

Research-based participatory approaches for adopting Conservation Agriculture in the Mediterranean Area



Deliverable 2.3

Summary of respondents and results of the survey

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PRIMA
PARTNERSHIP FOR RESEARCH AND INNOVATION
IN THE MEDITERRANEAN AREA

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1. Introductory remarks

In the frame of Task 2.2 of the Work Package 2 (WP2), the use of the interview with farmers was an effective tool to understand the importance of barriers to the adoption of Conservation Agriculture (CA). The formal interviews, implemented and carried out through a google forms format, has provided standardized and quantifiable information addressing to agronomic, pedo-climatic, economic, policy and socio-cultural barriers, previously identified in the literature review in the frame of Task 2.1.

Answers, expected in number of 30-50 entities per Country, were 152, divided as below for each Country:

- Algeria 6
- France 20
- Greece 12
- Italy 27
- Morocco 10
- Portugal 34
- Spain 11
- Tunisia 32

Of the total number of respondents 122 were farmers, the remaining 30 were principally researchers and technical consultants. The 81% of surveyed farmers already were CA adopters. About age and level of education of the surveyed, the majority of farmers aged between 40 and 60, with a medium or high level of education.

Characteristics of the respondent's farms highlight a mean farmland size more than 270 hectares. This result is particularly influenced by the replies from Portugal, with an average farmland size greater than any other Country. The practice of irrigation is applied from about 23% of farms, although most do not apply it or only partially.

2. Materials and methods

The results of collected responses to survey from each Country, reported in the "Deliverable 2.3 - survey responses", was preliminary used for the implementation of "farms and field network", in combination with Task 3.1 of the Work Package 3 (WP3). The objective of this activity was to identify WP2 and WP3 farmers' and fields and point out its features.

The methodology entailed the criteria definition and adoption for the establishing of a farmers' and fields network of WP2 and WP3, and with this aim a regional focus groups have been planned and carried out for each Country.

Per Country, among interviewed, 3-5 farmers were appropriately chosen by their representatives. To them, CREA provided a document, namely "Summary of the results of the survey", containing the guidelines for conducting the focus group, in order to discuss with the farmers the results of the survey and highlight their views and needs.

Each toolkit contains graphs relating to the results of the survey by Country, as well as a series of questionnaires addressed to farmers about the problems and issues that emerged.

Analysis of the answers was structured was structured on three levels as follows:

- General overview about the importance of the identified barriers to CA adoption;
- Analysis and evaluation of each single barrier, taking into account the determining factors for each;

- Analysis of the issues that make those factors important/influential.

3. Results

For the majority of the Countries and especially for Morocco, policy and socio-cultural barriers prevailed on agronomic, pedo-climatic and economic ones.

Focusing on agronomic obstacles, crop diversification and no-tillage most contributed to create a barrier, for almost any Country. Determining factors were the limitant summer conditions for crop diversification, and weed control and cost and availability of machinery for implementing no-tillage technique.

Among pedo-climatic barriers, water availability is a common concern of all countries due to limitant and extreme summer climate conditions, in particular when consider the cover crop cultivation, for which irrigation is frequently needed. For Algeria, even orography is cause for concern, due to high fragmentation of the farms that hampers operations. In Greece, soil characteristics negatively affect the adoption of CA system due to clayed soils that need to be plough to threat soil compaction. In Morocco instead, the opposite situation occurs, because the high presence of stones needs to be removed from the soils.

Economic, organizational and practical barriers are principally affected from the concern related to the purchase or rent a no-till drill. Factors that make the adoption of new machinery/techniques difficult are given by their expensive and to the high number of machinery to purchase. Especially for Greece, the concern is also related to the lack of these techniques on the market and to the lack of contractors as service companies. The low presence of adequate advice and support services for agricultural activity also concern the surveyed farmers from an economic and practical point of view.

Policy barrier, considered as public financial support, that most contributed to hamper CA adoption in quite all Countries, are consider important directly for farmers, to cover the losses of profitability, sustain investments and motivate them, such as for environment, to remunerate the environmental benefits deriving from CA adoption. Despite financial support are always considered essential, there are substantial differences among involved Countries. In general, European countries Italy, France, Portugal and Greece are those that most receive public support for agricultural activity, from EU and national funds. Algeria and Morocco are the Countries that fewer than others receive funding.

Among socio-cultural barriers, despite the medium and high level of education of the surveyed farmers, training and advice services considered highly relevant, contributed a lot to creating hampers to CA adoption. This situation is worried by the current sources of information, that in all Countries constitute by experience from friend and/or colleagues and internet and social media.

4. Overall Summary of the results of the survey

Following are reported the preliminary results of the aggregate analysis of the data collected by the online survey, according to agronomic, pedo-climatic, economic, policy and socio-cultural barriers to Conservation Agriculture adoption.

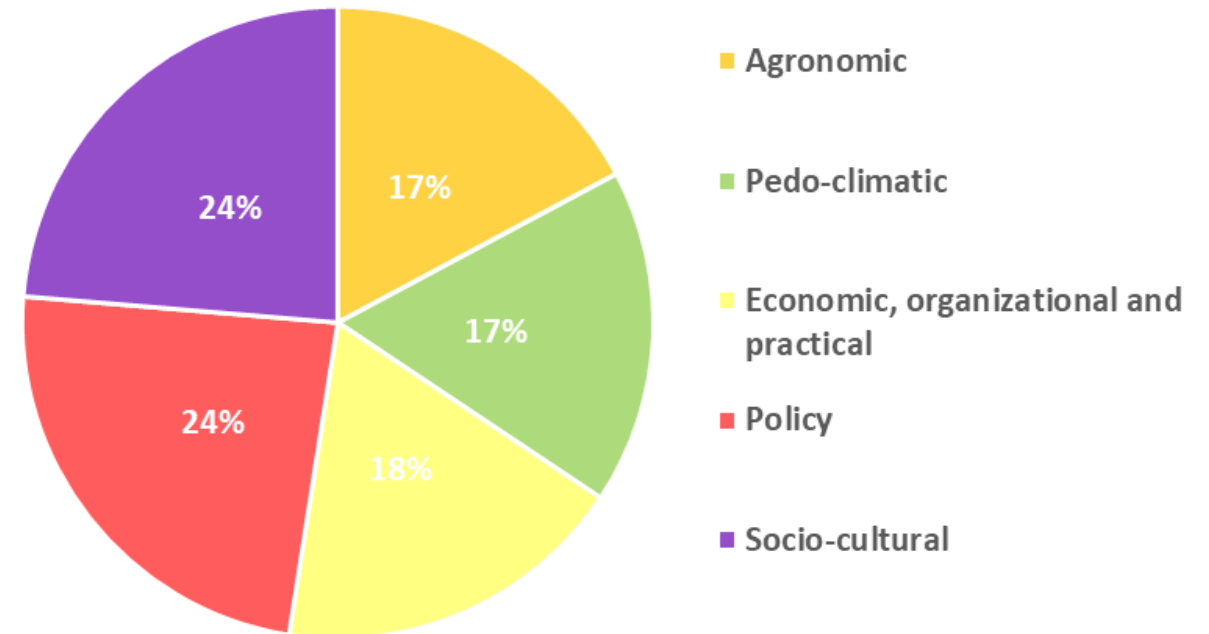
Barriers to Conservation Agriculture adoption

1. Agronomic
2. Pedo-climatic
3. Economic, organizational and practical
4. Policy
5. Socio-cultural

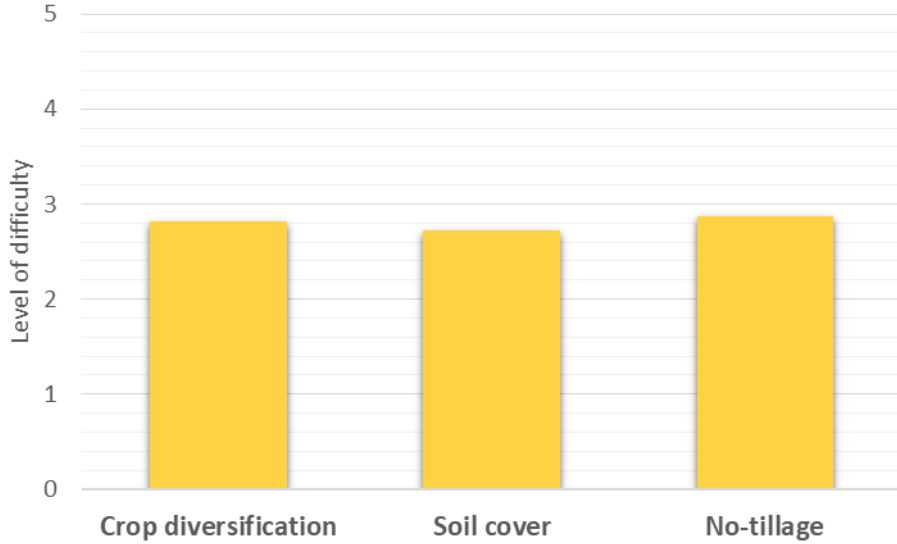
Preliminary information

- N° of farmers: 122
- Average age of farmers: 50
- Average farm size: 273 ha
- Irrigation: 23%

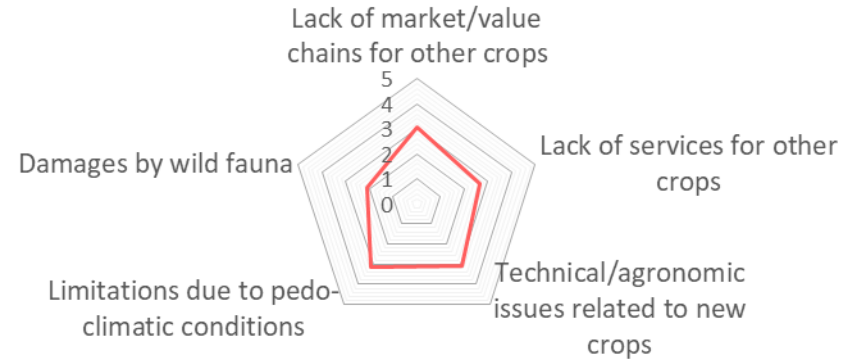
Importance of the different types of barriers
To Conservation Agriculture adoption



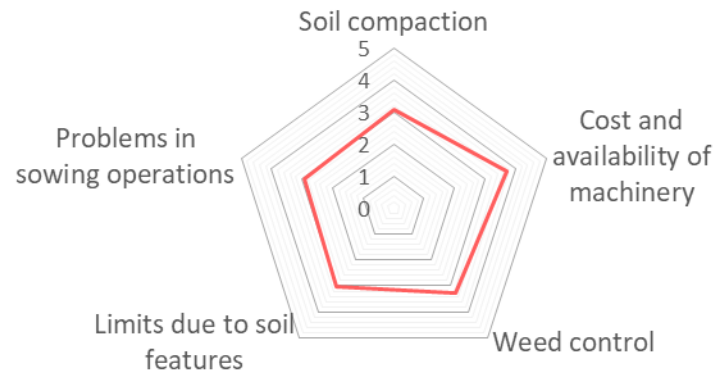
1. Agronomic barriers to CA adoption



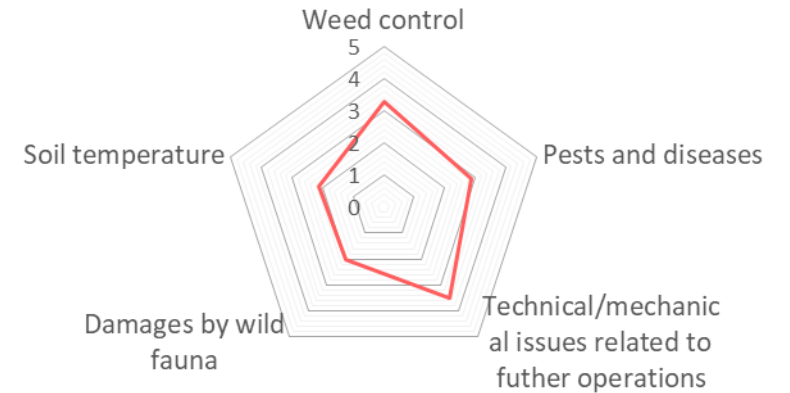
Factors hampering crop diversification



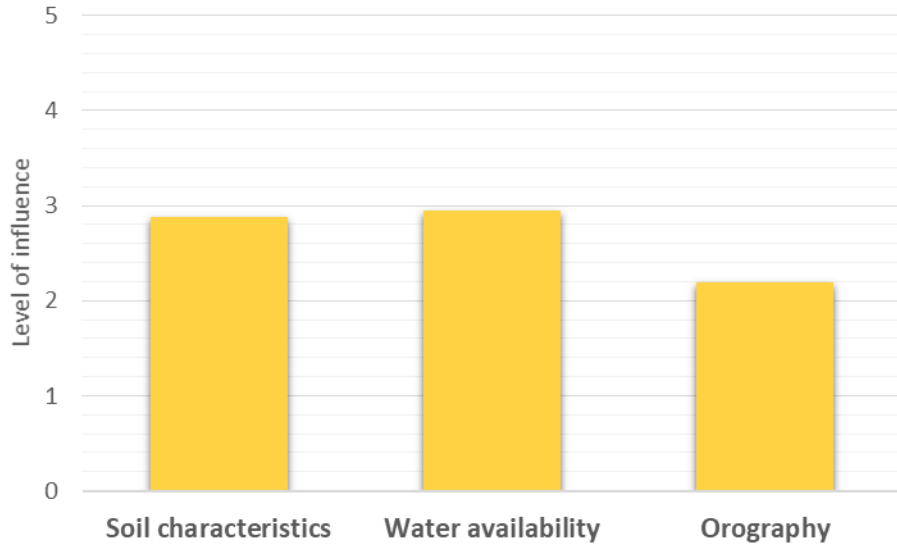
Factors hampering no-tillage



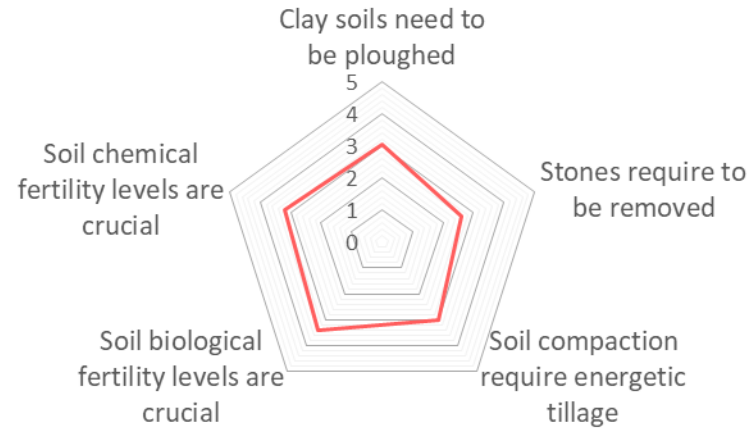
Factors hampering soil cover



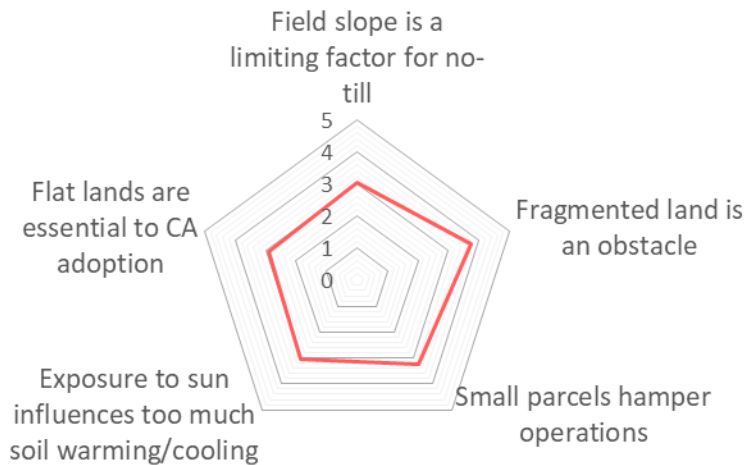
2. Pedo-climatic barriers to CA adoption



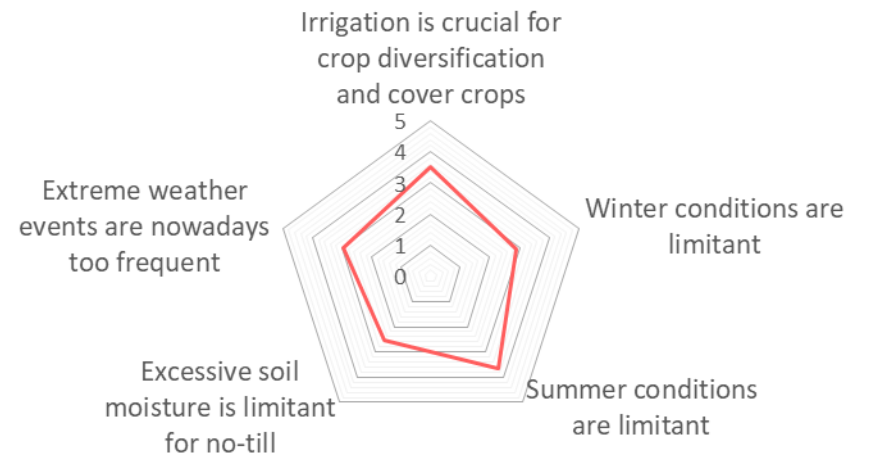
Factors making soil characteristics a barrier



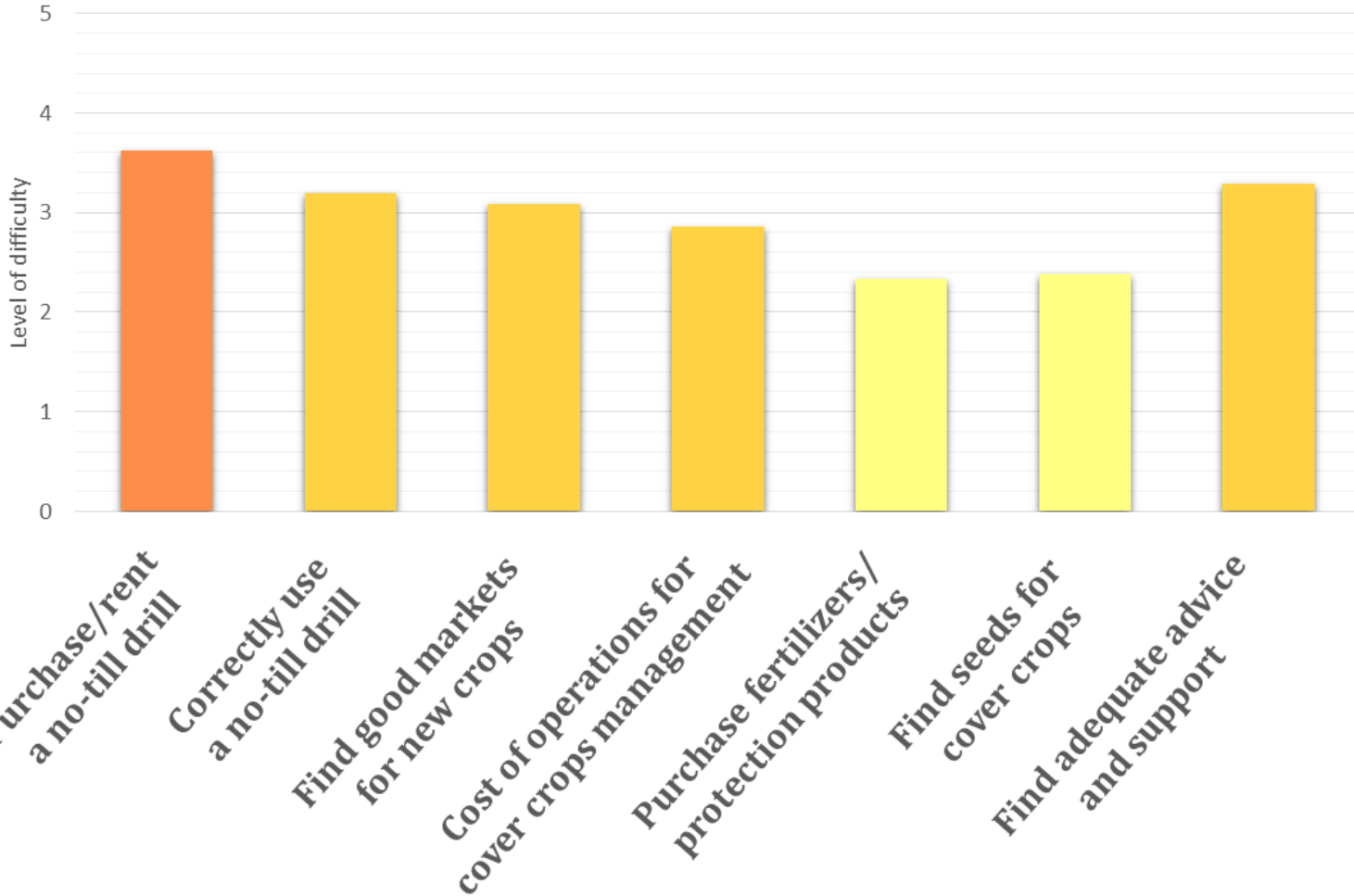
Factors making orography a barrier



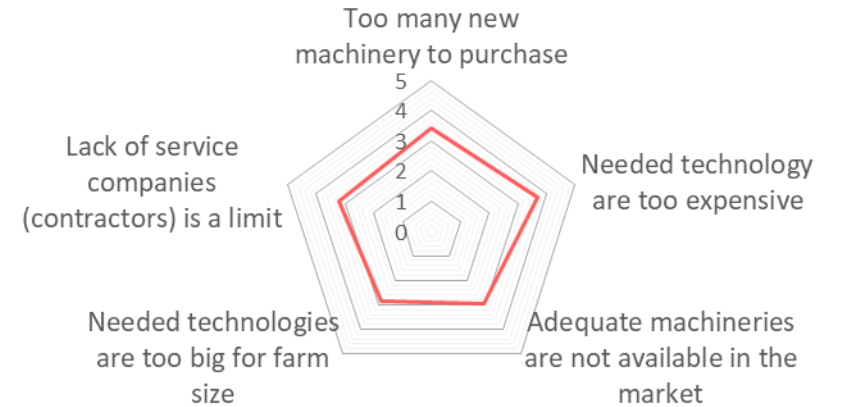
Factors making water availability a barrier



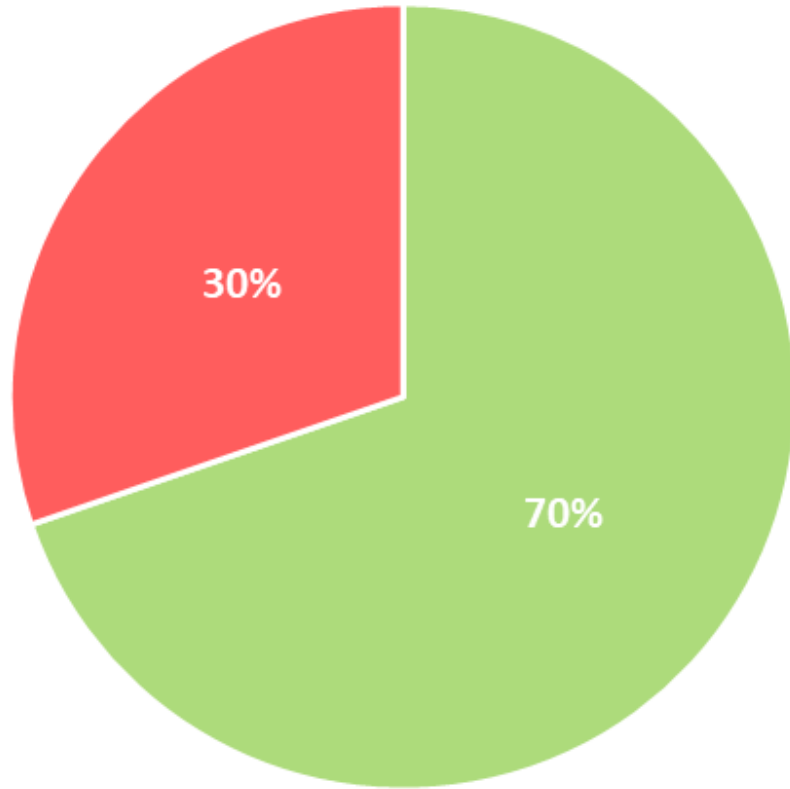
3. Economic, organizational and practical barriers to CA adoption



Factors hampering the adoption of new machinery

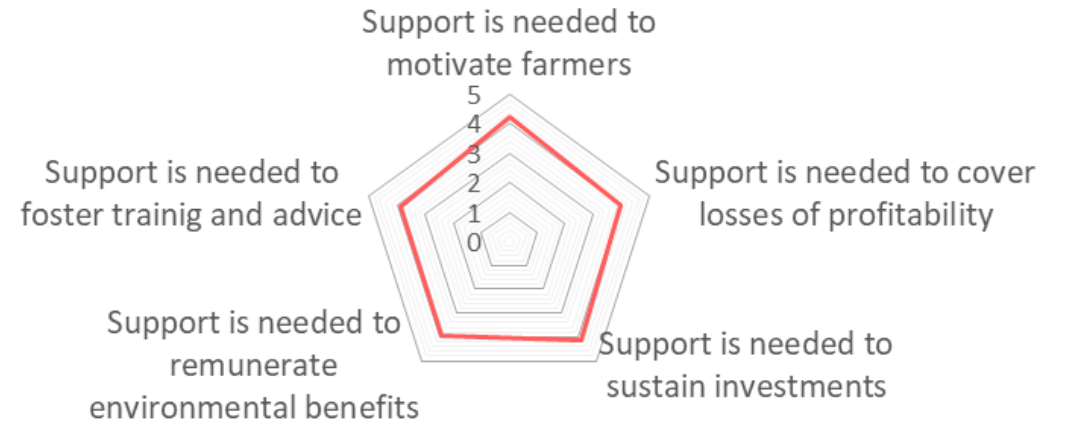


4. Policy barriers to CA adoption



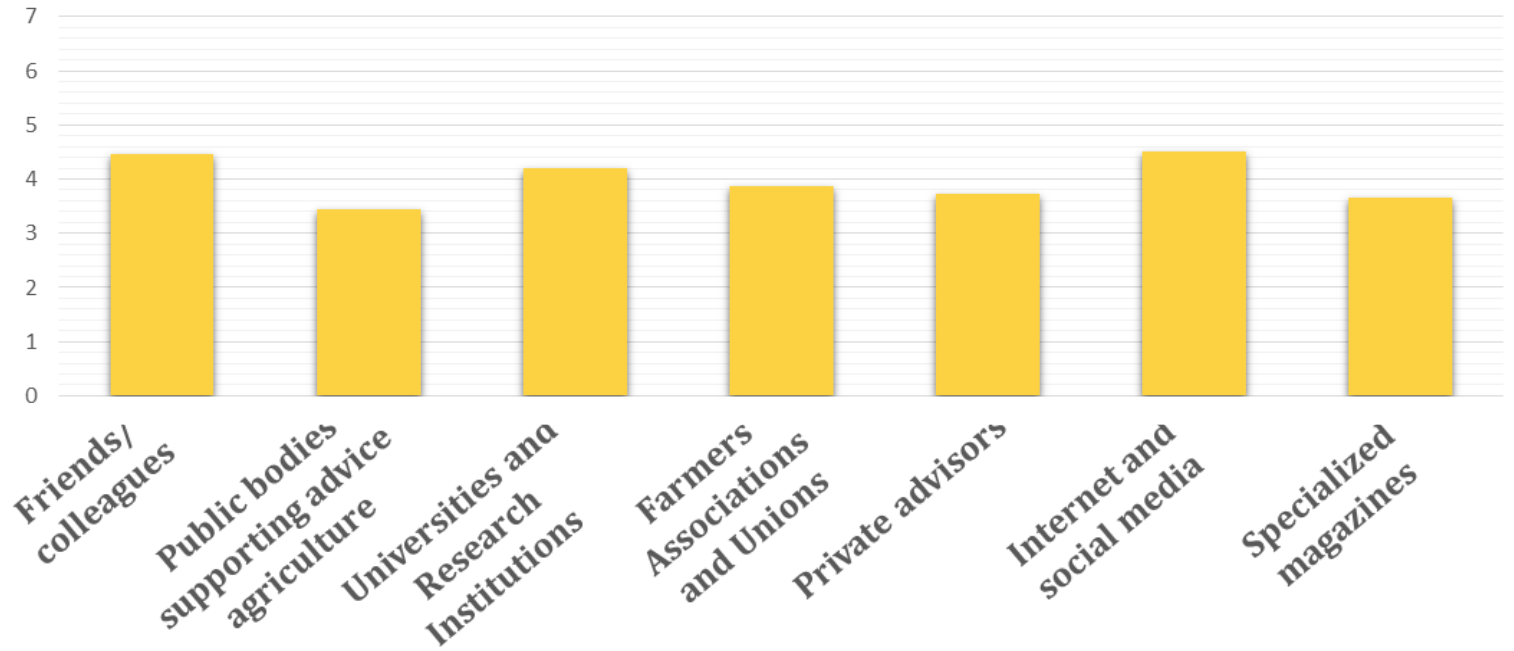
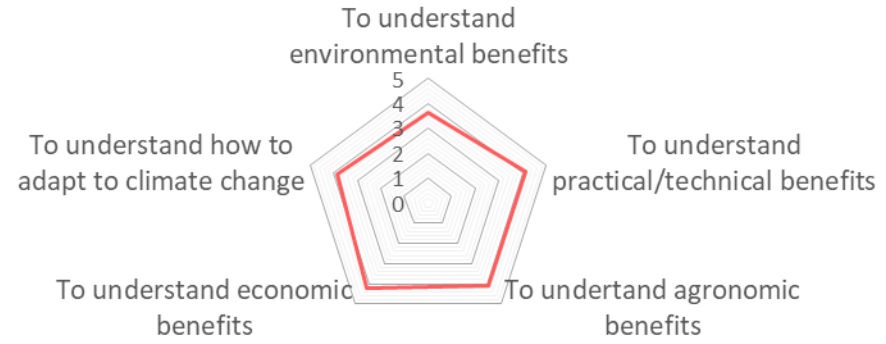
- Yes, I receive public support
- No, I don't receive public support

Factors making public incentives essential



5. Socio-cultural barris to CA adoption

Factors making training and advice relevant



5. Annex 1 – Summary of the results of the survey

Following, are reported the “Summary of the results of the survey” provided by CREA to give a preliminary analysis of the results of the survey by Country. These materials were also prepared as guideline for conducting of the focus groups in each partner Country.

Following, the “Summary of the results of the survey” according to the order:

- Algeria
- France
- Greece
- Italy
- Morocco
- Portugal
- Spain
- Tunisia

5.1 Algeria summary of the results of the survey

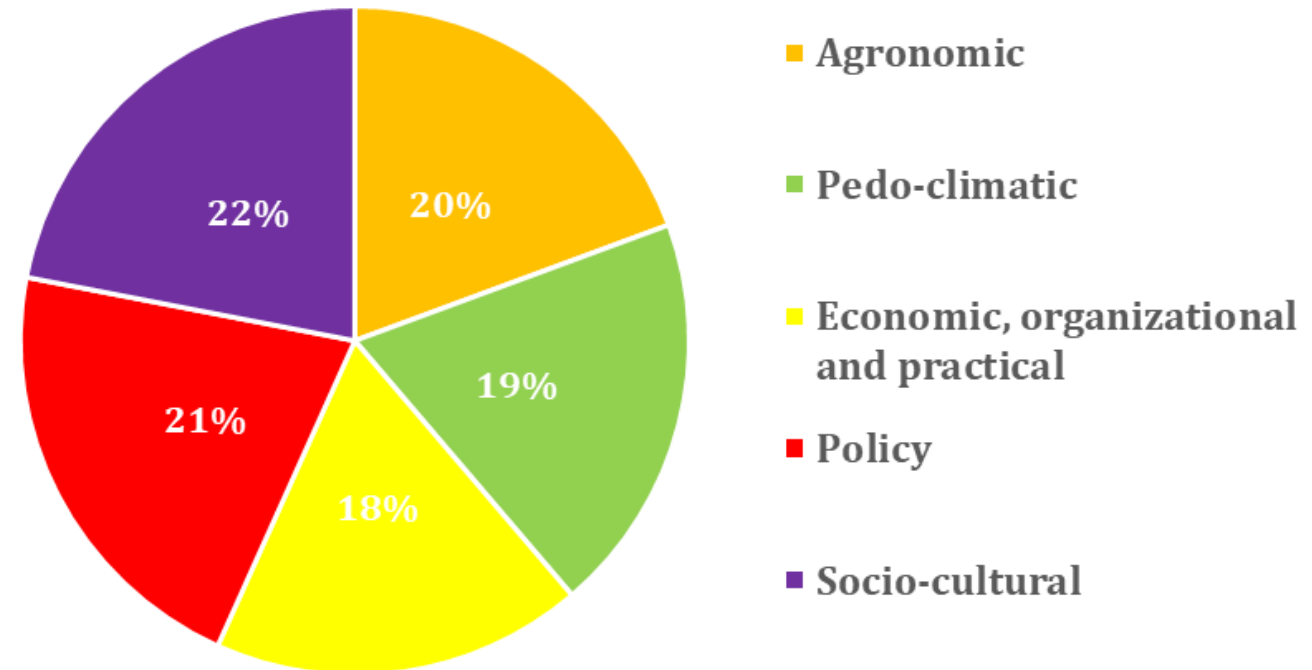
Barriers to Conservation Agriculture adoption

1. Agronomic
2. Pedo-climatic
3. Economic, organizational and practical
4. Policy
5. Socio-cultural

Preliminary information

- N° of respondents: 5
- N° of farmers: 5
- Adopters of CA: 3
- Average age of farmers: 55
- Average farm size: 47 ha
- Irrigation: 6%

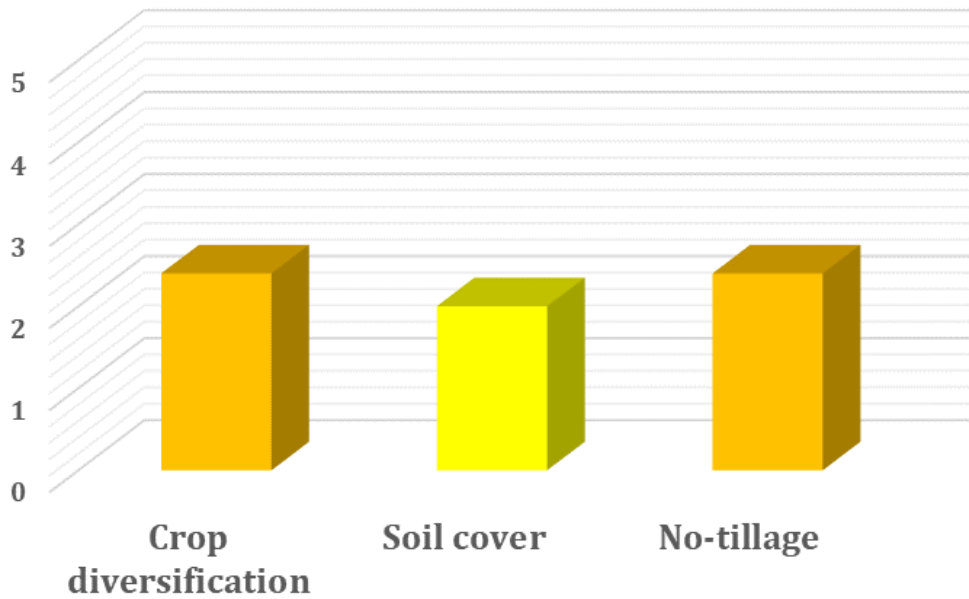
Importance of the different types of barriers
To Conservation Agriculture adoption



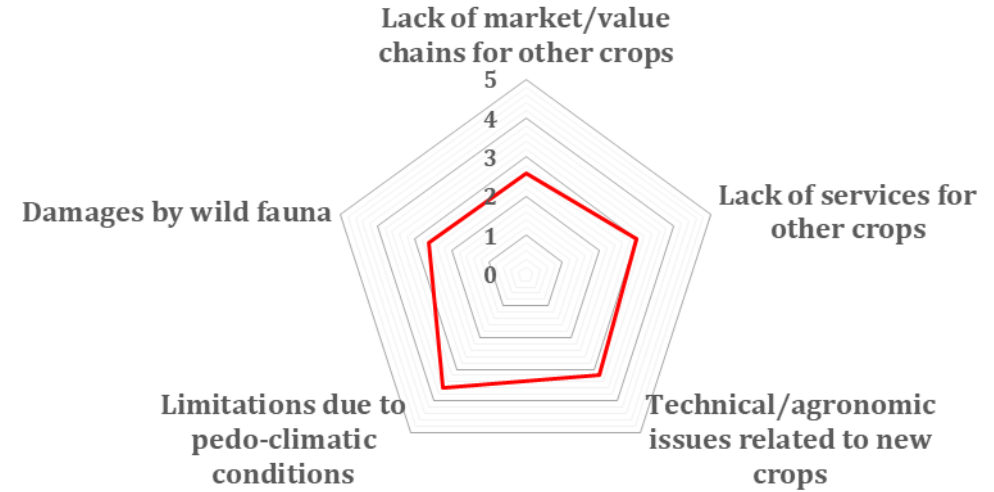
1. Agronomic barriers to Conservation

Agriculture adoption

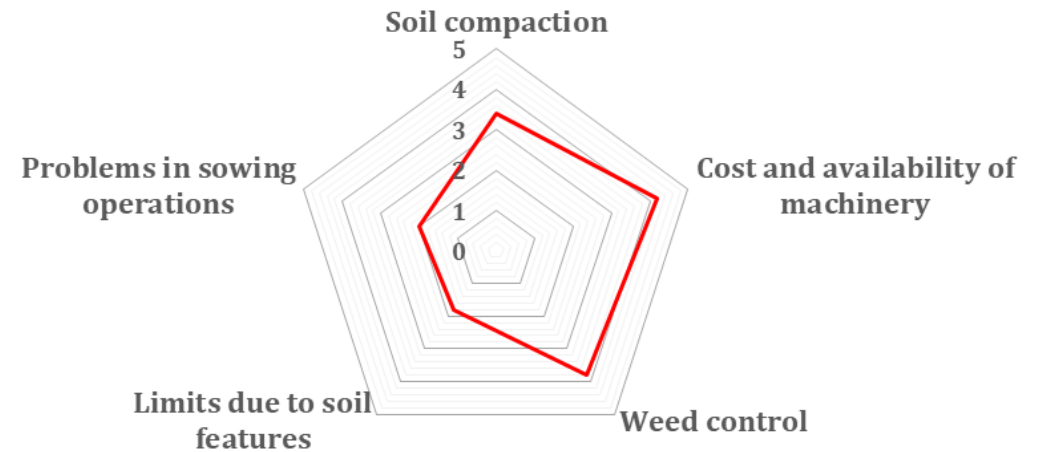
from 1 to 5 increasing level of difficulty



Factors that make crop diversification difficult



Factors that make no-tillage difficult



1. Agronomic barriers to Conservation Agriculture adoption

Although agronomic factors seem not to be an important barrier to CA adoption, crop diversification and water availability have received the major attention.

