

Deliverable 6.4 (additional): Demonstration of recommended agricultural management practices and SQAPP in the iSQAPER study sites

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Demonstration of recommended agricultural management practices and SQAPP in the iSQAPER study sites

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1. Introduction

While there are some broad categories of agricultural management practices that protect soil from the main threats to its quality (such as prevention of erosion or maintenance of organic matter), the choice of which specific practice is most suitable for any particular location depends on a number of factors including climate zone, soil type, farming system and information available about the practice. Reliable knowledge and data help land users assess their soils and make well-informed decisions about its use. When information on alternative land use practices is easily available, it supports farmers in improving their land management.

iSQAPER's 14 study sites span 8 different pedo-climatic zones and 32 potential farming systems in Europe and China. Stakeholders in the study sites (farmers, technical advisors, researchers and policy makers) have been central to the research programme. In consultation with these stakeholders, a number of promising sustainable agricultural management practices have been identified and evaluated in field trials. The stakeholders have also been involved in the designing the functionality of SQAPP (the soil quality assessment app) and in evaluating it during its development.

In the final phase of iSQAPER, demonstrations events were organised in all the study sites (with the exception of Zhifanggou Watershed) to: present the major research findings to stakeholders; demonstrate and discuss management practices of proven benefit to soil quality; and demonstrate and discuss the local soil quality assessment and additional recommended management practices provided by SQAPP.

In this report we present the results and feedback gathered from these demonstration events.

2. Context

2.1 Soil quality assessment and agricultural management practice evaluation

Based on WOCAT database (www.wocat.net), iSQAPER selected 18 promising agricultural management practices (AMPs) with potential to improve soil quality ([»Agricultural management practices in the iSQAPER study sites](#)). Examples of a number of these AMPs were identified in each of the 14 iSQAPER study sites that conformed to the following criteria:

- the promising management practice has been implemented for at least 3 years;
- at least 2 different soil types are represented; and
- at least in 2 different first level Farming Systems (arable, permanent, grazing) are represented.

For each AMP plot, nearby control plots were also identified where the practice has not changed.

A first field campaign was conducted in 2016 to evaluate the soil quality in each of the paired AMP-control plots, using visual soil assessment methods ([»Visual soil and plant quality assessment](#)). The results from this and all the other study sites were combined to determine which AMPs can be shown to have a proven positive effect on soil quality, see [»Assessing effect of management practices on soil quality - experimental results](#).

Those practices that were innovative for the study site were also described and added to the WOCAT database.

The soil assessment campaign was repeated in 2018. The aim was to investigate

- how measurements of soil quality parameters obtained from the visual assessments compared to those obtained from laboratory measurements;
- if different AMPs affected different soil quality parameters in different ways;
- and what impact the AMPs had on the principal soil threats.

For details of the assessment analysis methods and the results from this and all study sites see [»Impact of promising agricultural management practices](#).

2.2 SQAPP development, testing and evaluation

Ninety stakeholders from the European study sites took part in the evaluation of the beta version of SQAPP. Participants were asked a series of questions relating to their expectations of SQAPP, the relevance of the soil parameters included in SQAPP, the assessment of soil threats and the suitability of the app's recommendations to their local context. The feedback and comments were combined with those from the other study sites and used in the further development of SQAPP. For details of the responses from all study sites see [»Stakeholder feedback and SQAPP development](#).

2.3 Demonstration events

In late 2019 demonstration events were organised in all the iSQAPER study sites to present the major findings of iSQAPER to stakeholders, to demonstrate management practices of proven benefit to soil quality and to review again the information and recommendations provided by SQAPP.

3. Format of demonstration events

Each of the case study sites organised their demonstration events to suit the local conditions (duration, location, number of people invited, a stand-alone event or in combination with another event). However, all events contain at least the following elements:

- i. Discussion about the challenge of soil quality improvement and demonstration of selected AMP
- ii. Discussion about information available to help soil quality improvement and demonstration of SQAPP
- iii. Collection of feedback from the participants

3.1 Demonstration and discussion of AMP of local interest

Discussion about the challenge of soil quality improvement and the AMP demonstration was supported by generic handouts (Figure 1) and roll-up posters on the iSQAPER project and the description of the AMP of local interest. The aim of the discussion sessions was to gain information about what factors might motivate adoption of the AMP and what additional actions/support are needed to do so.



Figure 1. Handout leaflet explaining the identification of AMPs and development of SQAPP within the context of iSQAPER. The handout was translated into all local languages.

In many study sites, the events included visits to experimental stations or farms so that the participants could see how the recommended practices have been implemented in the field and with what results.

3.2 Demonstration and discussion of SQAPP v2

The second part of the events involved explanations about how to download and use SQAPP, what it can (and cannot) do, where the data sets come from, how the management practice recommendations SQAPP gives can be improved if local data is added. In each study site examples of local practice recommendations were evaluated by inviting the participants to vote on them (for example with stickers: green - I already use this AMP, light green – I am interested in this AMP, yellow – I might be interested in this AMP, orange – I am not interested in this AMP/this is irrelevant for this area.) (Figure 2). The purpose of this exercise was to generate interest in and discussion of the app and to enable the participants to provide informed feedback on it.

GRASSED WATERWAYS	CROP ROTATION	LIQUID MANURE OR SLURRY
<p>Class:</p> <p>Category: runoff conveyance</p> <p>Cost: medium</p> <p>Description: A grassed waterway is a natural or constructed ditch, usually broad and more shallow than the rest of the field, used to conduct surface water from or through cropland. It enhances water infiltration and traps eroded sediment, and also helps in preventing the development of gullies in the fields.</p>	<p>Class: vegetation management</p> <p>Category: crop rotation</p> <p>Cost: low</p> <p>Description: Crop rotation is the practice of growing a series of dissimilar or different types of crops in the same area in sequenced seasons so that the soil of a field is not used for only one set of nutrients. It reduces soil erosion, increases soil fertility and crop yield.</p>	<p>Class: nutrient management</p> <p>Category: organic amendments</p> <p>Cost: medium</p> <p>Description: Application of liquid manure is a common nutrient application strategy. It also forms a thin layer on the soil surface to protect soil from wind blowing. There is a potential risk of eutrophication, affecting water quality.</p>

Figure 2. Example methodology for inviting feedback on local management practice recommendations provided by SQAPP.

3.3 Collection of feedback using questionnaire

In the final part of each event, feedback was collected by questionnaire from as many participants as possible. This was done in a variety of ways including: asking the participants to complete the questionnaire themselves or using assistants to conduct informal interviews. All study sites were asked to aim for at least 10-15 completed questionnaires and to include both male and female respondents.

In formulating the questions, account was taken of the concept of a multi-level perspective which is currently prominent in the sustainable transition literature. Sustainable transitions include changes in technology, consumer practice, policies, cultural meaning, infrastructure and business models. From this perspective, everyone who comes to a demonstration event is involved in some way in the transition and therefore the questions need to be broad enough to include everyone's input.

1. In what role are you attending this event?
2. What is your gender?
3. What actions do you take (in your job or otherwise) to protect the soil?
4. What is your motivation for these actions?
5. What would enable you to do more?
6. What prevents you from doing more?
7. For the management practice of <demonstrated AMP> to be widely adopted in this area, what issues do you think would have to be addressed
8. What aspect of the SQAPP app interests you most?
9. Are there any improvements or changes you think should be made to SQAPP to make it a tool that you would use regularly?

4. Demonstration events: invitations, participants and AMPs demonstrated

4.1 Invitations

Most of the events were held as stand-alone iSQAPER events but the De Peel study site the event was combined with another on organic farming and the Ljubljana event was held in conjunction with a related EU project. Invitations were sent (mostly by email but also by post and telephone) to: universities, research institutes, farmers organisations, responsible ministries, farmers and other stakeholders who have previously been involved in iSQAPER workshops. The demonstration events were also publicised through farmer networks, regional and national online media, institutional websites and social media platforms (Figure 3).



Figure 3 Examples of event invitations (from the Cértima, Crete, SE Spain and Ljubljana study sites)

4.2 Participants

A total of 483 people participated in 11 events including representatives from all the target groups of stakeholders (farmers, advisors, suppliers, researchers, students, policy makers and administrators). The Qiyang and Gongzhuling sites held a joint event and no event was held in Zhifanggou Watershed.

Table 1: Dates of events, number and types of participants in each study site

Study site	Date of event	No. of participants	Type of participants (Q1)
De Peel, NL	4 July 2019	150	Mostly farmers, but also advisors and people who work for seeding/ fertilisation/ machinery companies
Certima, PT	29 October 2019	32	Regional agricultural and local authorities, technicians, enterprises, farmers, researchers, students, associations
SE Spain	20 September 2019	25	Researchers, farmers, administrators
Crete, GR	4 July 2019	18	Agronomists, researchers, students, farmer agronomist, scientific advisors
Ljubljana, SI	18 September 2019	44	Farmers, agricultural extension service, NGO, ministry, research, municipality, students
Zala, HU	6 June 2019	46	Farmers, Chamber of Agriculture staff, agriculture and environmental affairs staff
Braila, RO	30 September 2019	11	Farmers, land manager, advisor, researchers, students

Trzebieszów, PL	25 October 2019	28	Farmer, agricultural companies, student farmers, researchers
Tartu, EE	13 September 2019	72	Researchers, students, farmers, vocational training, research institute, media, agricultural supplier
Qiyang/Gongzhuling, CN	7-8 September 2019	33	Researchers, agro-extension technicians, farmers
Suining, CN	30 September 2019	24	Researchers, students, agro-technicians and farmers

4.3 AMP and SQAPP demonstrations

The identification of which AMPs to demonstrate in which study site was the result of a long process of discussion sharing experiences from local long term experiments, field trials of 2-3 AMPs in each study site, discussions with local farmers and stakeholders about reasonable implementation.

Table 2: AMPs demonstrated in each study site

Study site	AMP/s demonstrated	SQAPP
De Peel, NL	Non-inversion tillage	(not demonstrated)
Certima, PT	Incorporation of composted sewage sludge	Series of SQAPP tests made to show all information available on the app and to understand the feedback of potential users regarding soil quality.
SE Spain	Minimum tillage with permanent soil cover	Presentation about SQAPP demonstration and on mobile.
Crete, GR	No till or minimum till; Extensive sustainable grazing	Presentation about SQAPP followed by guided download and use and discussion of results.
Ljubljana	Organic farming/broad crop rotation/organic farming	Presented in a lecture room, then later in the field
Zala, HU	Application of farmyard manure	(not demonstrated)
Braila, RO	Water management in arable lands	Presentation followed by individual use and discussion of results.
Trzebieszów, PL	Application of spent mushroom substrate	Field demonstration using mobile phones
Tartu, EE	No-tillage	Participants downloaded the app in advance. Step- by step instructions on how to use the app and its functions.

Qiyang/Gongzhuling,
CN

Crop rotation and straw
return; Green manure

Presentation in lecture room with
instructions for downloading and using
SQAPP.

Suining

Straw mulching and no
tillage

How to use SQAPP, organic fertilizer
application, training event

Full details of the management practice, the soil threat it is designed to address, evidence of its effectiveness from field trials, the location in which it is implemented, its costs, establishment/maintenance activities and inputs and where conditions under which it can be used were given in handouts.



Figure 4 Examples (from the De Peel and SE Spain study sites) of the handouts describing the AMP of local interest. All handouts were translated into local languages.

For the full collection of leaflets see <https://isqaper-is.eu/key-messages/good-practice-leaflets>.





