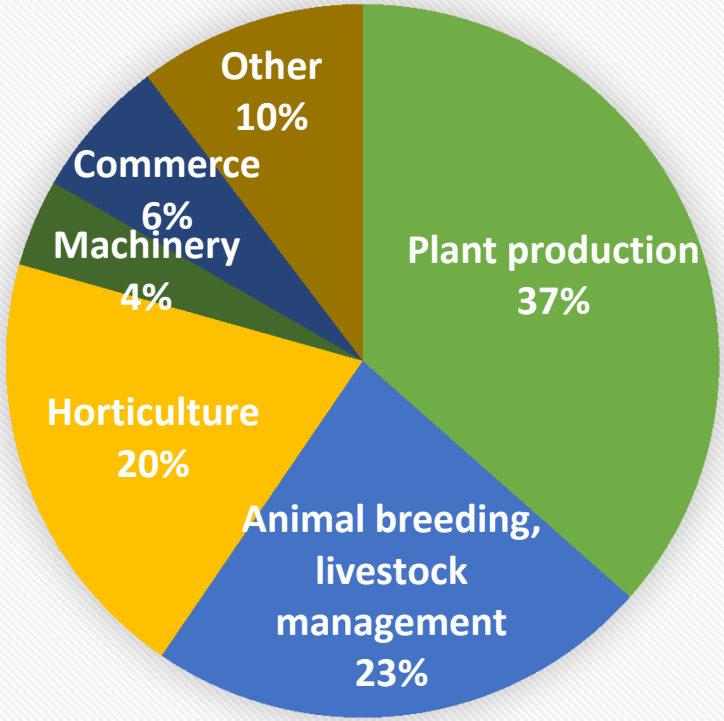
- Number of respondents: 67 / 64 processed
- Respondents composition:
  - Farmers near Makó, / Galamb (4-5 inputs)
  - Advisory clients (50 advisors, 2-3000 farms)
  - Farm logbook users (out of appr. 3000 fams, about 300.000 hectares)
- Possibility of distortion
  - Respondents mainly
    - Farm managers
    - Users of ICT tools already
    - More appreciating knowledge management than total sample me be

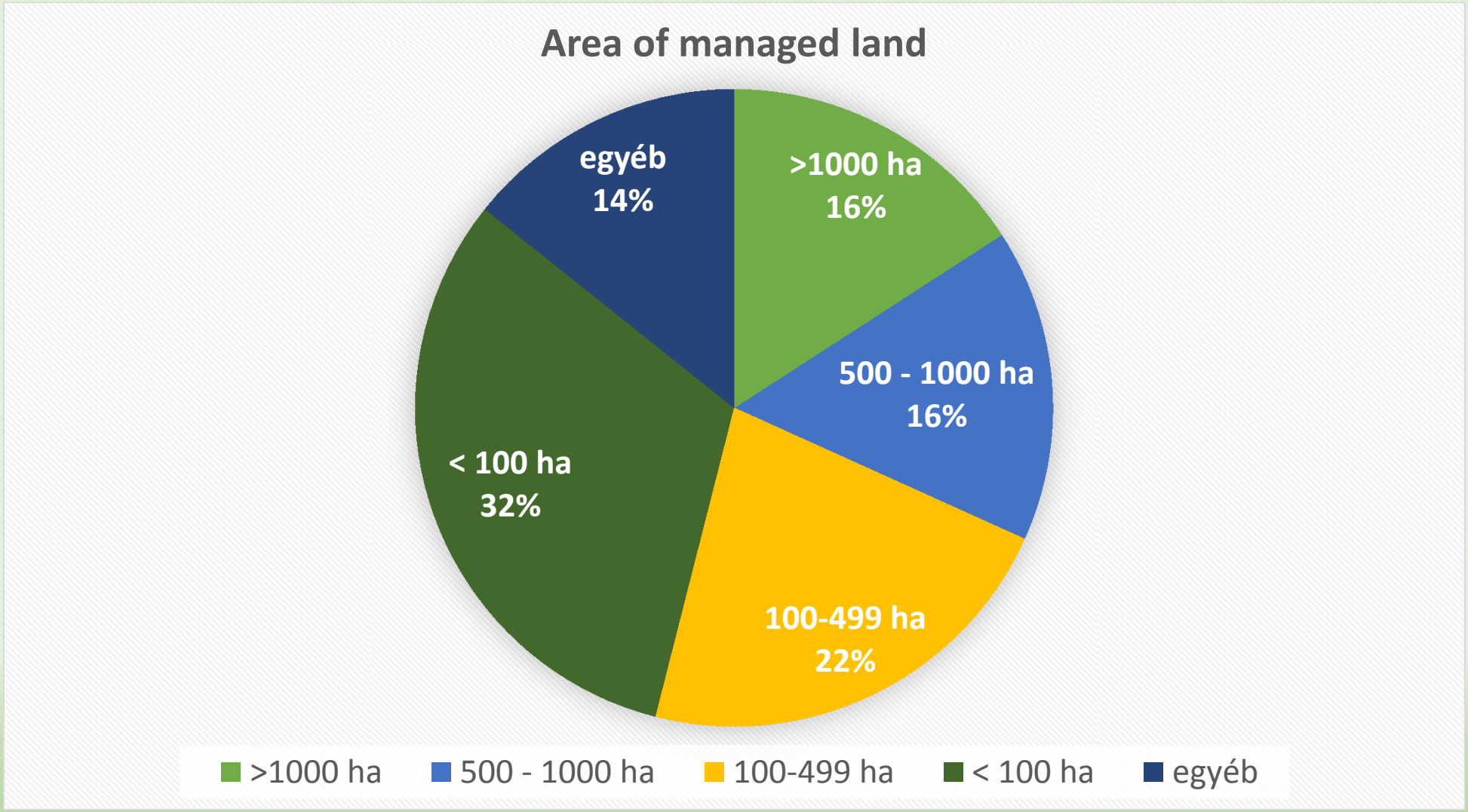

Does the enterprise have a webpage?
Yes
27%
No
73%
Yes
No


Type of enterprise:
Other
19%
Small-medium
enterprise
53%
Family farm
25%
Large
enterprise
3%
Small-medium enterprise
Large enterprise
Family farm
Other


Number of employees
100-249 person
6%
50-99 person
8%
10-49 person
16%
0-9 person
70%
0-9 person
10-49 person
50-99 person
100-249 person

What is the main sector of activity?