Correlation between crop diversification and limitations due to pedo-climatic conditions should be discussed in the interviews, addressing in particular to water availability.

Could you please help us to better understand:

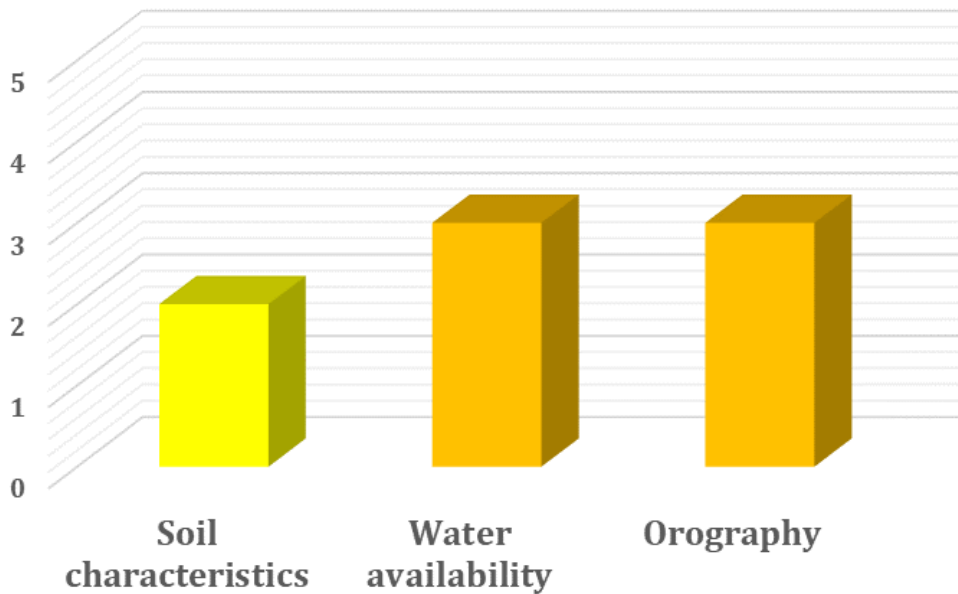
Q. 1.1 Why is difficult for you to diversify crops? Does it is related only to severe climatic conditions or also to technical factors?

Q. 1.2 Regarding the adoption of no-tillage technique, how it is hampered by problems in weed control?

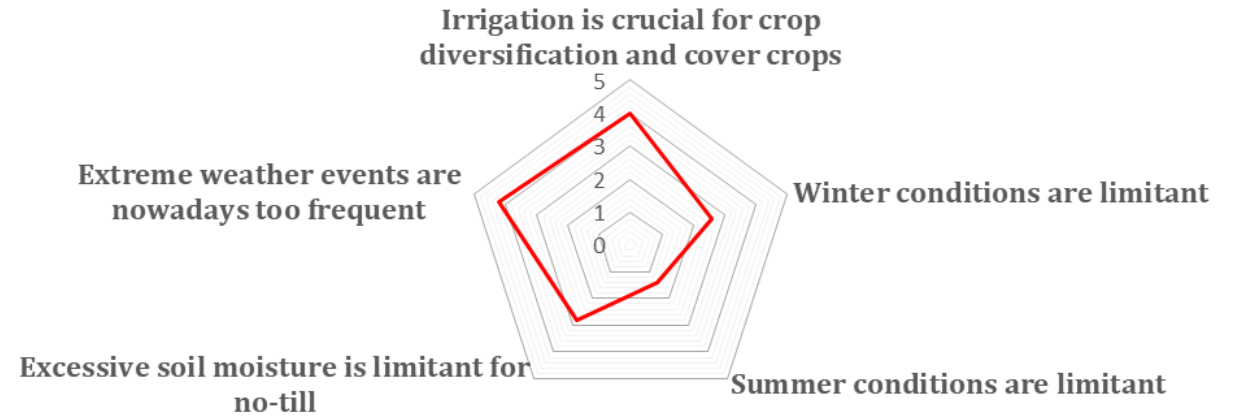
2. Pedo-climatic barriers to Conservation

Agriculture adoption

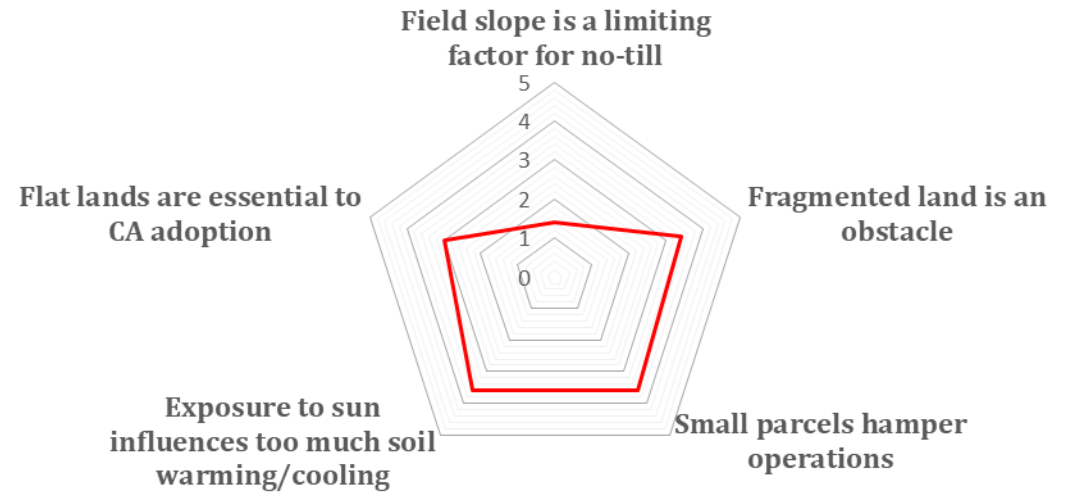
from 1 to 5 increasing level of influence



Factors that make water availability influential



Factors that make orography influential



2. Pedo-climatic barriers to Conservation Agriculture adoption

Water availability and orography appear to be major concerns for surveyed farmers, when pedo-climatic conditions are taken into account.

It is simple to suppose that water availability in terms of scarcity but also to extreme events is the major hinder to crop diversification. On the other hand, land fractionation seems to hamper a lot the mechanical and technical operations related to CA.

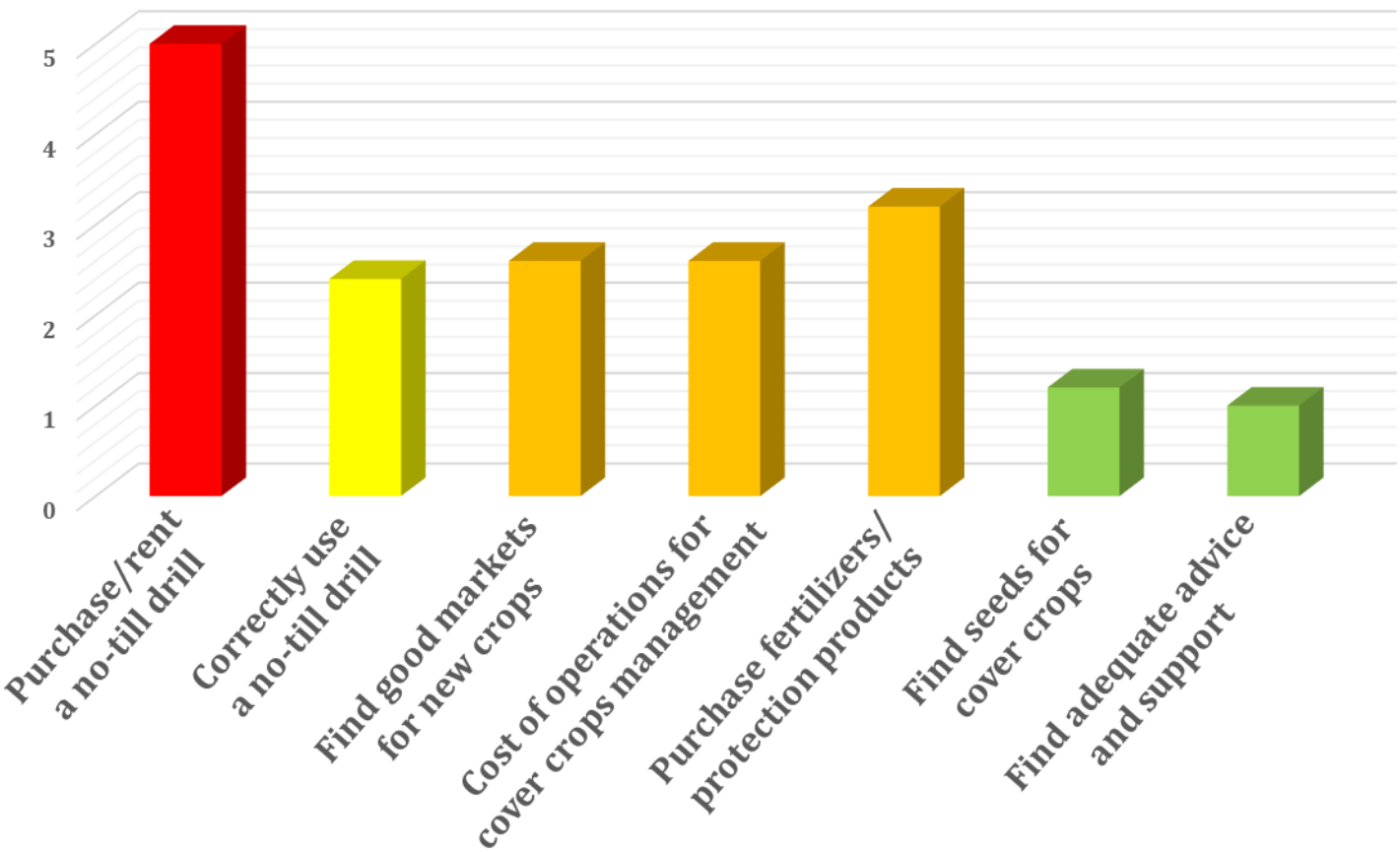
Could you please help us to better understand:

Q. 2.1 Could the use of irrigation water also be an economic problem when using cover crops?

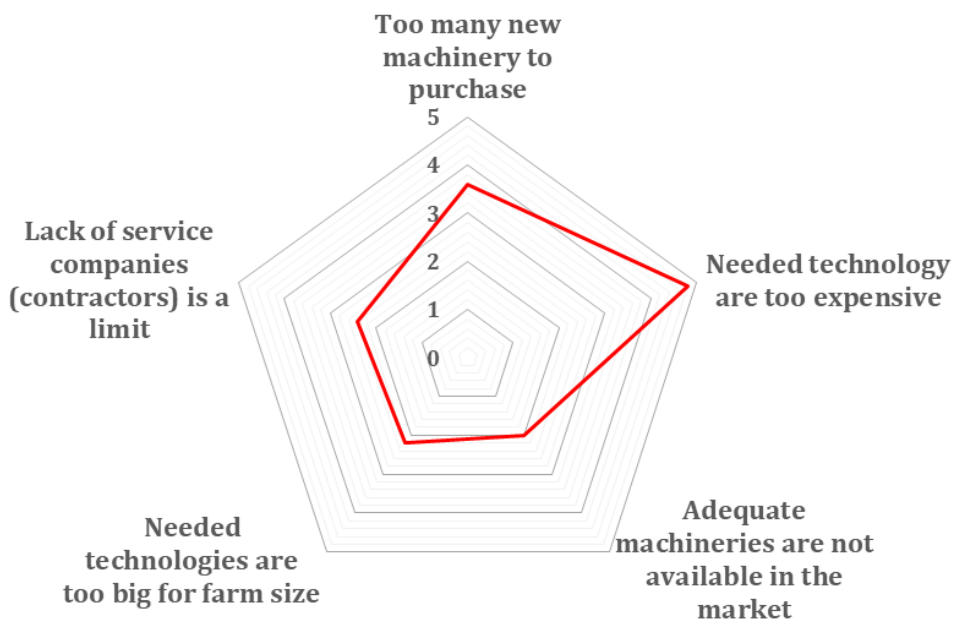
Q. 2.2 In your opinion, how can problems related to fragmented land be solved? Or, can the CA technique be adapted to this territorial conditions?

3. Economic, organizational and practical barriers to Conservation Agriculture adoption

from 1 to 5 increasing level of difficulty



Factors that make the adoption of new machinery/techniques difficult



3. Economic, organizational and practical barriers to Conservation Agriculture adoption

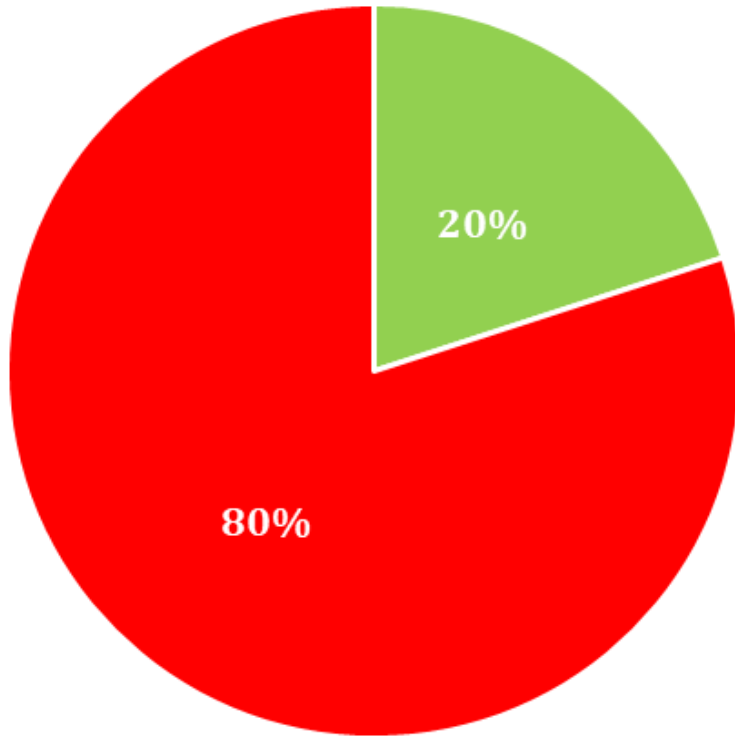
When consider the economic and organizational barriers, purchase/rent a no-till drill received the major impact. Anyway, also when consider technical operations related to the use of cover crops, the adoption of new technologies seems to be a problem.

Dimension of the problem of “adoption of new technologies” should be investigated among surveyed farmers.

Could you please help us to better understand:

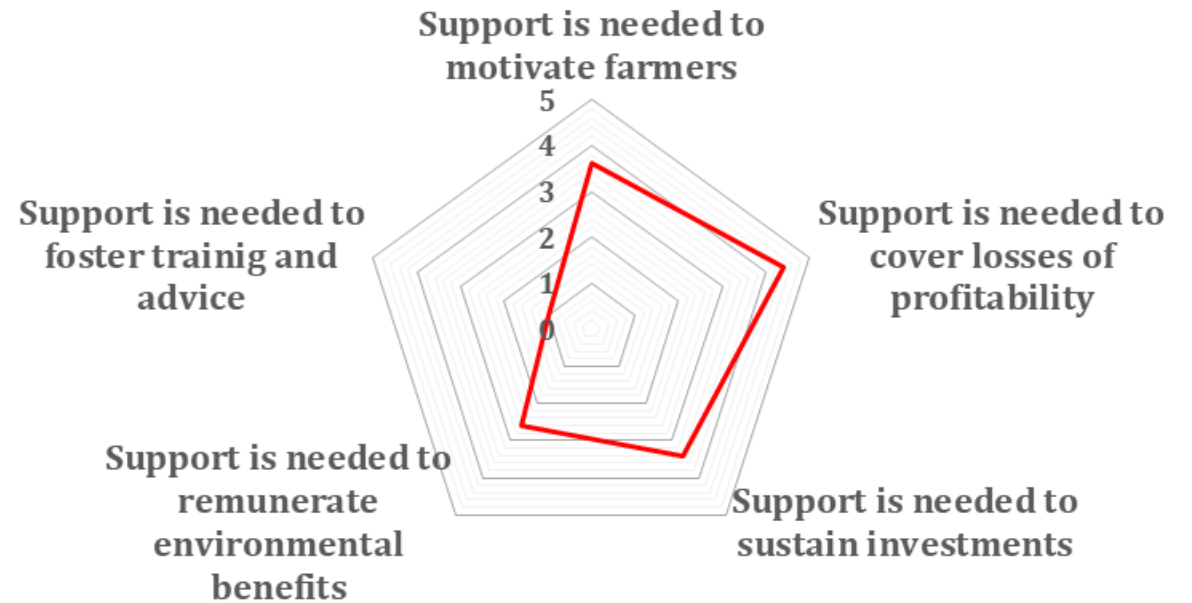
Q. 3.1 How many models of NT drillers do you know? Do you consider them too expensive in comparison with other machineries you have? Do you think a cooperation among farmers is enough to increase the level of CA adoption?

4. Policy barriers to Conservation Agriculture adoption



- Yes, I receive public support
- No, I don't receive public support

Factors that make public support essential to CA adoption



4. Policy barriers to Conservation Agriculture adoption

Only 20% of surveyed farmers receive public support for agricultural activity. It seems that public support is needed to motivate farmers but also to repay them for the losses of profitability due to CA adoption.

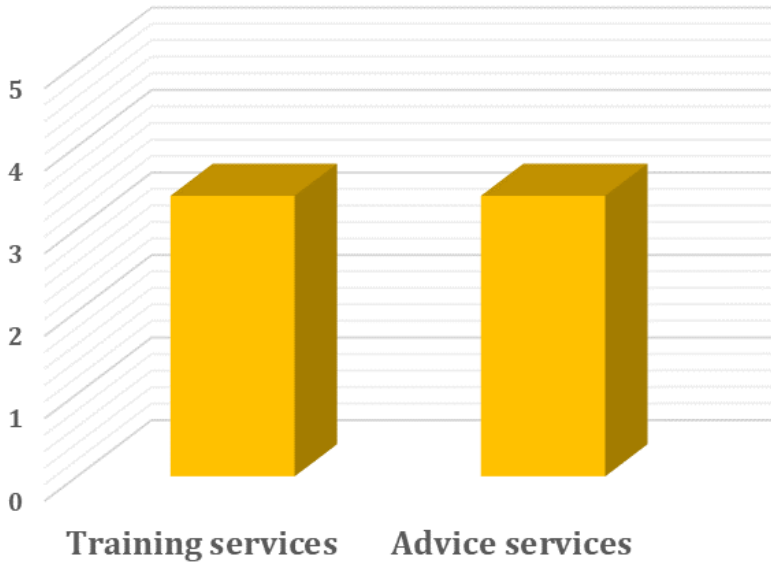
Could you please help us to better understand:

Q. 4.1 Do you think that an increase in public aid in support of agriculture could increase the level of adoption of CA?

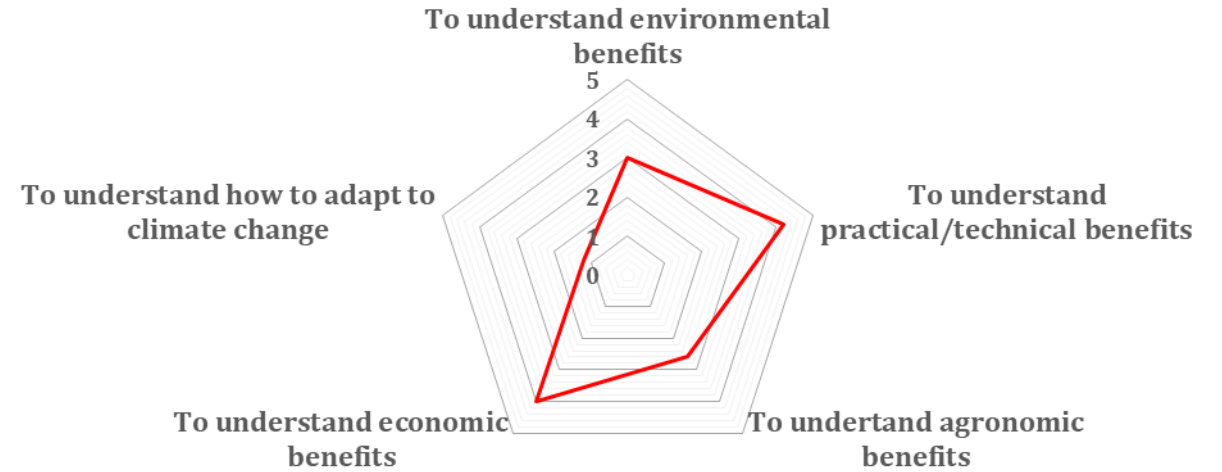
5. Socio-cultural barriers to Conservation

Agriculture adoption

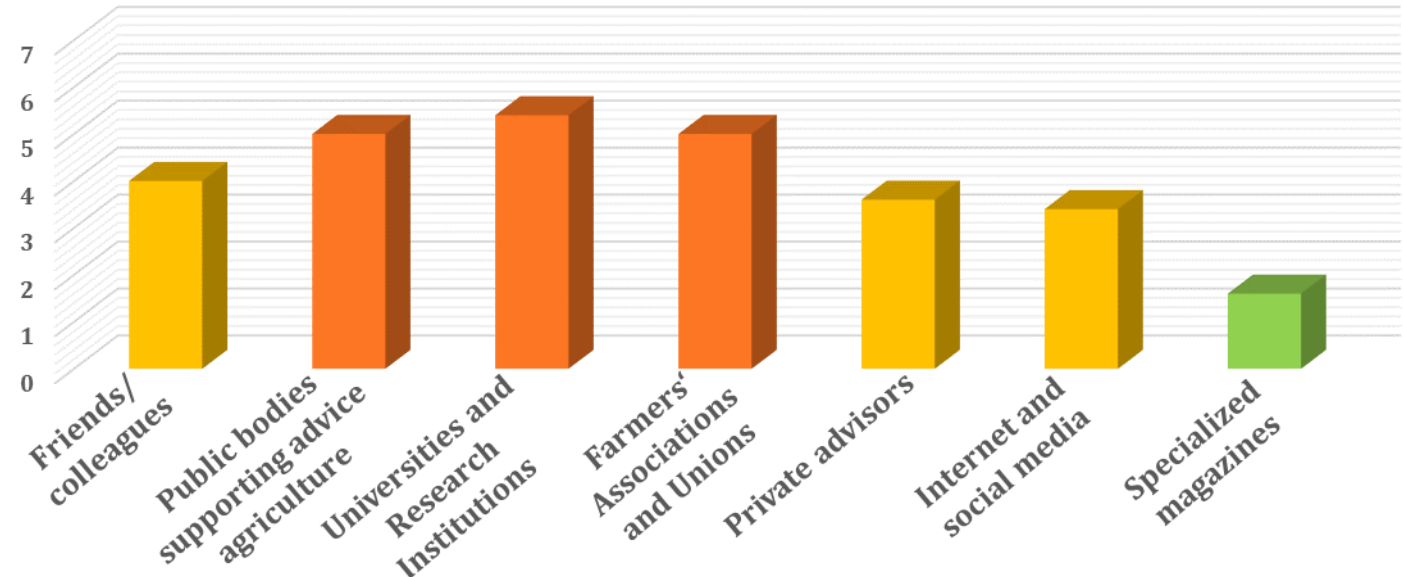
from 1 to 5 increasing level of relevance



Factors that make training and advice relevant



Current sources of information (from 1 to 5 increasing level of relevance)



5. Socio-cultural barriers to Conservation Agriculture adoption

The need for full understanding of the benefits for farmers more than for environment, seems to be the core of this section.

Training and advice services are assumed to be important to shift to CA system. The main current sources of information are represented by public advisors, Universities and Research Institutions.

Could you please help us to better understand:

Q. 5.1 Do you think that a greater understanding of the environmental benefits deriving from CA can increase its level of adoption?

Considering the results of the survey and of the focus group, please help us to focus on the most urgent needs/solutions/proposals to enhance CA adoption in your Country:

- *Agronomy: enhance the level of crop diversification in consideration of pedo-climatic conditions relating it to water availability. Enhance the applicability of no-tillage related to weed control. What is needed?*
- *Knowledge: do you think a dedicated training on principles of CA would help you to understand how to use it properly?*
- *Information and cooperation: do you think that a network of farmers would be beneficial to share knowledge and efforts towards CA in your region, in particular when consider the using of a no-till drill?*

5.2 France summary of the results of the survey

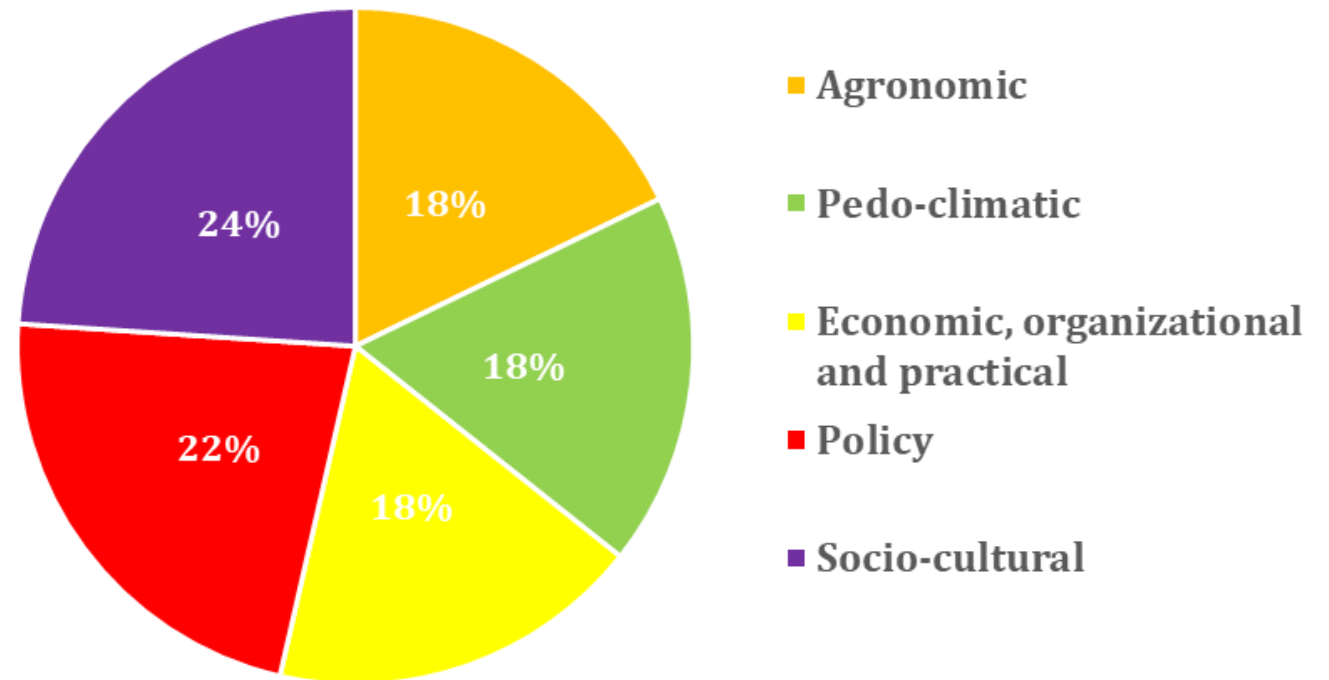
Barriers to Conservation Agriculture adoption

1. Agronomic
2. Pedo-climatic
3. Economic, organizational and practical
4. Policy
5. Socio-cultural

Preliminary information

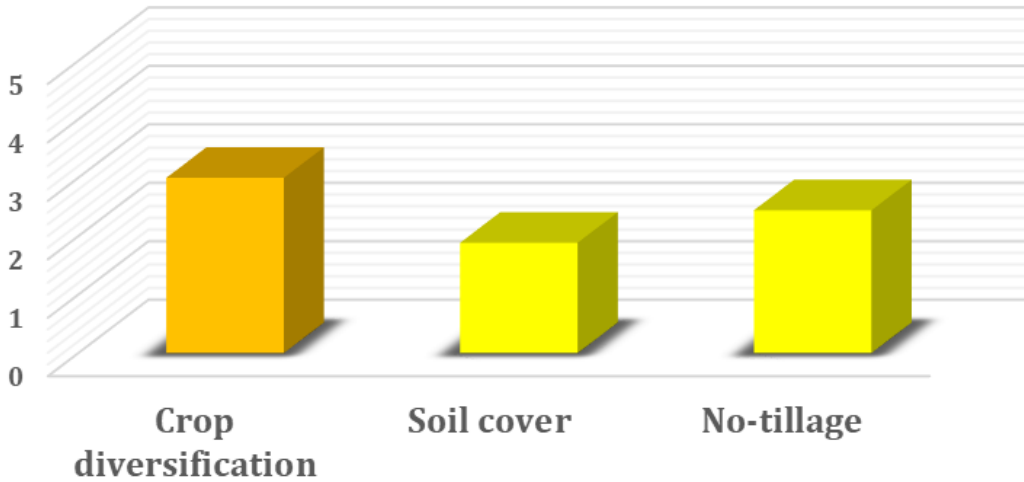
- N° of respondents: 18
- N° of farmers: 11
- Adopters of CA: 10
- Average age of farmers: 43
- Average farm size: 153 ha
- Irrigation: 25%

Importance of the different types of barriers
To Conservation Agriculture adoption

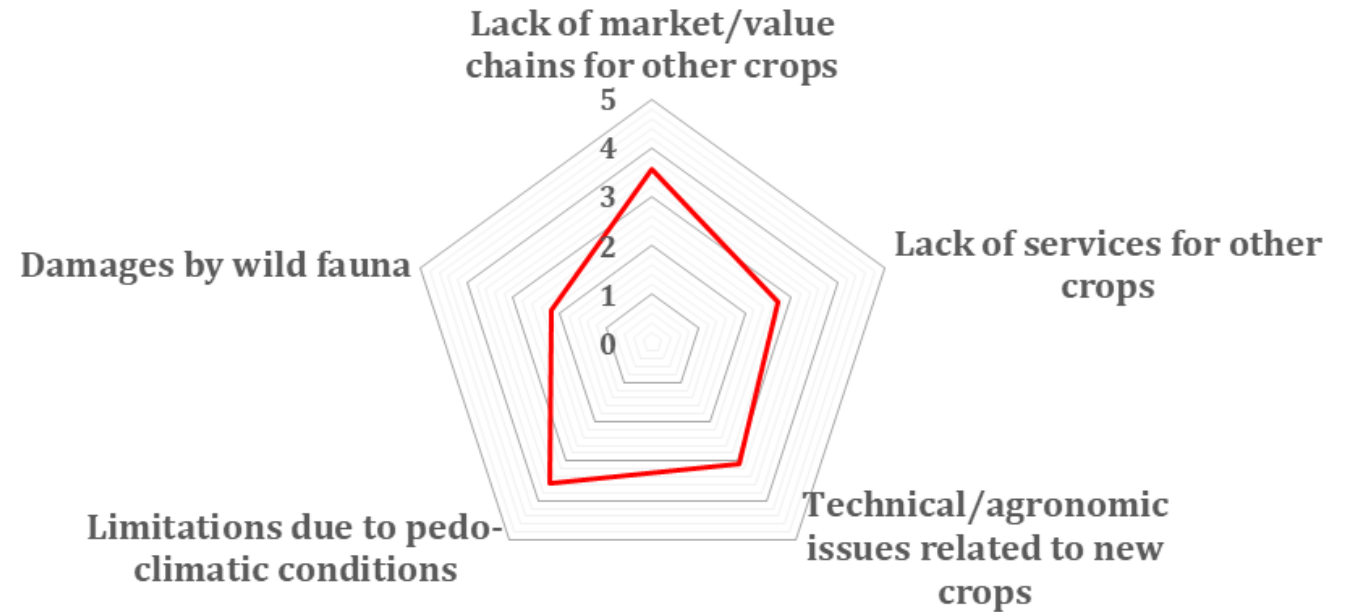


1. Agronomic barriers to Conservation Agriculture adoption

from 1 to 5 increasing level of difficulty



Factors that make crop diversification difficult



1. Agronomic barriers to Conservation Agriculture adoption

Considering the agronomic barriers, no particular critical issues were highlighted in the adoption of CA. However, the crop diversification procedure has received more attention than others, equally due to pedo-climatic factors and the lack of a market for cover crops.

Correlation between technical and agronomic issues related to cover crops and level of adoption of CA should be discussed during the interviews.