Figure 5. Participants at the demonstration events in Cértima, Qiyang and Trzebieszów study sites

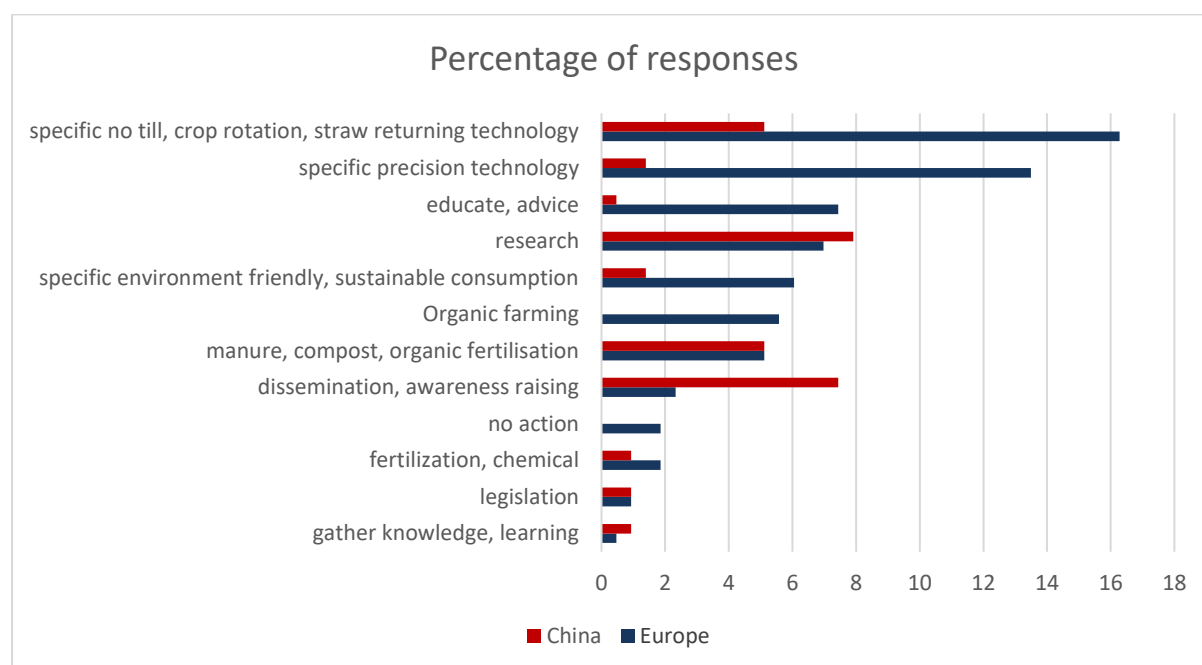
5. Questionnaire results

Here we give an overview of the responses to the questionnaires. The full data will be used to further refine SQAPP, help tailor the promotion of SQAPP according to the particular interests of the different stakeholder groups and more broadly analyse the multi-level perspectives expressed within the context of sustainable transitions. However the collated summaries of the questionnaire responses for many of the study sites are given in Annex 1 and the full questionnaire results in Annex 2.

For each question we have grouped the responses into about 10 types but, for this report, have not differentiated between responses from different actor types (farmers, advisors, researchers, students) nor between genders. Gender disaggregated responses to the questions are given in the [»iSQAPER 4th and final gender equality and diversity report](#).

Most people gave only one response to each question but where there were two, both were counted. The responses have been separately analysed for Europe and China and ranked in decreasing order of frequency of European responses. Examples of comments from the three most frequent response types are given.

Question 3: What actions do you take (in your job or otherwise) to protect the soil?



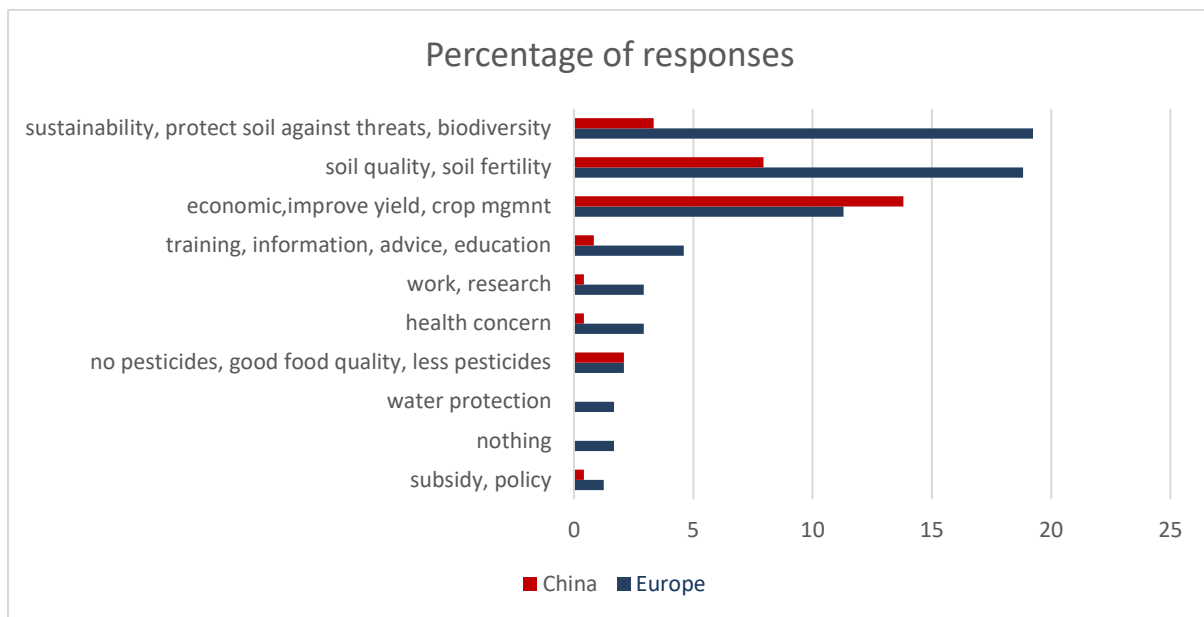
The three most frequent response types from the Europeans were

1. Specific no till, crop rotation, straw returning technology:
"I use mineral fertilizers rationally, I use composts to improve the content of organic matter, no-tillage cultivation and crop rotation." (male mushroom farmer, Poland)
2. Specific precision technology:
"Optimal fertilization, control of water suitability for irrigation." (female agronomist, Crete)
3. Educate, advice:
"I advise about SLMs and we promote waste incorporation, crop rotation, green manure with autumn growing crops (leguminous crops). I buy as well organic products." (male technical consultant, Portuguese Agriculture Ministry)

The three most frequent response types from the Chinese were

1. Research
"Soil testing and fertilization project and control paddy field acidification." (male government official, Qiyang/Gongzhuling).
2. Dissemination, awareness raising
"Study soil nutrient changes and provide a theoretical basis for fertilizer reduction." (female researcher, Qiyang/Gongzhuling)
3. Specific no till, crop rotation, straw returning technology;
"I use protective tillage and straw returning." (male farmer, Suining)

Question 4: What is your motivation for these actions?



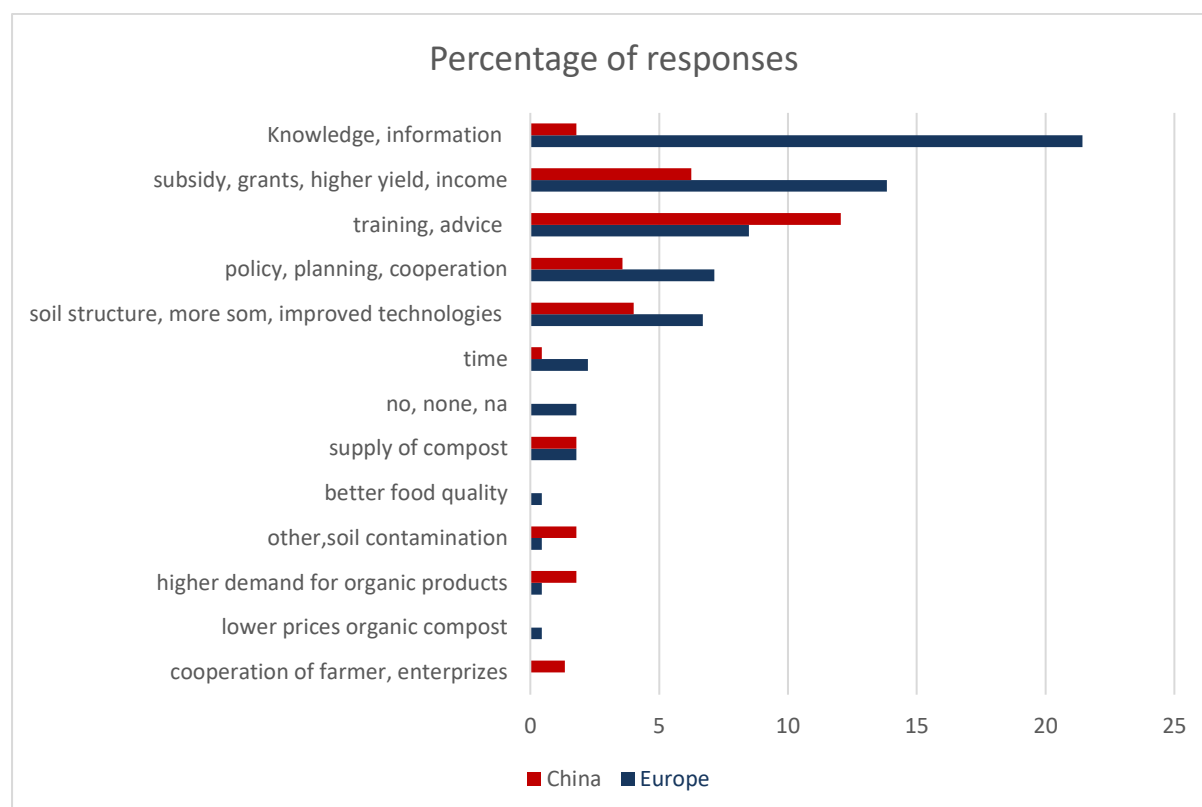
The three most frequent response types from the Europeans were

1. Sustainability, protect soil against threats, biodiversity
"To be more ecologically sound and economically efficient." (male farmer, Slovenia)
2. Soil quality, soil fertility
"To increase the content of humus in the soil." (female teacher, Poland)
3. Economic, improve yield, crop management
"Low costs and/or high levels of crop yields." (male farmer, Romania)

The three most frequent response types from the Chinese were the same, but in the reverse order

1. Economic, improve yield, crop management
"Improve soil fertility and increase production." (male farmer, Suining)
2. Soil quality, soil fertility
"Soil fertility to ensure sustainable use of soil." (male researcher, Qiyang/Gongzhuling)
3. Sustainability, protect soil against threats, biodiversity
"Reduce carbon dioxide emissions." (female researcher, Qiyang/Gongzhuling)

Question 5 What would enable you to do more?