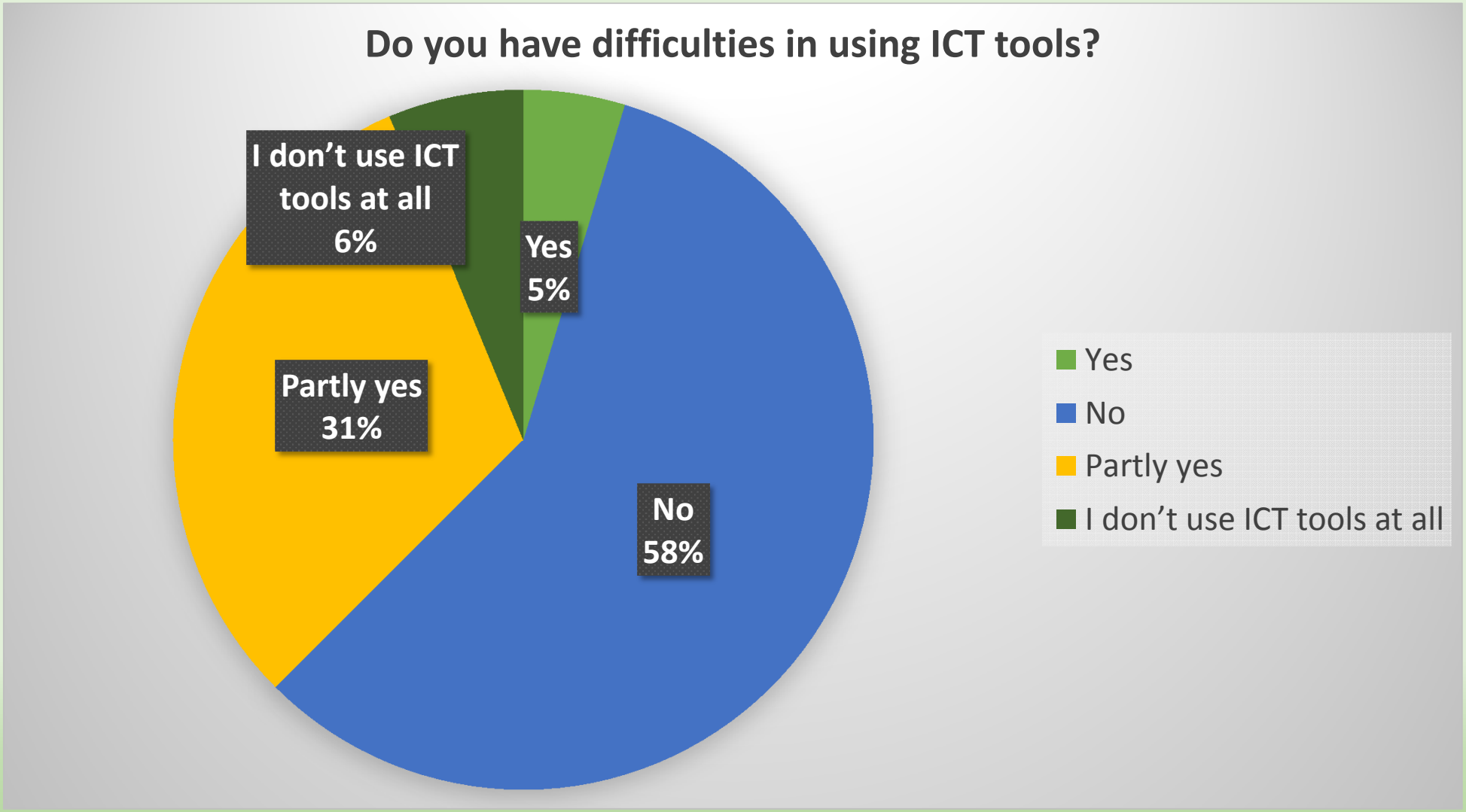

Area of managed land
egyéb
14%
>1000 ha
16%
500 - 1000 ha
16%
< 100 ha
32%
100-499 ha
22%
>1000 ha
500 - 1000 ha
100-499 ha
< 100 ha
egyéb

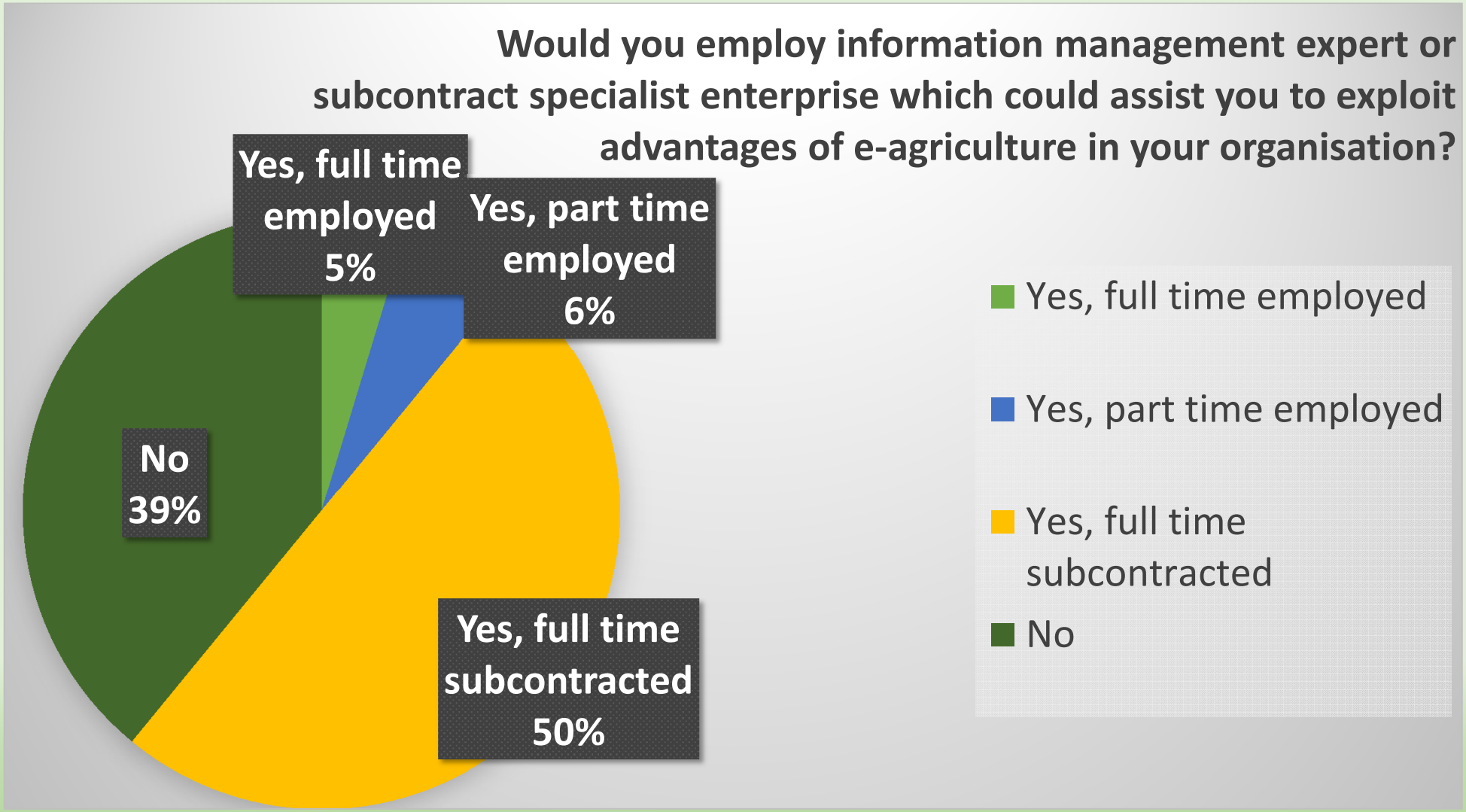
In which areas of your work related to agriculture do you use information communication tools and technologies (ICTs)?