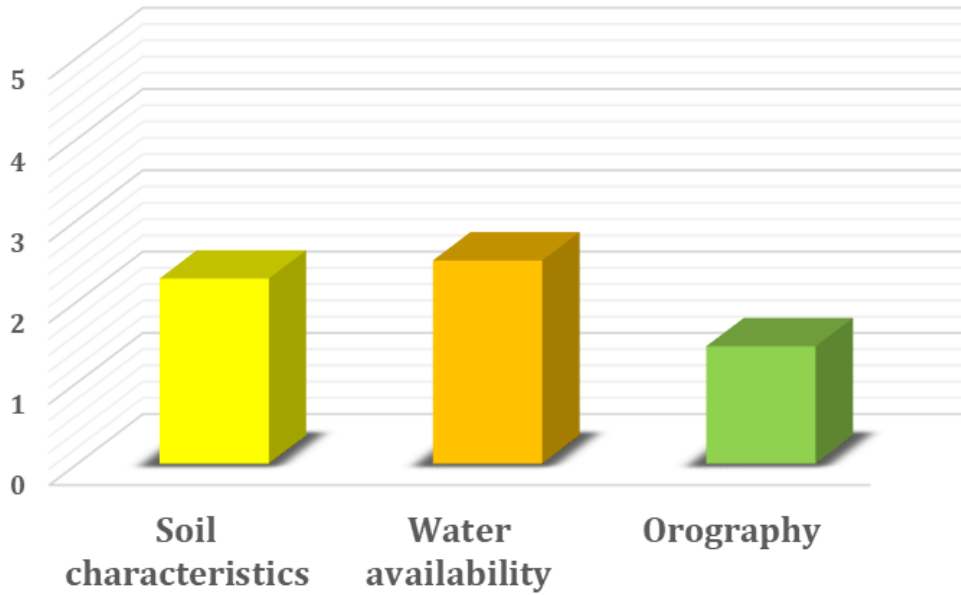
Could you please help us to better understand:

Q. 1.1 Taking into account pedo-climatic factors, are the limiting summer conditions the only problems that negatively affect crop diversification? Is this concern related to the summer cover crops?

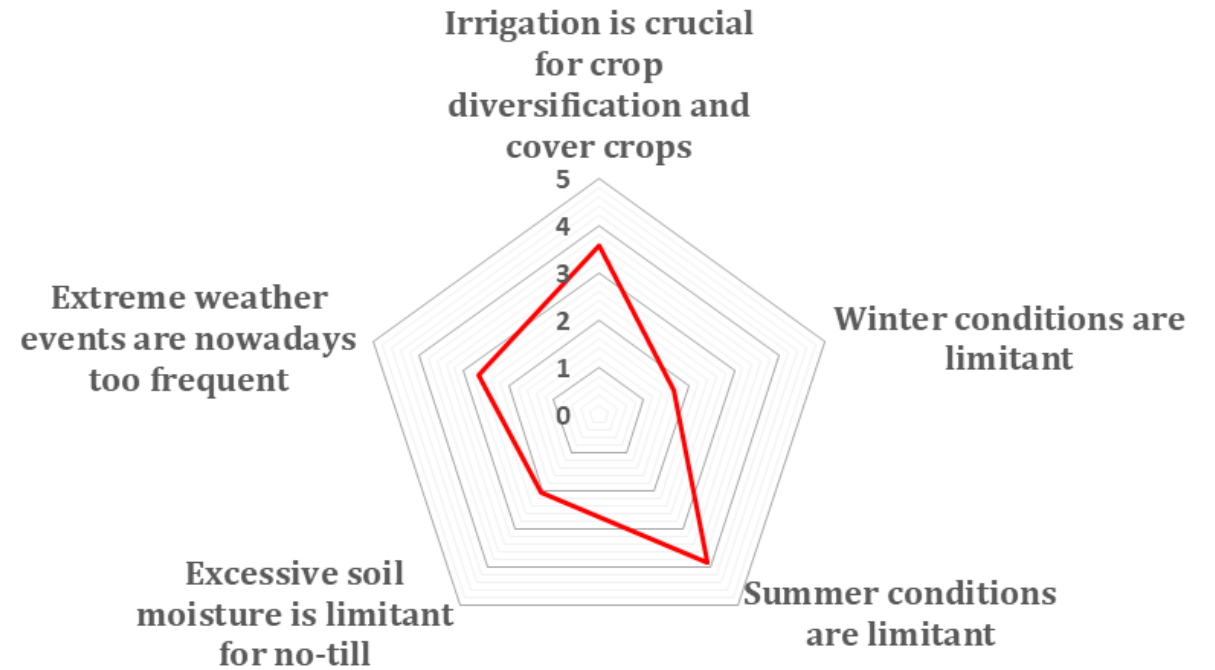
Q. 1.2 Do you think that a more active cover crops market than the current one could lead to an increase in crop diversification despite limiting summer climatic conditions?

2. Pedo-climatic barriers to Conservation Agriculture adoption

from 1 to 5 increasing level of influence



Factors that make water availability influential



2. Pedo-climatic barriers to Conservation Agriculture adoption

Among pedo-climatic barriers, water availability seems to be the factor that in the majority negatively affects the level of CA adoption.

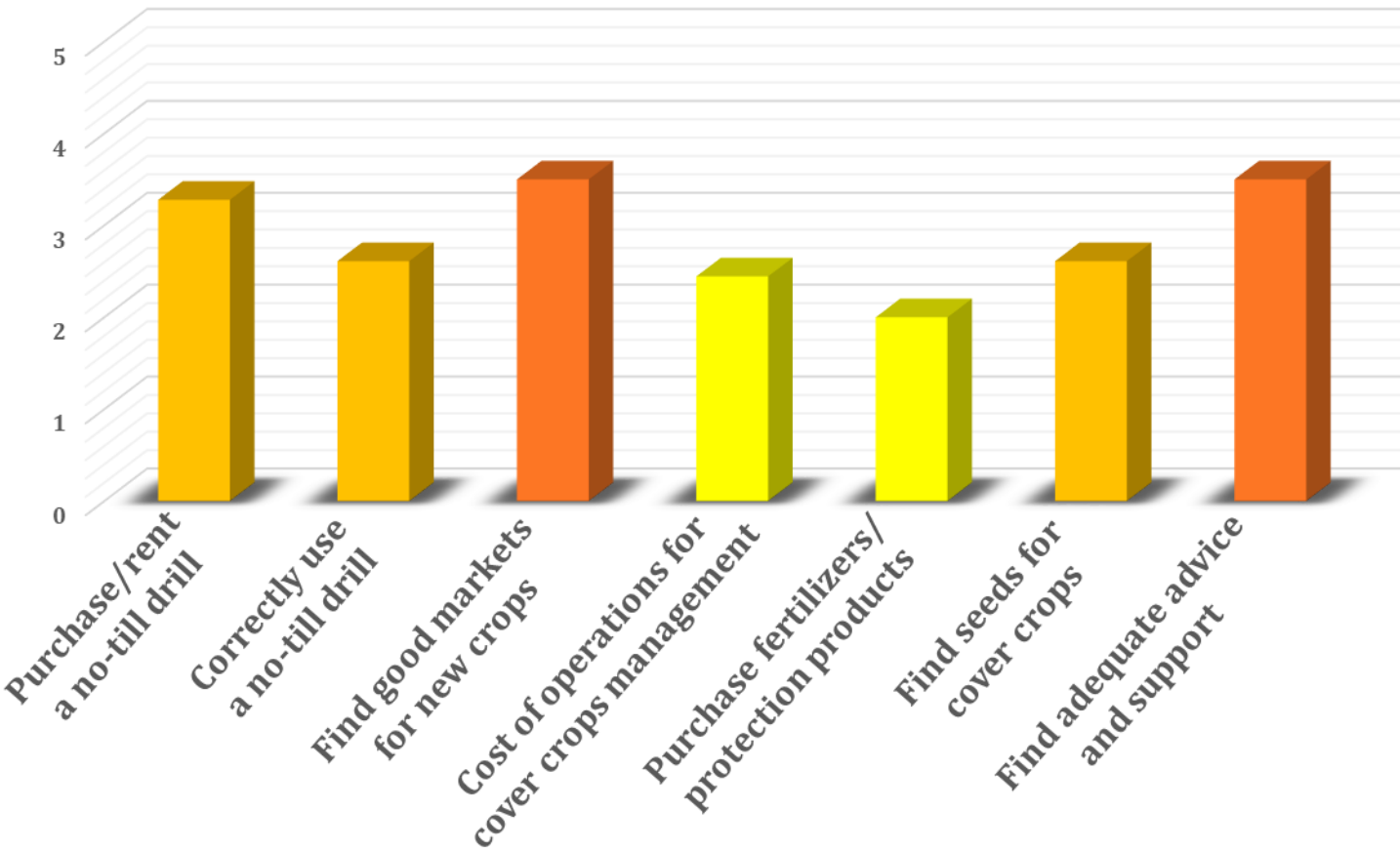
It is simple to suppose that the factor "water availability" in terms of irrigation makes crops diversification difficult, in particular if limiting summer conditions are taken into account.

Could you please help us to better understand:

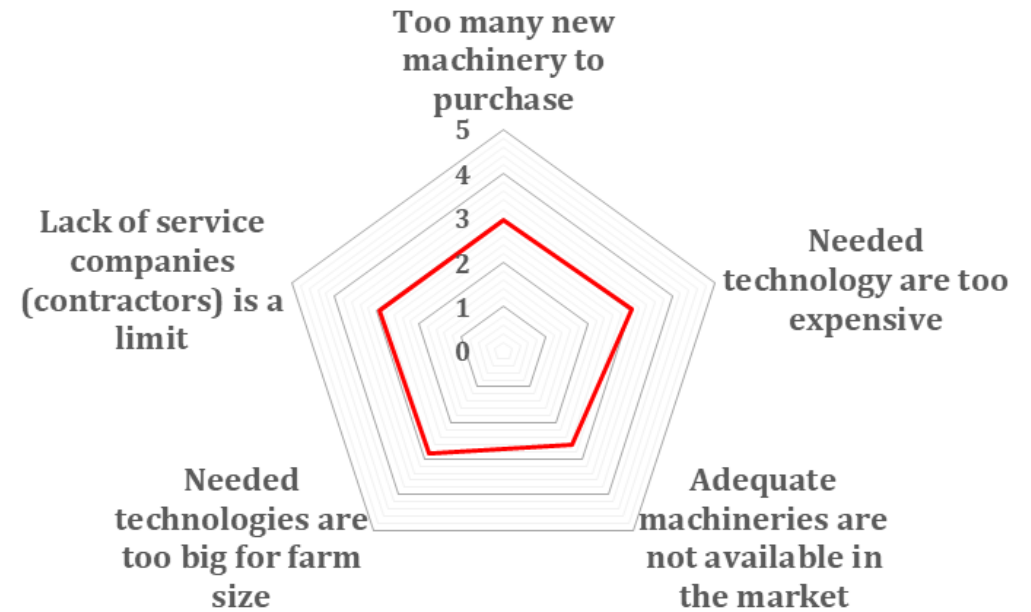
Q. 2.1 Could the use of irrigation water also be an economic problem when using cover crops?

3. Economic, organizational and practical barriers to Conservation Agriculture adoption

from 1 to 5 increasing level of difficulty



Factors that make the adoption of new machinery/techniques difficult



3. Economic, organizational and practical barriers to Conservation Agriculture adoption

Referring to the economical and practical barriers to CA adoption, the lack of market for cover crops and the lack of adequate advice and support services are considered the major concerns.

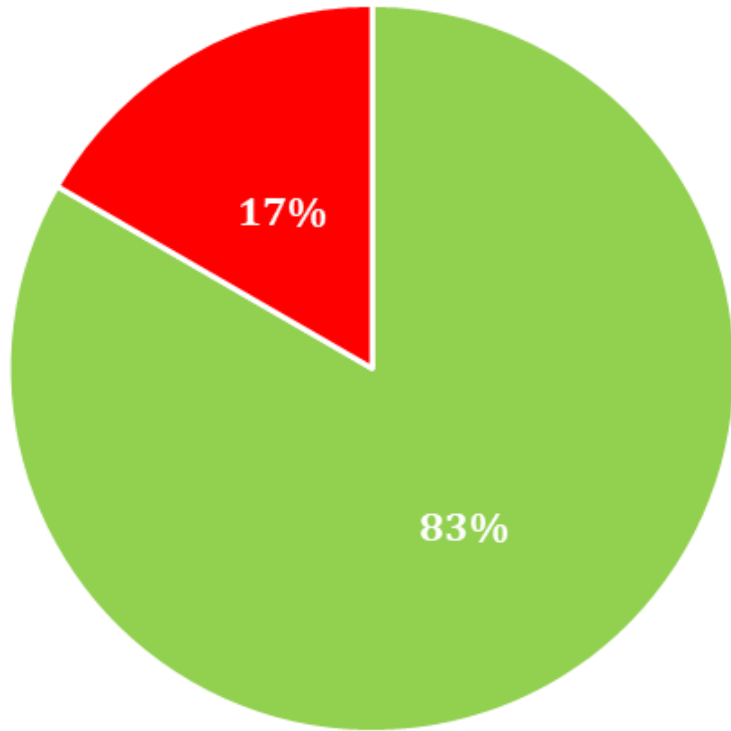
Also the purchase and the correct use of a no-till drill were considered as barriers, although less than others. This aspect should be investigated among surveyed farmers.

Could you please help us to better understand:

Q. 3.1 How do you think that the problems related to the adoption of new machineries can be solved?

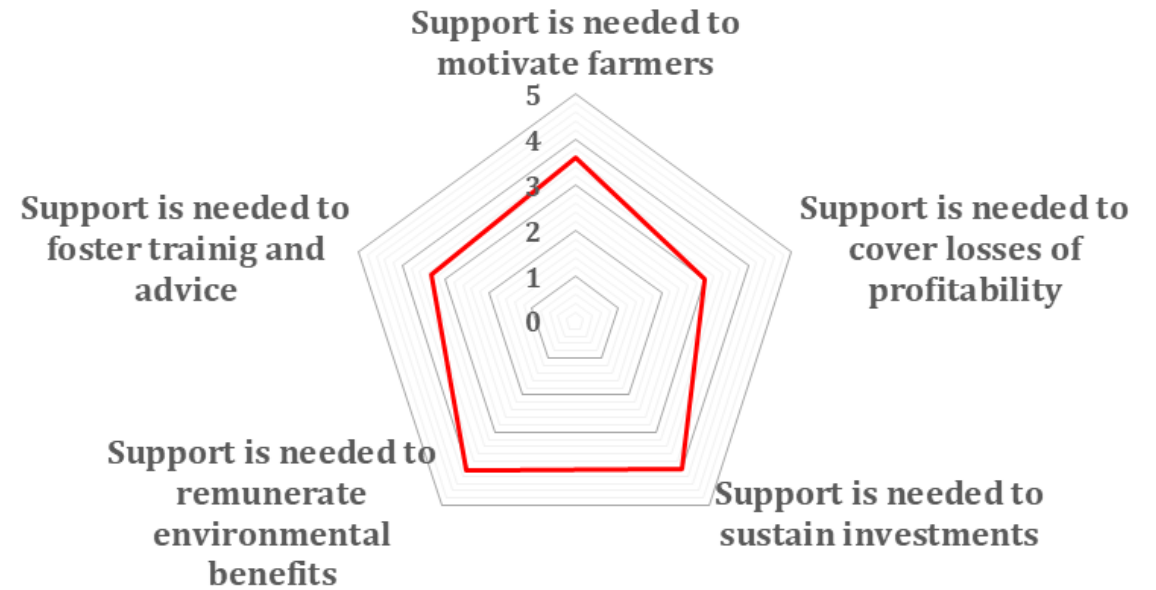
Q. 3.2 Why the finding of adequate advice and support services are an economic problem for you?

4. Policy barriers to Conservation Agriculture adoption



- Yes, I receive public support
- No, I don't receive public support

Factors that make public support essential to CA adoption



4. Policy barriers to Conservation Agriculture adoption

Most of the interviewees (83%) stated that they receive public aid to support agricultural activity, considered an essential contribution when CA is adopted.

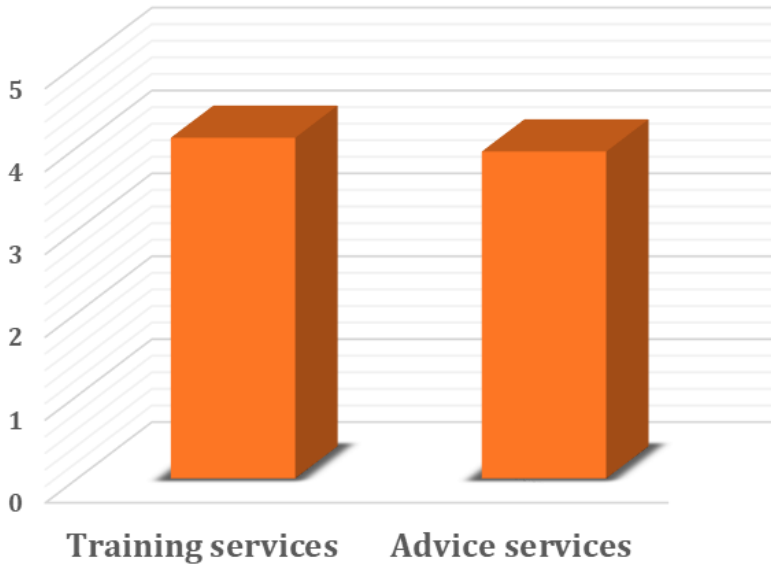
Could you please help us to better understand:

Q. 4.1 As from the graph, public support is considered particularly essential to sustain investments and to remunerate environmental benefits, when CA is adopted. Don't think that public support aimed to foster training and advice services could be also a good opportunity to eliminate this economic barrier?

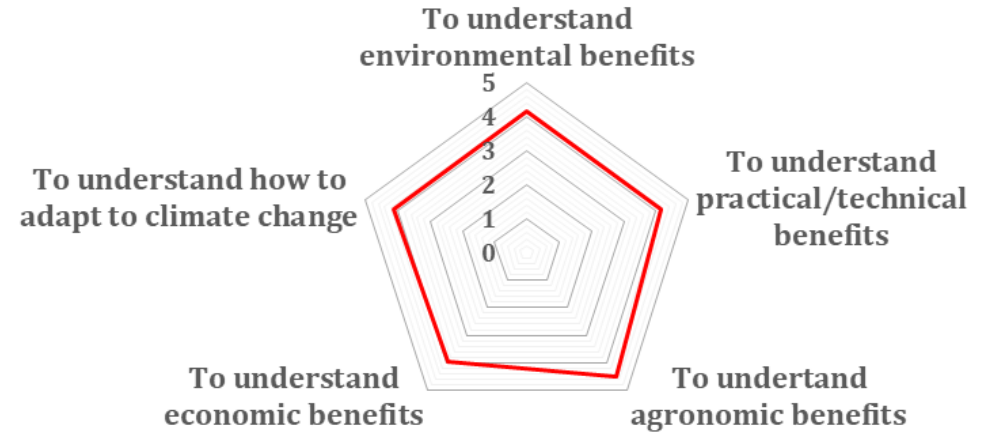
5. Socio-cultural barriers to Conservation

Agriculture adoption

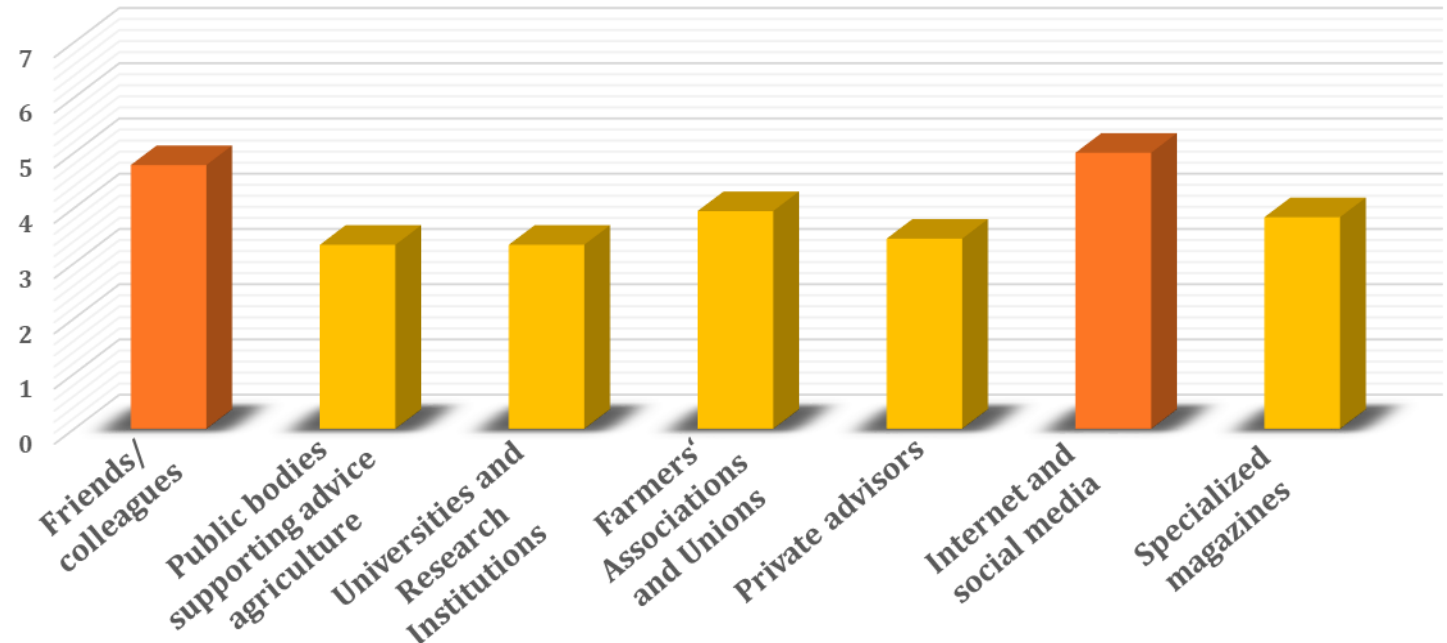
from 1 to 5 increasing level of relevance



Factors that make training and advice relevant



Current sources of information (from 1 to 7 increasing level of relevance)



5. Socio-cultural barriers to Conservation Agriculture adoption

The need for full understanding of the benefits for the environment such as for farmers, in particular when the agronomic benefits are considered, seems to be the core of this section.

Training and advice services are assumed to be important to shift to CA system. However, the main current sources of information are represented by friends and colleagues such as internet and social media.

Could you please help us to better understand:

Q. 5.1 Do you think that a strengthening of training and advice services could increase the level of adoption of CA?

Considering the results of the survey and of the focus group, please help us to focus on the most urgent needs/solutions/proposals to enhance CA adoption in your Country:

- *Agronomy: enhance the level of crop diversification in consideration of both cover crop market and water availability. What is needed?*
- *Knowledge: do you think a dedicated training and advice services on environmental and agronomic benefits from CA could increase its level of adoption?*
- *Information and cooperation: do you think that a network of farmers would be beneficial to share knowledge and efforts towards CA in your region, in particular when consider the crop diversification?*

5.3 Greece summary of the results of the survey

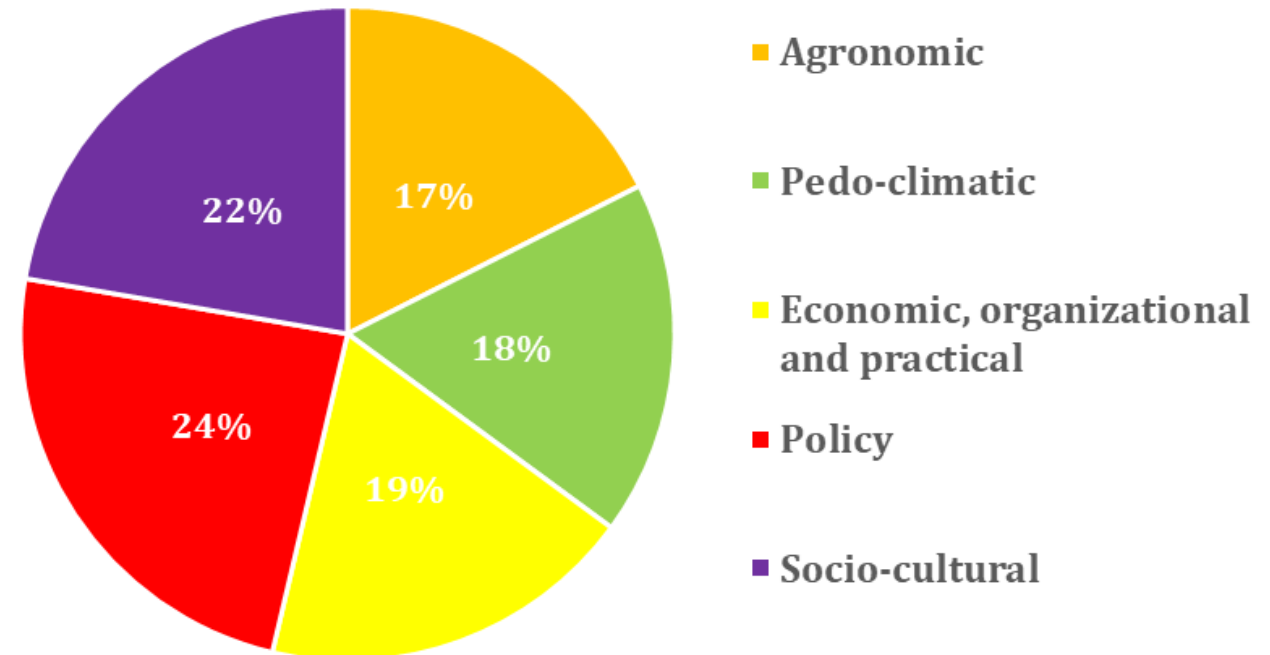
Barriers to Conservation Agriculture adoption

1. Agronomic
2. Pedo-climatic
3. Economic, organizational and practical
4. Policy
5. Socio-cultural

Preliminary information

- N° of farmers: 12
- Average age of farmers: 44
- Average farm size: 50 ha
- Irrigation: 61%

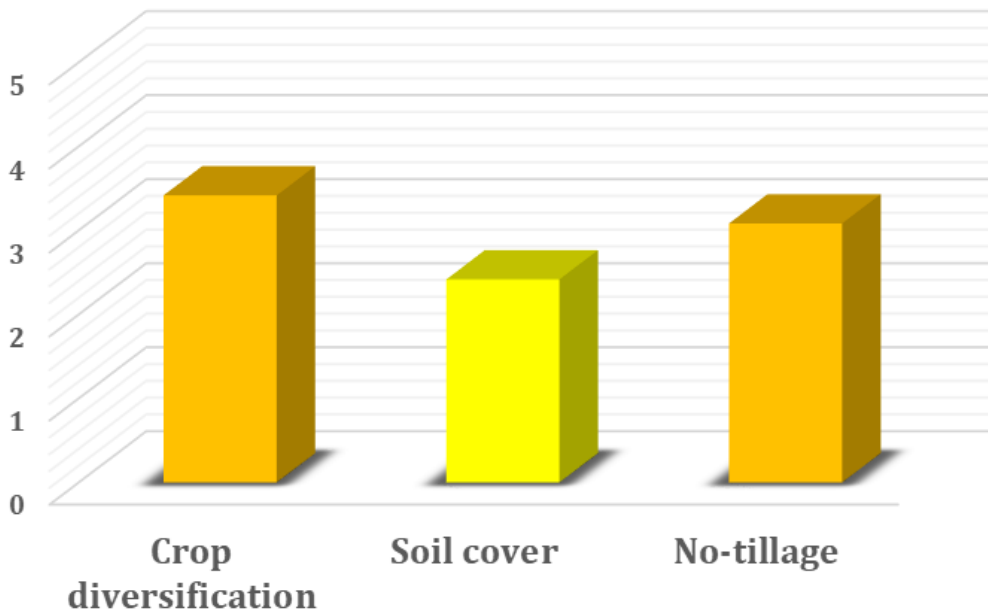
Importance of the different types of barriers
To Conservation Agriculture adoption



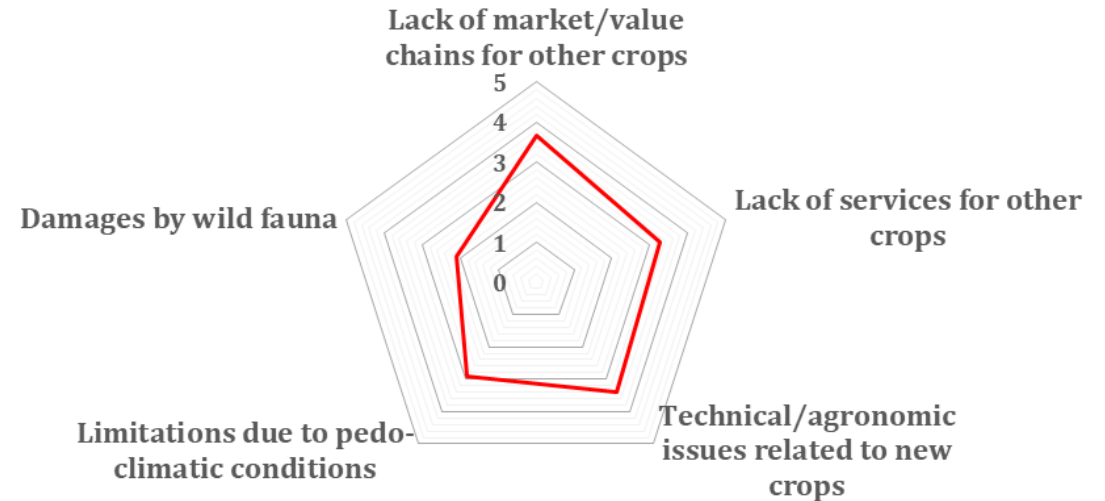
1. Agronomic barriers to Conservation Agriculture adoption

Agriculture adoption

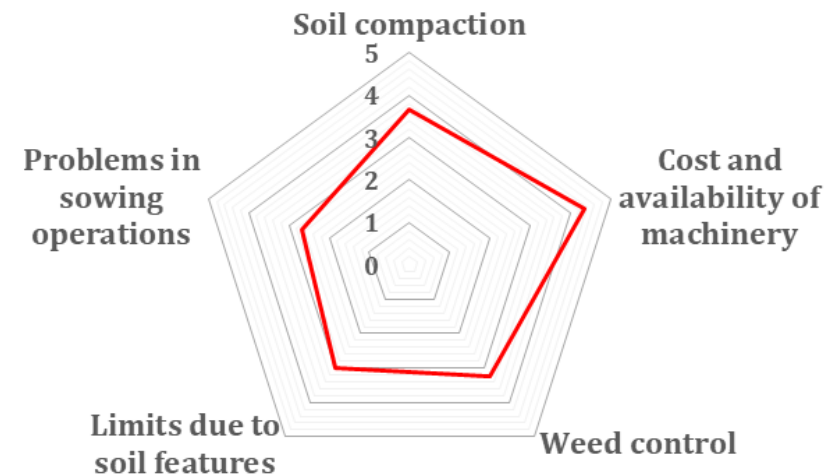
from 1 to 5 increasing level of difficulty



Factors that make crop diversification difficult



Factors that make no-tillage difficult



1. Agronomic barriers to Conservation Agriculture adoption

Crop rotation/diversification and NT adoption appear to be major concerns for surveyed farmers, especially for issues related to soil compaction (see also section 2 pedoclimatic).

Correlation between simplified cropping systems and tillage practices should be investigated in the interviewees to understand their thoughts on soil compaction.

Could you please help us to better understand:

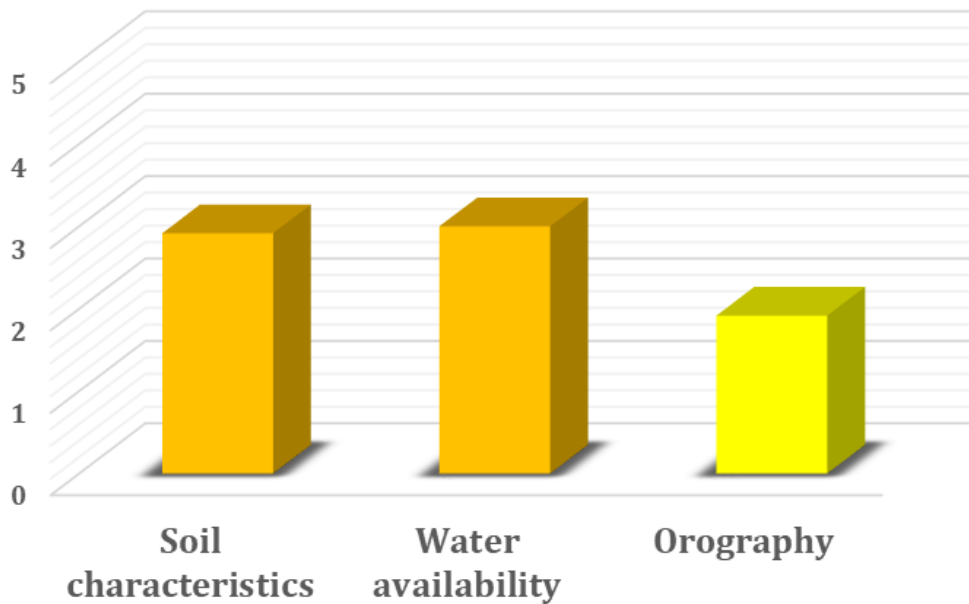
Q. 1.1 Why and how is difficult for you to set up a crop-rotation programme?

Q. 1.2 Why soil compaction is one of your concerns? Can you describe your ordinary farming practice and describe how soil compaction affects your farming?

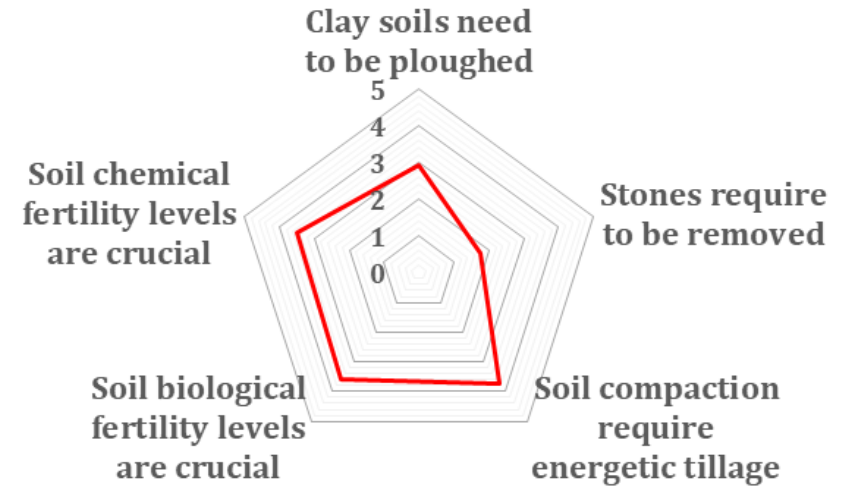
2. Pedo-climatic barriers to Conservation Agriculture adoption

Agriculture adoption

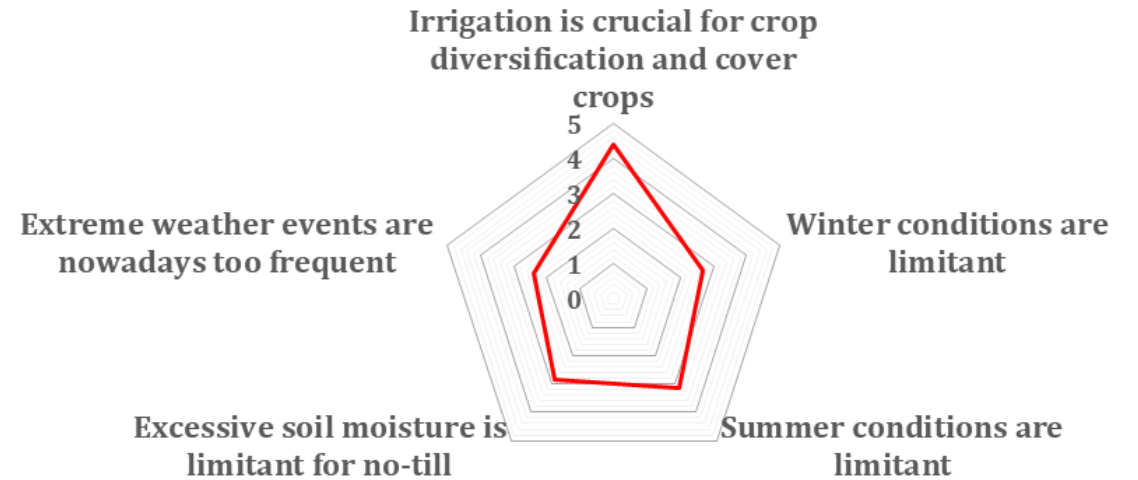
from 1 to 5 increasing level of influence



Factors that make soil characteristics influential



Factors that make water availability influential



2. Pedo-climatic barriers to Conservation Agriculture adoption

Soil compaction and soil water management appear to be major concerns in this section.