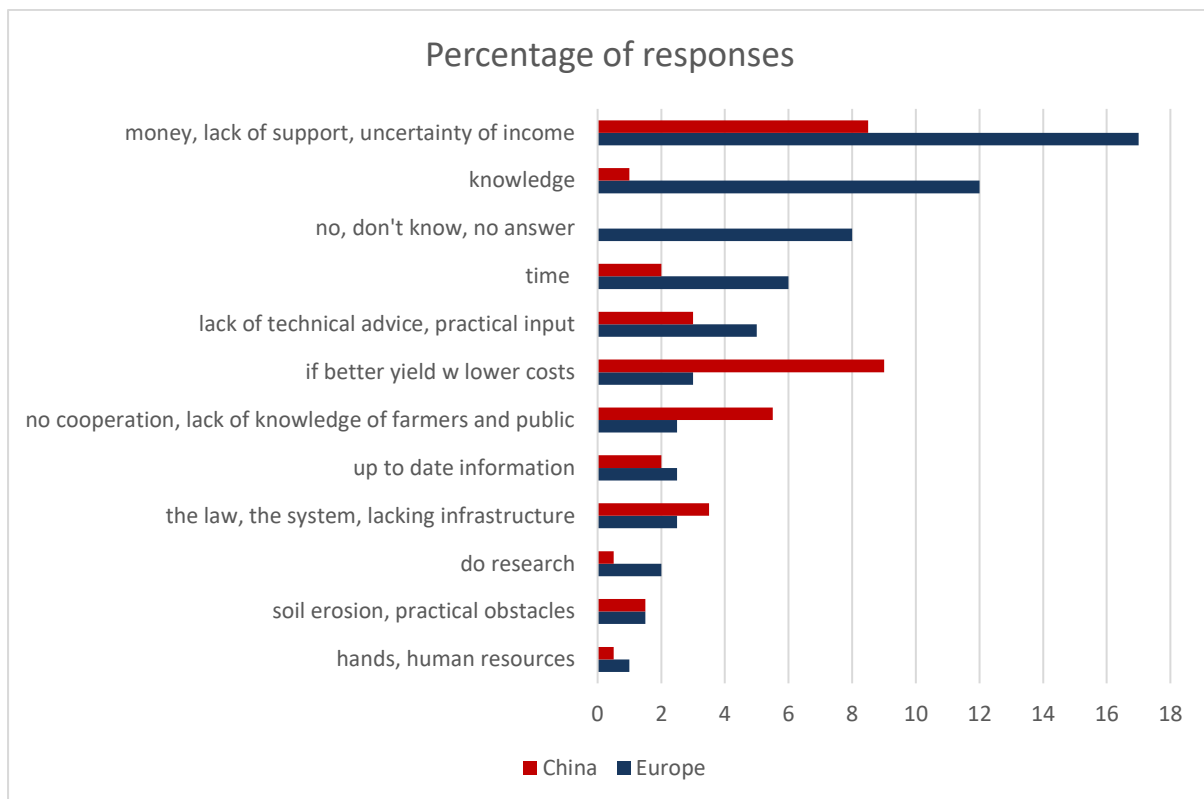
The three most frequent response types from the Europeans were

1. Knowledge, information
"Always having more information about protecting soil." (male city mayor, France)
2. Subsidy, grants, higher yield, income
"Having a future job." (male student in practical training, Crete)
3. Training, advice
"More applicable knowledge and good practices." (female public agriculture extension advisor, Slovenia)

As with the previous question, the three most frequent response types from the Chinese were the same, but in the reverse order

1. Training, advice
"Get some professional guidance on the amount of organic fertilizer." (female farmer, Suining)
2. Subsidy, grants, higher yield, income
"Get government incentives, a professional research guide." (male researcher, Suining)
3. Knowledge, information
"In-depth study on the application of organic fertilizer." (male researcher, Qiyang/Gongzhuling)

Question 6 What prevents you from doing more?



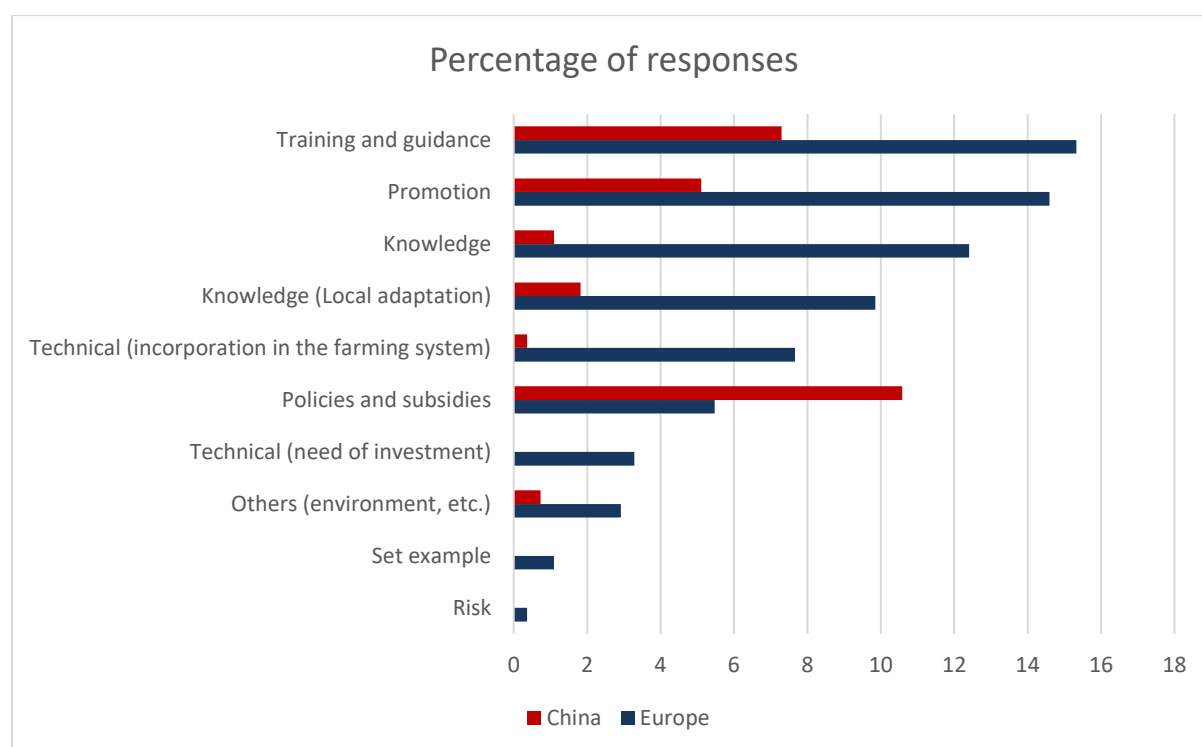
The three most frequent response types from the Europeans were

1. Money, lack of support, uncertainty of income
"The investment is too expensive for me." (male farmer, Estonia)
2. Knowledge
"Lack of knowledge in soil contamination with chemicals." (male farmer from a farmers' association, Romania)
3. No obstacles, don't know, no answer
"No obstacles." (female agronomist-researcher, Crete)

The three most frequent response types from the Chinese were

1. If better yields with lower costs
"Green manure is time-consuming and labour-intensive, with low returns and low rate of farmers' acceptance." (male, agro-technician, Qiyang/Gongzhuling)
2. Money, lack of support, uncertainty of income
"I don't have enough money to support the expansion of production." (male farmer, Qiyang/Gongzhuling)
3. No cooperation, lack of knowledge of farmers and public
"Farmers have low enthusiasm and low cooperation." (female agro-government, Suining)

Question 7 For the management practice of <demonstrated AMP> to be widely adopted in this area, what issues do you think would have to be addressed?



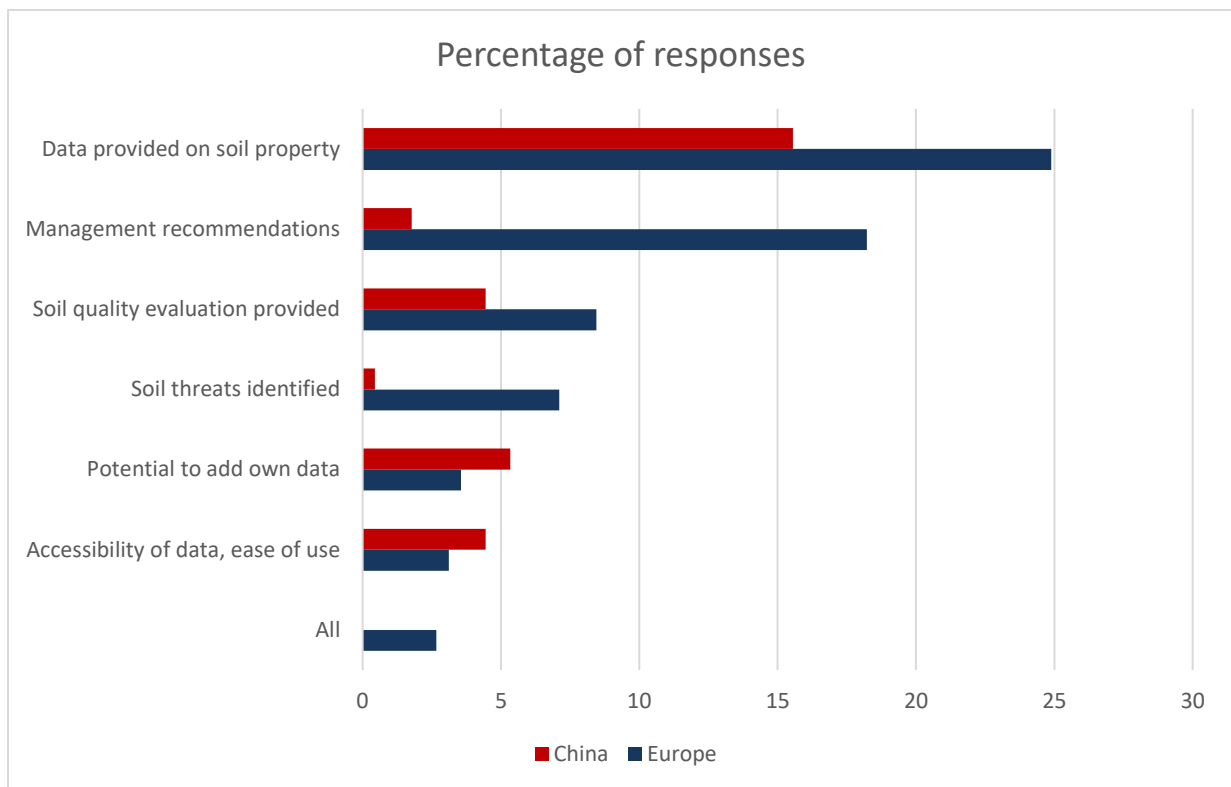
The three most frequent response types from the Europeans were

1. Guidance and training
"More information about how to apply, their benefits and consequences and aspects of legislation about sludge incorporation." (Incorporation of composted sewage sludge: female farmer, Portugal)
2. Promotion
"There should be more demonstration events about no-tillage sowers. Also more dissemination about the advantages and disadvantages of no-till farming." (No tillage - male researcher, Estonia)
3. Knowledge
"More actions towards awareness rising of general population." (Wide crop rotation/organic farming/organic manure - female ministry employee, Slovenia)

The three most frequent response types from the Chinese were

1. Policies and subsidies
"Vigorously develop mechanization and give farmers subsidies." (Organic matter amendments - male agro-technician, Qiyang/Gongzhuling)
2. Training and guidance
"Transforming farmers' attitudes toward new technologies." (Organic matter amendments male agro-environment technician, Suining)
3. Promotion
"More promotion and publicity for farmers to accept." (Organic matter amendments female agro-technician, Qiyang/Gongzhuling)

Question 8 What aspect of the SQAPP app interests you most?