E-government (subsidy claim, tax report, tax refund, etc.)	**55**
Official record keeping, data reports and planning (farmer logbook, nitrate report, soil nutrition plan, land utilization and crop rotation plan, etc.)	55
Complex enterprise resource planning system, farm management	10
Food traceability, processing and safety	10
Forecasts (weather, plant protection, pests), risk mitigation	28
Precision farming, cultivation, production technologies	20
Market access, e-commerce, input purchase, sale of products	20
Other(s): ……	4
None of the above	3

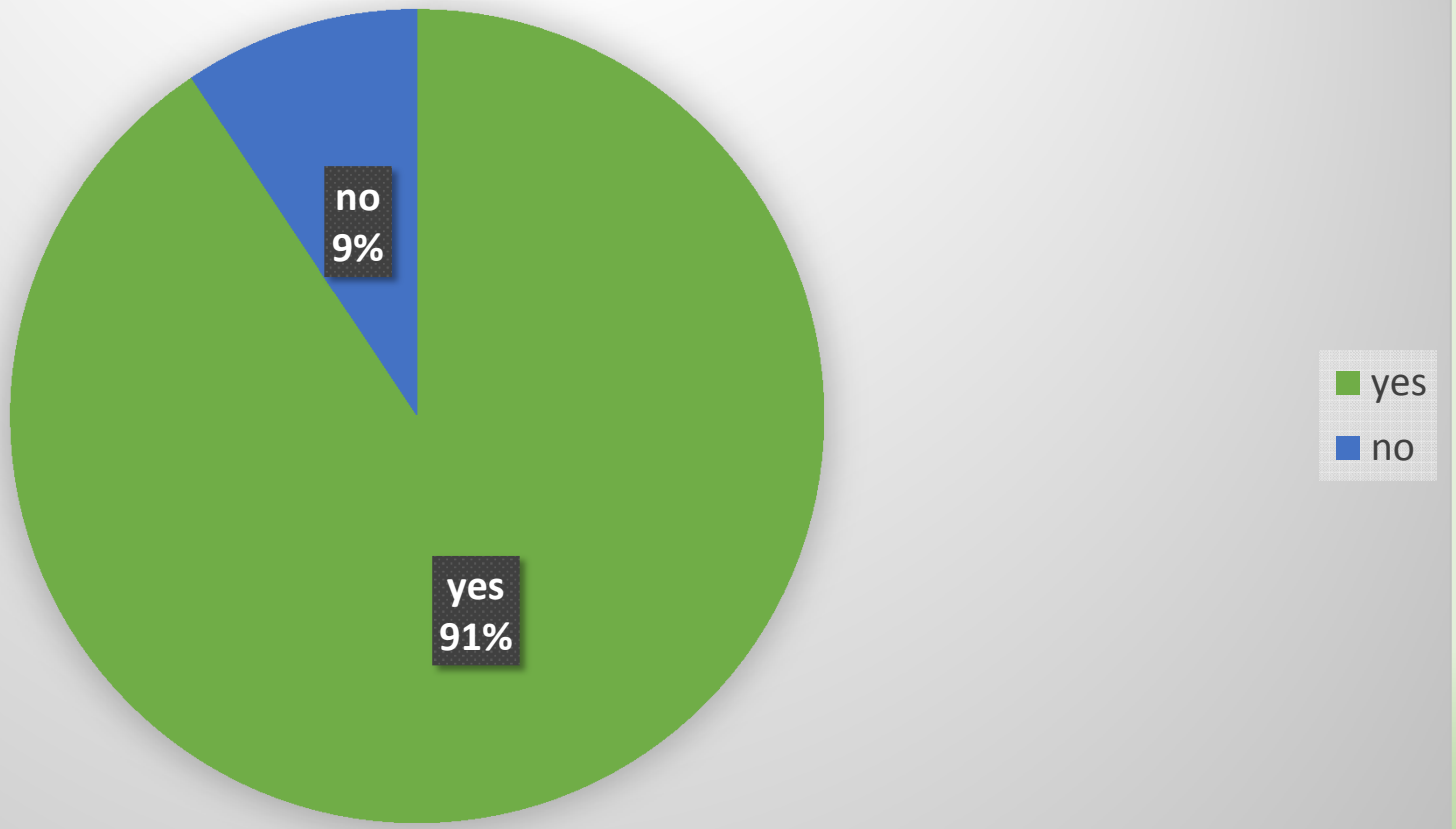
What is your opinion about ICTs from the perspective of managing and developing your organisation?