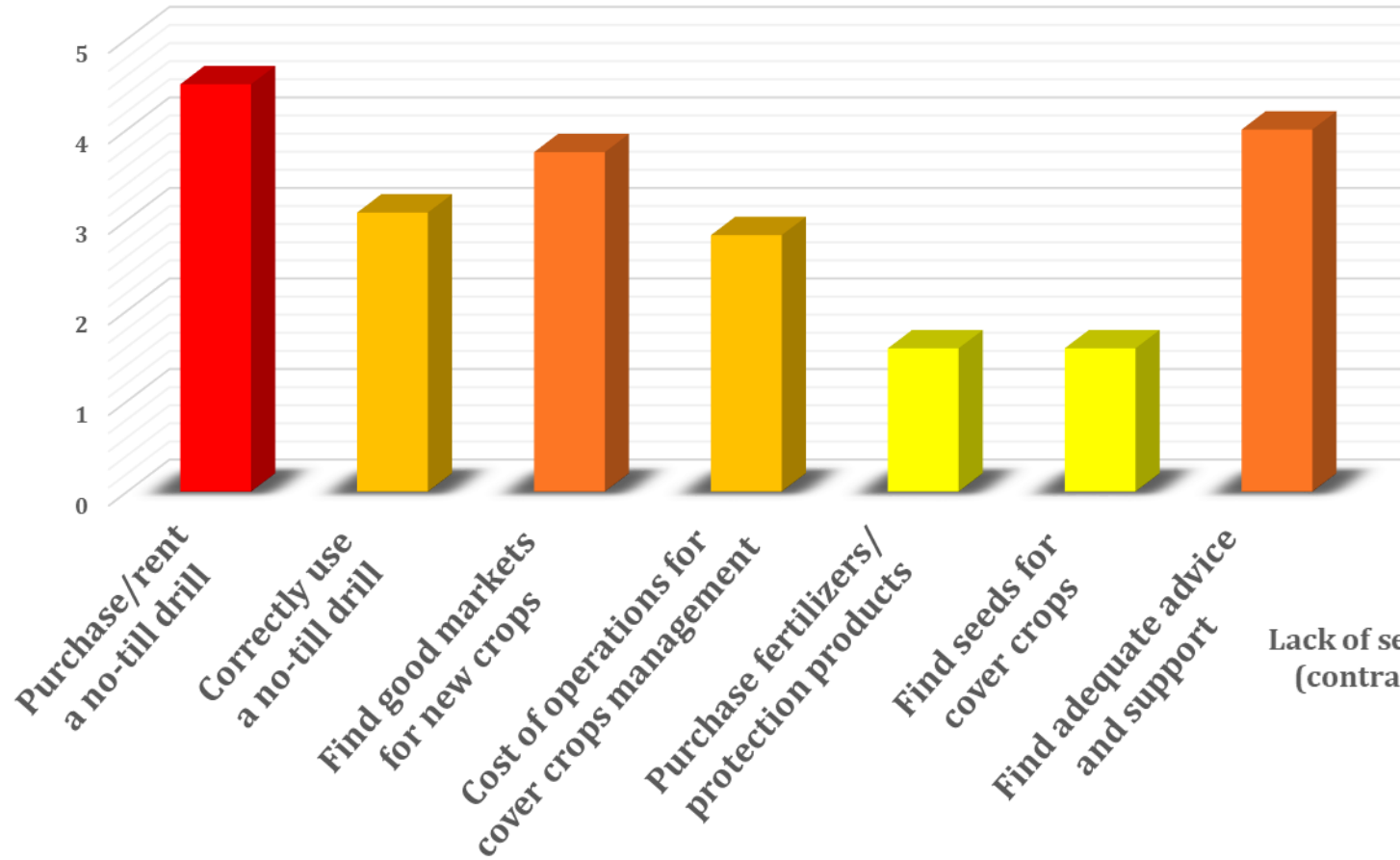
Correlation between crop diversification and threats for water scarcity or water excesses should be investigated. It is possible to suppose that surveyed farmers have partial knowledge of concepts of soil bio-chemical fertility beyond the sole idea of mineral fertility. These aspects should be investigated.

Could you please help us to better understand:

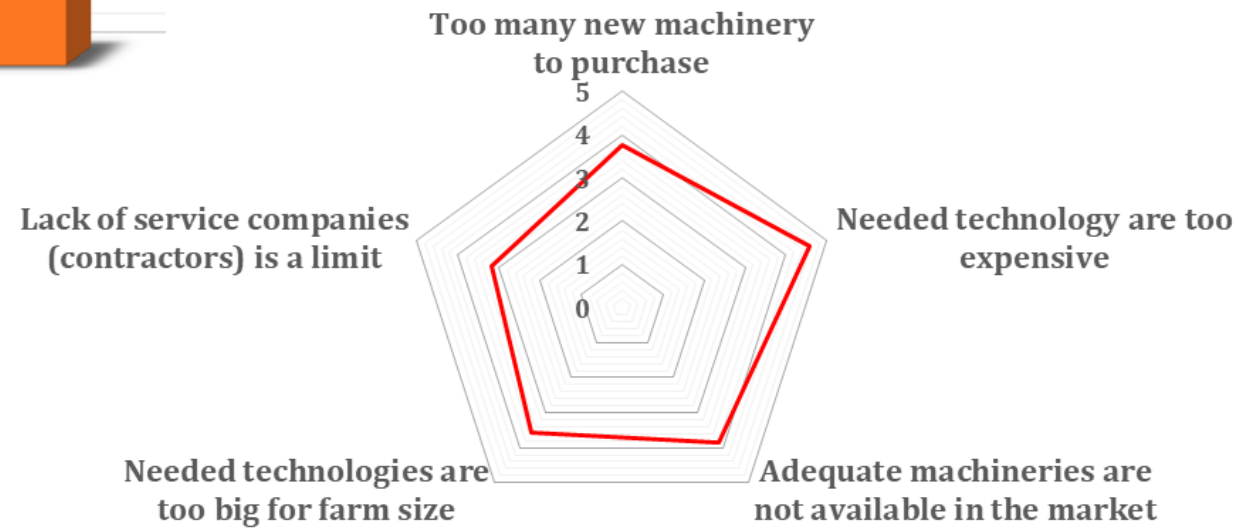
Q. 2.1 Why and how water excess or scarcity can be a problem for you?

Q. 2.2 How do you recognize a fertile soil? And how a degraded one?

3. Economic, organizational and practical barriers to Conservation Agriculture adoption *from 1 to 5 increasing level of difficulty*



Factors that make the adoption of new machinery/techniques difficult



3. Economic, organizational and practical barriers to Conservation Agriculture adoption

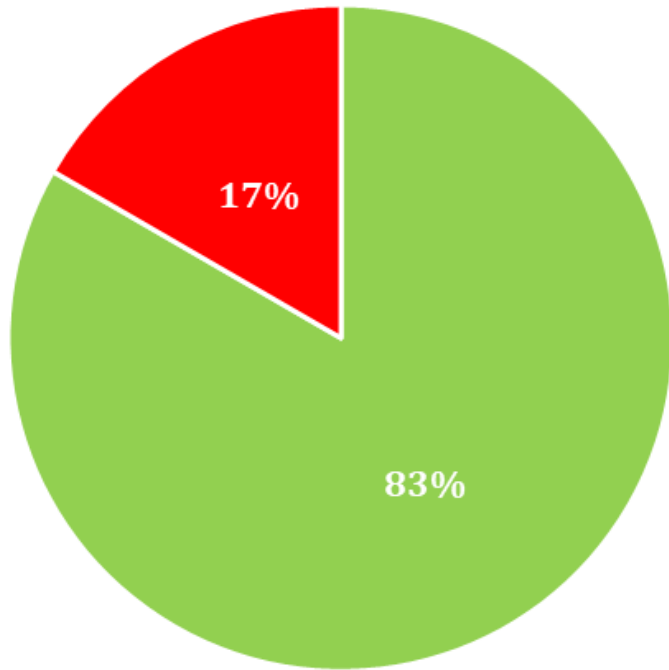
Adoption or availability of machineries and technologies seems to be the major concern in this section.

Machineries can be expensive: several farm experiences anyway show how NT and CA can be adopted as a any other farming solution, even step-by-step through small investments. Dimension of the problem of “adoption of new technologies” should be investigated among surveyed farmers.

Could you please help us to better understand:

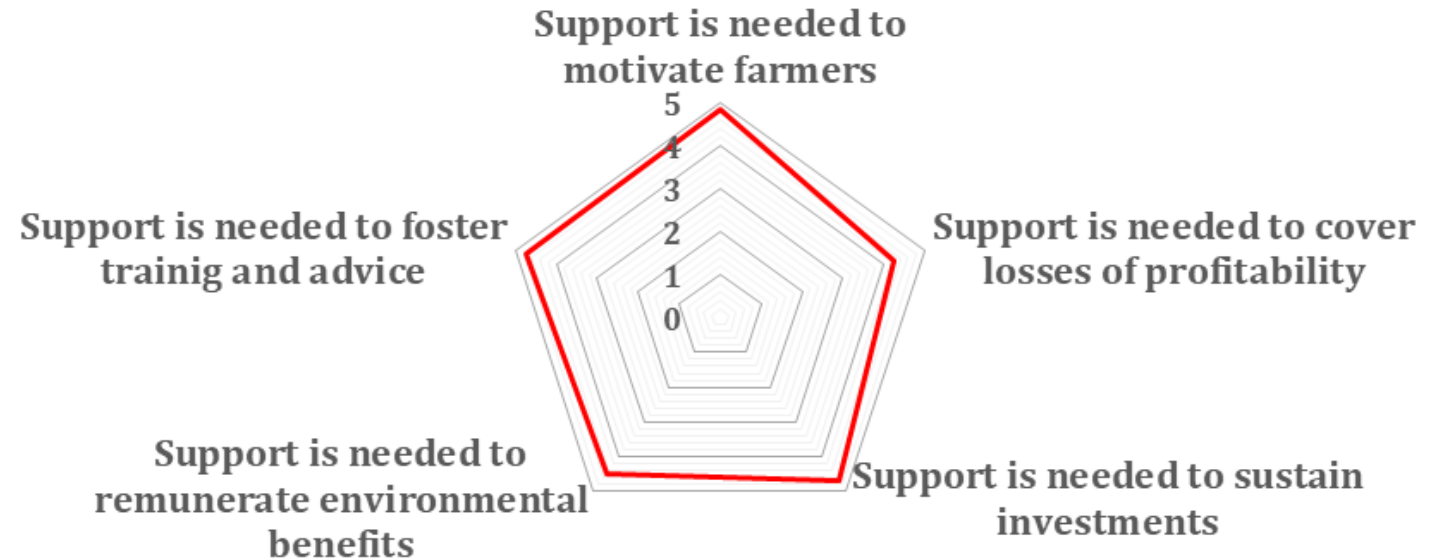
Q. 3.1 How many models of NT drillers do you know? Do you consider them too expensive in comparison with other machineries you have?

4. Policy barriers to CA



- Yes, I receive public support
- No, I don't receive public support

Factors that make public support essential to CA adoption



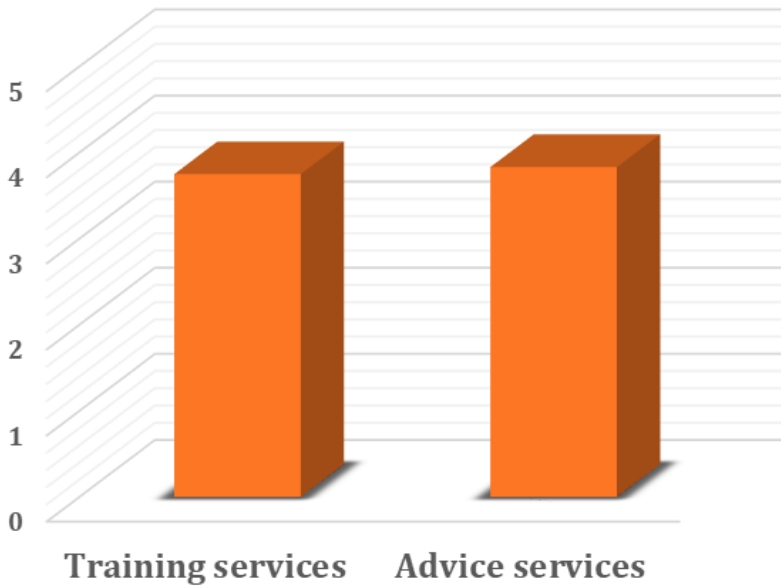
4. Policy barriers to Conservation Agriculture adoption

Most of the interviewees (83%) stated that they receive public aid to support agricultural activity, considered an essential contribution when CA is adopted.

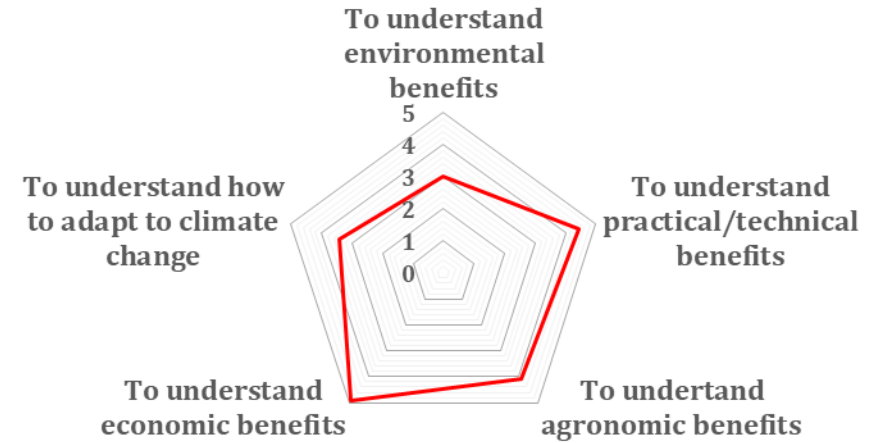
Could you please help us to better understand:

Q. 4.1 Can you receive support to purchase a new machinery? Do you know with is the support rate (%) you can get for such investments?

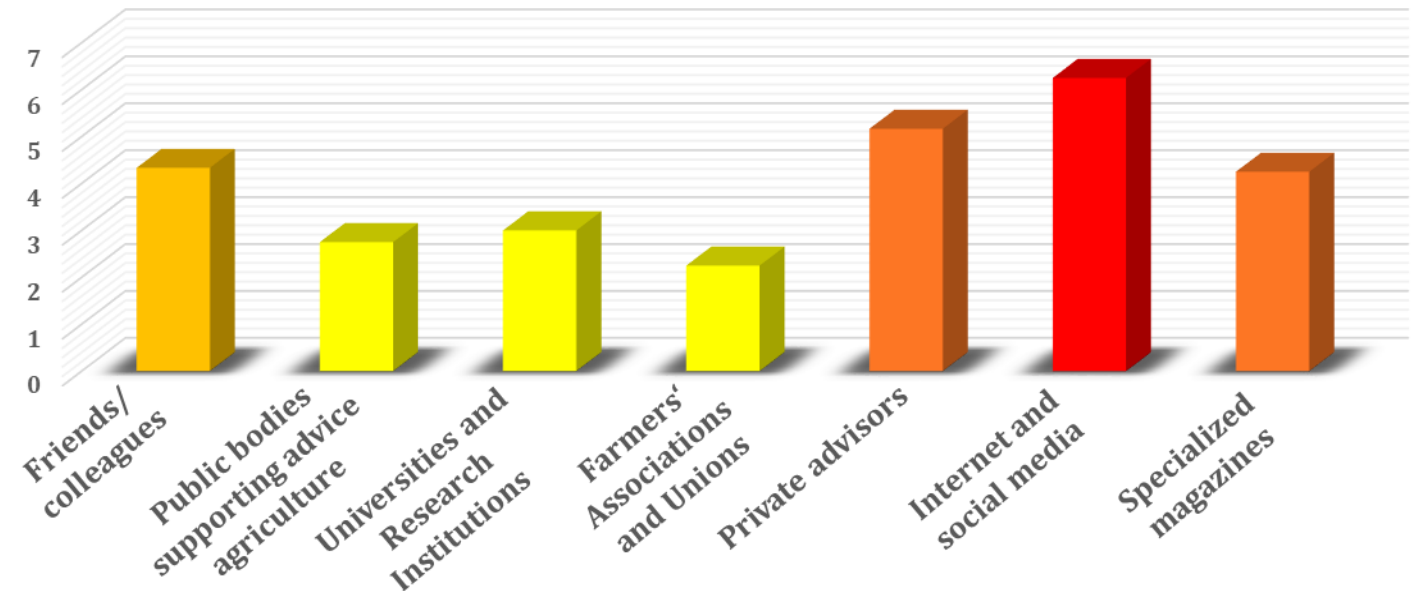
5. Socio-cultural barriers to CA *from 1 to 5 increasing level of relevance*



Factors that make training and advice relevant



Current sources of information *(from 1 to 7 increasing level of relevance)*



5. Socio-cultural barriers to Conservation Agriculture adoption

The need for full understanding of the benefits FOR FARMERS (more than for environment) seem to be the core of this section.

Farmers probably need to fully understand why and how CA can be beneficial for them. For this reason, maybe, barriers seem to exceed possible benefits and they can be reluctant to change. Private advisors and informal networks are the main source of information for them. Advisors should be trained to make them aware that CA can be a convenient to be advised.

Could you please help us to better understand:

Q. 5.1 What kind of advice do you receive from your advisors?

Q. 5.2 Do you think that a strengthening of training and advice services could increase the level of adoption of CA?

Considering the results of the survey and of the focus group, please help us to focus on the most urgent needs/solutions/proposals to enhance CA adoption in your Country:

- *Agronomy: enhance the level of crop diversification in consideration of both cover crop market and water availability. What is needed?*
- *Knowledge: do you think a dedicated training and advice services on environmental and agronomic benefits from CA could increase its level of adoption?*
- *Information and cooperation: do you think that a network of farmers would be beneficial to share knowledge and efforts towards CA in your region, in particular when consider the crop diversification?*

5.4 Italy summary of the results of the survey

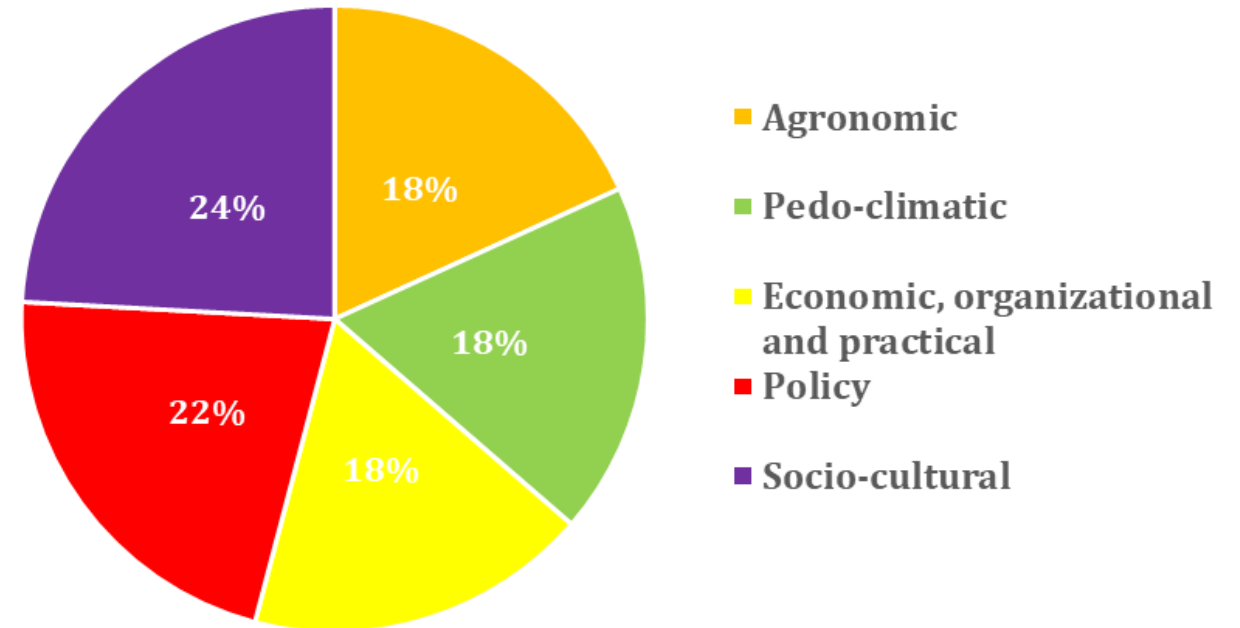
Barriers to Conservation Agriculture adoption

1. Agronomic
2. Pedo-climatic
3. Economic, organizational and practical
4. Policy
5. Socio-cultural

Preliminary information

- N° of farmers: 24
- Average age of farmers: 49
- Average farm size: 88 ha
- Irrigation: 22%

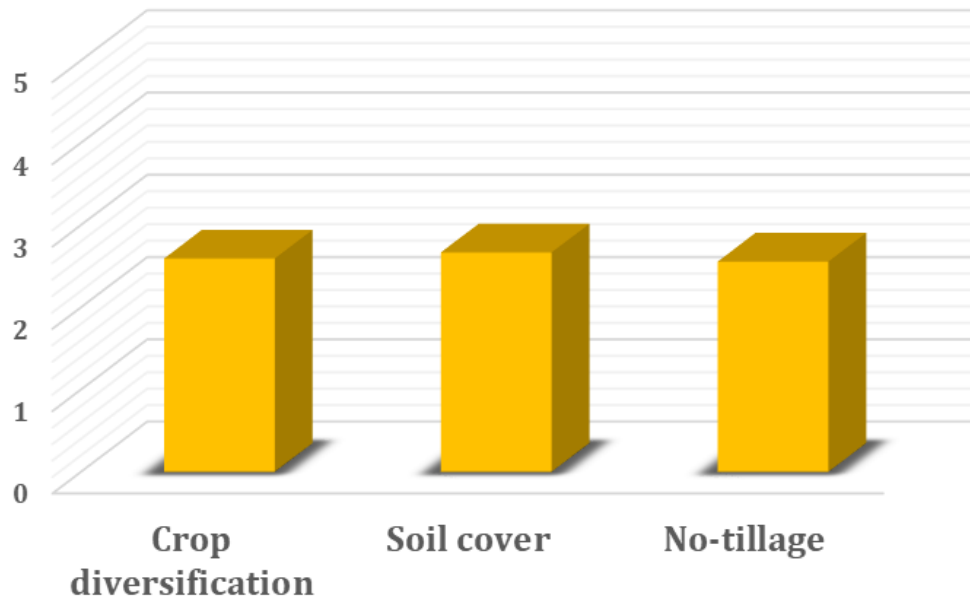
Importance of the different types of barriers
To Conservation Agriculture adoption



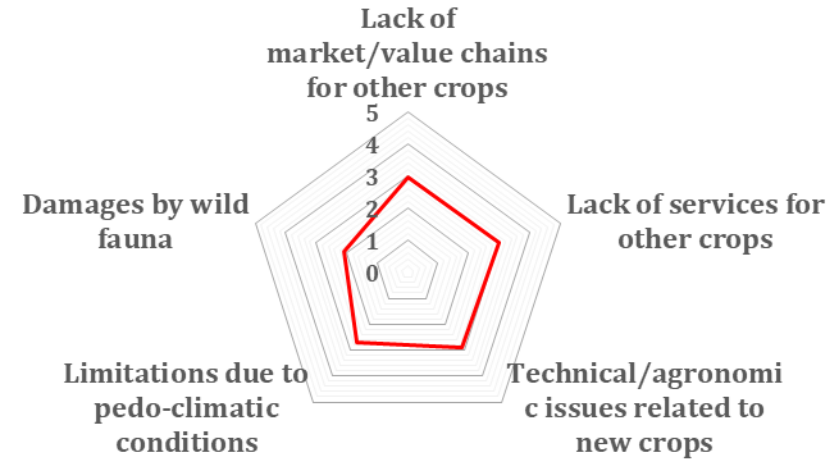
1. Agronomic barriers to Conservation

Agriculture adoption

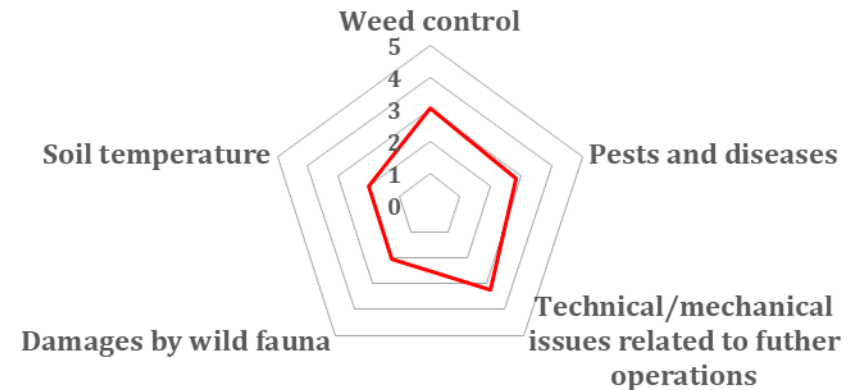
from 1 to 5 increasing level of difficulty



Factors that make crop diversification difficult



Factors that make soil cover difficult



1. Agronomic barriers to Conservation Agriculture adoption

Crop rotation/diversification and soil cover appear to be major concerns for surveyed farmers, especially for issues related to further operation.

Correlation between pests and diseases and weed control should be investigated in the interviewees to understand their thoughts on soil cover.

Could you please help us to better understand:

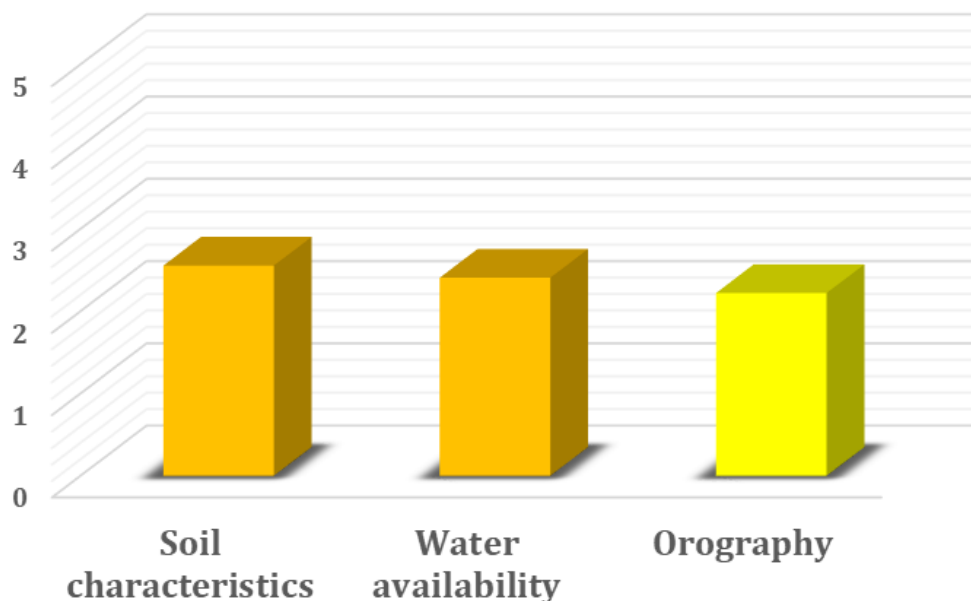
Q. 1.1 Why and how is difficult for you to set up a crop-rotation programme?

Q. 1.2 Why technical/mechanical further operation is one of your concerns relating to soil cover?

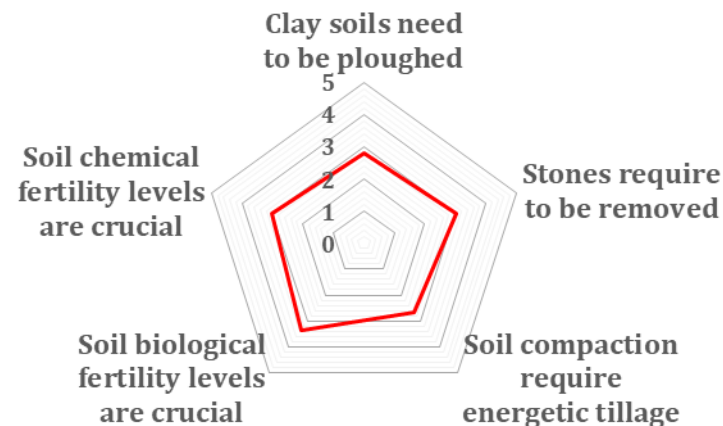
2. Pedo-climatic barriers to Conservation

Agriculture adoption

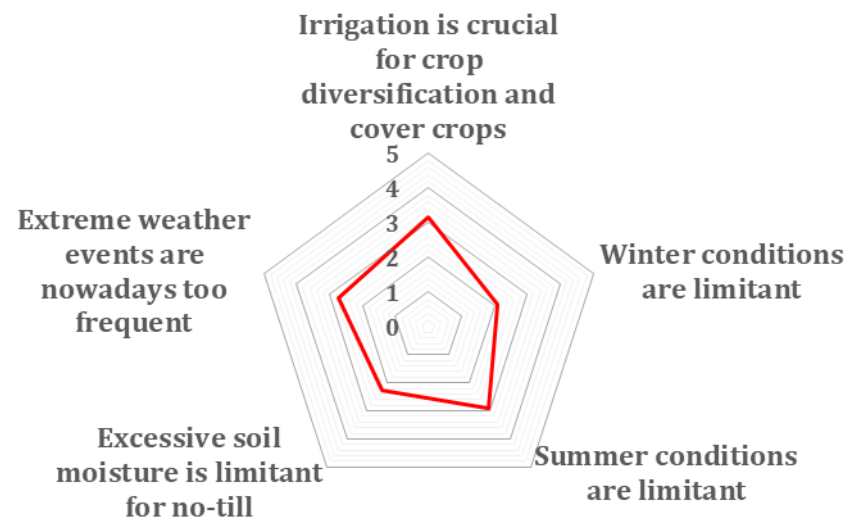
from 1 to 5 increasing level of influence



Factors that make soil characteristics influential



Factors that make water availability influential



2. Pedo-climatic barriers to Conservation Agriculture adoption

Soil biological fertility and soil water management appear to be major concerns in this section.

Correlation between crop diversification and threats for water scarcity or water excesses should be investigated. It is possible to suppose that surveyed farmers have partial knowledge of concepts of soil bio-chemical fertility beyond the sole idea of mineral fertility. These aspects should be investigated.

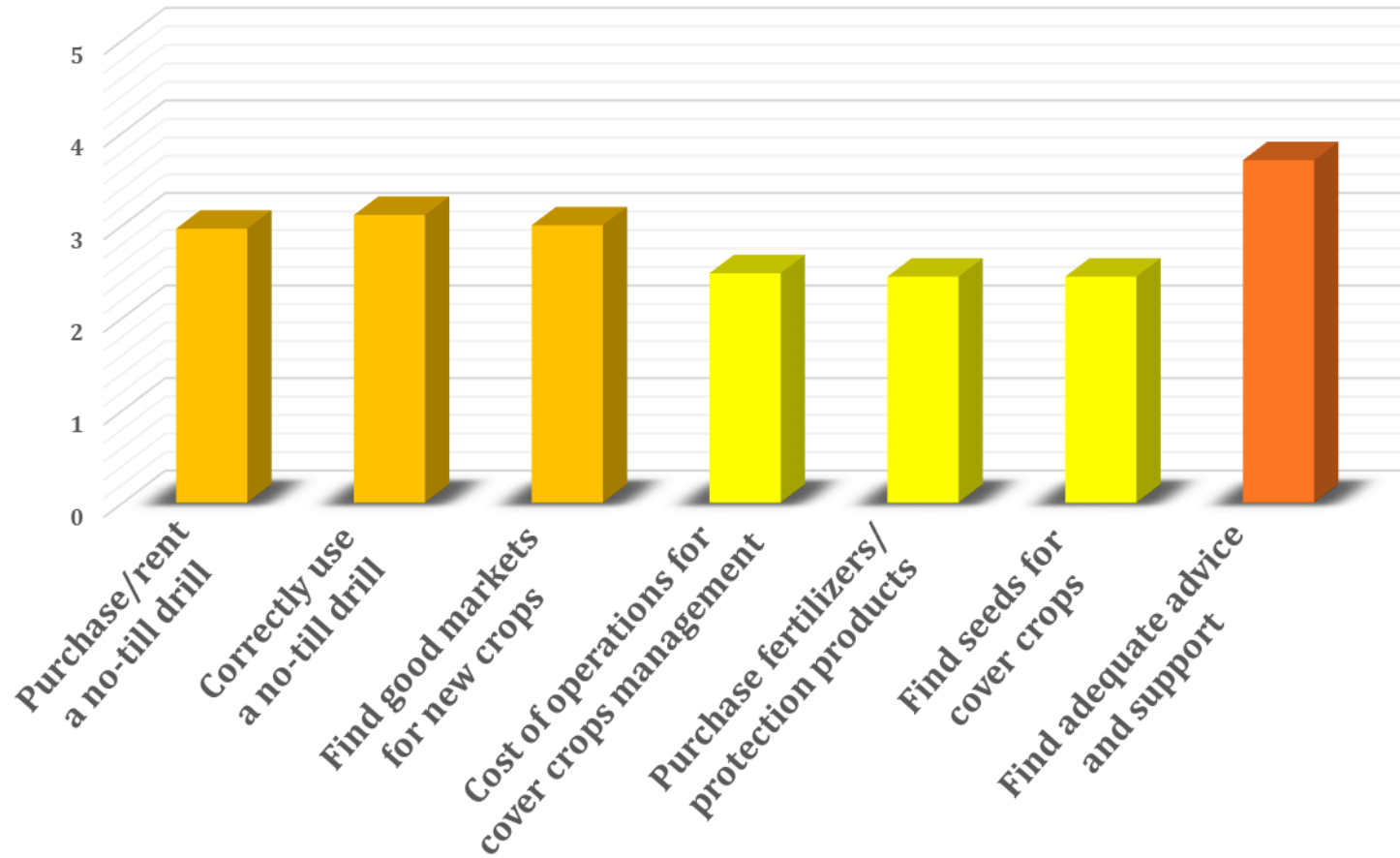
Could you please help us to better understand:

Q. 2.1 Why and how water excess or scarcity can be a problem for you?

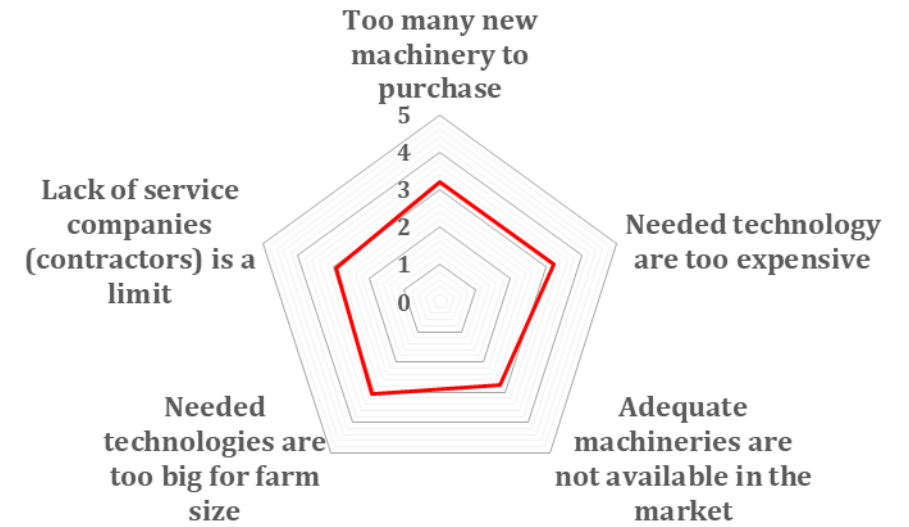
Q. 2.2 How do you recognize a fertile soil? And how a degraded one?