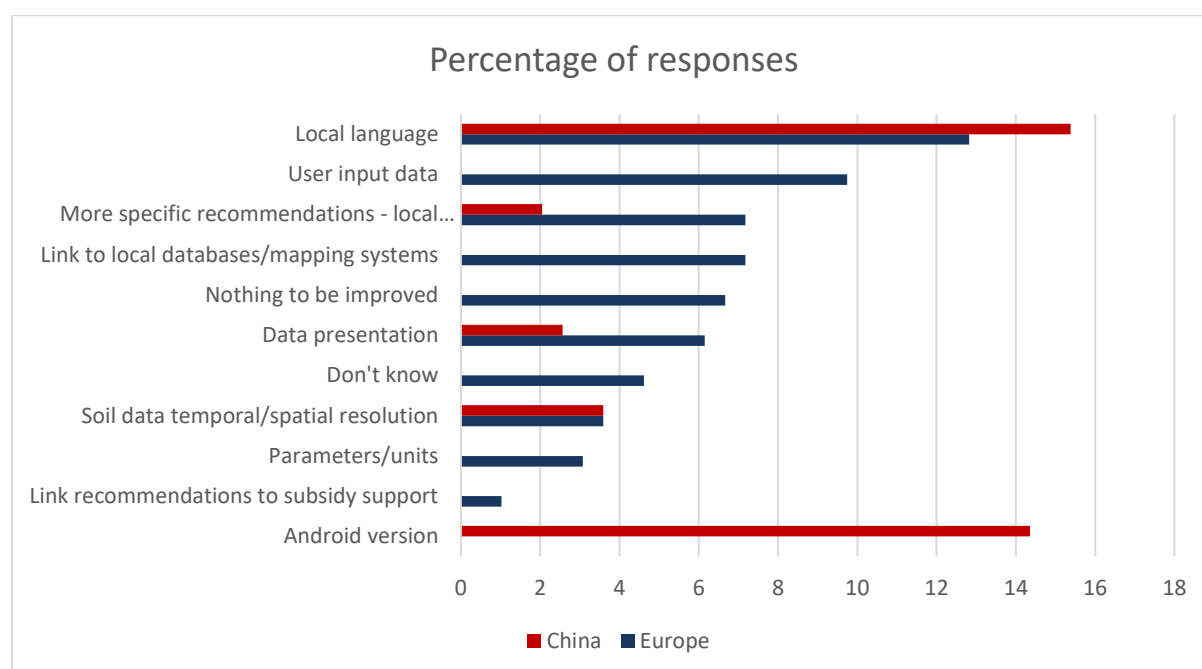
The three most frequent response types from the Europeans were

1. Data provided on soil properties
"The availability of soil data for specific area." (male agronomist, Crete)
2. Management recommendations
"Tips on how to improve soils." (male farmer, Slovenia)
3. Soil quality evaluation provided
"Fast results about soil quality. (male student, Estonia)

The three most frequent response types from the Chinese were

1. Data provided on soil properties
"The database is very powerful." (male farmer, Qiyang/Gongzhuling)
2. Potential to add own data
"All users can update the data." (female researcher Qiyang/Gongzhuling)
3. (equally): Soil quality evaluation and Accessibility of data, ease of use
"I can know the quality of my farmland by the APP." (female farmer, Qiyang/Gongzhuling)
"Data download is very convenient." (male agro-technician Qiyang/Gongzhuling)

Question 9: Are there any improvements or changes you think should be made to SQAPP to make it a tool that you would use regularly?



The most frequently requested improvement from users in both Europe and China was to have more of the text translated from English into their own language.

The two other most frequently requested improvements from the Europeans were

2. User input data

"Inputs from users should be checked by experts since there is always a risk for not valid data or data entry mistakes." (female agronomist, Crete)

3. More specific recommendations for local methods/practices

"Recommendations that are more suitable in Estonian conditions." (female student, Estonia)

The two other most frequently requested improvements from the Chinese were

2. Android version

Because, at the time of testing, SQAPP was only available on Apple's App Store in China, the second most frequent request was for an Android version of the app.

3. Soil data temporal/spatial resolution

"I think it needs improvement in accuracy." (male researcher, Qiyang/Gongzhuling)

6. Evaluation of the demonstration events

The demonstration events were held in from June to October 2019 in all iSQAPER study sites (except Zhifanggou Watershed). They provided an opportunity for the iSQAPER research teams to meet a range of local stakeholders and to: present iSQAPER's major research findings; demonstrate recommended agricultural management practices and the revised version of SQAPP; and to obtain valuable feedback from the stakeholders. The following specific remarks were made by the demonstration event organisers.

Study site 1 De Peel, NL According to the organising parties the event was very successful. There were more visitors than was hoped for, and they were all very positive about it. It was also a nice opportunity for (organic) farmers to share thoughts and ideas, during the field visits, and afterwards when there were some drinks and snacks provided.

Study site 3 Cértima, PT Overall, the main objectives of the demonstration event in disseminated the results of application and incorporation of sewage sludge in maize farm as the best management practices in the Portuguese study sites were successfully fulfilled. The farmers also had the opportunity to share their experience with a multidisciplinary audience which led to important discussions about the agriculture management practices in Portuguese farms. The discussions about the potential of sludge incorporation and the challenges in agriculture Portuguese topsoil during the demonstration event were important to link the scientific results with different stakeholder perspective about the best agriculture management practices.

Study site 4 SE Spain, ES The event was really successful. The participants were very interested in the project results and in the SQAPP. It is necessary to translate all the text of the application to Spanish.

Study site 5 Crete, GR The demonstration events fulfilled their objectives in receiving valuable remarks and promoting SQAPP to the stakeholders: (a) in the organized event in Crete, and (b) in the presentation during the meeting for the program of Agricultural Development (PAD) of the Greek Ministry of Agricultural Development and Foods in which land use planners and policy makers were included. However, farmers express their unwillingness to participate in the organized event (except one), even though contacts with farmers unions was made before the event. Stakeholders have understood fairly well how SQAPP works, its potential for land users and planners in conserving or improving soil quality. Almost all participants confirm that they will use SQAPP in the future to make decisions on land management practices as well as that they will promote SQAPP to other people.

All participants pointed out the importance of the existing soil data provided by SQAPP. However, the incorporation of new data by the users must be under control to avoid the entry of false data provided by the users of the tool. In addition, it has been outlined that the measuring units of the various soil properties must be in the same widely used systems.

The proposed AMPs by SQAPP, further of those that were analyzed (no tillage or minimum tillage, extensive grazing) have been considered: (a) as very important in conserving soil quality, (b) as well known by various stakeholders and most of them already applied. A new AMP is difficult to be promoted by farmers due to imposed constraints by the organization of the farm (type of crops-perennial crops or annual crops, physical environment characteristics, socio-economic characteristics, etc). In addition, the applied AMPs are related to traditional knowledge transferring from generation to generation, hard to change in a new AMP. Young land users usually wish to apply new technologies on improving soil quality and protection of the environment, but in several cases there are many problems in implementing a technology such as the appropriate knowledge, the available economical resources, the farmer's income, the trends in the market and the availability of the appropriate infrastructure, etc.

In conclusion, SQAPP received excellent comments for the organization on the data base, the assessment of the possible threats and recommendations for conserving or improving soil quality.

There was a general willingness by the participants for future application and promotion of SQAPP to other land users or planners.

Study site 6 Ljubljana, SI Event fulfilled its objective and presented and demonstrated soil improvement agricultural management practices. During introduction lectures and demonstrations, main soil threats were discussed along with a practical presentation of visual soil assessment techniques and SQAPP.

Study site 7 Zala HU The event partly fulfilled its objectives. The personal discussion was successful, both parties, farmers and scientists enriched with new information.

What lessons have been learnt about further promotion of the AMP and SQAPP? - Small scale farmers have limited resources for investing in expensive new technology/machinery, so they pay less attention to promotions focusing on this.

Study site 8 Braila County, RO The event fulfilled its objective to disseminate and inform other stakeholders about a new tool which can be used in practice, by farmers especially, to make decisions based on the information provided by the SQAPP application. In addition, the SQAPP can be used by professors to teach the students about soil quality and degradation processes directly in the field, as practical field applications.

For the adoption of the new innovative agricultural management practices, the SQAPP application was suggested by participants at the event that it can be a useful tool for predicting and assessing the impact of existing management practices on the soil quality characteristics and environment.

Study site 9 Trzebieiszów, PL The event fulfilled its objectives by dissemination both SQAPP application as well as AMP use in the study sites. This event was especially important for students of Agriculture, who have own farms or their parents have farms and therefore they can use such solutions in the future.

We think that it was a successful event, especially many students were interested in agriculture management practices application, especially how to use spent mushroom substrate. It was very good that people could visit mushroom production and see how spent mushroom substrate is produced, how mushrooms grow and they could ask questions about this kind of exogenous organic matter. They could also make some measurements of soils on the field amended with spent mushroom substrate. It would be better if more farmers and local authority participated in this event.

People need to be informed during training, conferences about AMP and SQAPP. It is important to have positive examples of farmers who use AMP in practice and they can say something about their positive impact on soil, crops, yield.

Study site 10 Tartumaa, EE Quite a lot of people registered to the event, which shows that this topic is something that people want to learn about. Fewer people participated in the event than registered, which was probably due to bad weather. Overall the event fulfilled its objectives.

Study sites 11/14 Qiyang/Gongzhuling, CN Through the indoor training and on-site observation, the conference popularized and promoted the related technologies of AMPs and the use of SQAPP, and achieved the expected goals. From this event, we can conclude that in the next promotion of AMP and SQAPP, we should pay more attention to flexibility, avoid excessive oral teaching, increase

people's sense of participation, and better meet the actual needs of participants. It is more conducive to its promotion and publicity.

Study site 12 Suining, CN This questionnaire event fulfils its objectives. With technical training and guidance, fertilizer products, and government subsidies, these can further promotion of AMP in this area. It is better for widely adopted SQAPP in China to develop full Chinese version and compatible with Android mobile phone.

7. Anticipated long-term impact of iSQAPER's research programme in the study sites.

The iSQAPER study site teams were asked if, taking account discussions with the stakeholders and feedback from the various research tasks and events in which they took part, they anticipated that the iSQAPER research programme could have a lasting legacy in their study site in the following areas

- Research results influencing farming practice
- Uptake of recommended AMPs
- Regular use of SQAPP
- Development of new or enhancement of existing stakeholder networks
- Involvement of new stakeholder types in existing networks.

The results are reported in Table 3.

Table 3: Anticipated impact of iSQAPER research programme in the study sites

	Impact level: 0 - no impact, 1 - barely noticeable to 5 - important visible impact					
	0	1	2	3	4	5
Research results influencing farming practice			1	7	4	1
Uptake of recommended AMPs				3	9	1
Regular use of SQAPP		1	9	2		1
Development of new or enhancement of existing stakeholder networks		5	4		3	1
The involvement of new stakeholder types in existing networks		1	5	6	1	
Frequency of responses	1,2	3,4	5,6	7,8	9,10	

The results indicate that iSQAPER is anticipated to have an impact in all areas, in all study sites, however some are likely to be more visible than others. The teams thought the most visible impact would be in the areas of research results influencing farming practice and the uptake of recommended AMPs. The regular use of SQAPP would be less visible. It is less likely still that new networks will be developed although new stakeholder types are likely to become involved in existing networks.

Annex 1 Collated summaries of the questionnaire responses

Many of the study sites provided separate summaries for some or all of the responses to the questionnaire. These are collated here because they provide additional, more nuanced information about the local situations for each study site.

Question 3: What actions do you take (in your job or otherwise) to protect the soil?

Study site 3 Cértima, PT According to the results the participants are aware about the importance of promote a sustainable agricultural management practices and their impact on soil and food quality. For that, the participants take different actions to protect soil and improve their quality. Participants, such as researchers and technicians are mostly focus in adopt and promote sustainable managements practices, such as minimal tillage, spontaneous or seed cover soil and crop rotation. However, from the consumption point of view, the participants mainly promote the soil sustainability buying organic products. The questioner also shows that a lack of technical knowledge among the farmers and a lack of financial support is a key point that mainly prevent the adoption of sustainable managements.

Study site 5 Crete, GR The actions for protection of the soil especially for the main process of land degradation which is soil erosion are summarized as following:

- Plant covering, enrichment of soil by organic materials,
- No tillage, incorporation of organic materials in soil, rational use of irrigation water,
- No tillage, plant covering
- Advisory for integrated management of olives groves
- Avoidance of over-fertilization, optimum soil aeration
- Application of precision farming technologies
- Organic farming.