Makes daily work and administration easier	**51**
Cost reduction and revenue increase can be achieved by its use	36
Indispensable to manage and develop the organisation	35
Has small impact on the operation	7
Has no impact on the operation	1


Do you have difficulties in using ICT tools?
I don’t use ICT tools at all 6%
Yes 5%
Partly yes 31%
No 58%
Yes
No
Partly yes
I don’t use ICT tools at all

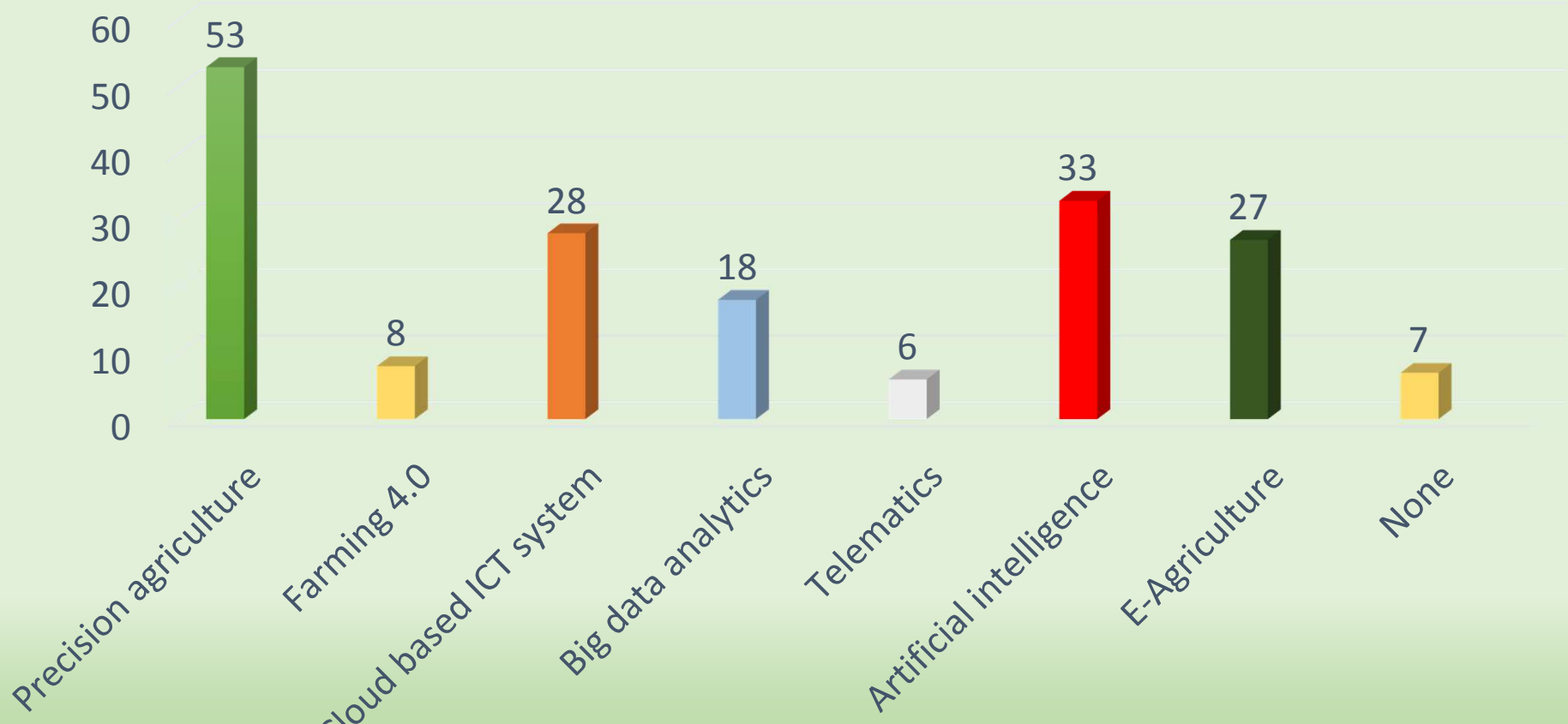

Would you employ information management expert or subcontract specialist enterprise which could assist you to exploit advantages of e-agriculture in your organisation?
Yes, full time employed 5%
Yes, part time employed 6%
No 39%
Yes, full time subcontracted 50%
Yes, full time employed
Yes, part time employed
Yes, full time subcontracted
No

Having the means, would you support your colleague's participation at a special training which develops capacity in the use of information communication tools and technologies?

