

S1. Farmer survey and choice experiment:

“Socio-economic situation of farmers and techniques to reduce nutrient input and water use”

Filter questions:

a. Is cultivation of field crops one of the activities of this farm?

Yes (continue)	<input type="checkbox"/>	No (stop interview)	<input type="checkbox"/>
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b. Are you a person that is operating the farm on a day-to-day basis and that is involved in the financial and investment decision-making on the farm?

Yes (continue)	<input type="checkbox"/>	No (ask for farm manager)	<input type="checkbox"/>
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This survey is part of the European research project “Farming Tools for External Nutrient Inputs and Water Management” (shortly: FATIMA). The project addresses the socio-economic situation of farmers in your region as well as the farmers’ interest in applying techniques to reduce nutrient input and water use. Participation in this survey will take you no more than 30-45 minutes in total. There are no right or wrong answers: we are only interested in your opinion. Your responses are strictly confidential. The final results of the research are completely anonymous and can in no way be traced to individual responses.

Your opinion and time are greatly appreciated!

To be filled in by the interviewer:

Date	
Municipality	
Name interviewer	

Let me start with some questions about you and your farm.

1. What is your role on this farm?

Owner of farm	
Manager of farm/cooperative (employed)	
Other, namely:	

2. How many people work on this farm...

...full-time? [people]

...part-time? (working throughout the year)

..... [people]

...as seasonal workers? (working only for some weeks or months per year)

..... [people]

3. Which of the following categories describes this farm best?

Long-established family farm	
First generation family farm	
Part of a farming company or cooperative (if yes, skip question 4)	
Other, namely:	

4. Only if family farm: How likely is it that there will be a successor to the current farm owner within the family? [Please indicate the probability in percentages, 0% means that there will be no successor for sure, 100% means that there will be a successor for sure]

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
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0%= there will be
no successor

100%= there will be
a successor

5. What are the 5 most important field crops cultivated on this farm?

Crop 1	
Crop 2	
Crop 3	
Crop 4	
Crop 5	

6. Which of the following describes the production technique used on your farm best?

Conventional farming	
Organic farming	
Other, namely:	

7. How many hectares of land are cultivated on this farm? [ha]
[If no response go to question 8]

8. Which of the following describes the size of this farm best?

less than 5 ha	
between 5 and 25 ha	
between 26 and 50 ha	
between 50 and 100 ha	
between 100 and 500 ha	
between 501 and 1000 ha	
more than 1000 ha	
Don't know/ no answer	

9. How many hectares of the cultivated land are owned or leased?

1. Owned	ha	2. Leased	ha
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(Only if the farmer does not want to reveal the hectares)

What percentage of the cultivated land is owned or leased?

1. Owned	%	2. Leased	%
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10. How many hectares of this cultivated land are irrigated?
 [ha]

(Only if the farmer does not want to reveal the hectares)

What percentage of this cultivated land is irrigated?
 [%]

11. Apart from the local programs *[replace by your specific local program]* that minimize the impact on the environment, do you currently take any specific measures to protect the environment or wildlife on your land?

1. Yes	<input type="checkbox"/>	2. No	<input type="checkbox"/>
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12. How much of a challenge are the following issues for your farm?

[Please indicate for every issue the extent of the challenge on a 5-point-scale, from 1 (a minor challenge) to 5 (a major challenge)].

	Minor challenge <-> Major challenge				
	1	2	3	4	5
1. Soil degradation (erosion, salinization, loss of organic matter etc.)					
2. Nitrogen enrichment of groundwater					
3. Water availability					
4. Biotic stress (e.g. pests, diseases, parasites, etc.)					
5. Extreme weather events (e.g. droughts, floods, storms, etc.)					
6. Lack of access to credit					
7. Lack of access to land (i.e. no land available for lease or sale)					
8. Economic situation of the farm					
9. Market conditions (e.g. regulations, prices, etc.)					
10. Bureaucracy					
11. Other, namely:					

13. Have you m any innovations on you farm within the last 5 years in one of the following categories:

[Please indicate for every change yes or no: If 3 x no, skip question 14]

Farming innovations	Yes	No
Innovations in management and farm administration (e.g. IT or accounting systems)		
Innovations in farm practices (e.g. change from conventional to organic agriculture, introduction of no till farming)		
Adoption of more advanced technological equipment (e.g. machinery, GPS, sensors)		

14. If you made any innovations, can you please specify in few words (maximum 1 sentence) which innovation you made?

.....