Study site 6 Ljubljana, SI Participants from public extension service are mostly engaged in advising farmers on measures coming from CAP RDP programmes. They advise on fertilisation plans, crop rotations, cover crops, green manure, soil tillage, irrigation, use of pesticides. They also provide some educational programmes on the proper use of technology and environmental measures connected to RDP and Nitrate directive. Civil servants are mostly engaged in the preparation of legislation on land and water resources protection. Participants from the research are mostly engaged in spreading knowledge (workshops, lectures, exercises, conferences) obtain during the research (soil cover, organic matter, irrigation, soil fertility, tillage systems, yield quantity and quality) among different stakeholders groups out of which student prevail. Farmers protect the soil with actions like cover crops, organic fertilisers, conservational tillage, min-till, mulch-till, considering weather condition before tillage, broad crop rotation, direct sowing.

Study site 9 Trzebieszów, PL Main responses were connected with:

- following the rules related to protection
- research on biodiversity, biopreparation, biofertilizers, rotation, leguminous crops as agricultural management practices important for soil quality
- research on soil properties including biological, physical and chemical parameters
- research on soil degradation and reclamation

- using composts, no-tillage, rotation, exogenous organic matter (chicken manure, spent mushroom substrate), rational application of mineral fertilizers, using leguminous crops, manure
- conducting organic production
- education
- sorting garbage

Study site 10 Tartumaa, EE The majority of the respondents use different actions to protect the soil. The main motivation to use these actions was to have a higher yield and improve soil properties. Some of them also wanted to protect nature and have general farm sustainability. The lack of resources and information prevents them to do more for soil protection.

Study sites 11/14 Qiyang/Gongzhuling, CN The following actions were mentioned

- Applying organic fertilizer
- Reduce chemical fertilizer application
- Straw return
- Crop rotation
- Planting green manure

Study site 12 Suining, CN The following actions were mentioned

- Improve soil organic matter
- Reduce chemical fertilizer application
- Straw return, no tillage practice
- Crop rotation

Question 4: What is your motivation for these actions?

Study site 5 Crete GR The motivations for the previously applied actions by the participants are summarized as following:

- Increase in crop production and increase in farmer's income
- Environmental protection, protection and improvement of soil properties
- Improvement of soil quality
- Research, scientific responsibilities originated from own job
- Responsibilities due to undertaken an educational program.

Study site 6 Ljubljana, SI The farmers' motivation is to keep the soil fertile on long-term with increasing organic matter (carbon) (environmentally sound), to produce good quality food sustainably, lowering costs, and develop under current difficult situation on agricultural market (economically efficient). Others motivations are maintenance and improvements of soil quality-fertility with reducing soil degradation threats. For that, they want to be up to date with this topic and spread knowledge among practitioners as they are aware of the importance of this topic.

Study site 9 Trzebieszów, PL Main responses were connected with:

- healthy food and human health
- soil protection
- high yields
- environmental health and care

- awareness of the threats to the soil environment
- soil productivity for present and future generations
- progressive degradation of soil quality due to soil drought, loss of organic matter and biodiversity

Study sites 11/14 Qiyang/Gongzhuling, CN The following motivations were mentioned

- Increase soil fertility
- Increase crop yield
- Increase farmers' income
- Reduce environmental pollution

Study site 12 Suining, CN The following motivations were mentioned

- Increase soil quality
- Reduce environmental pollution
- Food security
- Increase crop yield
- Increase farmers' income, Reduce the labour force

Question 5: What would enable you to do more?

Study site 5 Crete, GR The answers in the question what would enable you to do more are summarized as following:

- The climate change and protection of the environment
- Integrated planning on agricultural development
- The knowledge of degree of soil degradation in relation to the applied AMPs
- New techniques, and more soil data available
- Increase on soil organic matter and improvement of soil structure
- Water and fertilizer saving and increase in crop yields
- Production of better quality of products free of harmful substances
- Economical drivers such as allocation of subsidies
- Having a future job in new technologies.

Study site 6 Ljubljana, SI Farmers are unified and suggest that new technologies/machinery /equipment together with new knowledge and awarns rising of general as well as professional public and politicians would enable them to do more. Here they join opinion with others that financial support in both aspects is crucial to speed up the process towards adoption of soil improvement agricultural management techniques.

Study site 9 Trzebieszów, PL

- dissemination of information on the proper use of soil
- state support
- research funds, financial support for innovation in agriculture
- greater knowledge on soil protection
- financial support for farmers for increasing leguminous crops, catch crops in rotation
- education
- equipment, fertilizers, monitoring systems of soil parameters

Question 6 What prevents you from doing more?

Study site 5 Crete, GR The answers on the question what prevents you for doing more are summarized as following:

- The possible decrease in income
- Practical difficulties such as nets used for collecting olive fruits, the inclined soil relief
- The constant protests of farmers
- Lack of available financing
- Lack of providing information to the farmers.

Study site 6 Ljubljana, SI Main obstacle to speed up the process of soil protection is seen by participants in limited financial resources as new management technology requires change of machinery which is costly. Researcher and extension service also state that certain funds and time should be invested in studies to adapt them to specific climate and soil conditions. Certain knowledge from filed crop science should be transferred to monoculture agricultural sectors like fruit or grape production. There is also a need for the legislator to prepare measures that address the current state of agriculture and develop a strategic plan to adapt to the new focus of society.

Study site 9 Trzebieszów, PL

- lack of financial support
- insufficient knowledge
- profitability of production
- lack of time for training
- limited availability of natural, biologically active preparations beneficial for the soil environment
- nothing stops me from carrying out research, preparing publications
- low public interest in issues related to environmental protection

Study sites 11/14 Qiyang/Gongzhuling, CN

- Lack of funding and low social attention
- High labour costs and low crop prices
- No relevant polity allowance

Study site 12 Suining, CN

- Lack funds and low social attention
- High labour costs and low crop prices
- No relevant polity allowance

Question 7 For the management practice of <demonstrated AMP> to be widely adopted in this area, what issues do you think would have to be addressed

Study site 1 De Peel, NL De Peel Visitors liked the set-up of the event, it was interactive and they could get answers to almost all the questions they had. It would have been even nicer if some of the talks were given by farmers, to share his experiences. Some farmers said it is difficult that there is not one clear solution (regarding non-inversion tillage) that they can directly apply on their own farm, because it is depending on so many circumstances when it works best. Specifically about the AMP it is somewhat more difficult, because non-inversion tillage does not (yet) directly show all the positive effects you would expect. This is partly due to the circumstances and especially the soil type

in the region, which is a sandy soil. So it is not the basic promotional story about non-inversion tillage, but a more nuanced story; what are practical obstacles to do non-inversion tillage, and the message that in some situations ploughing might not be too bad after all.

Study site 3 Cértima, PT Regarding to AMP demonstration, the results highlighted some concerns about the potential risk of contamination by heavy metal. Although the sludge application had improved several soil indicators, the questionnaire shows that it is important to promote technical advices about the impact of sludge incorporation as a management practice.

Study site 5 Crete, GR The AMP *tillage* which is widely expanded in the island of Crete in comparison with the AMP *no tillage* causes high degradation of soil resources due to soil erosion, over-fertilization followed by soil contamination and decrease in crop production.

Study site 6 Ljubljana, SI General agreement was that practical field experiments (at leading farmers) presented during workshops (demo-events) with proper regional distribution is the best way to promote agricultural management practices. These enable that critical mass of users can attend and gives farmers direct insight into the results and can inspire them. Participants suggest that it would be crucial to collect data from experiments as well as from soil analysis at one public central soil quality database. There was also call to put more emphasis on recognising sustainable practices as farming system (like organic agriculture) as farms in the process of changing to sustainable farming must gain a lot of new knowledge, adopt its machinery, crop rotations, soil cover, crops as well as mindset.

Study site 7 Zala, HU Small scale farmers have limited resources for investing in expensive new technology/machinery, so they pay less attention to promotions focusing on this.

Study site 9 Trzebieszów, PL For the management practice of spent mushroom substrate application to be widely adopted in this area, what issues do you think would have to be addressed?

- dissemination of information about the positive impact of the spent mushroom substrate on soil properties
- present the benefits of such fertilizer to farmers
- training programs for farmers
- popularization of research results among stakeholders, especially farmers and local authorities
- difficult to say
- lower cost of spent mushroom substrate

Study site 10 Tartumaa, EE Weed, pest and disease management problems should be addressed so that no-tillage would be widely adopted in Estonia. Also many suggested that raising overall awareness and subsidy support from the government would enhance the adoption of no-tillage farming.

Study sites 11/14 Qiyang/Gongzhuling, CN

- Technical training and guidance
- Government support and more subsidies

Study site 12 Suining, CN

- Soil property data to provide more useful for the improvement of practice management
- Technical training and guidance

- Government support and more subsidies

Questions 8 and 9 What aspect of the SQAPP app interests you most and are there any improvements or changes you think should be made to SQAPP to make it a tool that you would use regularly?

Technical issues preventing access to v2 of SQAPP on Google Play and the App Store affected its demonstration in the De Peel (NL) and Zala (HU) study sites. These issues were resolved by the time the rest of the events were held.

Study site 3 Cértima, PT From the SQAPP feedback, one of the most interest features from the app is the information about several soil proprieties and the recommendations. The results also show that for a regular use the participants, namely farmers, need more time to interact and understand the features of the app regarding the improvement of soil quality. In overall, SQAPP's seems to be a good tool for technicians

Study site 4 SE Spain, ES SQAPP It is necessary to promote and improve some aspects of SQAPP. SQAPP must be kept and updated on time to be useful.

Study site 5 Crete, GR All participants pointed out the importance of the existing soil data provided by SQAPP. However, the incorporation of new data by the users must be under control to avoid the entry of false data provided by the users of the tool. In addition, it has been outlined that the measuring units of the various soil properties must be in the same widely used systems.

The proposed AMPs by SQAPP, further of those that were analyzed (no tillage or minimum tillage, extensive grazing) have been considered: (a) as very important in conserving soil quality, (b) as well known by various stakeholders and most of them already applied. A new AMP is difficult to be promoted by farmers due to imposed constrains by the organization of the farm (type of crops-perennial crops or annual crops, physical environment characteristics, socio-economic characteristics, etc). In addition, the applied AMPs are related to traditional knowledge transferring from generation to generation, hard to change in a new AMP. Young land users usually wish to apply new technologies on improving soil quality and protection of the environment, but in several cases there are many problems in implementing a technology such as the appropriate knowledge, the available economical resources, the farmer's income, the trends in the market and the availability of the appropriate infrastructure, etc.

In conclusion, SQAPP received excellent comments for the organization on the data base, the assessment of the possible threats and recommendations for conserving or improving soil quality. There was a general willingness by the participants for future application and promotion of SQAPP to other land users or planners.

Study site 6 Ljubljana, SI Participants pointed out their interest in the aspect of gathering info on soil/crop water requirements/water holding capacity, tillage types, soil quality concerning chemical and physical properties, soil organic matter, support for farmers and extension service. They expressed interest in the possibility to upgrade the system with more precise data. They think that app is practical for use in everyday life.

Most of the participants answered that they need to test the app first to use it in a real practical way during their work. They would appreciate if it would entirely be translated in Slovenian language. Some expressed concerns about data privacy. And some would like that app of this kind would also exist with precise data on Slovenian soils but only for Slovenian public.

Study site 8 Braila County, RO Most of the participants at the event agreed that there is a need for improving the SQAPP in the sense that will recommend in the end a lower number of technologies for improving/conserving soil quality, for example up to 5 technologies. Also almost all the people would like an easier way to introduce the measured data in application in order to get better recommendations related with what is actually in the field. Language translation was also an issue for some of the farmers who did not understand English. Some screens of the SQAPP showed a combination of Romanian and English languages which made it ambiguous

Study site 9 Trzebieszów, PL What aspect of the SQAPP app interests you most?