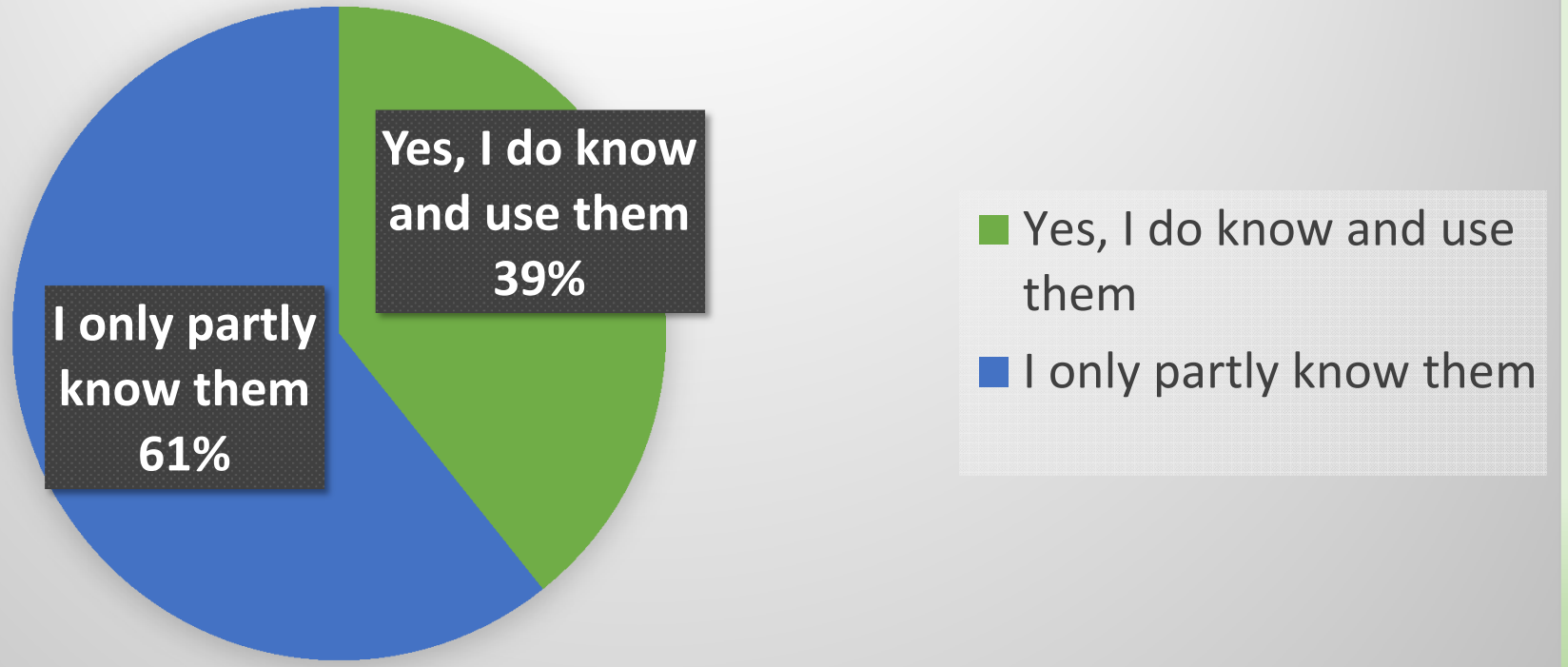


	1	2	3	4	5
Be acknowledged of the various software tools in e-agriculture, be capable to make suggestion for purchase, operation and maintenance.	2	3	7	12	**40**
Be acknowledged of the various hardware equipment in e-agriculture, be capable to make suggestion for purchase, operation and maintenance.	1	3	5	20	**35**
Especially be aware of the sensors used in agriculture, be capable to install, operate and maintain them.	1	4	8	20	**31**
Be capable to assist B2G (business to government) processes of the enterprise (claims, reports, refunds etc.)	4	6	10	7	**37**
Be capable to create and maintain the website pf the enterprise, with basic content management and administration tasks.	7	13	15	13	16
Be capable to develop proprietary software according to the specific functional needs of the enterprise.	14	**21**	12	8	9
Be capable to follow the technological changes in e-agriculture and monitor newest trends.	1	3	10	20	**30**
Be aware of the basic rules and possibilities of e-commerce.	3	9	19	17	16
Be aware of the operation of data transmission equipment.	1	5	12	20	26
Be acknowledged of legal and ethical aspects of using ICT tools.	1	6	16	18	23
Know the processing methods of collecting data and be capable to select the needed information for decision making support.	1	2	6	19	**36**
Be capable to provide general information system administrator tasks for the enterprise.	6	13	13	14	18
Help the teamwork of the enterprise by his/her decisions.	2	5	8	19	**30**