15. How frequently do you use the following modes to learn about new farming methods and technologies? *[Please indicate for every mode the frequency on a 5-point-scale, from 1 (never) to 5 (very frequently)]*

	Never <-> Very frequently				
	1	2	3	4	5
1. Direct (face to face) interactions with people					
2. Reading farming press or media					
3. Attending organized events					
4. Searching information on websites					
5. Reading literature received in the mail					
6. Others, namely:					

16. Usually, how relevant is the information about new farming methods and technologies that you receive from the following sources? *[Please indicate for every source the relevancy on a 5-point-scale, from 1 (not at all relevant) to 5 (very relevant)]*

	Not at all relevant <-> Very relevant				
	1	2	3	4	5
1. Family members and friends					
2. Neighbouring farmers					
3. Government and local authorities					
4. Farmer's/water user's association					
5. Industry					
6. Independent farm advisors					

17. When it comes to new investments in farming technology, do you think that now is a good or bad time to do a new investment?

Good time	
Bad time	
Neither good nor bad time	<i>[skip question 18]</i>

18. Which of the following aspects influenced the opinion you just expressed? [multiple answers possible]

Market prices	
Market access	
General economic conditions in your region/country	
Interest rates	
Access to credit / public funds	
Subsidies	
Other, namely:	

Now I would like to speak about some new farm management technologies to reduce nutrient input and water use. Please have a look at the separate sheet that presents these new technologies.

(Show sheet with description of technologies)

19. Have you heard about these new farming techniques before?

Farming technique	Yes	No
Non-automated technologies (<i>that requires full data analysis by the farmer</i>)		
Partly automated technologies (<i>that requires some data analysis by the farmer</i>)		
Fully automated technologies (<i>that requires no data analysis by the farmer</i>)		

20. Have you ever thought about adopting one of these new farming techniques?

Farming technique	Yes	No
Non-automated technologies		
Partly automated technologies		
Fully automated technologies		

21. Have you adopted one of these new farming techniques?

1. Yes	<input type="checkbox"/>	2. No [go to question 23]	<input type="checkbox"/>
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22. If yes, can you specify which techniques you adopted and what percentages of your land is managed using these techniques?

Non-automated technologies %
Partly automated technologies %
Fully automated technologies %
Other, namely: %

23. Have other farmers that you know adopted one of these farming techniques?

1. Yes	<input type="checkbox"/>	2. No [go to choice experiment]	<input type="checkbox"/>
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24. If yes, how many farmers that you know have adopted one of these techniques?
..... *[number of farmers]*

Choice experiment

I would like to learn more about your preferences for innovative farming technologies. To this end, I will show you a sequence of cards. Each card shows 3 technologies to reduce the use of fertilizer that vary in six different characteristics: whether the technology requires the farmer to take own decisions about fertilizer application or whether the application is done automatically, the predicted change in yield, the predicted change in fertilizer use, the predicted change in groundwater quality, whether free personal advice by an independent farm adviser is included and what are the one-time investment costs of the technology. **[Show the overview card and explain the attributes and their levels]**

[After the respondent has carefully read the description of the attributes:]

I will first show you an example card. **[Show the respondent the example card and explain the process.]** Among the three alternatives, please select the technology that you would prefer to invest in. If none of the three alternatives appeals to you, you may also indicate that you would not choose any of the three technologies. While making your decision please take into account the economic situation of your farm. The option that you choose should be the one that you would also choose in reality, in which case you would have to bear the investment cost. If you have questions, just ask.

[After the respondent has made a decision on the example card:]

I will now show you 4 cards. Again each card shows 3 technologies. Please look carefully at each card and tell me which technology you would prefer to implement on your farm. You can also decide to not choose any of the presented technologies.

Note that the cards are not related to each other and should be considered independently. Evaluate every card therefore separately from the previous one. On every card you are asked to make a new choice. While making your decision please keep in mind the economic situation of your farm. You should be willing and able to invest the indicated amount of money on the technology of your choice.

I will now show you 4 decision situations one after the other.