- possibility to check soil parameters, e.g. pH
- everything
- information about soil quality
- information about soil threats
- suggestions on how to improve soil quality
- I don't know

Are there any improvements or changes you think should be made to SQAPP to make it a tool that you would use regularly?

- useful tool and will be used
- Polish translation
- difficult to say
- development more detailed recommendations on how to improve soil quality
- dissemination information about this application
- satellite crop view
- extension of recommendations to improve soil quality

Study site 10 Tartumaa, EE Participants answered that the recommendations and detailed soil data were the most interesting aspects of SQAPP. Many respondents answered that they would use SQAPP regularly if it was joined with different Estonian databases and theme maps (Estonian soil map). Also, a lot of people pointed out that the whole application should be in Estonian.

Study sites 11/14 Qiyang/Gongzhuling, CN What aspect of the SQAPP app interests you most?

- Update data in real time
- Comprehensive evaluation of soil fertility

Are there any improvements or changes you think should be made to SQAPP to make it a tool that you would use regularly?

- Compatible with Android mobile phone
- Develop full Chinese version

Study site 12 Suining, CN What aspect of the SQAPP app interests you most?

- Update data in real time

- Comprehensive evaluation of soil fertility

Are there any improvements or changes you think should be made to SQAPP to make it a tool that you would use regularly?

- Compatible with Android mobile phone
- Develop full Chinese version

Annex 2 All questionnaire responses

Study site	Q No.	What is your gender?	In what role are you attending this event?	What actions do you take (in your job or otherwise) to protect the soil?	What is your motivation these actions?	What would enable you to do more?	What prevents you from doing more?	For the management practice of <demonstrated AMP> to be widely adopted in this area, what issues do you think would have to be addressed?	What aspect of the SQAPP app interests you most?	Are there any improvements or changes you think should be made to SQAPP to make it a tool that you would use regularly?
SS01 NL	1	male	farmer	organic farm management	no use of chemicals	-	time	more and better options for mechanical weed control	-	-
SS01 NL	2	male	farmer	using manure and compost as fertilisers	a more resilient soil	change in the law; allow more application of manure/compost (now there is a certain limit to the amount of nitrogen you can apply)	the law	more insight in the benefits and disadvantages on specific crops under non-inversion tillage	-	-
SS01 NL	3	male	farmer	partly organic farm	more attention to soil quality, and it is financially interesting	more demand for organic products. Now for some (vegetable) crops the demand is not as high as the actual production, so prices are very low, and sometimes it is impossible to sell your product	The same; demand	Weed abundance. In organic farming in this area weed control is a real big problem, and it becomes an even bigger problem if you change from ploughing to non inversion tillage.	-	-
SS02 France	1	female	Eylips employee (Specialised technician for farmer)	educate farmers to protect their soils	economic & ecological	May be a visit from scientist to explain and to popularise more their knowledge.	Time and money	increased productivity	Annual precipitation, soil contamination and soil nutrient depletion	have more specific recommendations

SS02 France	2	male	Farmer (neighbour from the case study)	I keep the hedges of my fields	It's common sense	Having more time	time	improvement of soil compaction	Annual precipitation, precise location of the fields	I don't use phone application except to know the weather
SS02 France	3	male	organic farmer	I do not use pesticide and fertilizers	I want to keep my planet clean	money and knowledge	money	improvement of soil quality	the recommendations	have recommendations more suitable for organic farming more practical advice
SS02 France	4	male	the mayor of the city	we do not use pesticides for green spaces in the city	I wish my fellow citizens are in good health	Always having more information about protecting soil	Time and money	change of habits from citizens, more democratisation of practices	the popularisation of knowledge	
SS03 Cértima	1	Male	Technical Consultant for agriculture ministry	In Bairrada vineyard In Bairrada vineyard we do alternate tillage on the lines and natural or seed cover soil on the inter rows alternate tillage with natural or seeded cover soil. Minimum tillage and depending on soil moisture	The actions is to ensure the soil sustainability and for respect to environment.	National and / or regional grants and some specific advice from experts.	Civic and environmental awareness on the consumer and the government itself should provide financial support for this purpose.	Regarding to the sludge application it important to have a good and reliable information about the chemical composition, origin and other data and information about how to apply.	The information about soil quality and plant nutrition.	Phosphorus deficiency in Bairrada vineyards affects the quality of the grapes, so the nutritional evaluation of this element using Egnér-Riehm is fundamental to the success of this tool in Portugal.
SS03 Cértima	2	Female	Researcher	To protect soil me and my family we do organic farming on my small with minimal tillage and we buy organic products.	We do those action for the soil and food sustainability, and because we want to use and eat food without pesticides.	Have more information about how the food is produced to make informed choices.	Lack of technical advice	N/A	The information about soil quality in my area and the recommendations.	Linking the recommendations to subsidy support.

SS03 Cértima	3	Female	Researcher	I advise about SLM	For general sustainability.)	N/A	Lack of technical knowledge among the farmers and	Further studies on the long-term impact of sludge application on soil and on the quality of food produced.	The sustainable agricultural practices the app recommends	No
SS03 Cértima	4	Male	Researcher	As a researcher I am concerned about this topic.	Only research	Only research	Only research	The topic about heavy metal and how they we can mitigate their impact on soil and food	The fact that potentially, and with the incorporation of more detailed data, may be an important soil mapping tool.	It is important to improve accuracy in special areas where no soil maps.
SS03 Cértima	5	Male	Technical Consultant for agriculture ministry	I advise about SLMs and we promote waste incorporation, crop rotation, green manure with autumn growing crops (leguminous crops). I buy as well organic products.	It is my work and my mission	National and / or regional grants	Environmental awareness and lack of financial support	N/A	The information provided about soil quality, the recommendations for sustainable land management and the possibility to add my own data that can improve the recommendations	Given to the variability that can occur in a plot agricultural, it is essential to obtain the highest accuracy and updated information about the crops grown and the techniques practiced over the time.

SS03 Cértima	6	Female	student	I try to buy fruit and vegetables from biological agriculture and eggs and meat from organic farming	I think that if most of the consumer would take action to change their way of buying and eating food, then also the market would be bound to change its products and so, also the industries their production. We should preserve soil, water and nature in general and this also means to change our habits in eating and producing food.	Cheaper products: often biological products are more expensive than other ones	N.A	Promote their impact on soil quality	The recommendations	The fact that users have a huge amount of data about the soil and can improve this system with more detailed data and also the fact that, thanks to these data, farmers can better understand how to treat their soil and how to improve their production
SS03 Cértima	7	Female	Researcher	I have a organic farm at home and I use organic products.	I am concerned with my health so I avoid pesticides and chemical fertilizers.	Have more free time	N.A	N.A	Soil properties and the recommendations	I think that to understand better the meaning of the values is to add a scale that can show in a easy way if the values are good or not.

SS03 Cértima	8	Male	Farmer	I do sludge incorporation and I try to do a minimum tillage	I am concerned with the quality of the soil because I producer and all my profit depend on that. Moreover, some of my consumers start to be aware about the importance of a sustainable agriculture and production.	To do more I need specific advice and support from the government.	N.A	Regarding to the sludge application to be widely adopted it is important to promote their impact on soil quality and have some support from the govern.	Physical and chemical properties	I think that to understand better the meaning of the values is to add a scale that can show in a easy way if the values are good or not.
SS03 Cértima	9	Female	Farmer	No-Till Sowing, Row Mobilization, crop cover and Crop Rotation	To protect soil, water and air and maximize my yield in a sustainable way	To do more support from the government and from EU.	The implementation cost for more crops and lack of know-how	More information about how to apply, their benefits and consequences and aspects of legislation about sludge incorporation.	the recommendations it gives for sustainable land management practices and the possibility to add my own data to improve the recommendations	Improve the site accuracy and link recommendations with possible financial support
SS04 Spain	1	Male	Scientist	Do not apply phytosanitary, incorporate adventitious plants into the soil	To preserve soil in a natural way	-	Economy	Green manure	To improve soil management	
SS04 Spain	2	Male	Technician/ Farmer	Organic farming						Data in real time about crop and soil status via landsat
SS04 Spain	3	Male	Agronomist /Farmer	Organic farming	Principles	More time available, information in real time		Information in real time	Soil data, map information	

SS04 Spain	4	Male	Farmer	No tillage, seeding, organic matter incorporation to soil	Improve soil quality and soil fertility				Specific aspects such as soil microorganisms	
SS04 Spain	5	Female	scientist	research, communication	Necessity of improving soil management	information	The existing information . In general without direct application to Mediterranean soils	More demonstration studies like iSQAPER in Alicante	The Database that is useful for comparison, and the recommendations but needs some improvements	Feed-back with the information that user will can provide
SS04 Spain	6	Male	scientist	Dissemination and awareness	To improve the environmental quality of the soils	More "in situ" knowledge		Reduction of inorganic fertilizers and pesticides	Recommendations	Connection with local database, agricultural enterprises, cooperatives, administration, etc
SS04 Spain	7	Female	farmer	Organic amendments	low fertility of soil	more availability of compost		a responsible interlocutor	Recommendations	
SS04 Spain	8	Male	farmer	Organic amendments	low fertility of soil	more availability of compost		a responsible interlocutor	Recommendations	
SS04 Spain	9	Male	Technician in Experimental Agronomy Station	Veg. Cover management, cover crops, use of compost	sustainable management	more knowledge	human resources	To know comparative results with different soil managements	All	Be more practical, easy use for all stakeholders
SS04 Spain	10	Female	Agronomist technician from Agricultural Cooperative Association	Knowledge by learning, courses	To improve crop management			To do comparatives in a small scale area	The information online	Add visual tools

SS05 Crete	1	Female	Agronomist	Plant covering, enrichment with organic materials	Responsibilities coming out from my job	The climate change, the environmental protection	The possible decrease in income	AMP: No tillage. Decrease in farmer's income	Presentation of soil properties and soil threats	Inputs from users should be checked by experts since there is always a risk for not valid data or data entry mistakes.
SS05 Crete	2	Male	Farmer, Agronomist Student	No tillage, incorporation of organic materials in soil, rational use of irrigation water	Increase of farmer's income and protection of land	Integrated planning on agricultural development	Nothing declared	AMP: No tillage. Greater use of chemical for removing weeds	The data base with the physical and chemical properties of soils	Regular update of the database
SS05 Crete	3	Male	Agronomist-Researcher	No tillage, plant covering	Research, scientific	Determination of the effect on cost production and total crop production	Practical difficulties such as nets used for collecting olive fruits	AMP: No tillage. Difficult to apply in co-culture of olive trees with leguminous	Presentation of soil properties	Evaluation of the input data by each user to avoid entering invalid or incorrect data
SS05 Crete	4	Male	Researcher, Scientific Advisor	Advisory for integrated management of olives groves	Environmental protection, protection and improvement of soil properties	The knowledge of degree of soil degradation in relation to the applied AMPs	Nothing declared	AMP: Tillage. Degradation of soil resources (increase in soil erosion) and reduction in crop production .	The evaluation of soil and the existing soil data	The laboratory analyses and the units of measurement of soil properties must follow the same protocol and be as simple as possible
SS05 Crete	5	Female	Student in practical training	Nothing declared	Nothing declared	Soil contamination	Improvement of soil quality through fertilization and optimum use of soils	Nothing declared	The soils characteristics which have been analyzed	All the available information for the soils of a specific area must be given also in Greek language
SS05 Crete	6	Male	Student in practical training	No tillage of soils under olive groves	Nothing declared	New techniques, more soil data	Soil erosion, sustainable agriculture	AMP: No tillage. Amount in organic matter content, management of available phosphorus	The assessment of soil erosion risk, the available data about nutrients	Data about the cultivated crops of each area must be included in SQAPP