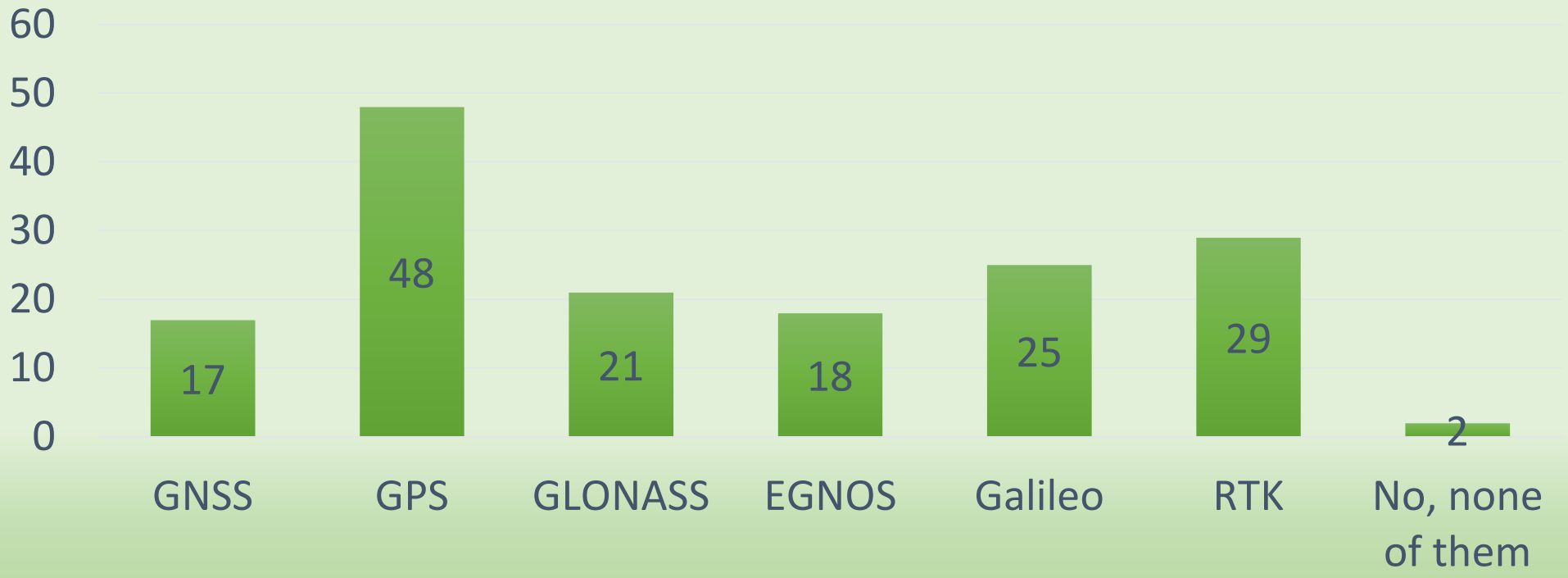
Select the concepts that you know of

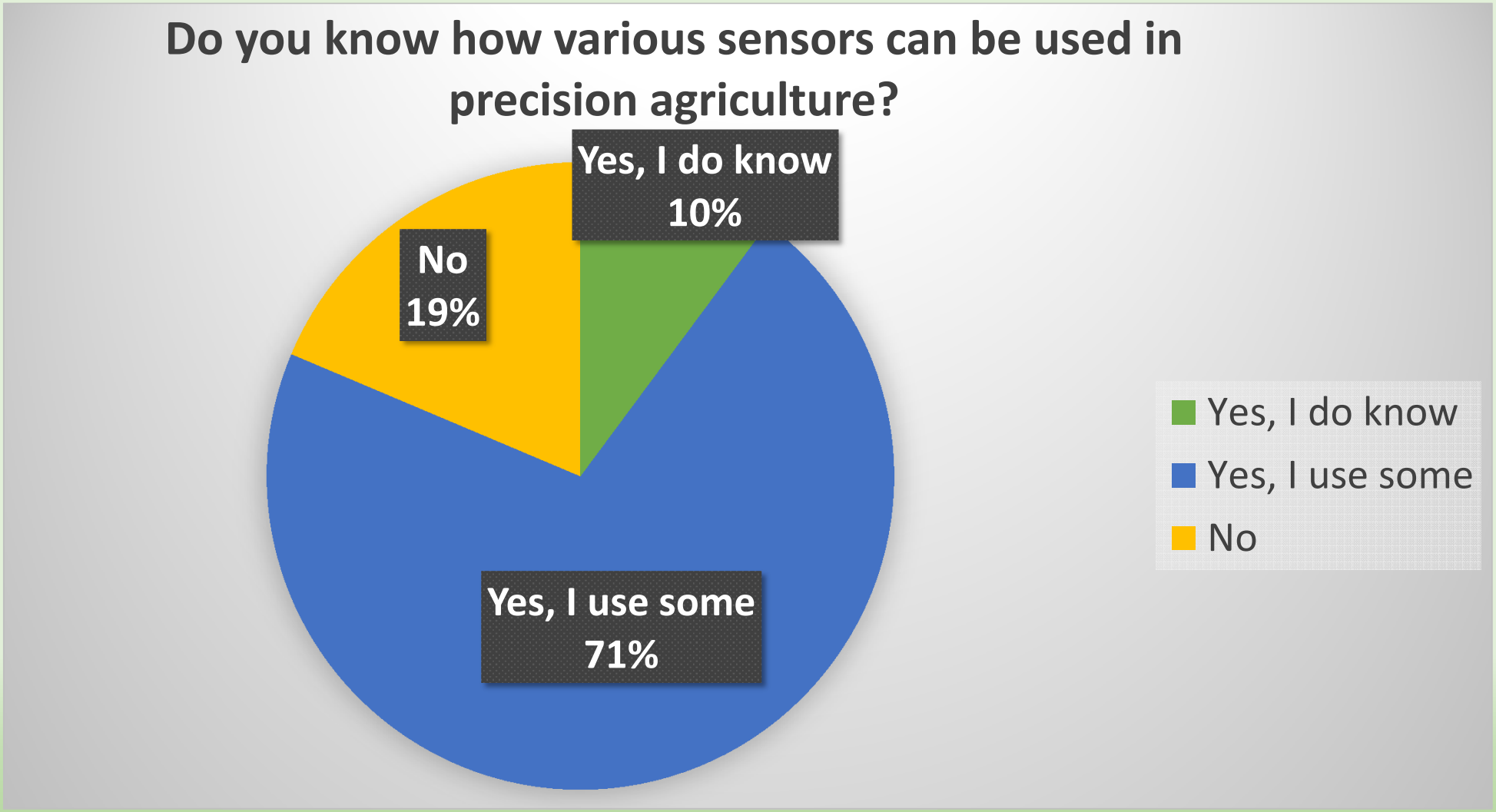


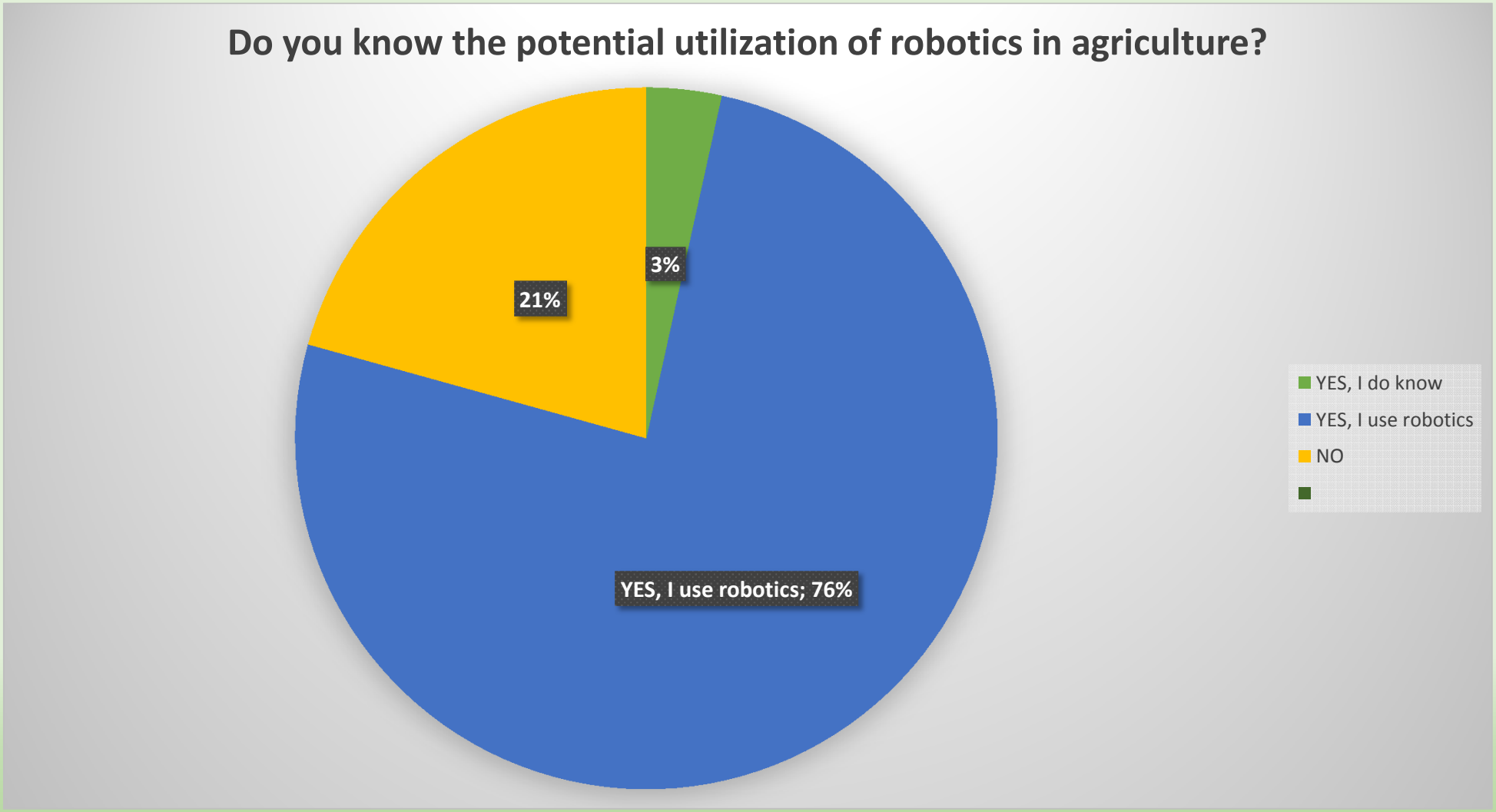
Do you know what is navigation and automatic steering, what types of benefits do they have and where they can be used?