3. Economic, organizational and practical barriers to Conservation Agriculture adoption

from 1 to 5 increasing level of difficulty



Factors that make the adoption of new machinery/techniques difficult



3. Economic, organizational and practical barriers to Conservation Agriculture adoption

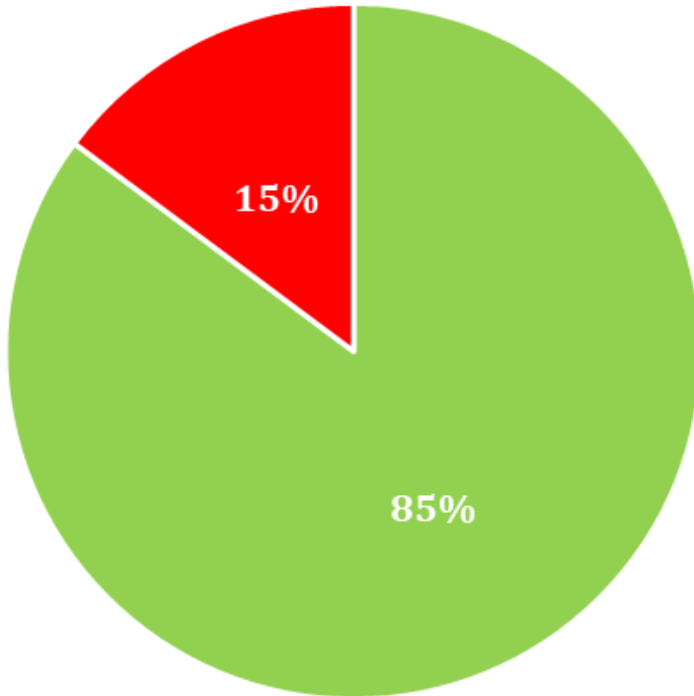
Finding of adequate advice and support seems to be the major concern in this section.

Indeed, although the purchase or rent a no-till drill is not a great concern, the adoption of new machinery appears limited by the lack of service companies, the high number of machinery to purchase and their costs.

Could you please help us to better understand:

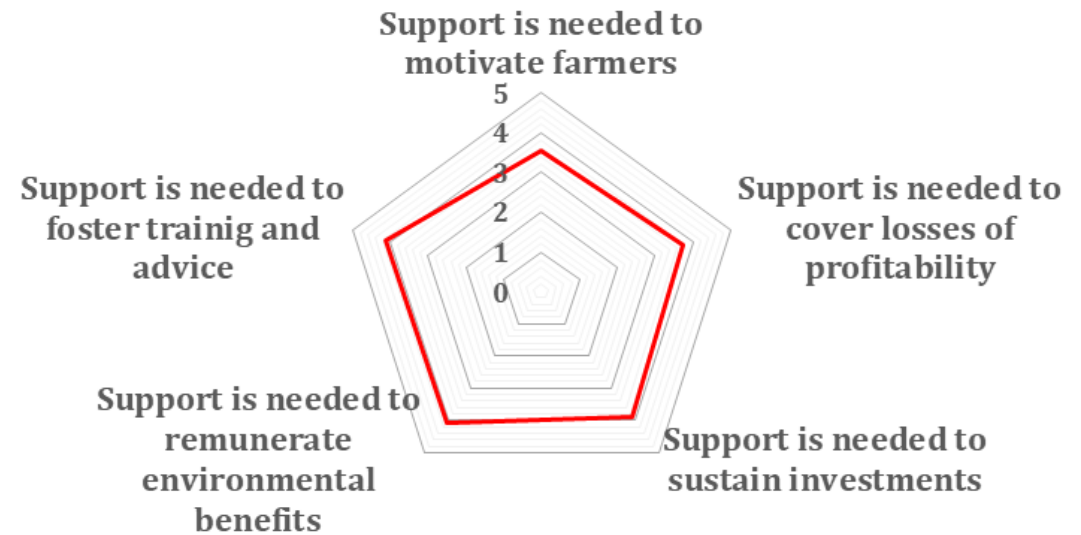
Q. 3.1 How many models of NT drillers do you know? Do you consider them too expensive in comparison with other machineries you have?

4. Policy barriers to CA



- Yes, I receive public support
- No, I don't receive public support

Factors that make public support essential to CA adoption



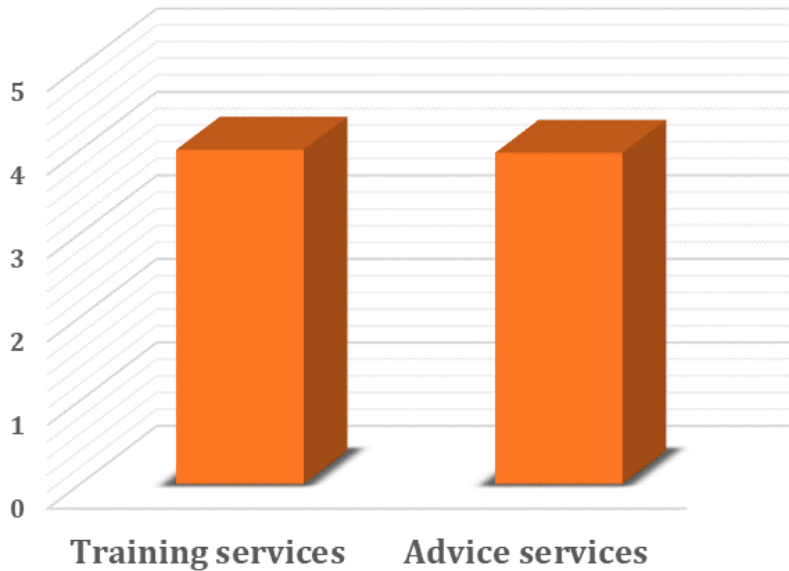
4. Policy barriers to Conservation Agriculture adoption

Most of the interviewees (85%) stated that they receive public aid to support agricultural activity, considered an essential contribution when CA is adopted.

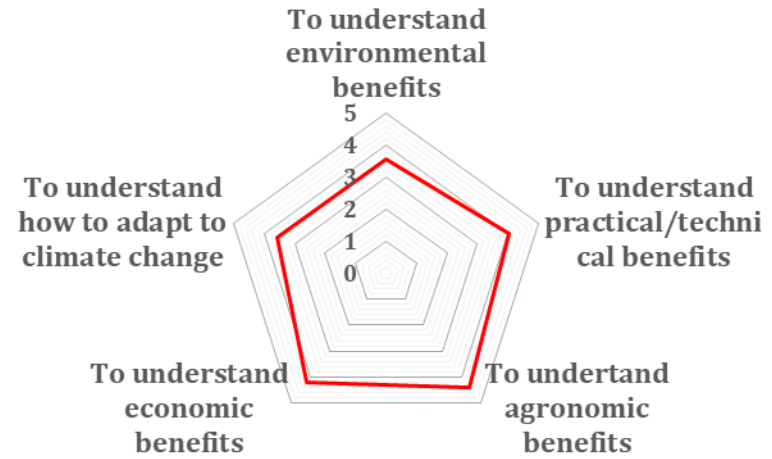
Could you please help us to better understand:

Q. 4.1 Can you receive support to purchase a new machinery? Do you know with is the support rate (%) you can get for such investments?

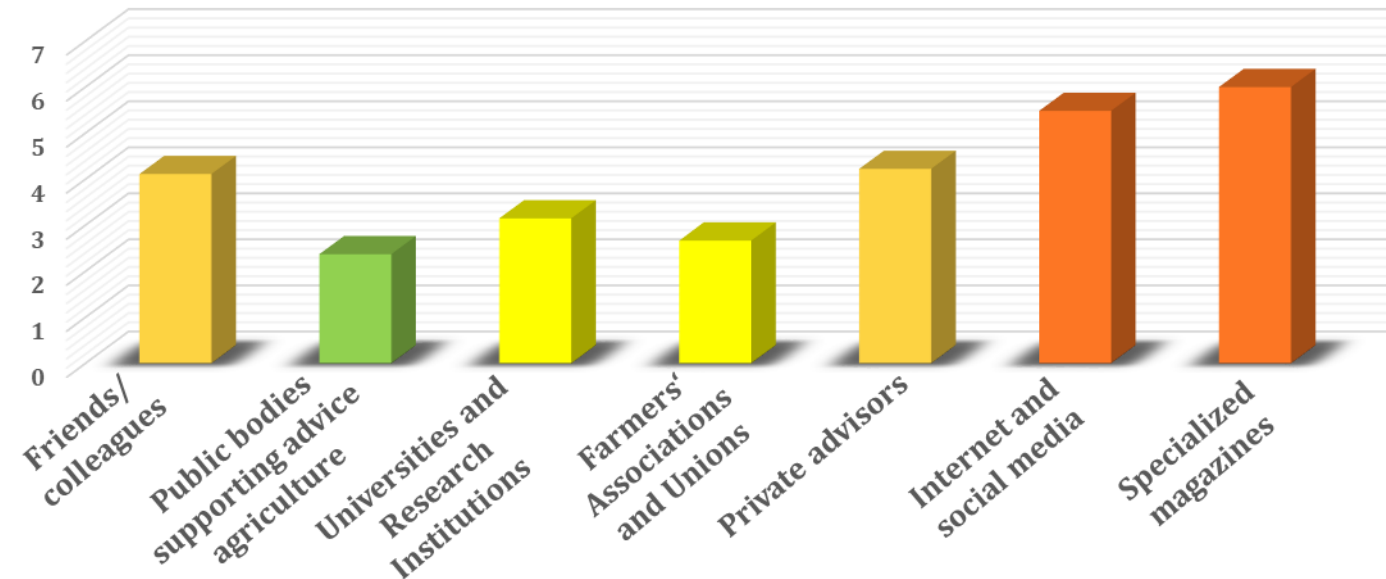
5. Socio-cultural barriers to CA *from 1 to 5 increasing level of relevance*



Factors that make training and advice relevant



Current sources of information *(from 1 to 7 increasing level of relevance)*



5. Socio-cultural barriers to Conservation Agriculture adoption

The need for full understanding of the benefits FOR FARMERS (more than for environment) seem to be the core of this section.

Farmers probably need to fully understand why and how CA can be beneficial for them. For this reason, maybe, barriers seem to exceed possible benefits and they can be reluctant to change. Internet and social media and specialized magazines are the main source of information for them.

Could you please help us to better understand:

Q. 5.1 Do you think that a strengthening of training and advice services could increase the level of adoption of CA?

Considering the results of the survey and of the focus group, please help us to focus on the most urgent needs/solutions/proposals to enhance CA adoption in your Country:

- *Agronomy: enhance the level of crop diversification in consideration of both cover crop market and water availability. What is needed?*
- *Knowledge: do you think a dedicated training and advice services on environmental and agronomic benefits from CA could increase its level of adoption?*
- *Information and cooperation: do you think that a network of farmers would be beneficial to share knowledge and efforts towards CA in your region, in particular when consider the crop diversification?*

5.5 Morocco summary of the results of the survey

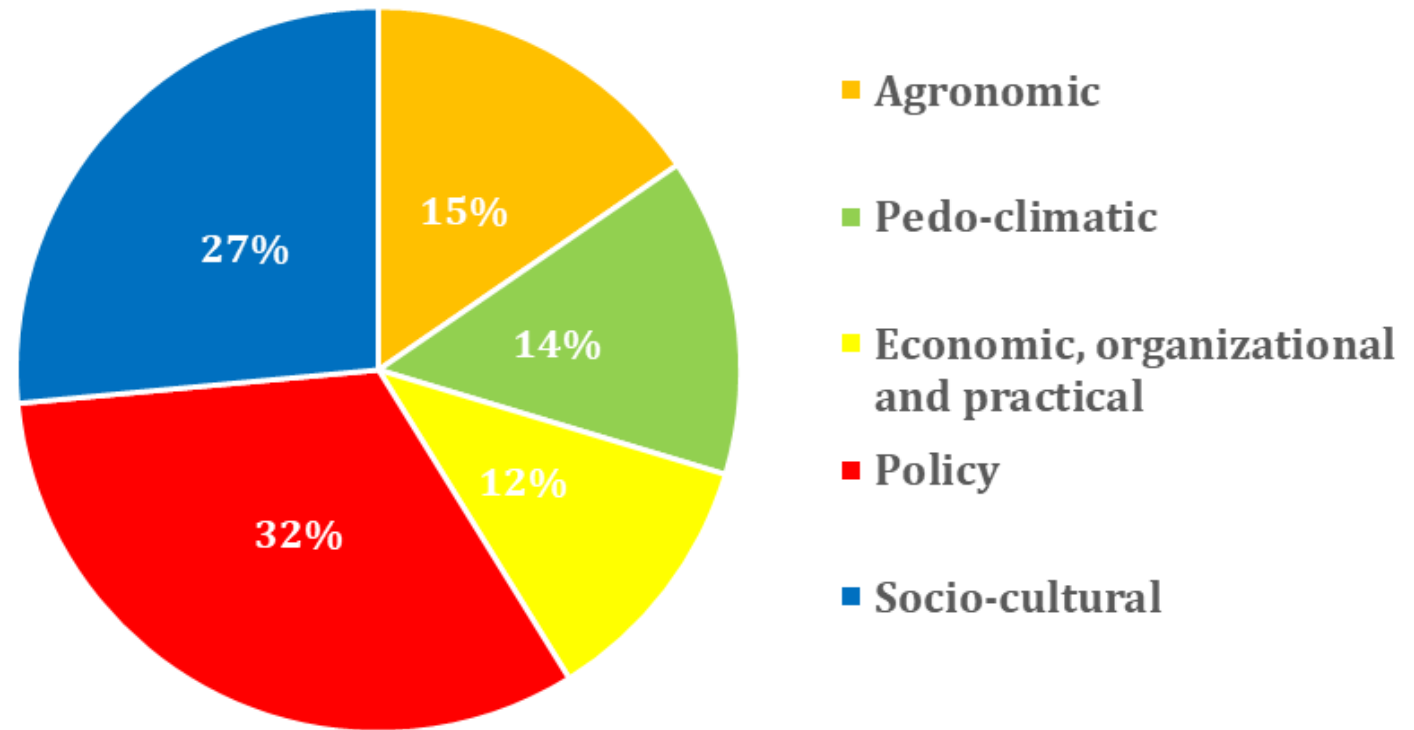
Barriers to Conservation Agriculture adoption

1. Agronomic
2. Pedo-climatic
3. Economic, organizational and practical
4. Policy
5. Socio-cultural

Preliminary information

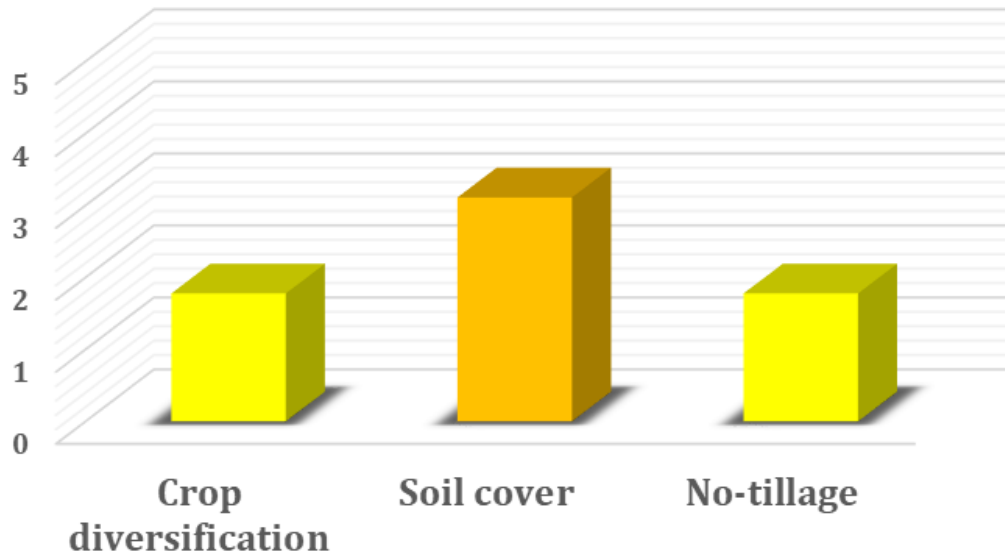
- N° of farmers: 9
- Adopters of CA: **lack of information**
- Average age of farmers: 51
- Average farm size: 362 ha
- Irrigation: 22%

Importance of the different types of barriers
To Conservation Agriculture adoption

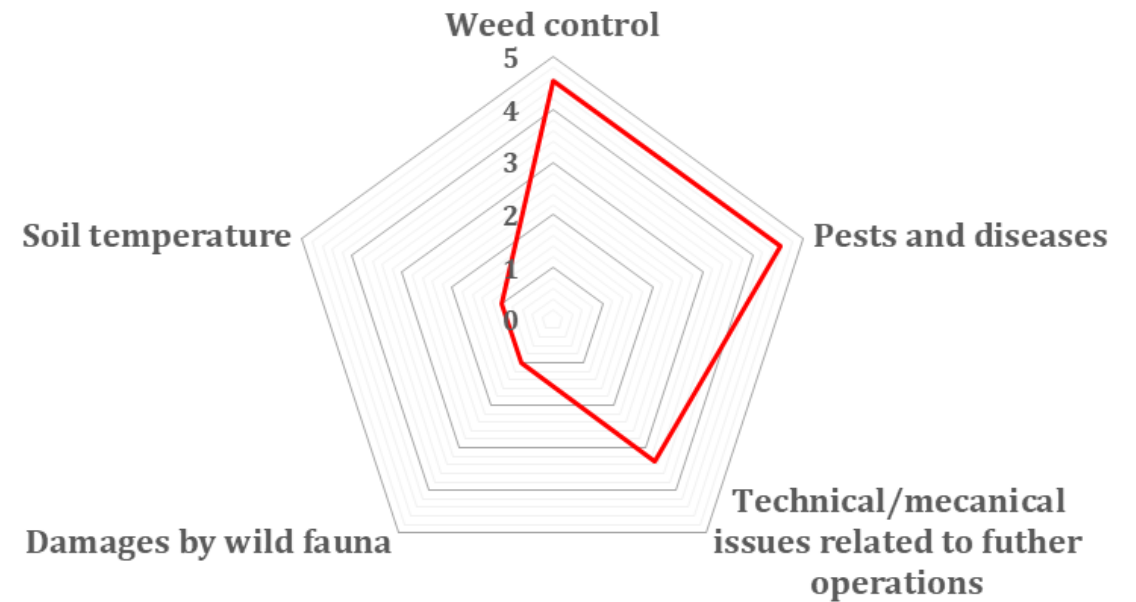


1. Agronomic barriers to CA

from 1 to 5 increasing level of difficulty



Factors that make soil cover difficult



1. Agronomic barriers to CA

Soil cover by crop residues/organic mulch appears to be major concern for surveyed farmers, especially for issues related to weed and pests and diseases control.

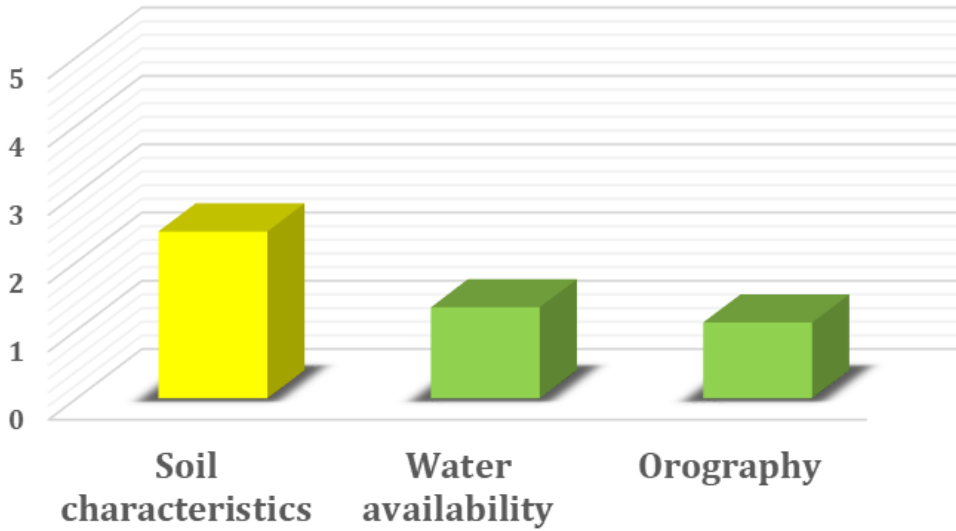
Correlation between crop residues on the soil surface and next technical/mechanical operation should be discussed in the interviews, because indicated as hinder to soil cover in the CA system.

Could you please help us to better understand:

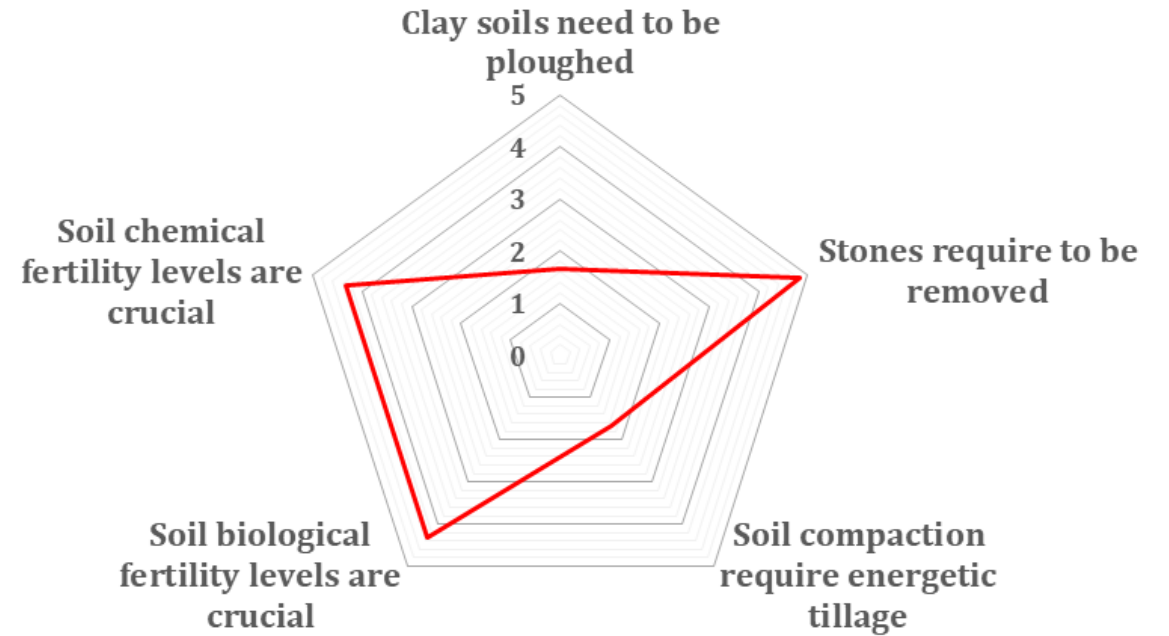
Q. 1.1 Why and how is difficult for you to leave the crop residues on the soil surface after harvesting procedures?

Q. 1.2 Why weed control and pests and diseases are major concerns? Can you describe how weed control and pests and diseases can affect your farming in view of managing crop residues?

2. Pedo-climatic barriers to CA *from 1 to 5 increasing level of influence*



Factors that make soil characteristics influential



2. Pedo-climatic barriers to CA

Soil characteristics appear to be a concerns for surveyed farmers, especially for issues related to soil chemical and biological fertility.

It can be supposed that pedo-climatic barriers to CA adoption are related to prevalence of skeletal soils among surveyed farmers. Correlation between soil cover and presence of stones into the soil should be investigated, if there is a one.

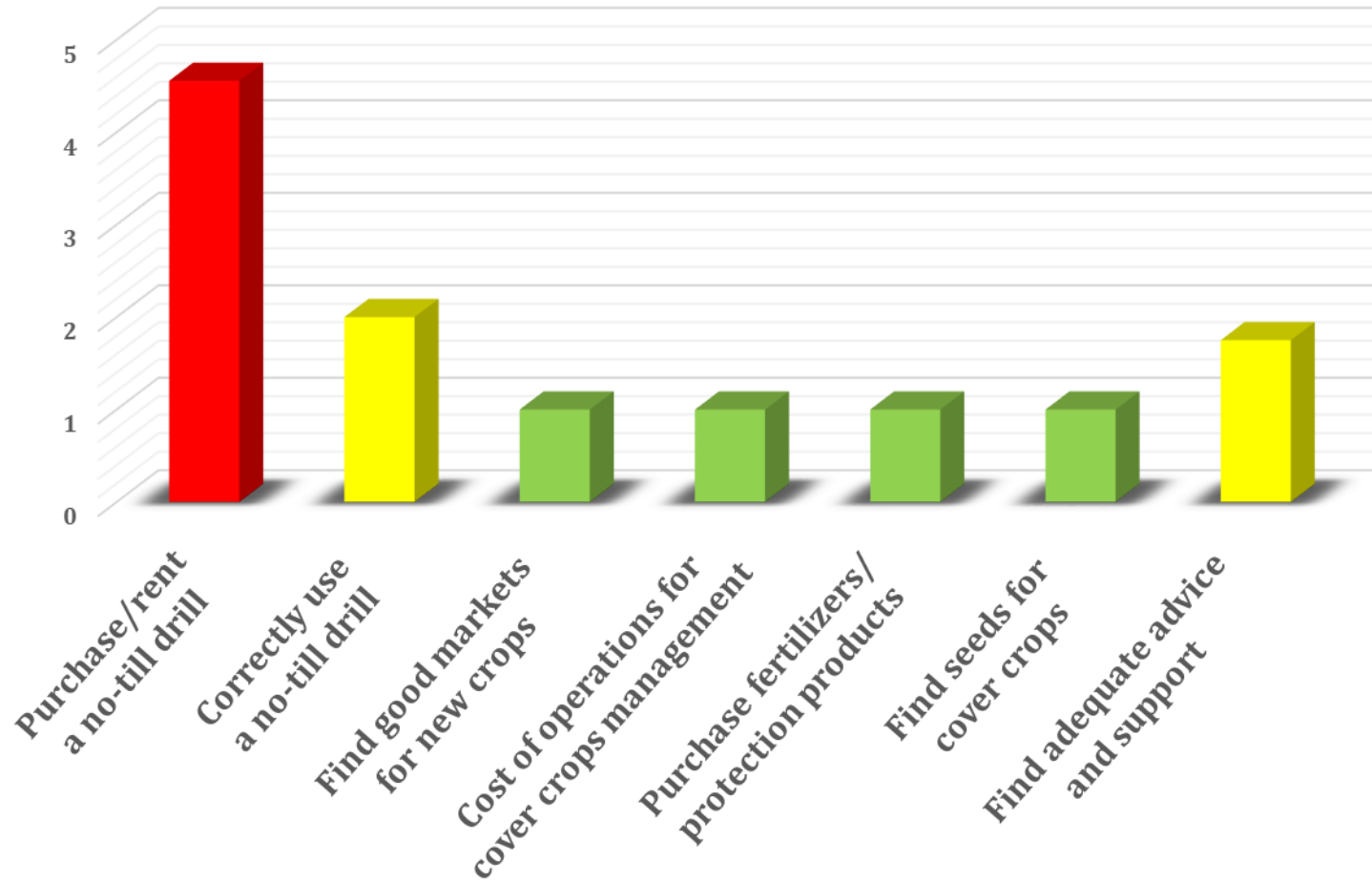
Could you please help us to better understand:

Q. 2.1 Why and how soil characteristics (fertility) can be a problem CA adoption?

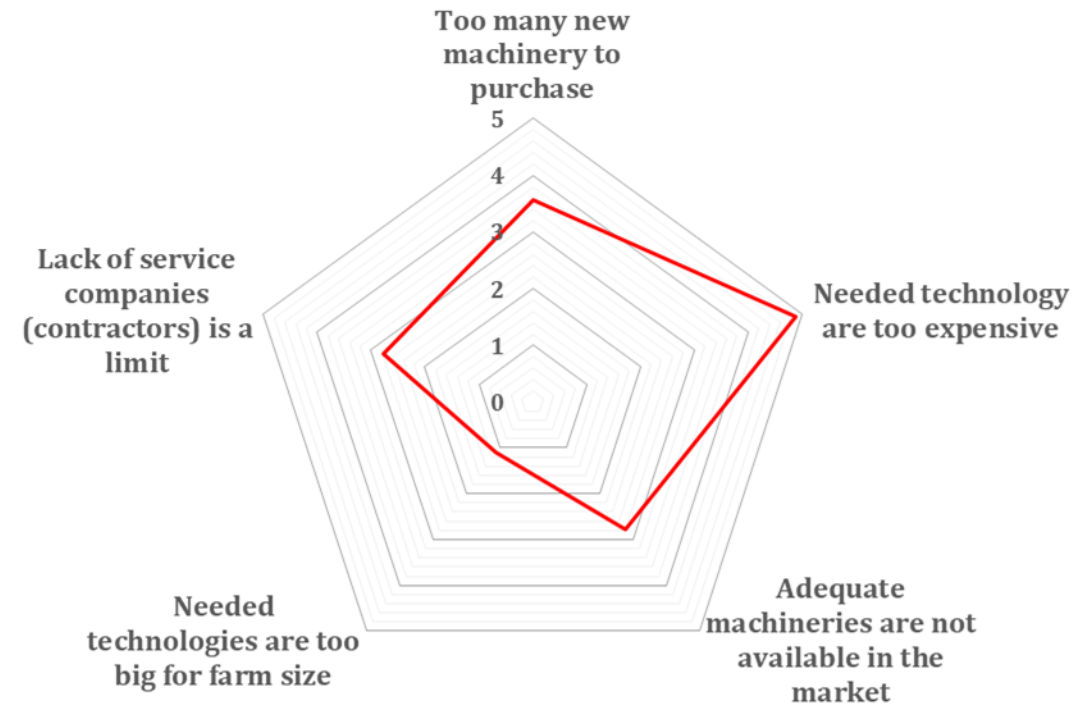
Q. 2.2 How do you recognize a fertile soil? And how a degraded one?

Please note: 50% of surveyed farmers have not answered to questions 3.1.1, 3.2.1 and 3.3.1 related to specifics pedo-climatic barriers to CA adoption.

3. Economic, organizational and practical barriers to CA *from 1 to 5 increasing level of difficulty*



Factors that make the adoption of new machinery/techniques difficult



3. Economic, organizational and practical barriers to Conservation Agriculture adoption

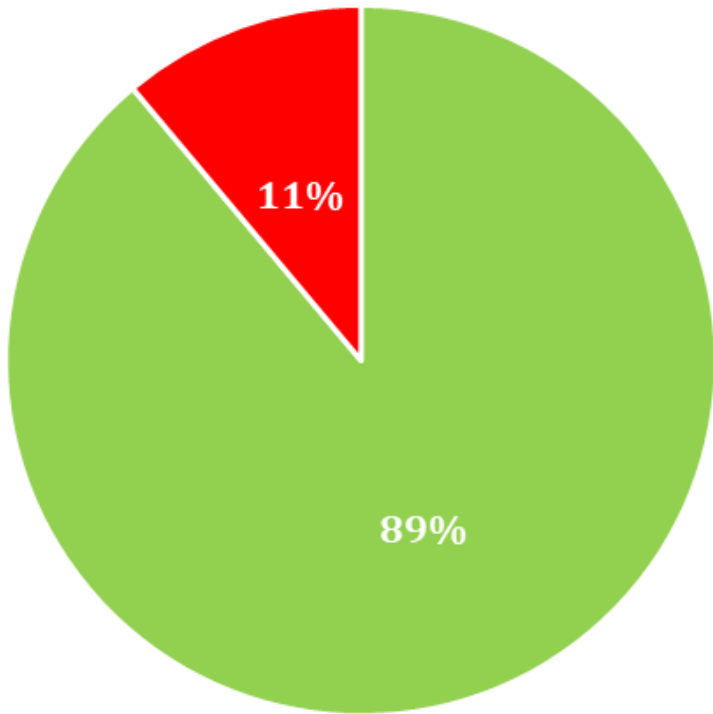
Purchase or rent of a no-till drill seems to be the major concern in this section.

Machineries can be expensive. Several farm experiences anyway show how NT and CA can be adopted as a any other farming solution, even step-by-step through small investments. Dimension of the problem of “adoption of new technologies” should be investigated among surveyed farmers.

Could you please help us to better understand:

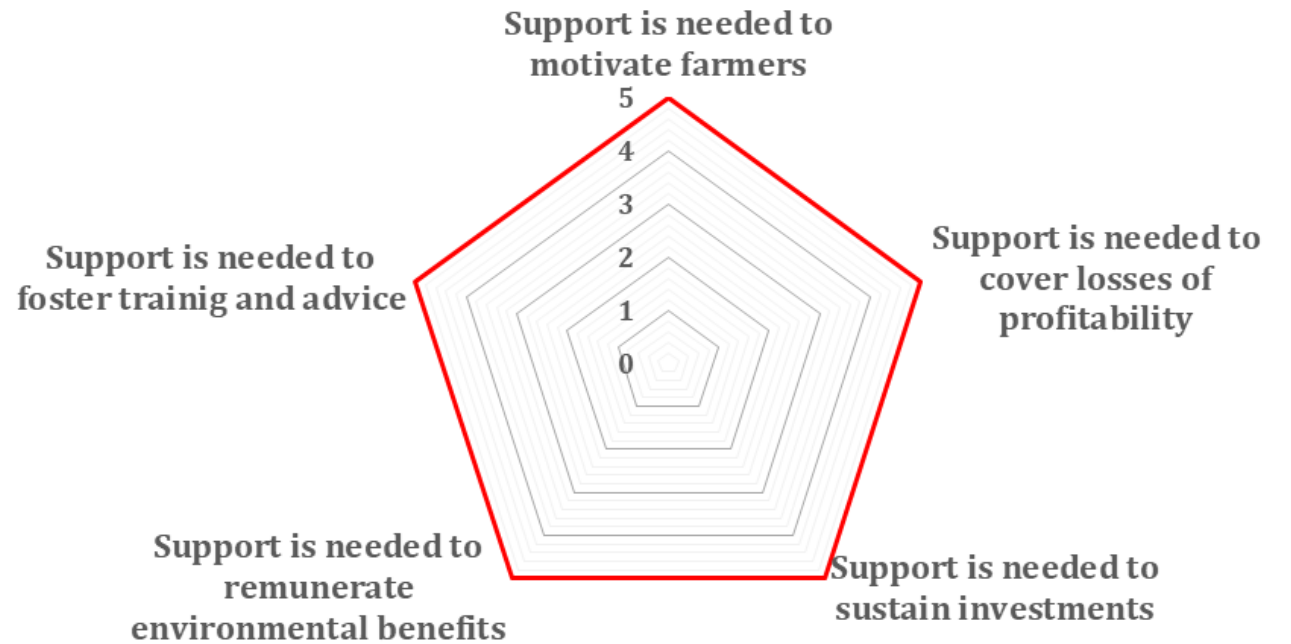
Q. 3.1 How many models of NT drillers do you know? Do you consider them too expensive in comparison with other machineries you have? Can you easily lease them?