SS05 Crete	7	Male	Student in practical training	No tillage of soils cultivated with olive groves	Improvement of soil quality	Improvement of soil structure	The constant protests of farmers	AMP: Tillage . Over-fertilizations, good conditions of soil drainage	The recommendations about soil threats	No the SQAPP is excellent!!!
SS05 Crete	8	Male	Student in practicing	No tillage of soils cultivated with olive groves	Nothing declared	Increase on soil organic matter and improvement of soil structure	Nothing declared	AMP: Tillage . In areas with olive groves how the plant residues will be incorporated into the soil	The recommendations facing soil threats	Available data for the soil mapping units of the area must be included
SS05 Crete	9	Male	Agronomist-Researcher	No tillage	The increase in biomass production	Water and fertilizer saving and increase in crop yields	The soil relief	AMP: No tillage . Problem in weed control in soils with high percentage of rock fragments	The availability of soil data for specific area	Soil analytical data for a specific property must be given using the same units of measurement (for example mg./kg of soil)
SS05 Crete	10	Male	Researcher, Scientific Advisor	Advises for soil fertilization and land management	Soil protection and improvement of plant productivity	Nothing declared	Nothing declared	AMP: No tillage . Providing information about positive impacts on no tillage even in areas with low slope gradient	The assessment of soil properties	The units of measurement in some parameters must be changed in order the presented values of soil data to be homogeneous
SS05 Crete	11	Male	Researcher	Avoidance of over-fertilization, optimum soil aeration	Production of products without residual harmful chemical substances	Better quality of products and food safety	Nothing declared	Nothing declared	The assessment of chemical soil properties	Nothing declared
SS05 Crete	12	Male	Agronomist-Researcher	Application of precision farming technologies	Research, scientific	Subsidized the proposed AMPs	Lack of financing	Nothing declared	The existing data base and its ability to be updated	Presentation of parameters on a map basis. Possibility of having the raw data base available to everyone

SS05 Crete	13	Female	Agronomist, Soil scientist	Optimal fertilization, control of water suitability for irrigation	Protection of soils and natural resources, environmental protection	The presentation of research results by compiling reports /carrying out research	Lack of financing	Nothing declared	Recommendations in order to protect soils from soil erosion	Nothing declared
SS05 Crete	14	Male	Researcher of ELGO_DIMI TRA on irrigation	Optimal irrigation practices and water management	Research and protection of agricultural soils	New technologies	Lack of providing information to the farmers	AMP: Tillage. Accelerated soil erosion and no soil protection by vegetation	The availability of data on soil properties	Some recommendations must be evaluated by specialists
SS05 Crete	15	Female	Agronomist-Researcher	Organic Farming	Soil quality protection and subsidies	Subsidies	No obstacle	AMP: No tillage. Nothing	The existing data base on SQAPP and the provided recommendations	The data should be available in units widely used by the farmers in order to be easily comparable
SS05 Crete	16	Female	Student in practical training	Plant covering	Educational program	Climate change, interest on environmental protection	Nothing declared	Nothing declared	Mainly the addressed soil threats. I will use this tool in the future for sure	Improvements to ensure the validity of data entered by the users of the tool
SS05 Crete	17	Male	Student in practical training	Plant covering	Educational program	Having a future job	Nothing declared	Nothing declared	The availability of data on soil properties	Nothing declared
SS05 Crete	18	Female	Agronomist, employee in the Institute of Olive groves and sub-tropical plants	Working on plant and soil analysis and providing advisory to the farmers	Working on plant and soil analysis and providing advices to the farmers	Nothing declared	Nothing declared	AMP: Tillage. Over-fertilization followed by soil contamination	The availability of data on soil chemical properties	Providing references about the source of data presented through the application of SQAPP. Units of measuring the various soil properties must be uniform and widely used

SS06 Slovenia	1	F	public agriculture extension service	advising on rotation, cover crops, ..)	maintenance or soil improvements	how to include farmers in RDP agri- environment measures	limited financial resources	Practical experiments	soil/crop water requirements/water holding capacity	/
SS06 Slovenia	2	M	farmer	reduce number of soil cultivations, reduce chemical substances	to be more ecologically sound and economically efficient	new equipment, machinery	price, costly of new equipment	increase of number of practical workshops with experiments presentation	/	/
SS06 Slovenia	3	M	a ministry employee	legislation, acts cover state of agricultural soils, land use cover factors, climate change	/	Systematically approach of monitoring, research and development of the area.	rigid current state of the system	better quality of promotion of new AMP through agriculture extension service	/	/
SS06 Slovenia	4	M	farmer	cover crops, organic fertilisers, min- till	easier, cheaper, and on long-term maintaining soil fertility	adequate machinery, equipment	I do not have all needed machinery. I would need to rent it.	acknowledge the future needs, more workshops, events in the field	more data from practice	additionally secure data stored on-line.
SS06 Slovenia	5	F	researcher	cover soil throughout the year, maintain/increa se organic matter in soils.	desire to be up to date with this topic; I'm aware how important is this topic	/	/	to inspire farmer - innovators, the leading farmer that are followed by others	/	/
SS06 Slovenia	6	M	researcher	minimal use of pesticide; use of fertilisers based on fertilisation plan	maintain soil fertility, protect water resources	better support from Ministry for agriculture in all forms	increase in support to fund research in this area	transfer of knowledge from research to extension service, demo-experiments	practicability in everyday life	/
SS06 Slovenia	7	F	researcher	sharing knowledge among students, spreading	to prevent soil degradation	more cooperation with farmers; sharing knowledge and awareness raising	limited financial funds	more direct headed studies, projects, presentations, publications of results.	soil quality in relation to chemical and physical properties	First I need to use it in real practical way during my work.

				information among public							
SS06 Slovenia	8	F	researcher	spreading info via workshops, lectures, exercises, conferences,	long-term protection of soil quality	financial support for research and development	limited financial resources and time need for research	/	/		Needs to be fully translated in to Slovenian language.
SS06 Slovenia	9	M	public agriculture extension service	advising farmers on RDP agri-environment measures, irrigation, conservation tillage	my motivation is to protect the soils	more knowledge, education	/	/	support for farmers and extension service	Yes	
SS06 Slovenia	10	F	public agriculture extension service	educate about proper technologies	my motivation is to spread knowledge trough education of producers	more education on this topic presented at demo-event	/	for sure more similar educational events like this one and more demonstration of practical examples	I need to get more in depth of the app and use it in real life to stat that	/	
SS06 Slovenia	11	M	farmer	conservational tillage, soil tillage in optimal weather conditions, rotation	desire to pass fertile soil to my successor, to be good example to other farmers	more experiences, more knowledge, more cooperation with faculty, proper machinery	previous answer topics are missing	critical mass of users, comparable data obtained from real life experiments - results	tips on how to improve soils	I need to test it for some time first.	
SS06 Slovenia	12	F	researcher	promoting and research of conserving fertility of soils with green cover (grass), irrigation	transfer new knowledge in to practice	knowledge, research	uncontrolled soil management by governmental institutions (monitoring soil tillage, soil quality)	register (database) on soil quality of Slovenian soil, better control of soil quality in publicly available edited database	all	to develop Slovenian version of the SQapp upgraded with detailed in the field collected data	

SS06 Slovenia	13	M	researcher	conservational tillage, cover and catch crops	maintenance and increase of soil organic matter, improve soil fertility and quality	proper machinery	by administration design sowing dates for cover/catch crops and also main crop culture	state should allocate more funds to support research on conservation tillage; more practical workshops is needed	tillage types	/
SS06 Slovenia	14	M	farmer	from 2000 I don't plough; from 2011 I cultivate soils on conservational way	maintenance and increase of soil organic matter, bind more carbon in the soil, produce food.	new technologies in connection with new machinery, which is still rarely in use.	above all is EU CAP with good intentions written in the document, but practical execution favorited other activities	State agricultural policy should put more emphasis and support conservational agriculture (organic or conventional), like an independent system not only as technology or tillage type.	soil organic matter	if it includes too much of data gets messy
SS06 Slovenia	15	F	researcher	impact of different tillage systems and impact on yield quality	current alert condition in soil quality	financial support, additional education, availability of machinery	financial funds	the soils are after many years of conventional system physically and chemically existed - support in rehabilitation is needed	everything connected with soils and upgrade of the system	/
SS06 Slovenia	16	M	farmer	minimal tillage, direct sowing	to remain and develop on difficult agricultural market	More experiments with different techniques of cultivation and direct sowing	better yield quality with lower costs	more field experiments to show difference in tillage, yield, costs	soil fertility	everything that is good can be improved.
SS06 Slovenia	17	M	farmer	minimal- reduced tillage, cover crops	improvement in soil quality of my land	new machinery	/	/	/	/
SS06 Slovenia	18	F	public agriculture extension service	support shallow ploughing, proper fertilisation, green cover, rotation	to support sustainable agriculture	more educations for farmers	financial support to educate farmers and to change farmers' behaviour	/	all	No

SS06 Slovenia	19	F	public agriculture extension service	advising on proper soil cultivation, cover/catch crops	to support farmers to achieve yield quality and quantity and reduce costs	clearer subsidy payment policy that would support sustainable practices.	lack of knowledge; lack of financial funds to educate farmers	to be aware that changes can be only observed on long-term. Target subsidy payments.	I'm interested in data precision/resolution in high spatial heterogeneity of soils in Slovenia.	possibility of adding my soil analysis.
SS06 Slovenia	20	F	public agriculture extension service	advising, lectures, field visits	when changes are observed	better awareness, new challenges	time, finances	more information on general, and also spreading knowledge in other regions	basic data, research source, design	First I need to use it in real practical way during my work.
SS06 Slovenia	21	M	public agriculture extension service	irrigation, use of pesticides, flood protection	advising farmers, changing the attitude of public towards these knowledgeable farmers	proper irrigation, reduction of erosion, less plant protection products and fertilisers, subsidy payments	change the thinking of farmers, subsidy payment policy, measures	water in soil, monitoring water in soil	soil characteristics - texture, structure, moisture	it might be good to make it even simpler for use for farmers
SS06 Slovenia	22	F	a ministry employee	agriculture land protection	high	education, time, capabilities	more education	more actions towards awareness rising of general population	First I need to use it in real practical way during my work.	use of this app would spread knowledge and about agricultural management practices
SS06 Slovenia	23	M	a municipality employee	monitoring of soil fertility and pesticide residues, farmers education	conservation of soil fertility, drinking water resources protection, economy of production	more promotion and awareness raising of citizen, government, farmers	the mind-set that this is not important, and that state of the environment is good and that changes are not needed.	Decision makers need to put more emphasis and include sustainable practices in CAP 2021- 2027 and provide possibilities to execute measures and information dissemination.	App gives first info on soils, but for further steps is not enough	I see it as tool for spreading information and awareness rising. It would be good to go more in this direction. Coupling with local data.

SS06 Slovenia	24	F	a ministry employee	I prepare regulations on soil and water sector	protection of natural resources for future generations	more education and awareness rising of general population about importance of soils	time and personnel limits, lack of understanding of this natural resource in politics and general public	legal basis, new CAP, education of all segments of population	environmental part - how to protect environmental resource with app	to make only Slovenian app with Slovenian detailed data and to enable use of this data only in Slovenia
SS06 Slovenia	25	F	public agriculture extension service	advising agri- envi. measures, soil tillage, green manure, rotation	soils are exhausted, I want to promote sustainable farming	more applicable knowledge and good practices	I work in fruit production - farmers in that area have much less knowledge about innovative sustainable practices. For example use of cover crops or conservation tillage techniques in orchards for improving soil fertility and quality. Knowledge linking between different fields of research.	Group should be established to plan, coordinated and unify applicative solution into production	how to prepare soil for orchards	data protection (farmers values)?
SS06 Slovenia	26	F	public agriculture extension service	livestock production, proper use of soils to produce yield of best quality	cow diet - optimising meals - animal health	knowledge is needed to produce good voluminous fodder	/	/	new to me - all was interesting	First I need to use it in real practical way during my work. However I greet it.