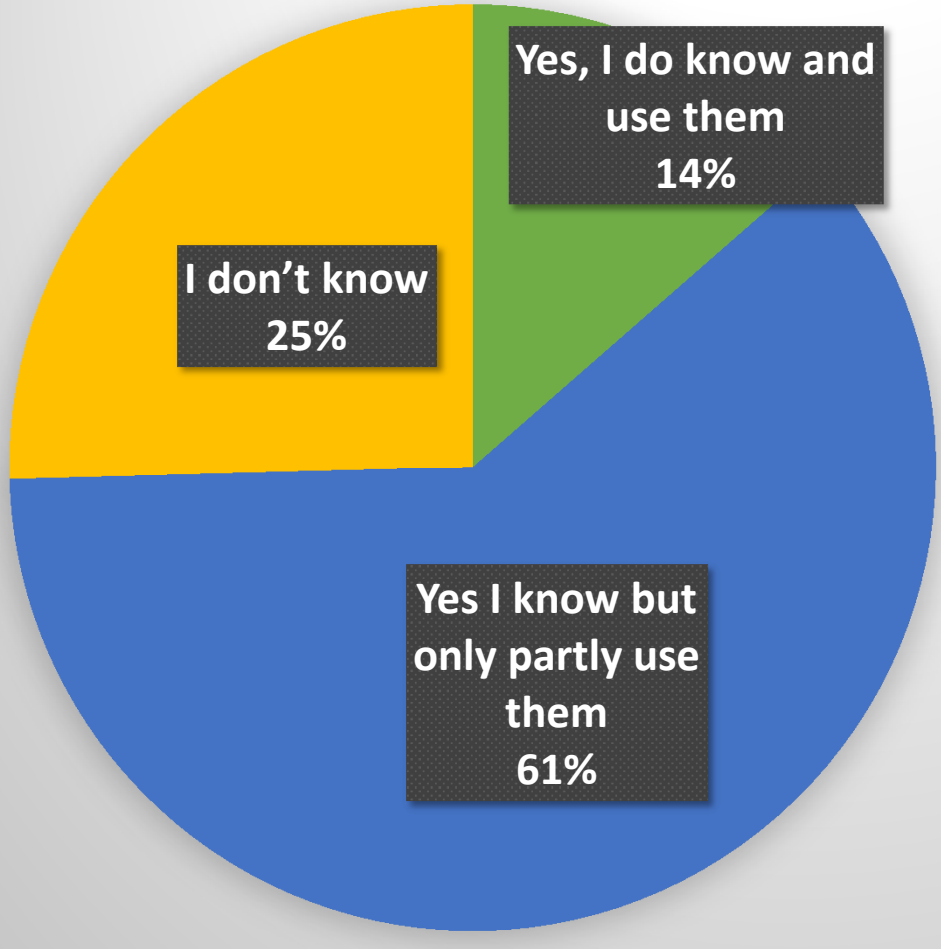
Do you know any of the following terms: GNSS, GPS, GLONASS, EGNOS, Galileo, RTK?




Do you know how various sensors can be used in precision agriculture?
Yes, I do know 10%
No 19%
Yes, I use some 71%
Yes, I do know
Yes, I use some
No