4. Policy barriers to Conservation Agriculture adoption



- Yes, I receive public support
- No, I don't receive public support

Factors that make public support essential to CA adoption



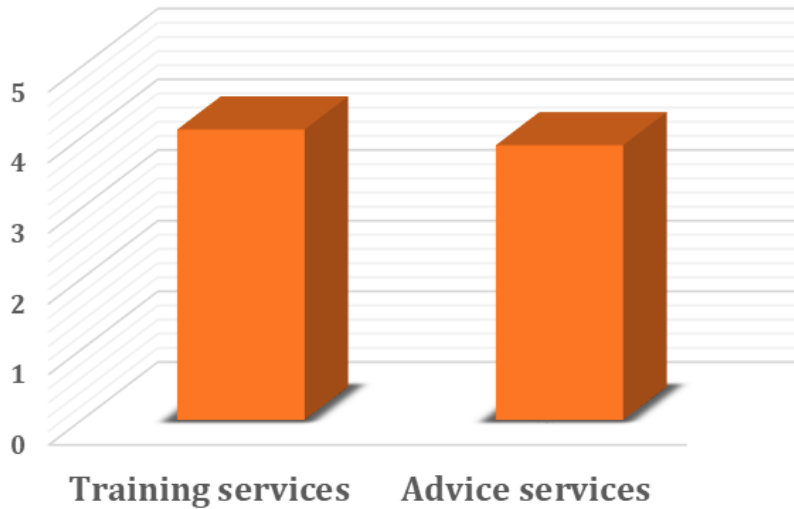
4. Policy barriers to CA

Majority of the surveyed farmers receive public support for agricultural activity.
Support by policy seems to be needed for all the aspects related to CA adoption.

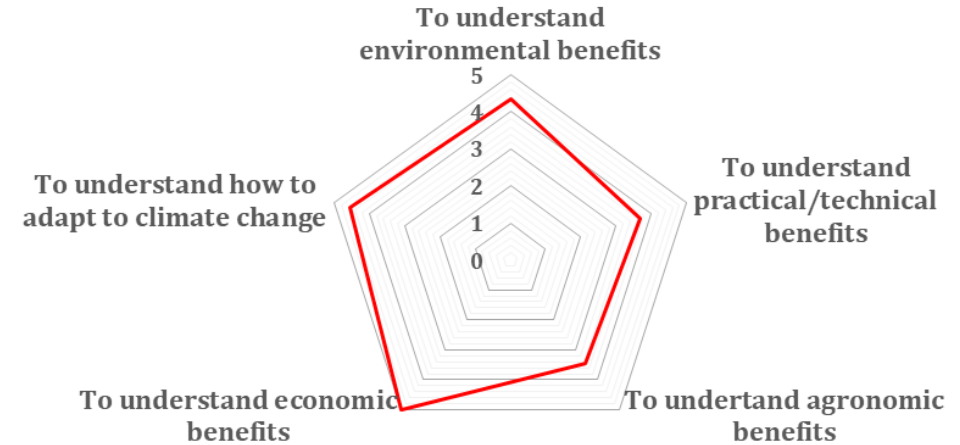
Could you please help us to better understand:

Q. 4.1 Can you receive support to purchase a new machinery? Do you know which is the support rate (%) you can get for such investments?

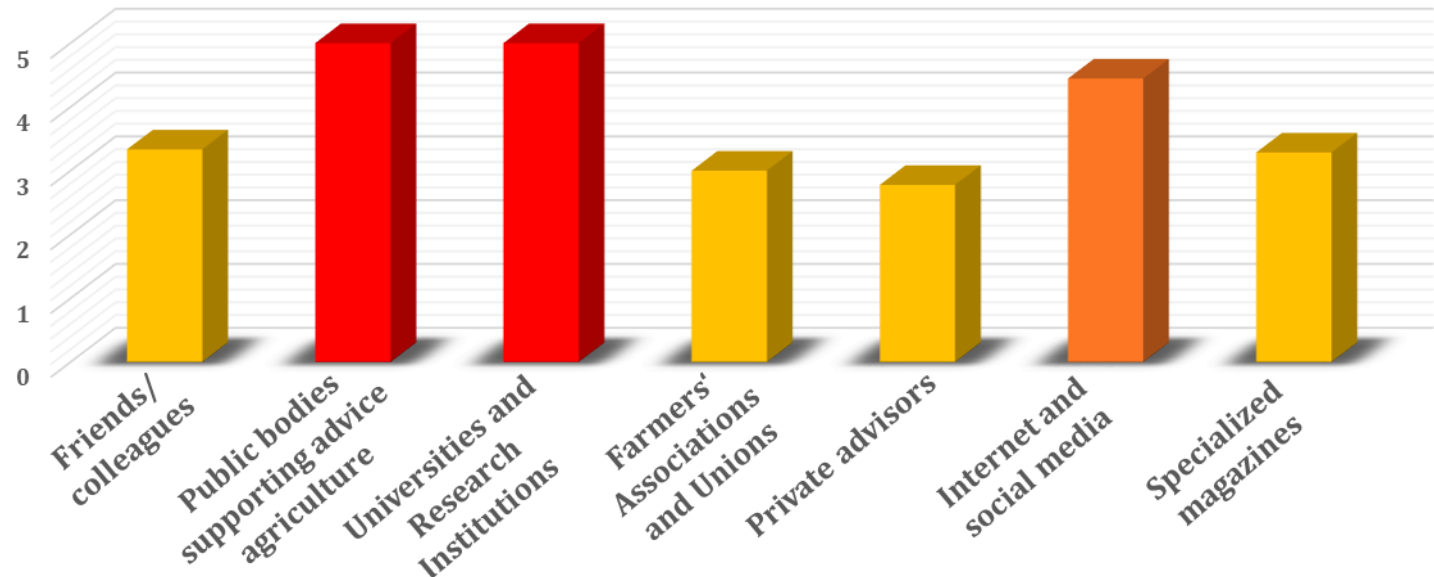
5. Socio-cultural barriers to CA *from 1 to 5 increasing level of relevance*



Factors that make training and advice relevant



Current sources of information *(from 1 to 5 increasing level of relevance)*



5. Socio-cultural barriers to Conservation Agriculture adoption

The need for full understanding the benefits of CA for farmers seem to be the core of this section.

Training and advice services show to be important for farmers. Private advisors and research institution are the main current sources of information.

Could you please help us to better understand:

Q. 5.1 Which kind of benefits should be stressed among farmers to enhance CA adoption?

Considering the results of the survey and of the focus group, please help us to focus on the most urgent needs/solutions/proposals to enhance CA adoption in your Country:

- *Agronomy: enhance the level of soil cover in consideration of management of weeds/pests/diseases - What is needed?*
- *Knowledge: do you think a dedicated training on crop residues management would help you to understand how to manage them properly?*
- *Information and cooperation: do you think that a network of experienced famers would be beneficial to share knowledge and efforts towards CA in your region?*

5.6 Portugal summary of the results of the survey

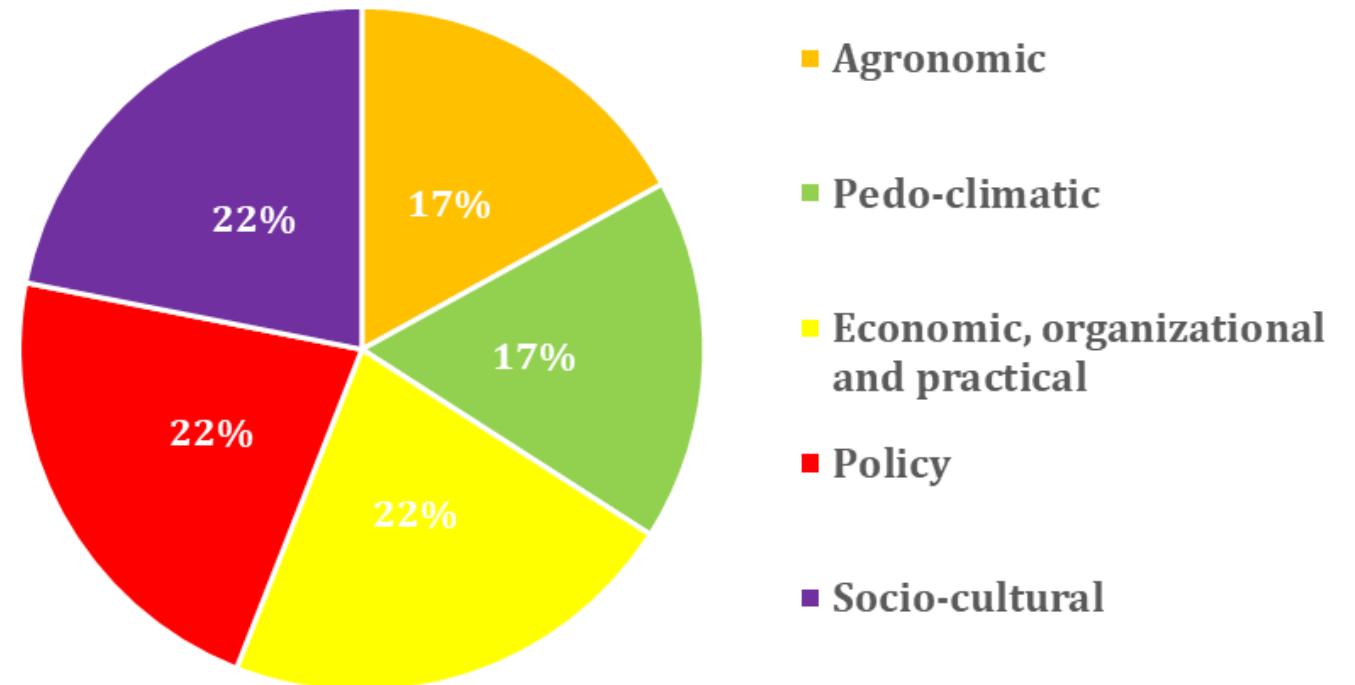
Barriers to Conservation Agriculture adoption

1. Agronomic
2. Pedo-climatic
3. Economic, organizational and practical
4. Policy
5. Socio-cultural

Preliminary information

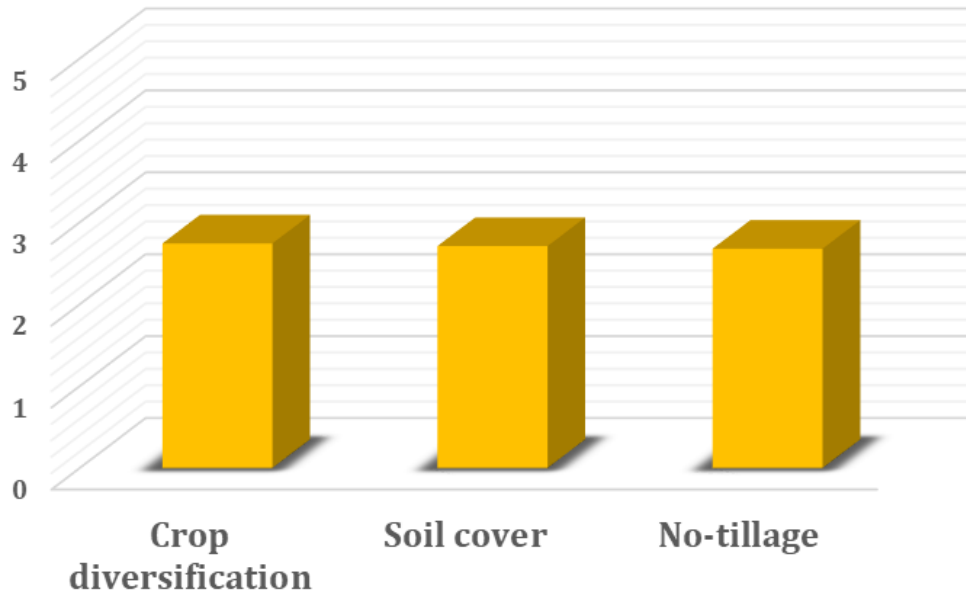
- N° of respondents: 31
- N° of farmers: 26
- Adopters of CA: 23
- Average age of farmers: 50
- Average farm size: 725 ha
- Irrigation: 37%

Importance of the different types of barriers
To Conservation Agriculture adoption

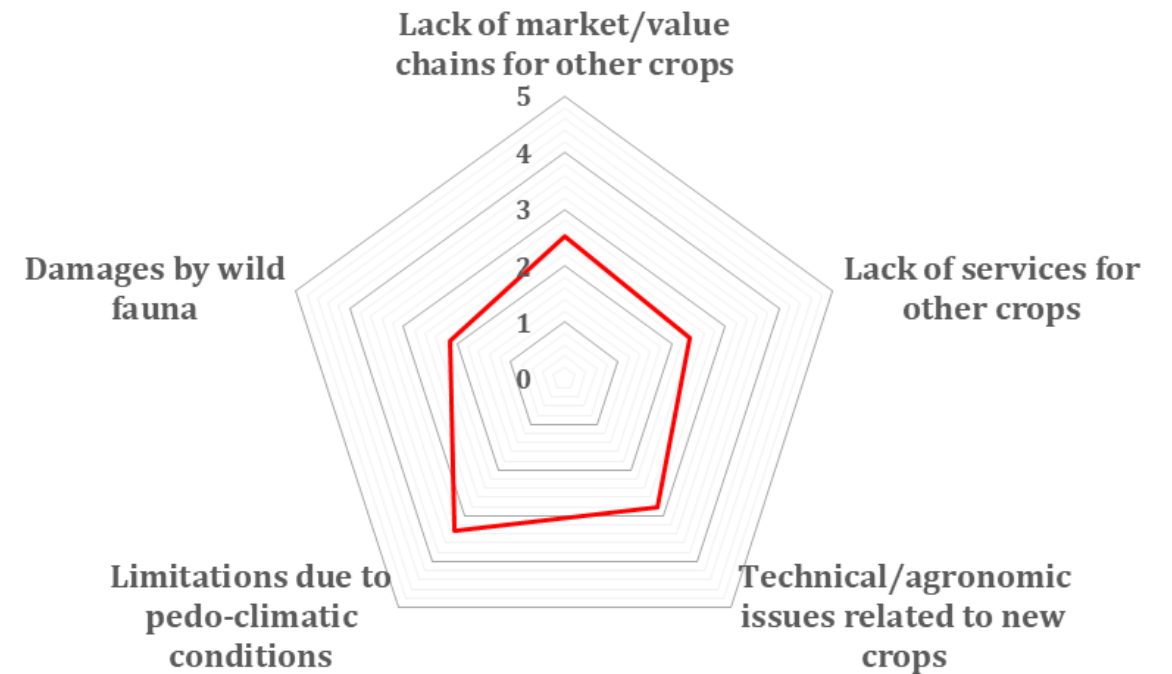


1. Agronomic barriers to Conservation Agriculture adoption

from 1 to 5 increasing level of difficulty

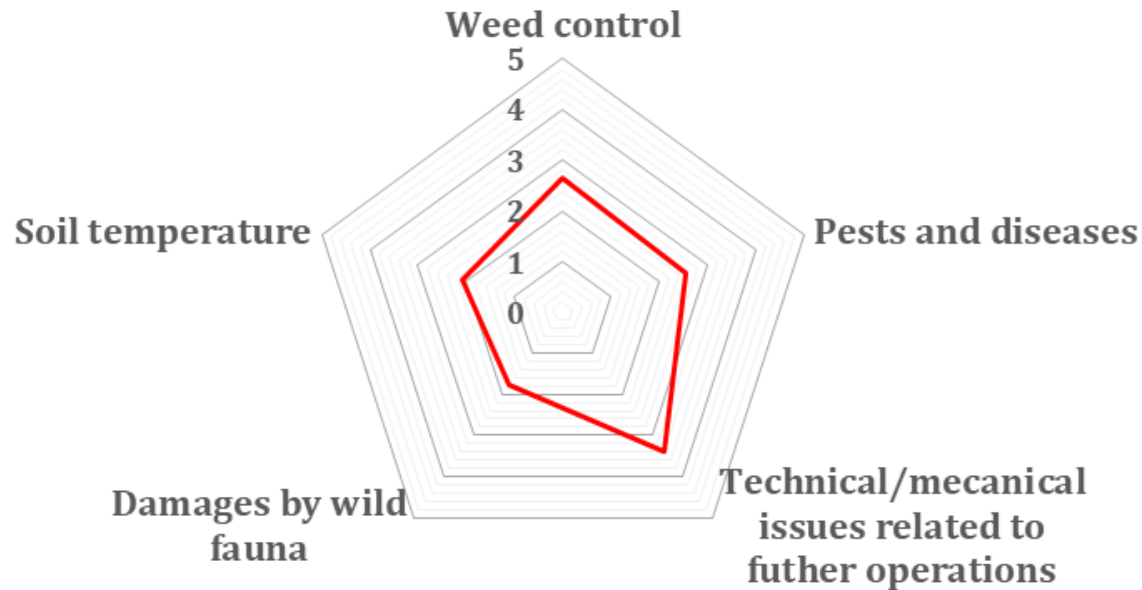


Factors that make crop diversification difficult

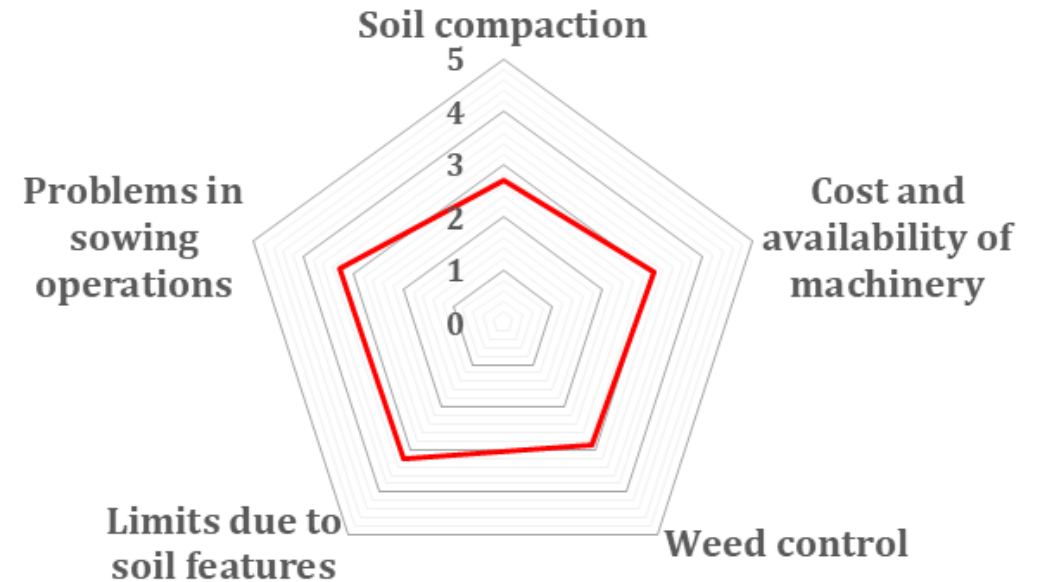


1. Agronomic barriers to Conservation Agriculture adoption

Factors that make soil cover difficult



Factors that make no-tillage difficult



1. Agronomic barriers to Conservation Agriculture adoption

Crop diversification appears to be a concern for surveyed farmers, but also soil cover and no-tillage practices have received a similar attention.

Correlation between crop diversification and limitations due to pedo-climatic conditions should be discussed in the interviews, addressing in particular to water availability.

Could you please help us to better understand:

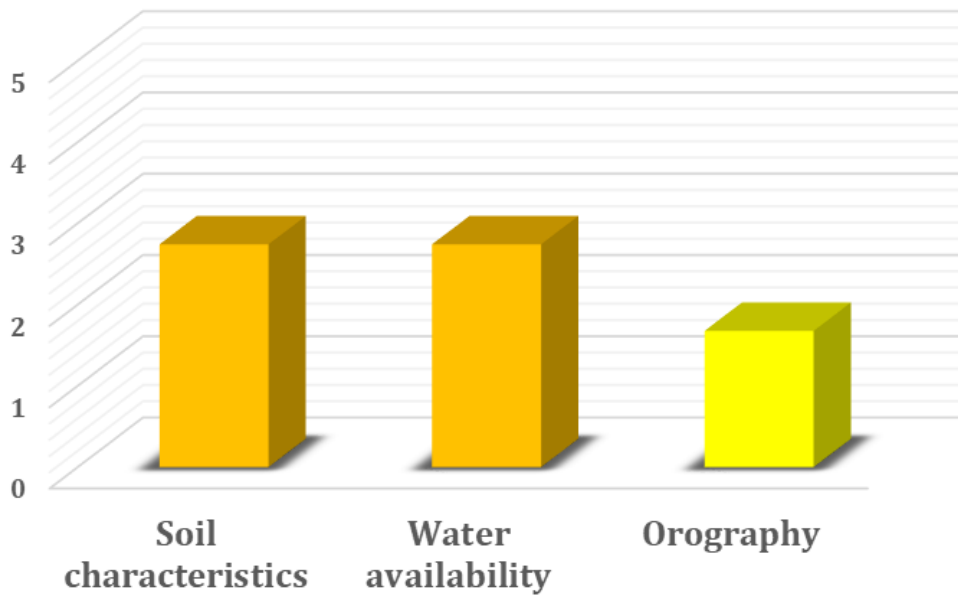
Q. 1.1 Why is difficult for you to leave the crop residues on the soil surface? How the technical and mechanical issues related to further operations hinder it?

Q. 1.2 Are the problems in sowing operations when no-tillage is adopted further concerns related to soil cover?

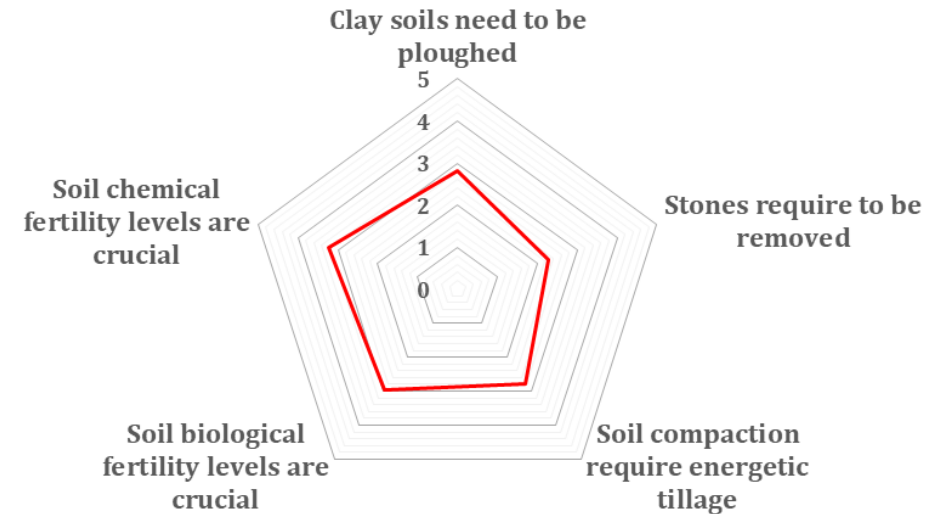
2. Pedo-climatic barriers to Conservation

Agriculture adoption

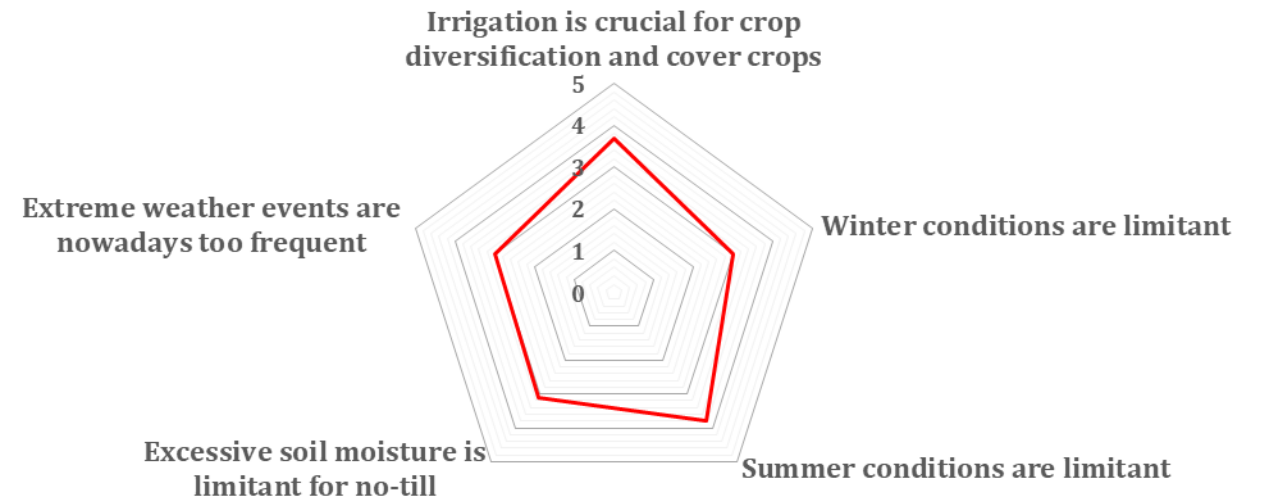
from 1 to 5 increasing level of influence



Factors that make soil characteristics influential



Factors that make water availability influential



2. Pedo-climatic barriers to Conservation Agriculture adoption

Soil characteristics and water availability appear to be major concerns for surveyed farmers, when pedo-climatic conditions are taken into account.

It is simple to suppose that pedo-climatic barriers to CA adoption are principally related to the scarcity of water as a cause of summer dry conditions.

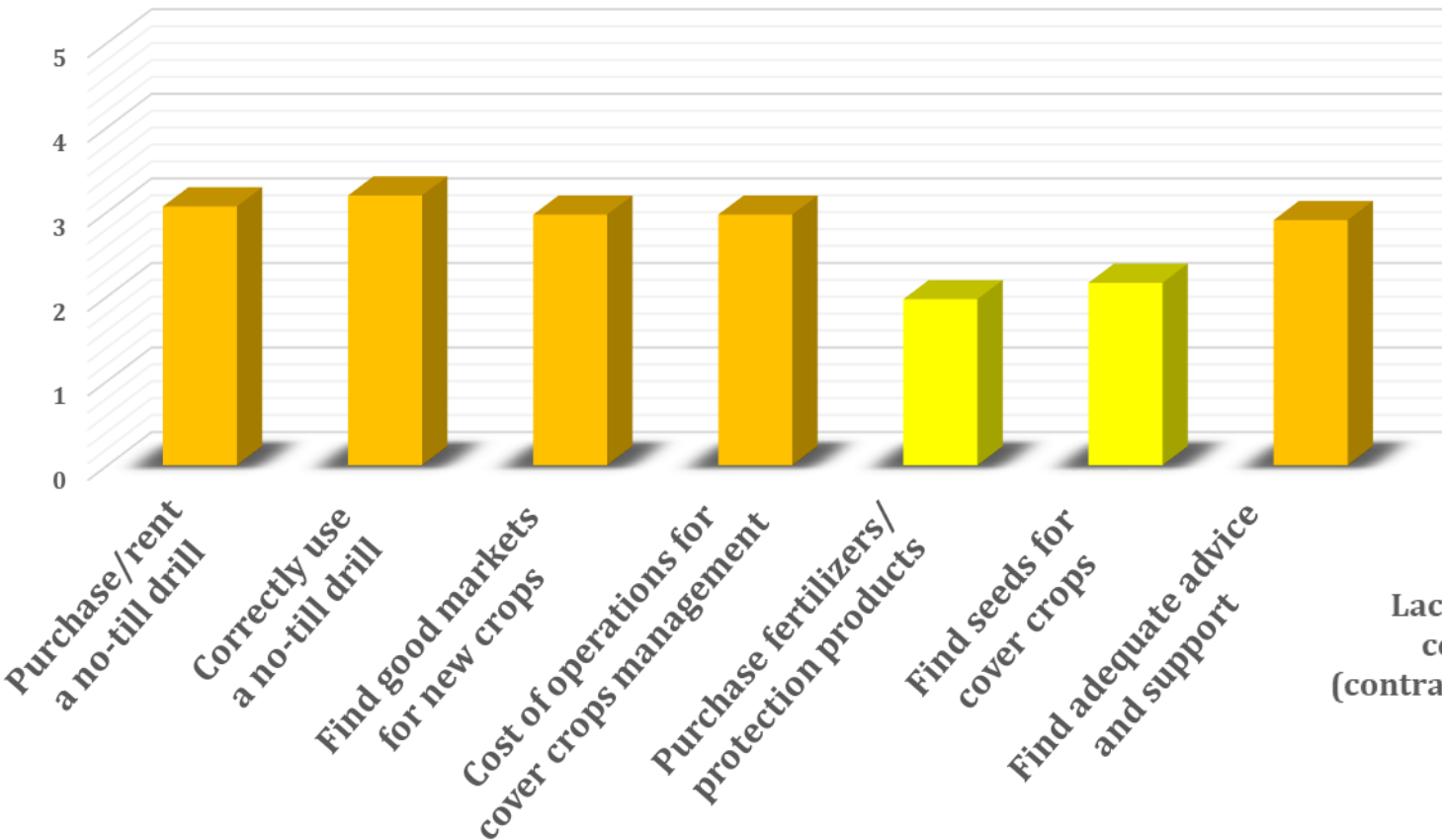
Could you please help us to better understand:

Q. 2.1 Could the use of irrigation water also be an economic problem when using cover crops?

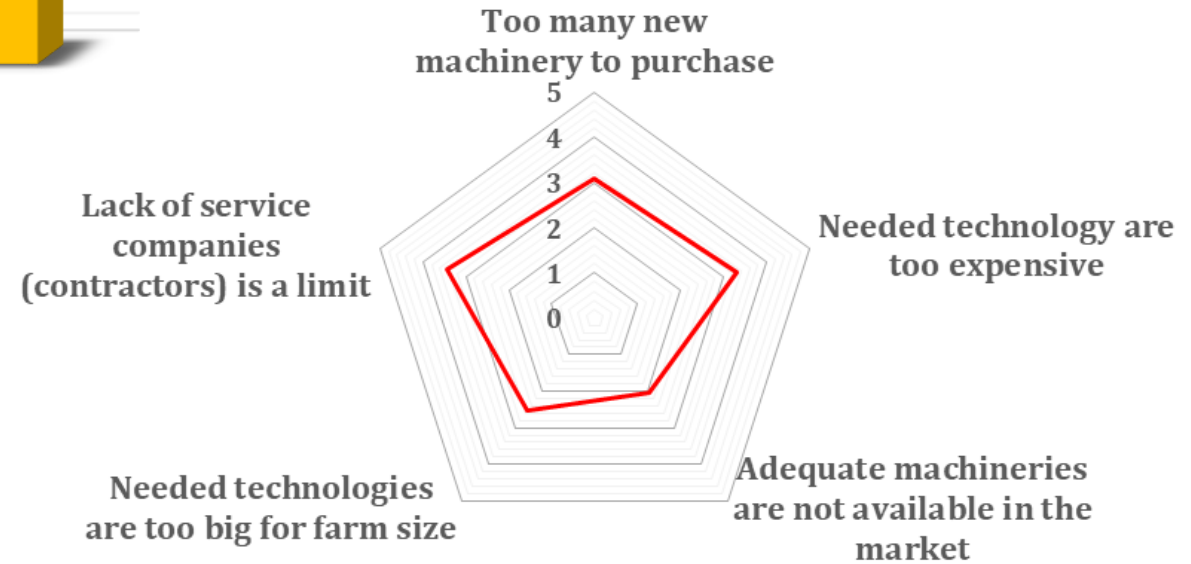
Q. 2.2 How do soil characteristics act as a barrier to CA adoption when referring to soil chemical fertility levels?

3. Economic, organizational and practical barriers to Conservation Agriculture adoption

from 1 to 5 increasing level of difficulty



Factors that make the adoption of new machinery/techniques difficult



3. Economic, organizational and practical barriers to Conservation Agriculture adoption

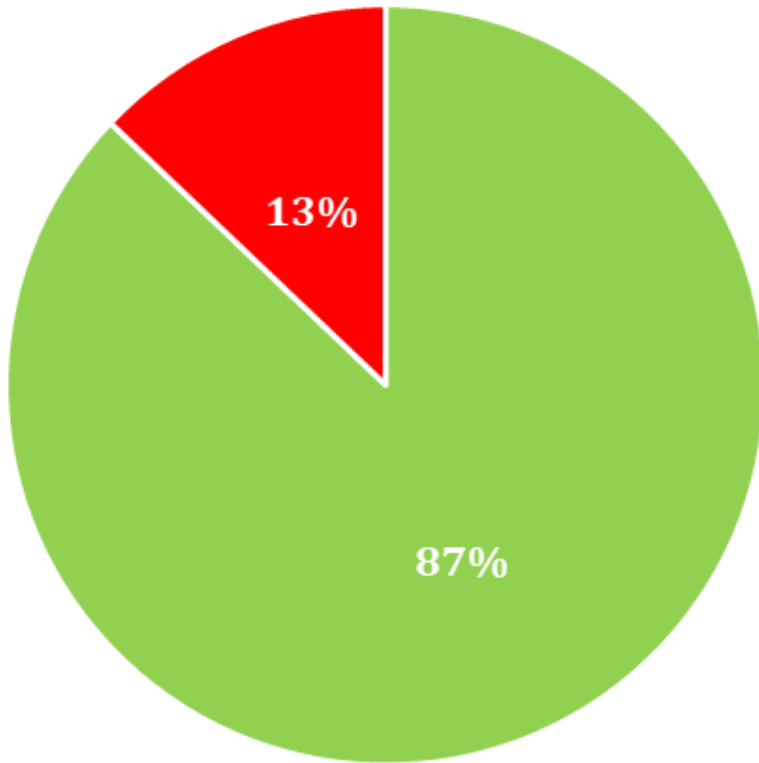
When consider the economic and organizational barriers, there is not a factors that is consider more affecting than others. Problems related to the adoption of a no-till drill and to the operations lied to the using of cover crops have received a similar attention.

Anyway, both concerns are related to the adoption of different and new machineries. Dimension of the problem of “adoption of new technologies” should be investigated among surveyed farmers.