Outcome choice experiment *[Please write down the CE number, which you can find on the choice card, and the choice of the farmer]*

CE number	Option A	Option B	Option C	None

There are some questions I would like to ask you regarding the hypothetical decision situations I just showed you.

[If someone never chose one of the available options ask question 25. Otherwise directly go to question 26]

25. What are the main reasons why you were not choosing one of the presented options? *[multiple answers possible]*

1. I do not have the funds to make such an investment.	
2. I feel that there are too many risks involved with these technologies.	
3. I do not expect the adoption of these technologies to be profitable on my farm.	
4. I will not do any investments on my farm in the near future, no matter what technology.	
5. I doubt about the predicted change in yields.	
6. I take other measures to improve groundwater quality.	
7. I do not trust new technologies in general.	
8. Other, please specify	

26. How important was each of the six attributes for your decisions in the four choice tasks?

[Please indicate for every attribute the importance of your decision on a 5-point-scale, from 1 (not at all important) to 5 (very important)].

	<i>Did not take into account</i>	<i>Not at all important</i>	<i>Rather unimportant</i>	<i>Rather important</i>	<i>Very important</i>
	0	1	2	3	4
1. Degree of automation of the technology					
2. Potential increase in yields					
3. Potential reduction in use of fertilizer					
4. Potential improvement of groundwater quality					
5. Personal advice included					
6. Cost of technology adoption					

27. Please indicate your agreement or disagreement for each of the following statements on a 5-point-scale, from 1 (*Do not agree*) to 5 (*completely agree*).

	<i>Do agree</i>	<i>not <-></i>	<i>Completely agree</i>		
	1	2	3	4	5
1. Farmers have the obligation to contribute to nature protection as much as possible.					
2. I am willing to take nature protection measures on my farm even if it is at the expense of revenues.					
3. The negative environmental effects of farming are often overestimated.					

We are almost done now. I would like to ask you some final questions about you and this farm. As in the rest of the survey, all your responses are strictly confidential and will not be used for any other purposes than the scientific analysis of the survey data.

28. What is your gender?

1. Male	<input type="checkbox"/>	2. Female	<input type="checkbox"/>
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29. What is your age group?

1. below 40 years	<input type="checkbox"/>
2. between 40 and 54 years	<input type="checkbox"/>
3. between 55 and 64 years	<input type="checkbox"/>
4. 65 years or above	<input type="checkbox"/>

30. On a scale between 1 to 10, how happy are you with your life in general th

[1 means “*not happy at all*” and 10 “*very happy*”]

31. What is the highest level of education that you have completed?

1. Primary / elementary school	<input type="checkbox"/>	4. College/ higher education	<input type="checkbox"/>
2. High school	<input type="checkbox"/>	5. University	<input type="checkbox"/>
3. Vocational school	<input type="checkbox"/>	6. Others, specify.....	<input type="checkbox"/>

32. Do you use a smartphone for business purposes?

1. Yes	<input type="checkbox"/>	2. No	<input type="checkbox"/>
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33. Do you use a computer for business purposes?

1. Yes	<input type="checkbox"/>	2. No [skip question 34]	<input type="checkbox"/>
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34. Does the computer have internet connection?

1. Yes	<input type="checkbox"/>	2. No	<input type="checkbox"/>
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35. What was the farms income in the last year? (Income is defined as total revenues *plus* subsidies *minus* total expenses before tax)

Less than €10.000,-	<input type="checkbox"/>
Between €10.001,- and €25.000	<input type="checkbox"/>
Between €25.001,- and €50.000	<input type="checkbox"/>
Between €50.001,- and €75.000	<input type="checkbox"/>
Between €75.001 and €100.000	<input type="checkbox"/>
More than €100.000,-	<input type="checkbox"/>
Don't know / no answer	<input type="checkbox"/>

36. What is the postal code of this farm?

..... [optional]

THIS IS THE END OF THE SURVEY - WE THANK YOU VERY MUCH FOR YOUR KIND COOPERATION IN THIS RESEARCH!

[Please hand out the FATIMA brochure to the farmer and mention that more information on the project can also be found on the Fatima webpage. Mention that the results of the survey will be published on the FATIMA webpage in fall 2017.]

Comments on data quality (e.g. protest behavior, inaccurate answers)	
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