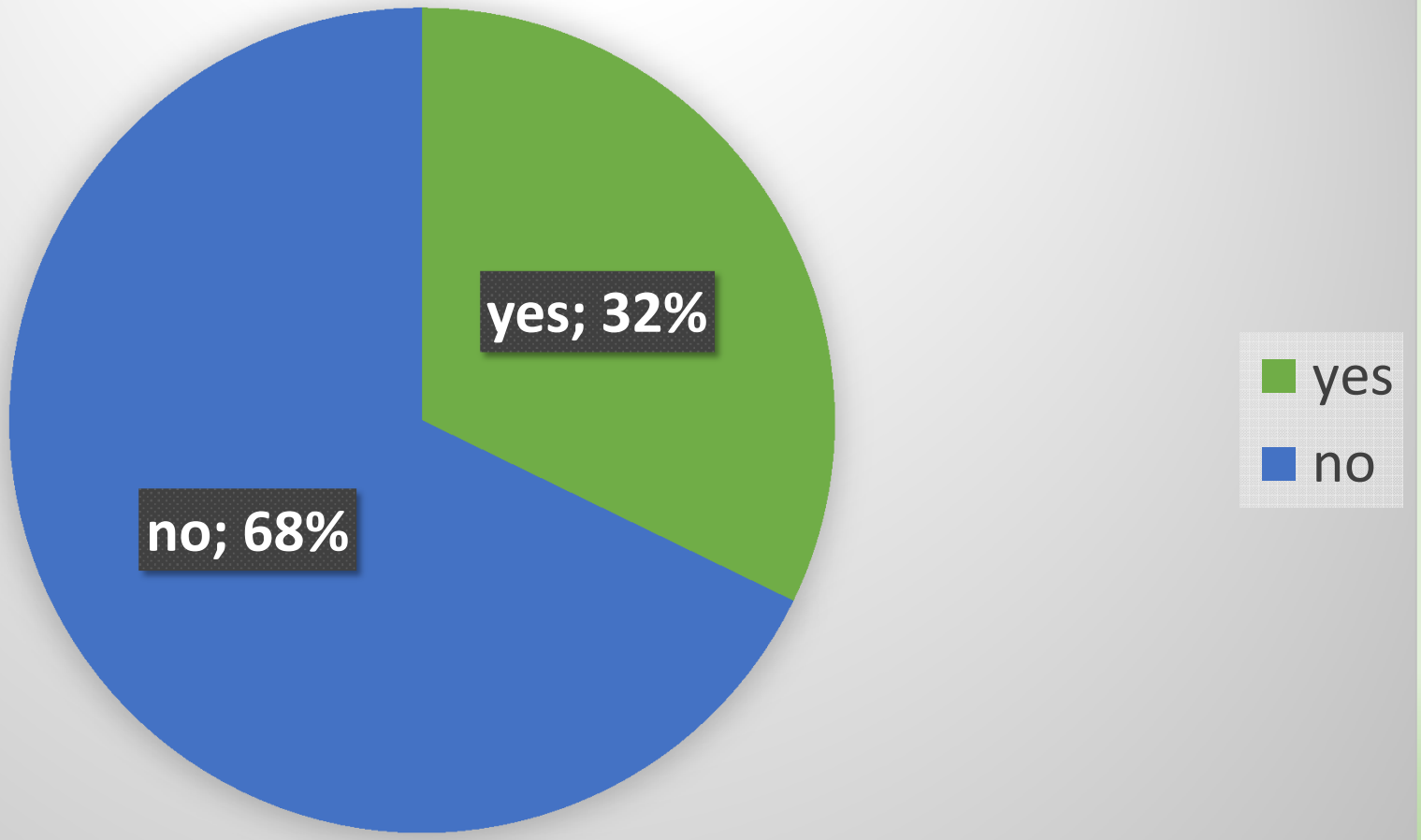

Do you know the potential utilization of robotics in agriculture?
3%
21%
YES, I use robotics; 76%
YES, I do know
YES, I use robotics
NO

Do you know how aerial and remote sensing can be used?

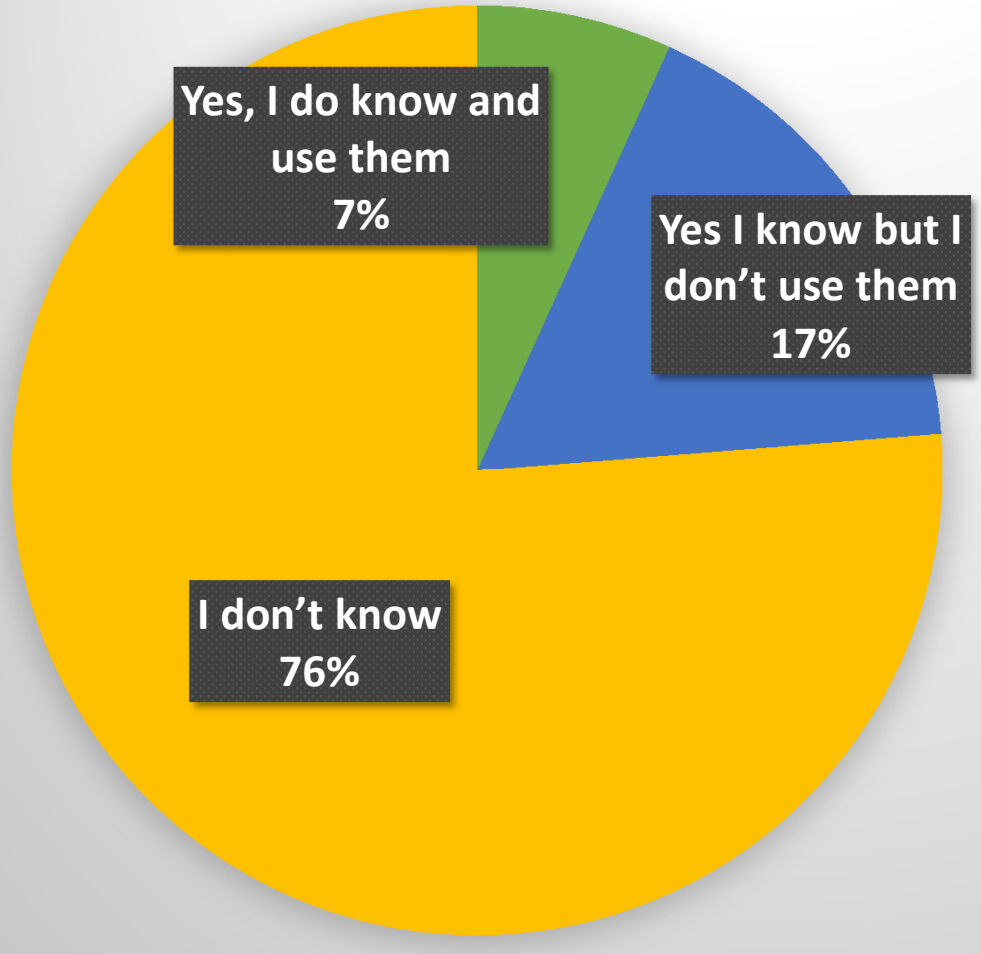


- Yes, I do know and use them
- Yes I know but only partly use them
- I don’t know

Do you know what Copernicus and LandSat are?



Do you know, what Geographic Information Systems are for?



Summary – Farm structure

- The result of the questionnaire highlights the fact that national agriculture is characterized by the size of the **small and medium-sized** farms, but the share of micro sized farms is also significant.
- The size of the businesses is somewhat parallel with the **physical size of the farms**, the number of farms with hundreds or thousands of hectares is lower, while the number of family farms of 50-100-200 hectare is growing, and it is worth noting that there are still a few thousand large farms in Hungary that handle a large proportion of agricultural land.

Summary - PA

- The result of the questionnaire fully supports the fact that the vast majority of agricultural producers currently have **heard about** precision technologies but are **not using them**.
- Uncertainty exists in the field of concepts. There are a lot of differences in the use of the English and Hungarian terminology - many do not understand the same thing in English and Hungarian.
- The survey supports the need for a system of concepts for precision farming and the concept of e-agriculture in the broader sense in Hungary.

Summary - CAP

- The EU's Common Agricultural Policy Support Scheme is crucial for the Hungarian agriculture, most of the farms encounter access to and use of ICT tools (land surveying, soil and leaf testing, use of eGovernment tools, reports, data submissions, registers, etc.) by the operation of CAP which occurs in all sizes, while the use of precision tools is more typical of larger farms, although it is expected to continue to spread in small and medium-sized economic categories.
- Most of the farmers are positive for ICT tools, they handle the benefits they have in the right place, open to new technologies, even through the use of new staff.

Summary – how to proceed

- The responses highlighted the functions that are most important and necessary for the use of ICT tools.
- As a result of the survey, we can summarize the features and needs of the potential user group more accurately, which can both help to create the strategy for the training and the concrete curriculum development work.
- The basic question is whether
  - the training is intended to serve the fewer larger farms; or the wider national agriculture sector,
    - in the first case the dominance of precision farming knowledge can be justified.
    - In the latter case, a **broader set of knowledge**, as indicated by this survey, should be processed and incorporated.