Could you please help us to better understand:

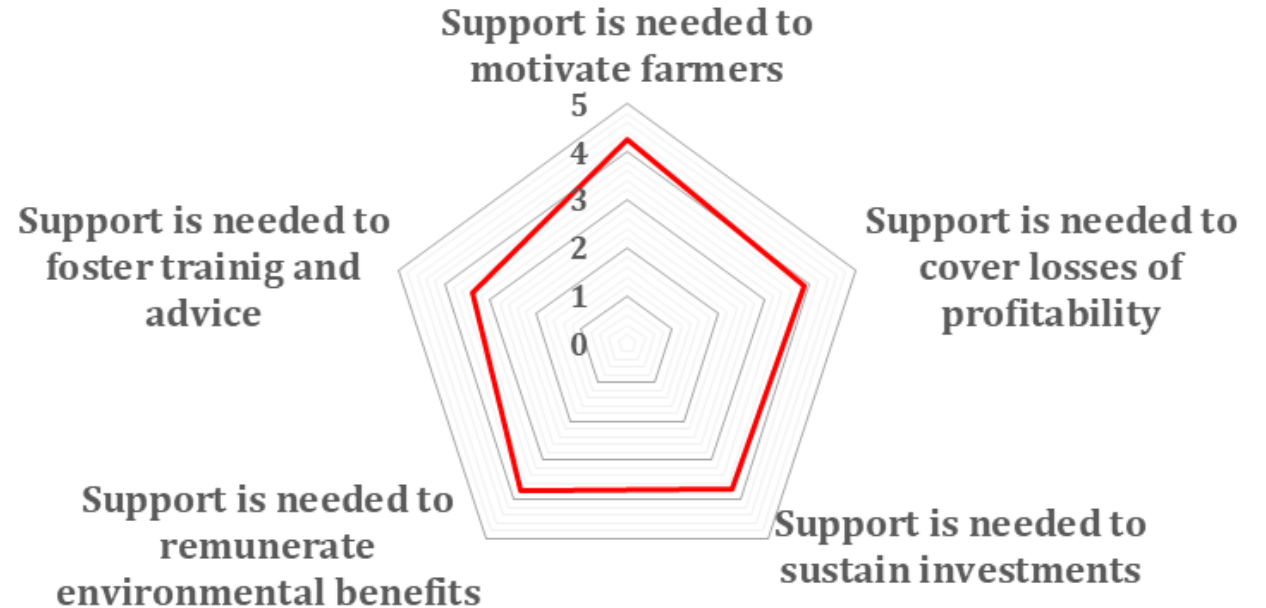
Q. 3.1 How many models of NT drillers do you know? Do you consider them too expensive in comparison with other machineries you have? Do you think an increase in contractors is enough to increase the level of CA adoption?

4. Policy barriers to Conservation Agriculture adoption



- Yes, I receive public support
- No, I don't receive public support

Factors that make public support essential to CA adoption



4. Policy barriers to Conservation Agriculture adoption

87% of the surveyed farmers receive public support for agricultural activity. Public support is considered very relevant to motivate farmers and to repay them for the losses of profitability due to CA adoption.

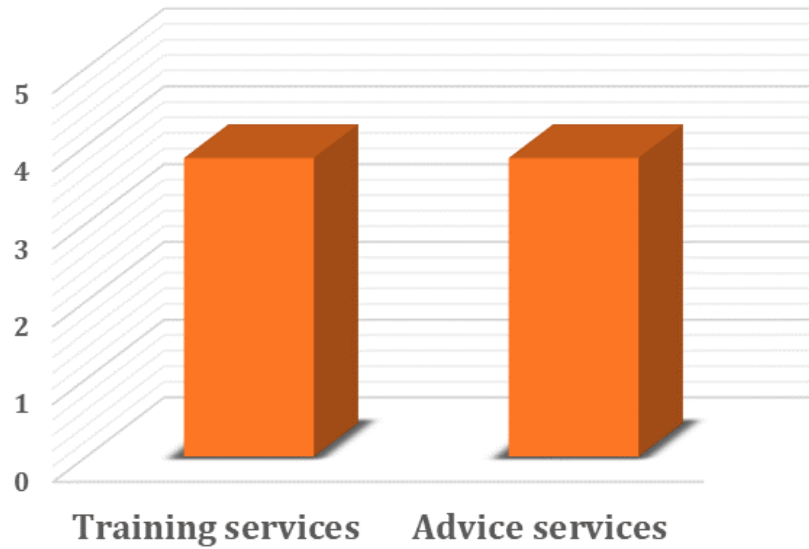
Could you please help us to better understand:

Q. 4.1 Do you think that an increase in public aid in support of training and advice services could increase the level of adoption of CA? Training and advices are considered important by you as you can see from the next section.

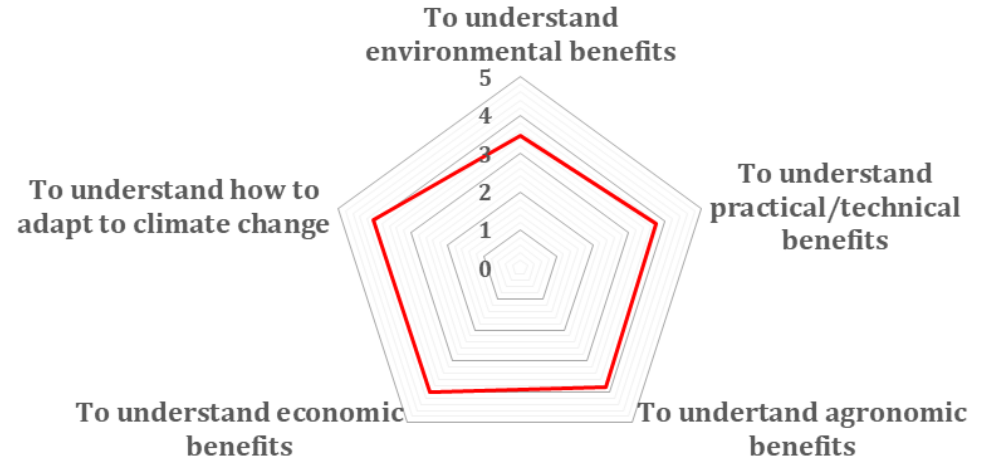
5. Socio-cultural barriers to Conservation

Agriculture adoption

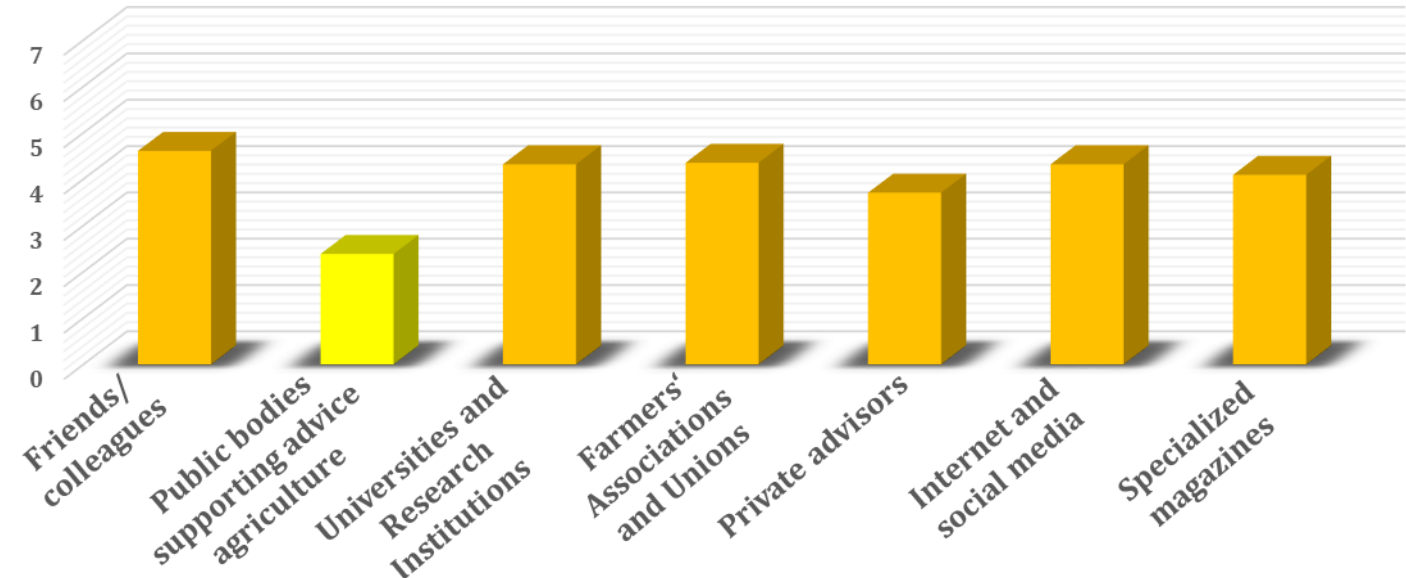
from 1 to 5 increasing level of relevance



Factors that make training and advice relevant



Current sources of information *(from 1 to 5 increasing level of relevance)*



5. Socio-cultural barriers to Conservation Agriculture adoption

The need for full understanding of the benefits for farmers more than for environment, seems to be the core of this section.

Training and advice services are assumed to be important for farmers. However, advice services from both public and private bodies are not the main current sources of information, which are principally given from friends and colleagues, but also from research institutions and farmers associations.

Could you please help us to better understand:

Q. 5.1 Do you think that a greater understanding of the environmental benefits deriving from CA can increase its level of adoption?

Considering the results of the survey and of the focus group, please help us to focus on the most urgent needs/solutions/proposals to enhance CA adoption in your Country:

- ***Agronomy: enhance the level of crop diversification in consideration of pedo-climatic conditions and the level of soil cover relating it to technical and mechanical issues in the further operations. What is needed?***
- ***Knowledge: do you think a dedicated training on principles of CA would help you to understand how to use it properly?***
- ***Information and cooperation: do you think that a network of technical advice services would be beneficial to share knowledge and efforts towards CA in your region?***

5.7 Spain summary of the results of the survey

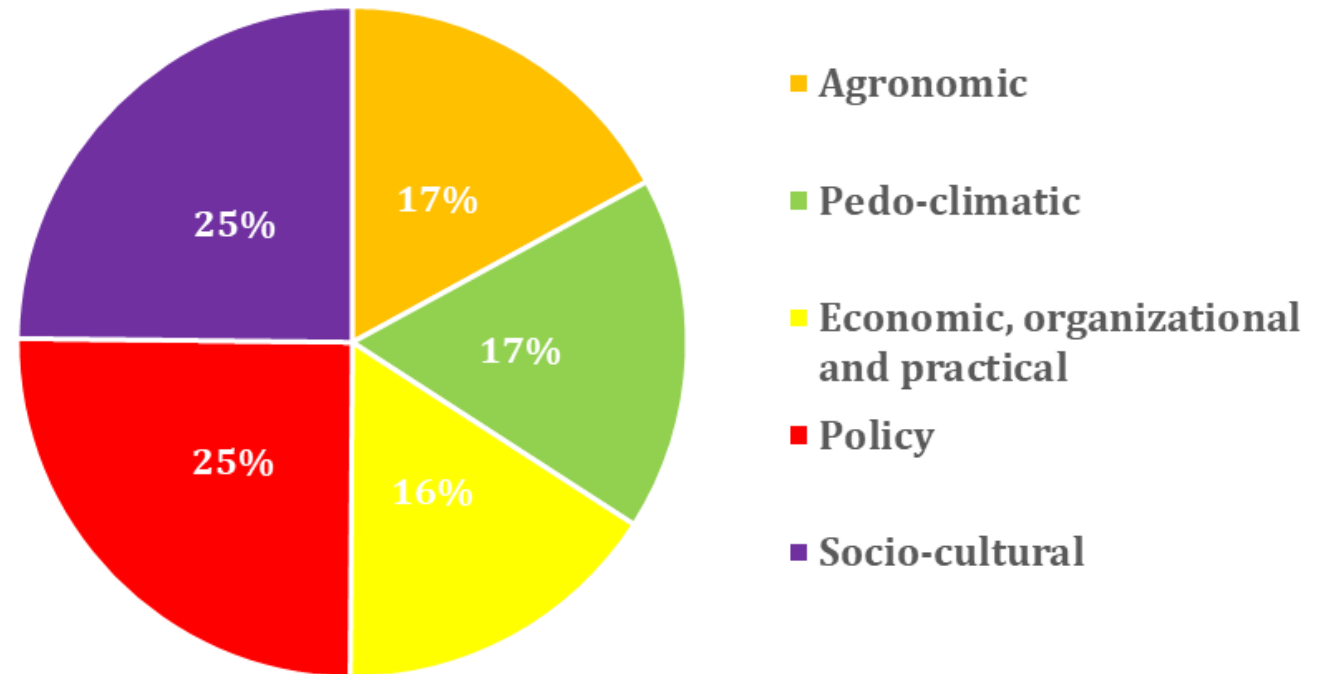
Barriers to Conservation Agriculture adoption

1. Agronomic
2. Pedo-climatic
3. Economic, organizational and practical
4. Policy
5. Socio-cultural

Preliminary information

- N° of respondents: 11
- N° of farmers: 5
- Adopters of CA: 5
- Average age of farmers: 51
- Average farm size: 165 ha
- Irrigation: 20%

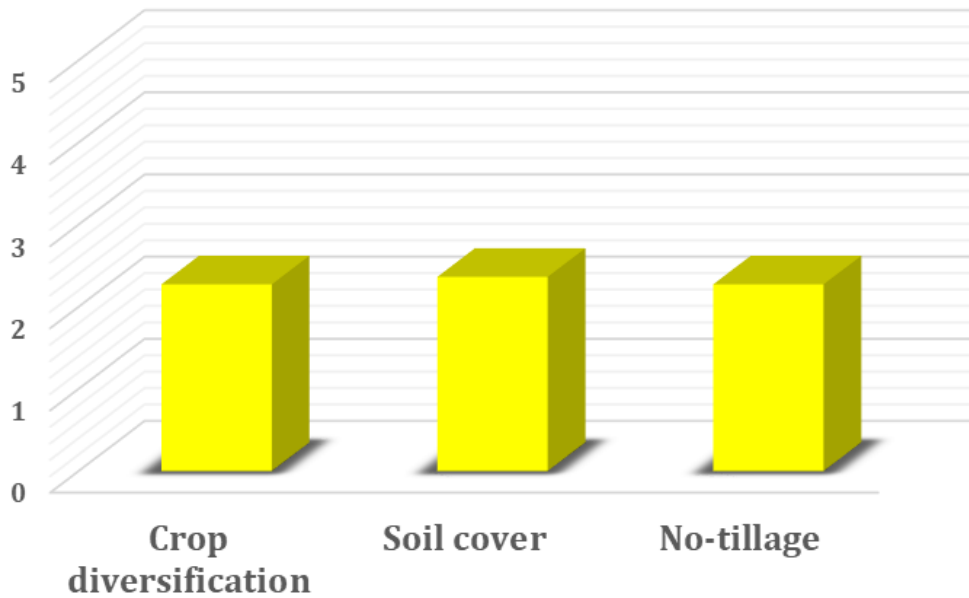
Importance of the different types of barriers
To Conservation Agriculture adoption



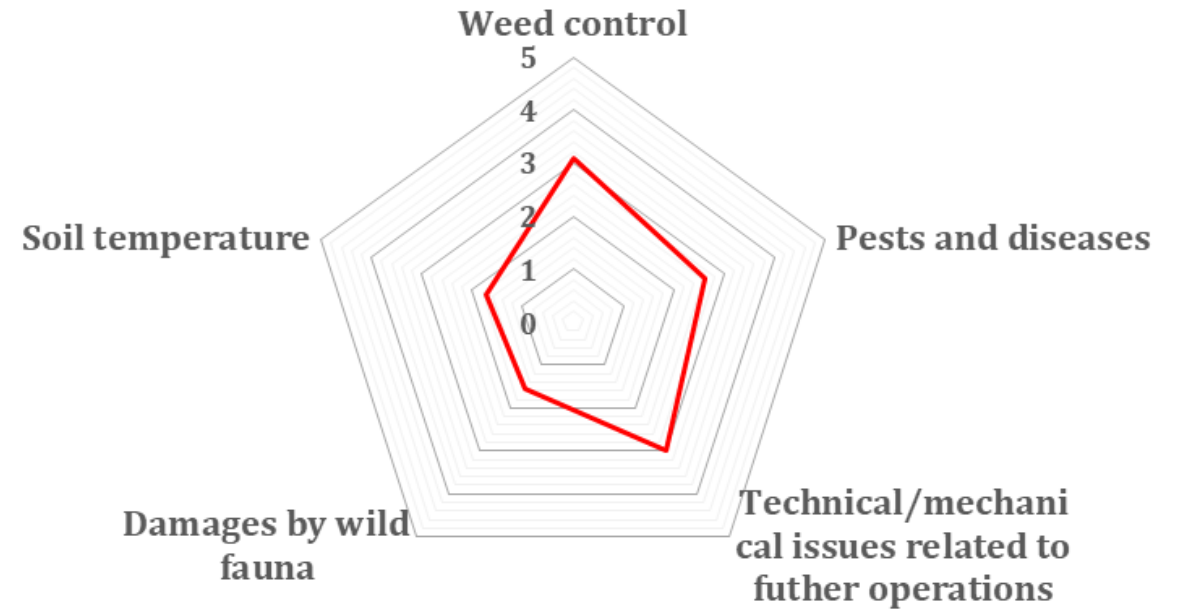
1. Agronomic barriers to Conservation

Agriculture adoption

from 1 to 5 increasing level of difficulty

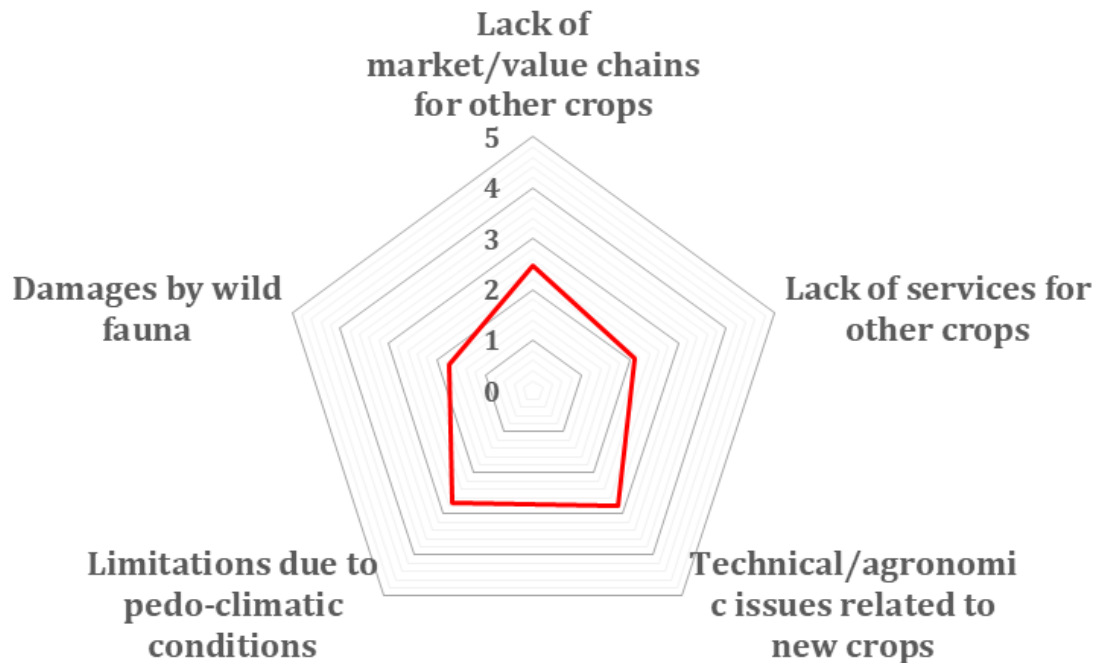


Factors that make soil cover difficult

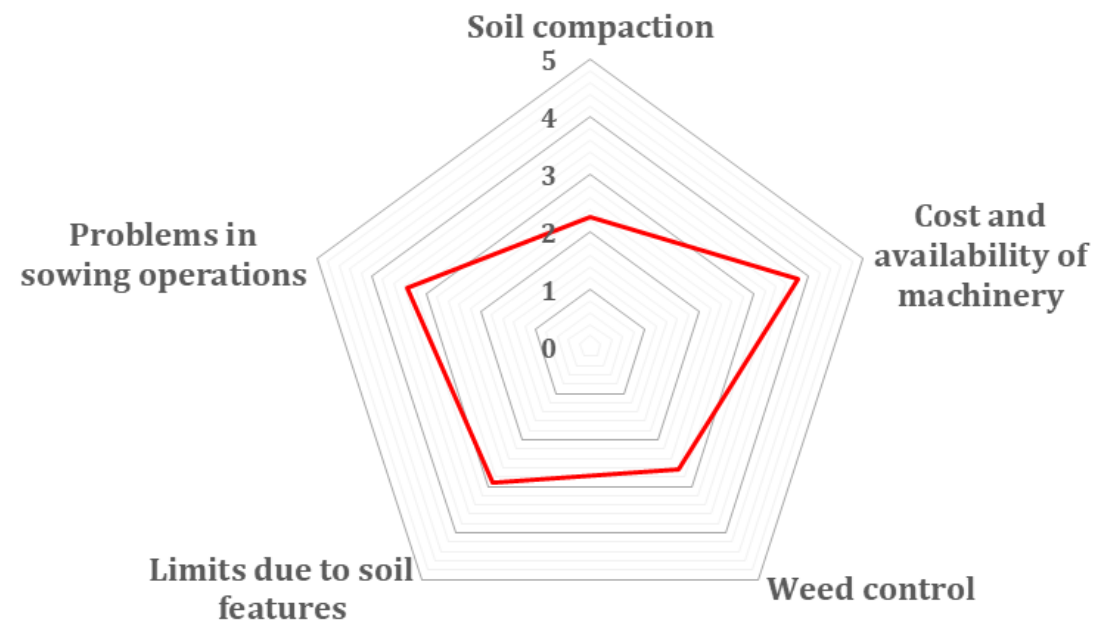


1. Agronomic barriers to Conservation Agriculture adoption

Factors that make crop diversification difficult



Factors that make no-tillage difficult



1. Agronomic barriers to Conservation Agriculture adoption

Considering the agronomic barriers to CA adoption, there hasn't been a specific barrier that has received a major attention related to others. Anyway, the soil cover technique seems to be equally hampered by problems related to weed control and technical approaches related to further operations.

Correlation between technical approach related to further operations regarding soil cover and needed technologies and machineries should be discussed in the interviews.

Could you please help us to better understand:

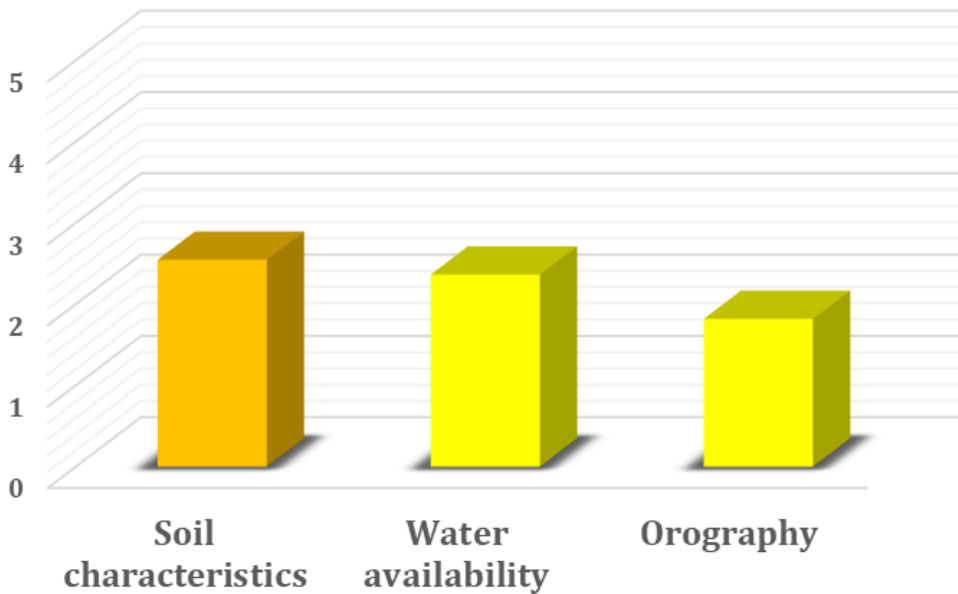
Q. 1.1 Why the application of no-tillage technique is difficult for you? Does it is related only to cost and availability of machineries?

Q. 1.2 Regarding crops diversification, are the severe climatic conditions the only pedo-climatic conditions hampering it?

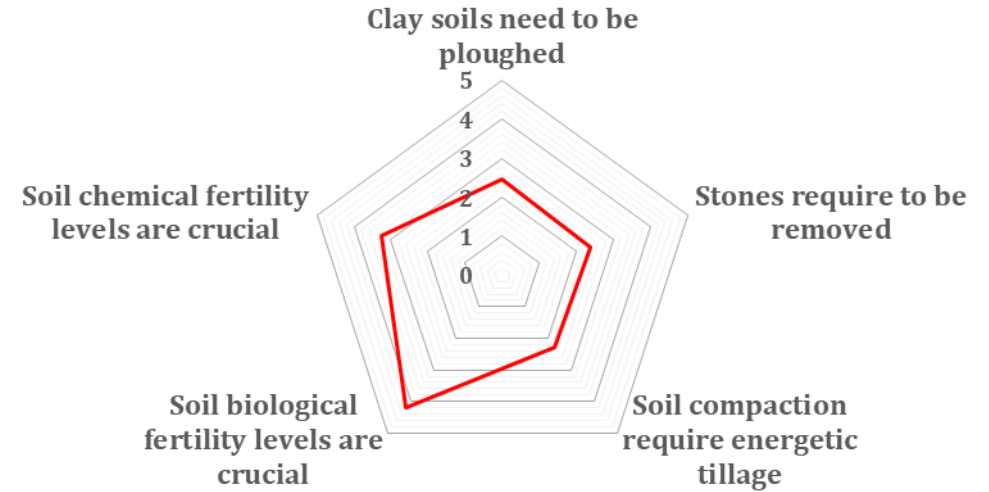
2. Pedo-climatic barriers to Conservation

Agriculture adoption

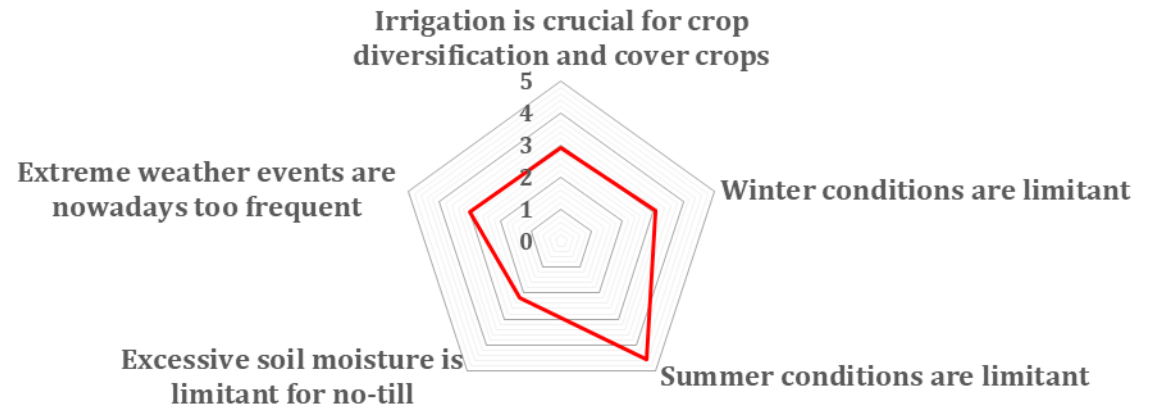
from 1 to 5 increasing level of influence



Factors that make soil characteristics influential



Factors that make water availability influential



2. Pedo-climatic barriers to Conservation Agriculture adoption

Among pedo-climatic conditions, the soil characteristics have received the major attention, although also the problems related to water availability were considered influential.

It is possible to suppose that the factor "water availability" in terms of irrigation makes crops diversification difficult, in particular if limiting summer conditions are taken into account.

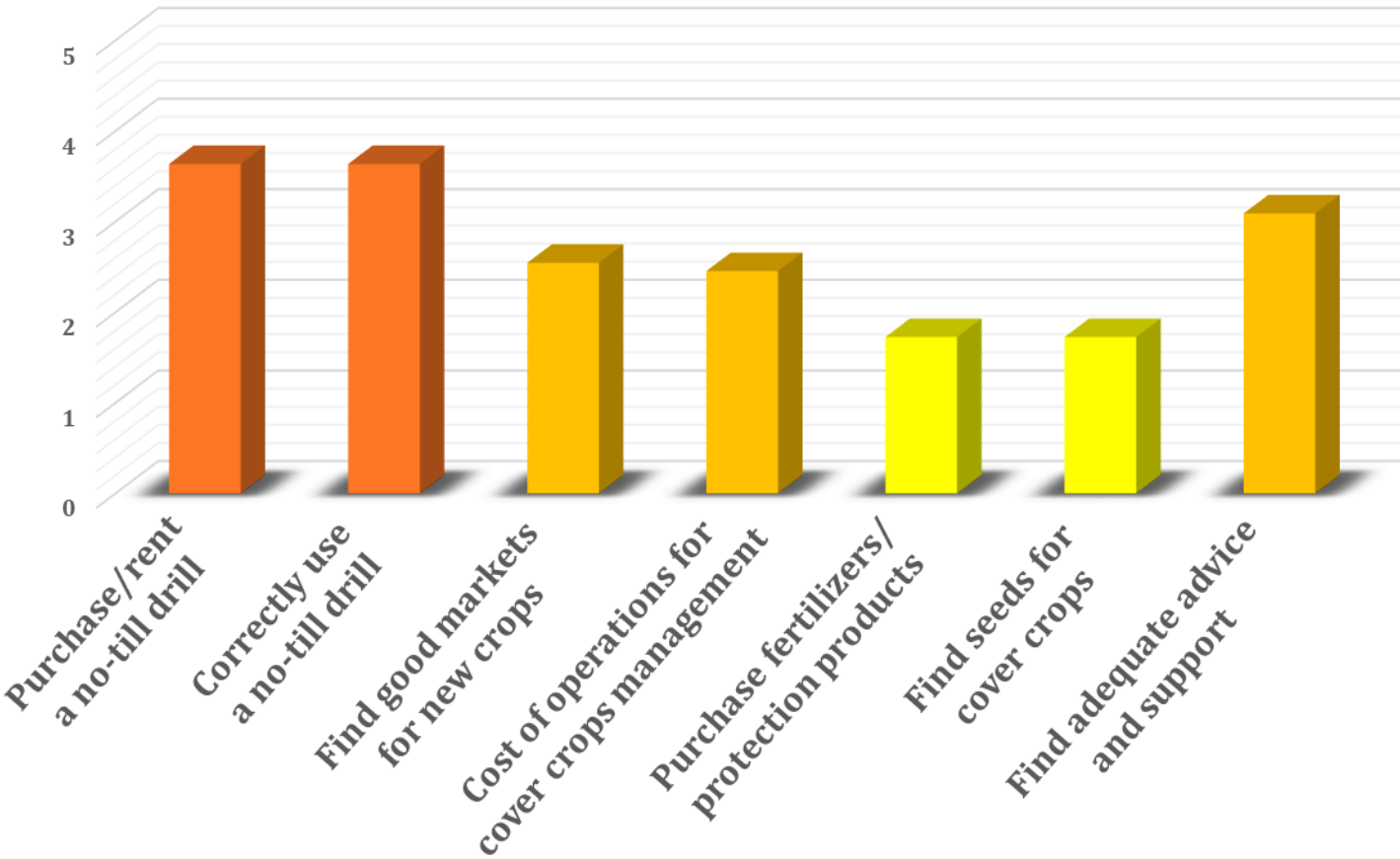
Could you please help us to better understand:

Q. 2.1 Why the soil characteristics is a problem for you when CA is adopted? In your opinion, how can soil biological fertility levels be crucial?

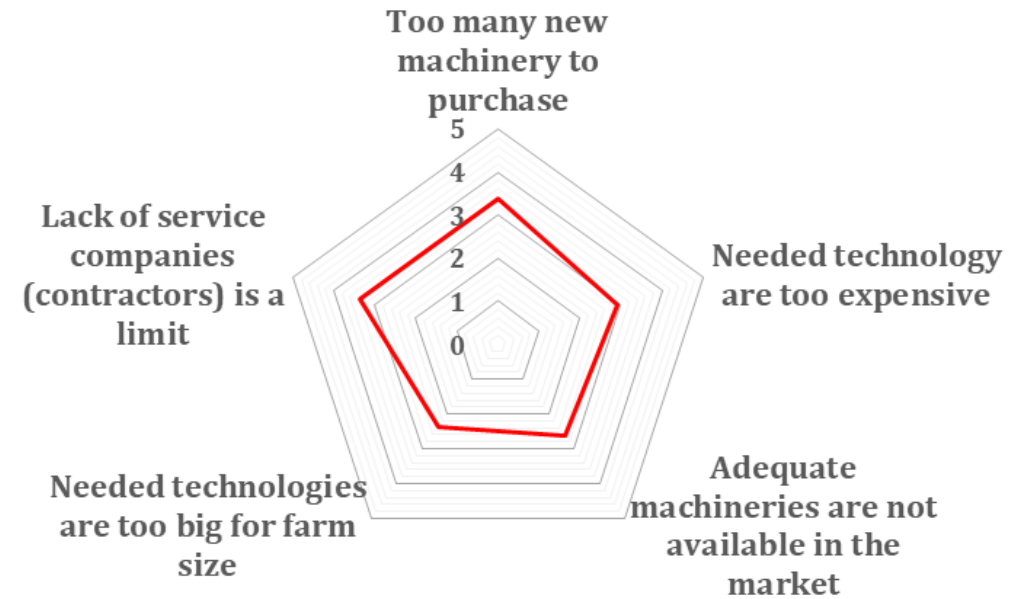
Q. 2.2 Could the use of irrigation water also be an economic problem when using cover crops?

3. Economic, organizational and practical barriers to Conservation Agriculture adoption

from 1 to 5 increasing level of difficulty



Factors that make the adoption of new machinery/techniques difficult



3. Economic, organizational and practical barriers to Conservation Agriculture adoption

When consider the economical and practical barriers to CA adoption, the purchase and the use of a no-till drill are considered a major concern.

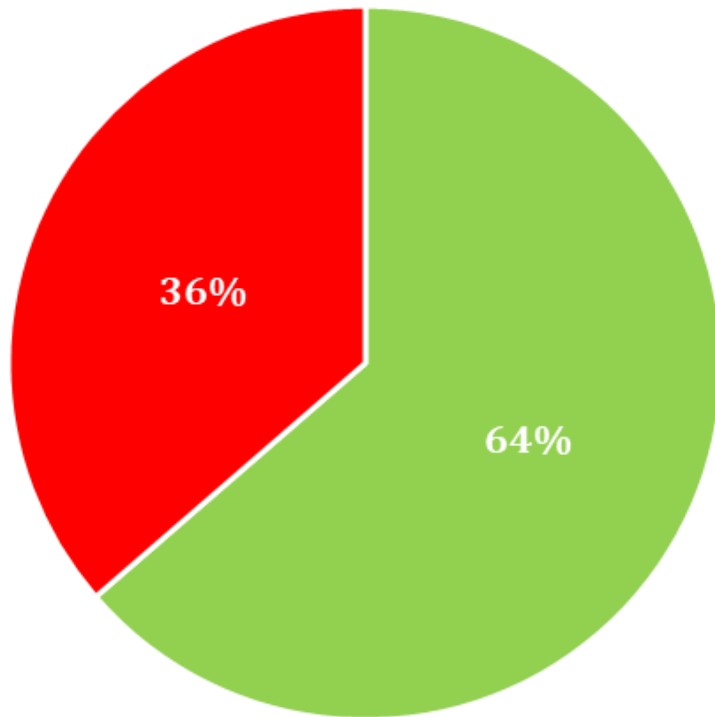
Also the finding of adequate advice and support was considered a barrier. This aspect should be investigated among surveyed farmers.

Could you please help us to better understand:

Q. 3.1 Why for you the adoption of CA need too many machineries to buy? How much more machineries should be use compared to conventional systems?

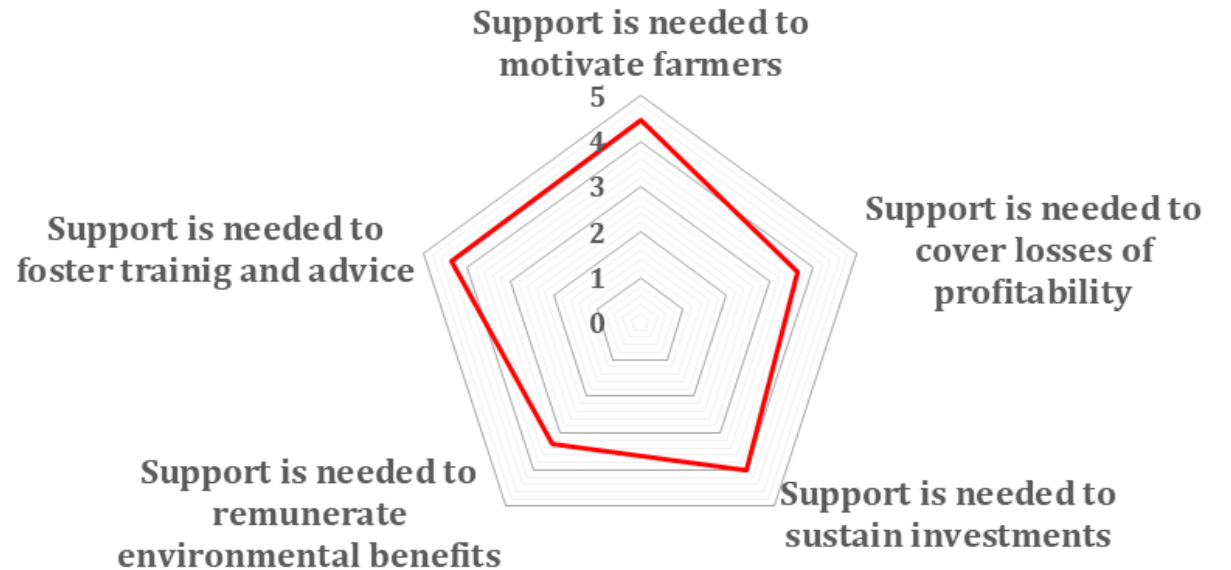
Q. 3.2 In your opinion, how can the lack of service companies (contractors) be solved?

4. Policy barriers to Conservation Agriculture adoption



- Yes, I receive public support
- No, I don't receive public support

Factors that make public support essential to CA adoption



4. Policy barriers to Conservation Agriculture adoption

As resulting from the survey, a great percentage of the surveyed (36%) does not receive any public support for agricultural activity, although public support is considered an essential contribution when CA is adopted.

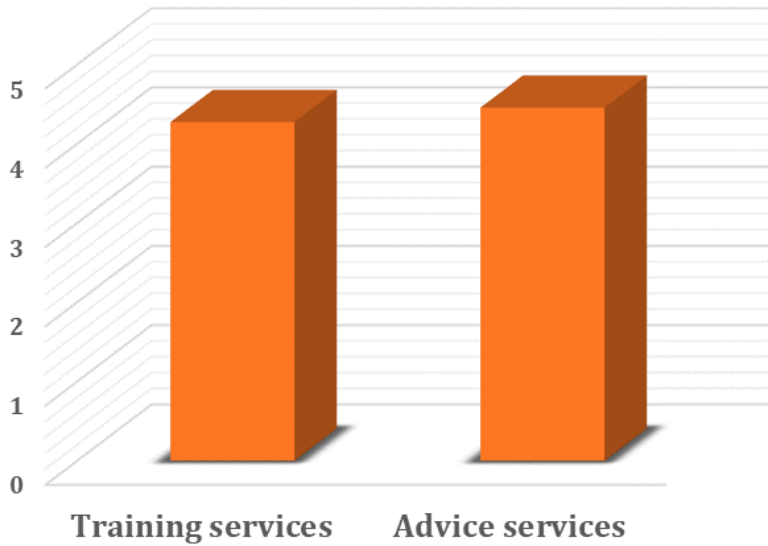
Could you please help us to better understand:

Q. 4.1 In your opinion, why remunerate environmental benefits is considered less essential than motivate farmers or cover the loss of profitability?

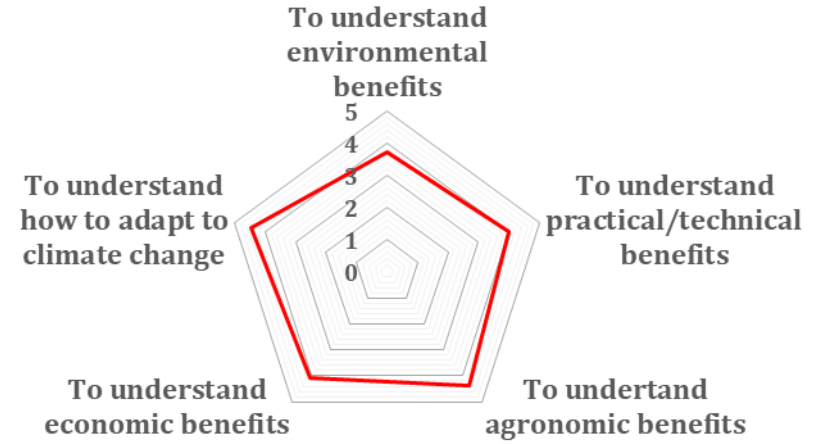
5. Socio-cultural barriers to Conservation

Agriculture adoption

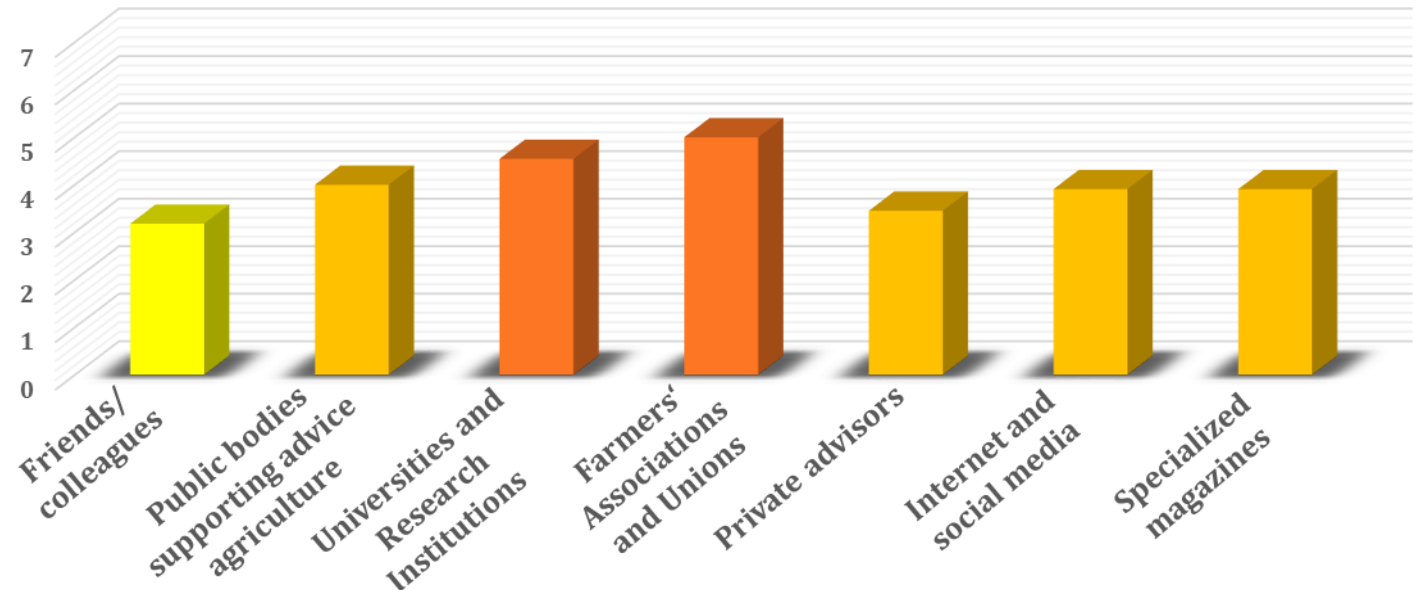
from 1 to 5 increasing level of relevance



Factors that make training and advice relevant



Current sources of information (from 1 to 7 increasing level of relevance)



5. Socio-cultural barriers to Conservation Agriculture adoption

The need for full understanding of the benefits for farmers such as for environment, in particular when the adaptation to climate change is considered, seems to be the core of this section.

Training and advice services are assumed to be important to shift to CA system. However, the main current sources of information are represented by farmers associations and unions, Universities and Research Institutions.

Could you please help us to better understand:

Q. 5.1 Do you think that a strengthening of training and advice services could increase the level of adoption of CA?

Considering the results of the survey and of the focus group, please help us to focus on the most urgent needs/solutions/proposals to enhance CA adoption in your Country:

- *Agronomy: enhance the level of soil cover in consideration of weed control. Enhance the level of water availability related to crops diversification. What is needed?*
- *Knowledge: do you think a dedicated training and advice services on environmental benefits from CA could increase its level of adoption?*
- *Information and cooperation: do you think that a network of farmers would be beneficial to share knowledge and efforts towards CA in your region, in particular when consider the using of a no-till drill?*

5.8 Tunisia summary of the results of the survey

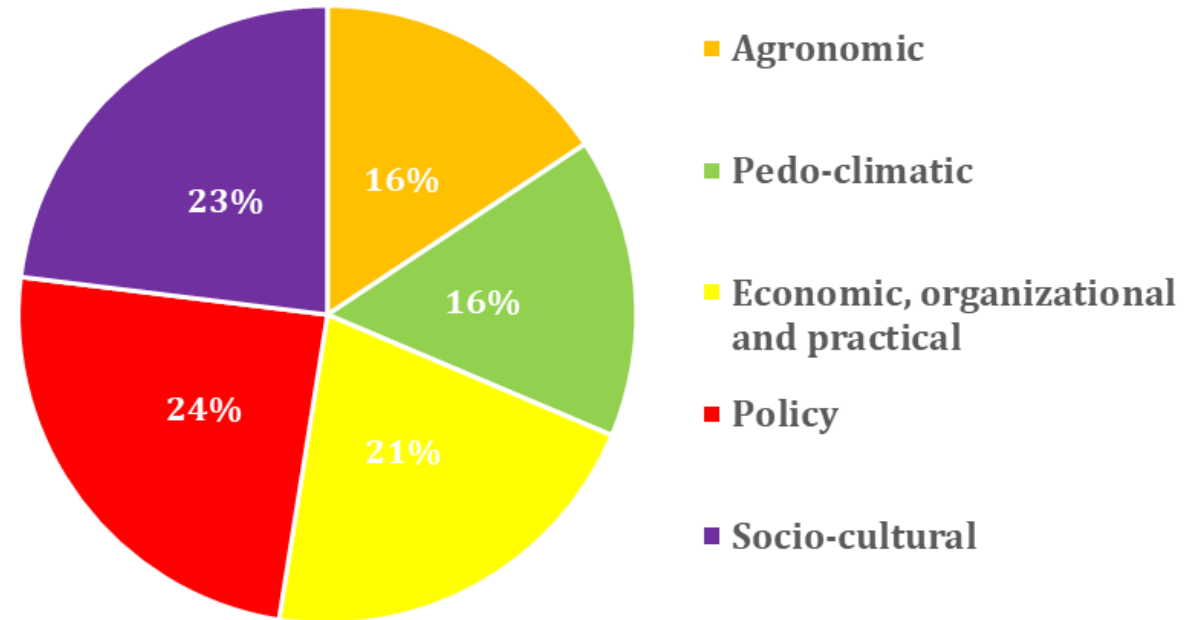
Barriers to Conservation Agriculture adoption

1. Agronomic
2. Pedo-climatic
3. Economic, organizational and practical
4. Policy
5. Socio-cultural

Preliminary information

- N° of farmers: 28
- Average age of farmers: 55
- Average farm size: 96 ha
- Irrigation: 1%

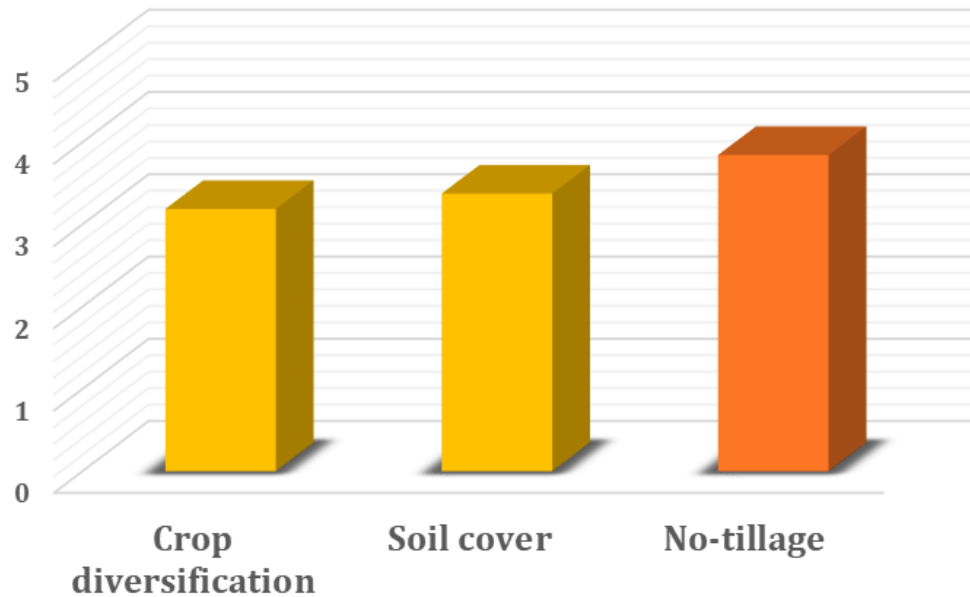
Importance of the different types of barriers To Conservation Agriculture adoption



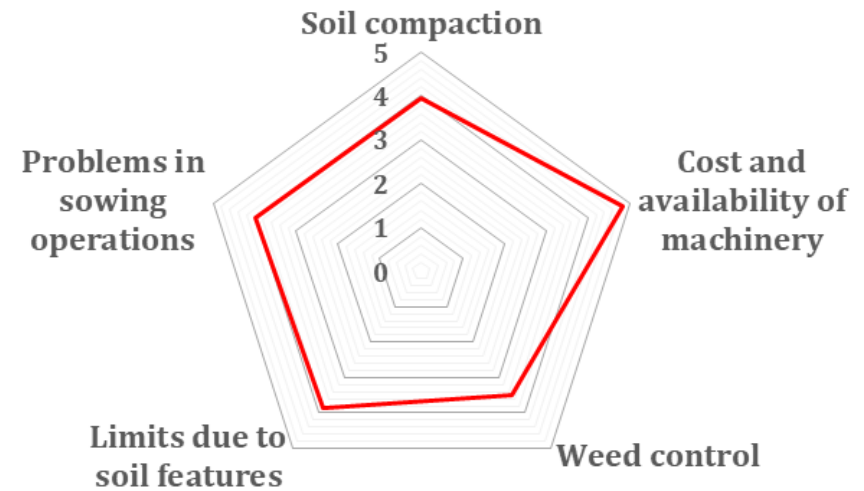
1. Agronomic barriers to Conservation

Agriculture adoption

from 1 to 5 increasing level of difficulty



Factors that make no-tillage difficult



1. Agronomic barriers to Conservation Agriculture adoption

The application of no-tillage technique appear to be major concerns for surveyed farmers, especially for issues related to cost and availability (see also section 3 economic).

Correlation between soil compaction and sowing operation should be investigated in the interviewees to understand their thoughts on no-tillage.

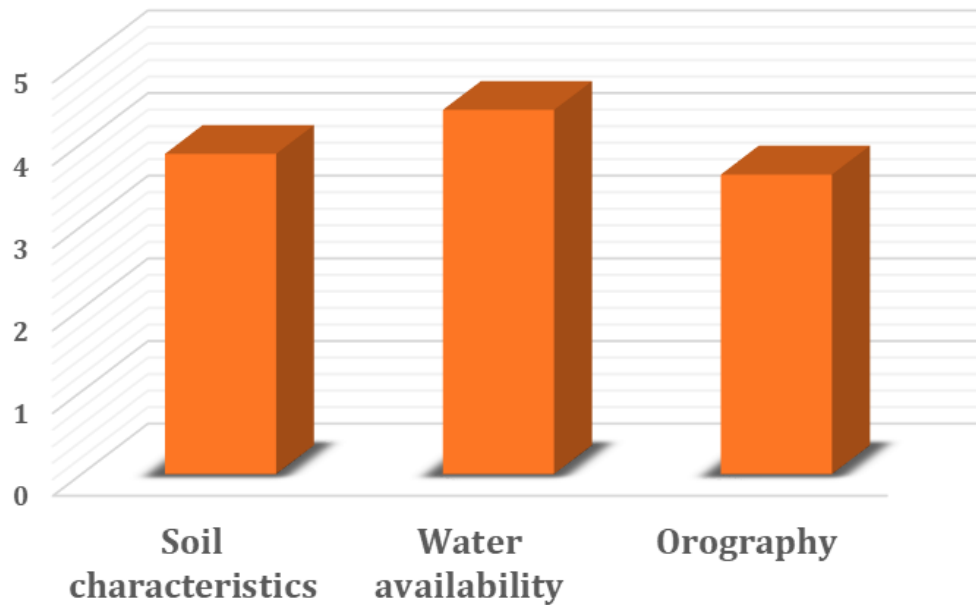
Could you please help us to better understand:

Q. 1.1 What are the features of the soil that limit the adoption of no-tillage technique?

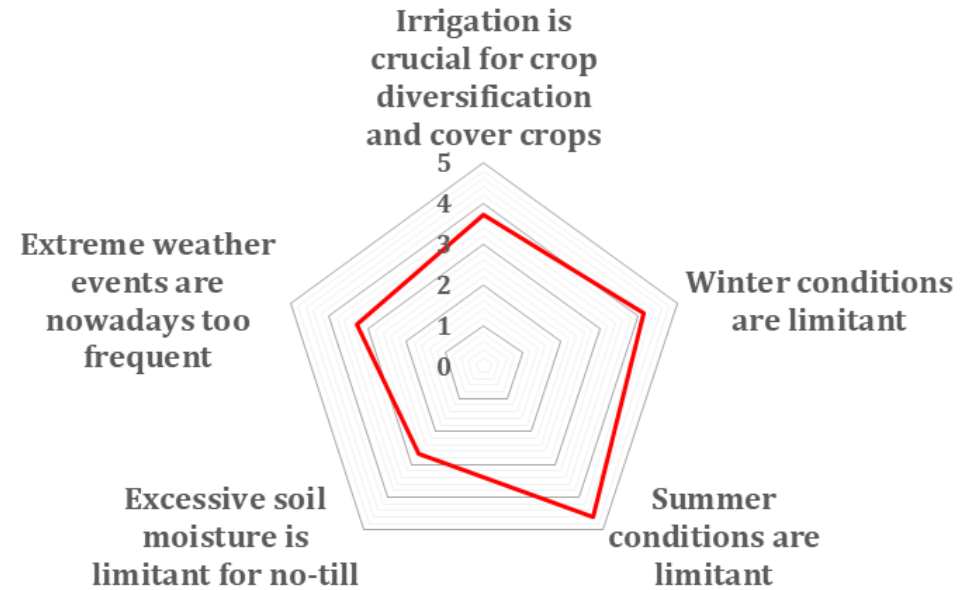
2. Pedo-climatic barriers to Conservation

Agriculture adoption

from 1 to 5 increasing level of influence



Factors that make water availability influential



2. Pedo-climatic barriers to Conservation Agriculture adoption

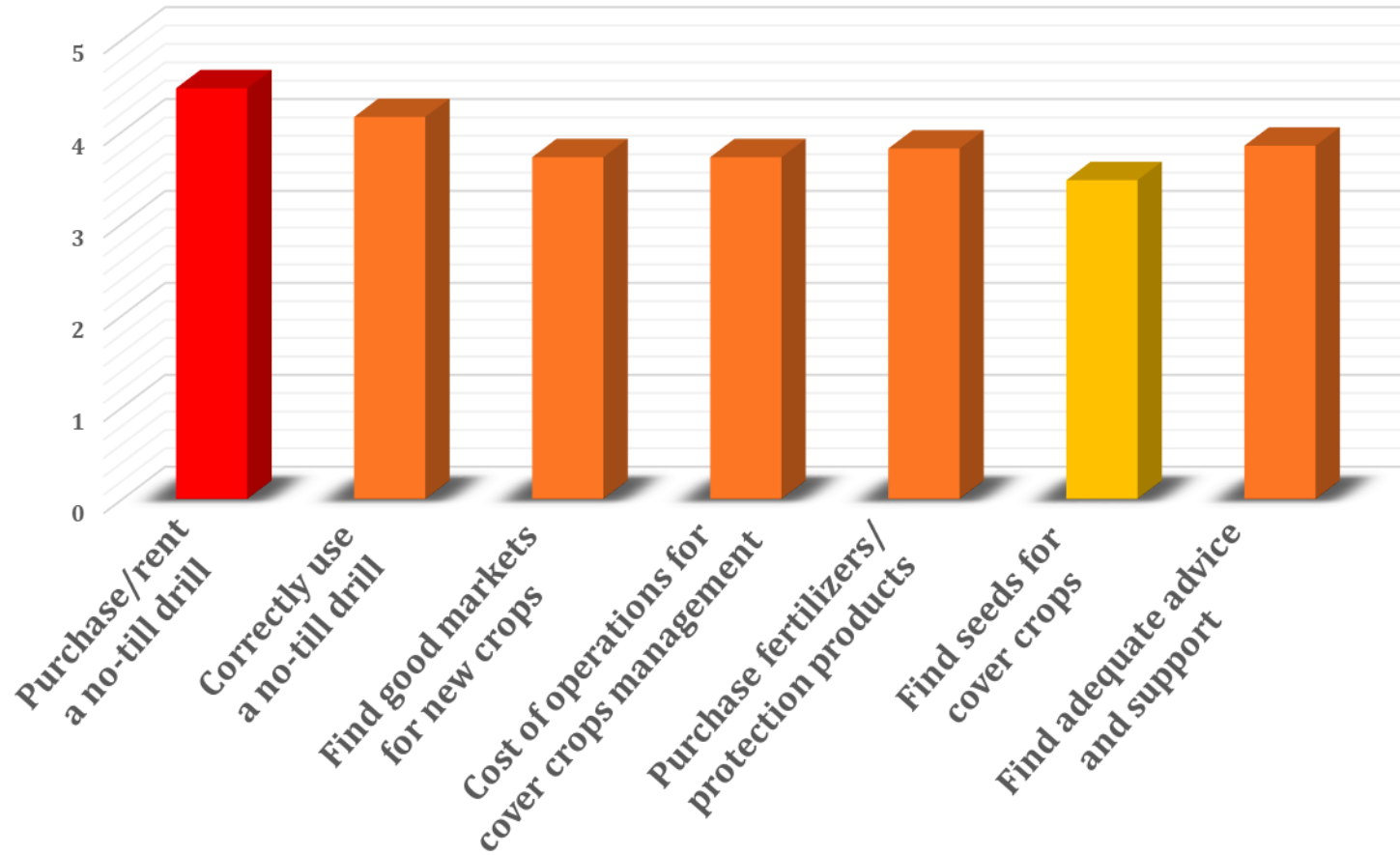
Water management appears to be the major concern in this section.

Correlation between crop diversification and threats for water scarcity or water excesses should be investigated.

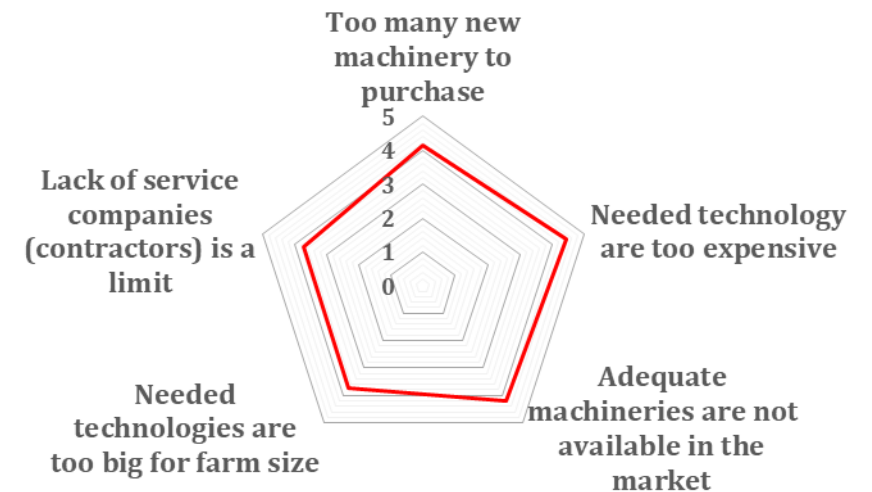
Could you please help us to better understand:

Q. 2.1 Why and how water excess or scarcity can be a problem for you?

3. Economic, organizational and practical barriers to Conservation Agriculture adoption *from 1 to 5 increasing level of difficulty*



Factors that make the adoption of new machinery/techniques difficult



3. Economic, organizational and practical barriers to Conservation Agriculture adoption

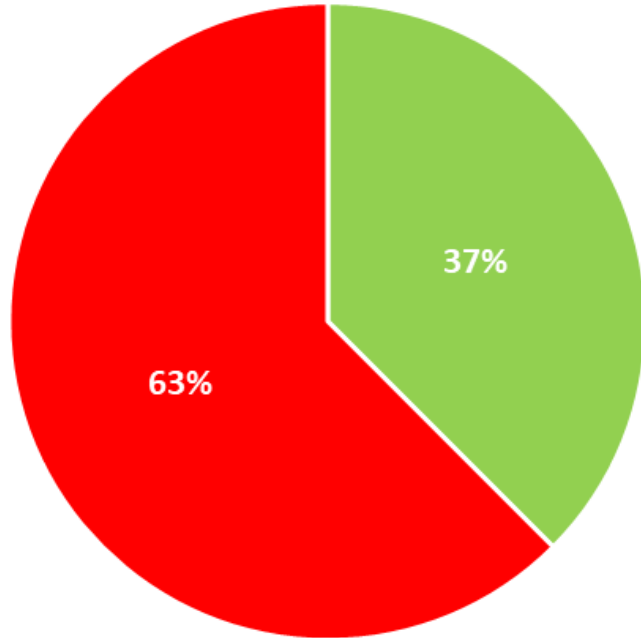
Adoption or availability of machineries and technologies seems to be the major concern in this section.

Machineries can be expensive: several farm experiences anyway show how NT and CA can be adopted as a any other farming solution, even step-by-step through small investments. Dimension of the problem of “adoption of new technologies” should be investigated among surveyed farmers.

Could you please help us to better understand:

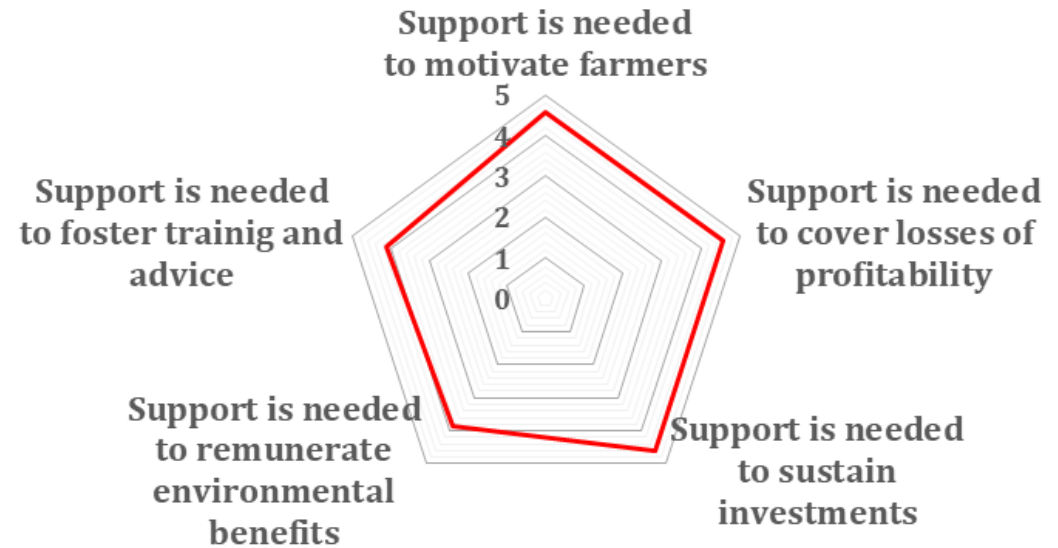
Q. 3.1 How many models of NT drillers do you know? Do you consider them too expensive in comparison with other machineries you have?

4. Policy barriers to CA



- Yes, I receive public support
- No, I don't receive public support

Factors that make public support essential to CA adoption



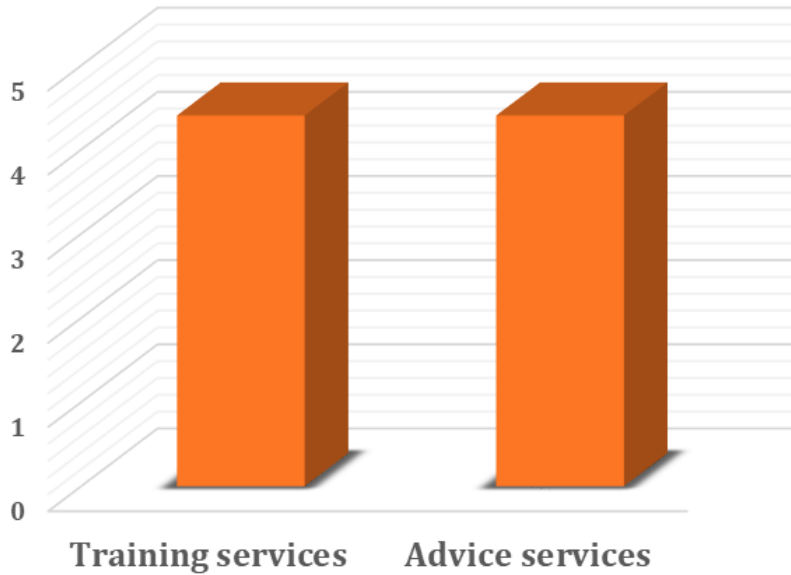
4. Policy barriers to Conservation Agriculture adoption

Majority of the interviewees (83%) stated that they not receive any public aid to support agricultural activity, considered an essential contribution when CA is adopted.

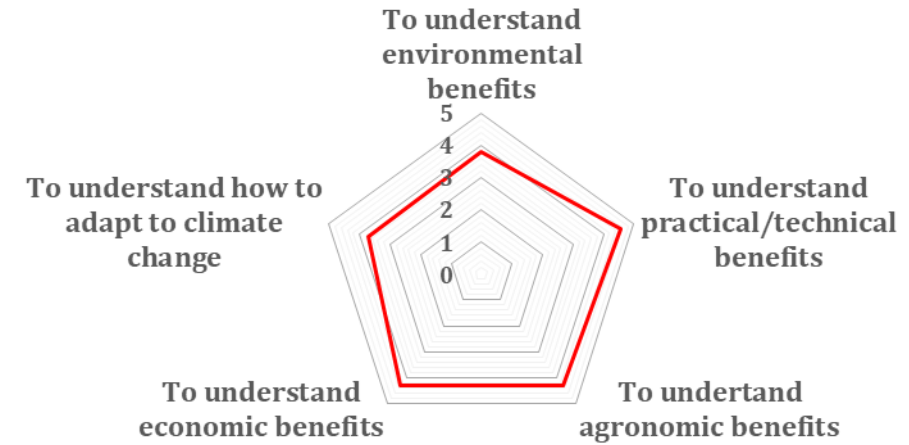
Could you please help us to better understand:

Q. 4.1 Can you receive support to purchase a new machinery? Do you know with is the support rate (%) you can get for such investments?

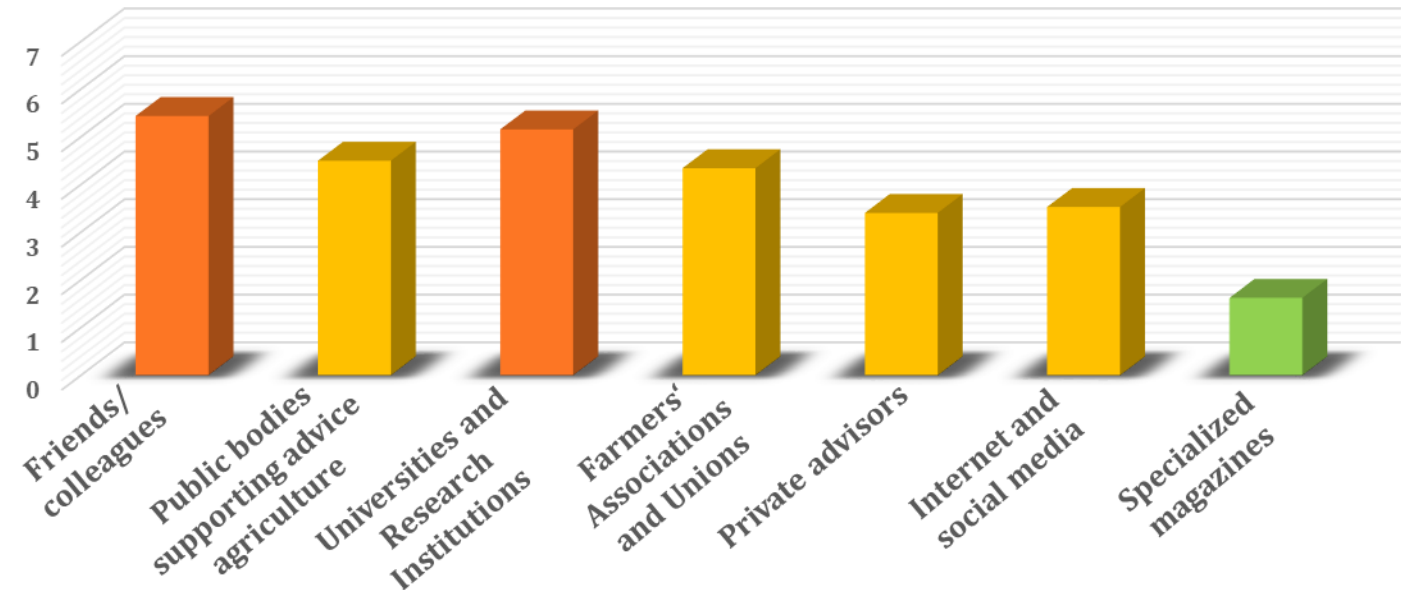
5. Socio-cultural barriers to CA *from 1 to 5 increasing level of relevance*



Factors that make training and advice relevant



Current sources of information *(from 1 to 7 increasing level of relevance)*



5. Socio-cultural barriers to Conservation Agriculture adoption

The need for full understanding of the benefits FOR FARMERS (more than for environment) seem to be the core of this section.

Farmers probably need to fully understand why and how CA can be beneficial for them. For this reason, maybe, barriers seem to exceed possible benefits and they can be reluctant to change. Friends/colleagues and research institutions are the main source of information for them.

Could you please help us to better understand:

Q. 5.1 Do you think that a strengthening of training and advice services could increase the level of adoption of CA?

Considering the results of the survey and of the focus group, please help us to focus on the most urgent needs/solutions/proposals to enhance CA adoption in your Country:

- *Agronomy: enhance the level of no-tillage in consideration of both soil characteristics and adoption of new machinery. What is needed?*
- *Knowledge: do you think a dedicated training and advice services on environmental and agronomic benefits from CA could increase its level of adoption?*
- *Information and cooperation: do you think that a network of farmers would be beneficial to share knowledge and efforts towards CA in your region, in particular when consider the no-tillage?*