SS06 Slovenia	27	F	public agriculture extension service	cover foils, cover crops, green fertilisation (cereals, leguminous, rape), rotation, conservation tillage	I care about sustainable agriculture	more accessible biodegradable foils and other covers	nothing	As much as possible practicable presentations, experiments of all sustainable practices, Promotion	irrigation practices	yes. Specially in the direction to make it more Slovenian with detailed data to be more used in Slovenia
SS06 Slovenia	28	F	public agriculture extension service	advising use of fertilisers, pesticides, tillage, ...	sustain soil, reduce costs	equipment, machinery	power of legislator	more presentation, education, demonstration in the field	usefulness in the field	data protection
SS07 Hungary										
SS08 Romania	1	male	landowner, farmer	tillages with high efficiency machinery performed under optimum soil moisture content	low costs and/or high levels of crop yields	legislation	legislation	final costs of the irrigation water	soil properties	reduced number of recommendations
SS08 Romania	2	female	county advisory service	dissemination of the measures presented in the Code of good agricultural practices	information to farmers in order to comply with the cross- compliance measures (GAEC and SMR)	job duties	job description	rehabilitation of irrigation systems	soil threats and recommendations	reduced number of recommendations
SS08 Romania	3	male	soil scientist	dissemination of soil threats by oral presentations at conferences and writing articles	mitigation of the degradation processes for a healthy soil	research projects related to soil quality assessment	limited/poor research programs funding at national level	easier access for farmers to obtain funds for irrigation systems at farm level	soil properties and soil threats	easiness in introducing in the APP of measured data for soil properties

SS08 Romania	4	male	farmer from a farmer association	reduced use of pesticides for soil pollution protection	healthy crop yields without any chemicals	additional payments for soil conservation	lack of knowledge in soil contamination with chemicals	national regulation for electricity costs for water pumping to the final user of irrigation water	all aspects: soil properties, threats and recommendations	translation from English in native language
SS08 Romania	5	male	student in agronomy field	planting trees in soils with bad quality status	converting to forest of bad quality soils, with low fertility	in deep knowledge of the negative effects of soil threats	lack of practical knowledge	irrigation methods selected according to the soil type, texture, land slope	all aspects: soil properties, threats and recommendations	easiness in introducing in the APP of measured data for soil properties in order to get more specific recommendation
SS08 Romania	6	male	researcher from an agricultural research station	no-till farming, diversified crop rotation, mulching, cover crops, irrigation, maintaining the soil pH in neutral range etc.	preserving the soil structure stability, the other soil properties will also be preserved (e.g. good porosity, water stable aggregates, high water retention capacity, good root penetration etc.)	more national funding programs for research	insufficient research projects	irrigation methods selected according to the soil type, texture, land slope and also in line with the new modern equipment available for irrigation	all aspects: soil properties, threats and recommendations	easiness in introducing in the APP of measured data for soil properties in order to get more specific recommendation
SS08 Romania	7	female	county office for soil survey	recommendations for fertilization according to soil analyses in laboratory	preparing fertilization plans for farmers based on analyses in line with the EU Regulations for soil and water protection against nitrates pollution from agricultural sources	dissemination of national and international research project results related to soil quality assessments	knowledge transfer between research and other interested fields	soil properties are very important in establishing the irrigation ratios, and must be known by the farmers and organizations of the irrigation water users	soil properties	easily introduction of measured data for soil properties

SS08 Romania	8	male	professor in soil science	teach the students which are the physico- chemical soil properties, their classification and give recommendatio ns for good agricultural practices, for example performing the tillage when soil is not too wet or not too dry	knowledge transfer to younger generation	modern methods and tools for teaching (e.g. teaching students how to use the SQAPP in practice)	not all students are enthusiastic about new developments	soil properties are very important in establishing the irrigation ratios, and must be known by the students as future possible farmers	soil properties and soil threats	easily introduction of measured data for soil properties
SS08 Romania	9	male	land manager	soil tillage performed under optimum moisture condition, fertilization plan for nutrient management and soil protection against nitrates pollution of water and soil	increasing the crop yields without damaging soil quality, and compliance with the cross- compliance regulations (GAEC; SMR) in order to get subsidies	additional payments for soil conservation measures	lack of knowledge in soil contamination with chemicals (pesticides, nitrates)	national regulation for electricity costs for water pumping to the final user of irrigation water, rehabilitation of irrigation systems, final costs of the irrigation water	all aspects: soil properties, threats and recommendations	easily introduction of measured data for soil properties, reduced number of recommendations
SS08 Romania	10	male	researcher	field experiments studying the effect of different tillage on soil characteristics and dissemination of the results	studying in dynamics and evaluation of the different practices of soil tillage in relation to the protection of soil characteristics	more national funding programs for research	insufficient research projects	irrigation methods selected according to the soil type, texture, land slope and also in line with the new modern equipment available for irrigation	all aspects: soil properties, threats and recommendations	easiness in introducing in the APP of measured data for soil properties in order to get more specific recommendation

SS08 Romania	11	male	researcher	development of methods for rehabilitation of polluted soils with heavy metals	in our country there are areas with historical pollution with heavy metals, which have not been rehabilitated	more national funding programs for research	insufficient research projects	irrigation methods selected according to the soil type, texture, land slope and also in line with the new modern equipment available for irrigation	all aspects: soil properties, threats and recommendations	easiness in introducing in the APP of measured data for soil properties in order to get more specific recommendation, and more information about soil contamination
SS09 Poland	1	F	Researcher/Scientist	I carry out research how to maintain soil biodiversity	Healthy and valuable food production	Dissemination of information on the proper use of soil.	Nothing. I try to spread my knowledge and information.	Dissemination of information about the positive impact of spent mushroom substrate on soil properties.	Possibility to check soil parameters from a specific place.	This is a useful tool and I think it will be used.
SS09 Poland	2	M	student	sorting garbage	soil contamination influence on food production and human health	Governmental support	No financial benefits	present the benefits of such fertilizer to farmers	checking of soil pH	Polish language in menu
SS09 Poland	3	M	Student	I follow the rules related to protection	I want to protect soil	I don't know	Lack of knowledge	increase of the public awareness on the positive impact of spent mushroom substrate on soil	all	no
SS09 Poland	4	M	student	soil pH control, rational selection of fertilization doses and types, manure fertilization, soil sampling for laboratory tests in order to identify deficiencies of nutrients	Good yields, living in harmony with nature.	-	-	training program for farmers	soil quality assessment	Polish language in menu

SS09 Poland	5	F	student	organic production	production of good quality food	More information about soil	Profitability of production	dissemination, cost effectiveness calculation	information about soil quality	very useful
SS09 Poland	6	F	Researcher/Scientist	the use of natural plant protection products and compounds of natural origin to improve plant growth and soil quality, soil liming, the use of organic matter as well as catch crops, incorporation of bean plants in crop rotation (which gives the possibility of limiting the use of mineral fertilization), research on the impact of agricultural waste on soil quality, especially microbiological activity	healthy environment and human health	Higher knowledge on soil protection and factors that cause soil degradation	low availability of natural, biologically active preparations beneficial for the soil environment for use in agriculture and horticulture	increasing farmers' awareness of the positive impact of spent mushroom substrate (SMS) on soil quality and crop yielding, financial support for farmers using SMS	information about soil threats, suggestions on how to improve soil quality	it is difficult to say
SS09 Poland	7	F	researcher/scientist/academic teacher	I conduct research on soil degradation and the possibility of their remediation	Awareness of the threats to the soil environment caused by humans	Funds for the study on soil protection	Lack of funds	Organization of meetings and lectures for farmers, presentation of benefits from the use of spent mushroom substrate in agriculture	suggestions on how to improve soil quality by agricultural management practices	Polish language in menu

SS09 Poland	8	M	Farmer - I use spent mushroom substrate in my farm from more than 30 years.	I use mineral fertilizers rationally, I use composts to improve the content of organic matter, no-tillage cultivation and crop rotation	Soil cultivation, plant breeding and food production are my life passion. I try to take care of the soil to make it productive for present and future generations.	Education	Lack of time for training, lack of knowledge on soil, low production profitability	Spent mushroom substrate should be used primarily locally because of transportation costs. It is produced in 3 main regions of Poland: Podlasie 60%, Wielkopolska 25%, Silesia 5%, other regions 10%. I think it can be widely used in agriculture and horticulture. It would be helpful to disseminate knowledge about the spent mushroom substrate.	I don't know	I don't know
SS09 Poland	9	M	Co-organizer, researcher, scientist	Research on changes in soil physical quality (based on retention capacity, organic matter content) under the influence of various crop rotations and exogenous organic matter (e.g. substrates after mushroom production, chicken manure).	Progressive deterioration of soil quality due to soil drought, loss of organic matter and biodiversity.	Financial support, especially for leguminous crops in crop rotation, and increase of grassland area.	Nothing stops me from undertaking research, developing publications and popularizing the ways of improving soil quality and its importance.	Greater popularisation of research results and dissemination among stakeholders, especially farmers and local authorities.	suggestions on how to improve soil quality	Develop more detailed recommendations on how to improve soil quality.
SS09 Poland	10	M	Student	Decrease of the spreading of mineral fertilizers on the farm	Caring for the environment	-	-	Organizing lectures in communes and poviats for farmers	-	no

SS09 Poland	11	M	PhD student	1. Conducting research on microbiologically enriched mineral fertilizers that are more environmentally friendly than traditional fertilizers. 2. Presenting the results of my research at scientific conferences and in the form of publications. 3. Participation in events related to the reasonable use of soil.	Increase of awareness of the risk of excessive application of mineral fertilizers and the benefits of alternative plant protection products.	Dissemination	Little public interest in issues related to environmental protection.	Dissemination of information about the positive impact of spent mushroom substrate on soil properties.	information about soil threats	Dissemination of this application e.g. for farmers, students of agriculture
SS09 Poland	12	M	Researcher / participated in demonstration	Education in all possible ways and opportunity	Care for the environment	Higher knowledge	-	it is difficult to say.	I don't know	Dissemination of this application e.g. for farmers, students of agriculture
SS09 Poland	13	M	Participant	pH test, soil analysis	Obtaining appropriate soil parameters for proper cultivation	Appropriate equipment, fertilizers, soil monitoring systems	-	Dissemination	-	A satellite crop view should be added

SS09 Poland	14	F	Co-organizer, researcher, scientist	Research on biopreparations (microbiological technologies) for organic production supporting plant growth and development as well as for natural plant protection against pathogens.	The observed loss of organic matter as well as a decrease in biodiversity and changes in the soil and plant microbiome, which leads to increased risk from plant pathogens.	Increase of financial support on innovative solutions used in agriculture, for farmers, but also increasing financial support on research for soil protection, including the development of microbiological technologies improving soil quality.	I try to do as much as possible, disseminate knowledge on soil quality importance, conduct research, participate in national and international projects for the protection of the agricultural environment and soil.	Dissemination of information about the positive impact of spent mushroom substrate on soil properties. More research on this problem.	information about soil threats	Develop more detailed recommendations on how to improve soil quality.
SS09 Poland	15	M	farmer - owner of field where AMP was tested	Manure fertilization, use of catch crops, previously it was mainly lupins, now other crop after crops, balanced fertilization with mineral fertilizers management	preservation of soil in good condition and fertility	good practice in soil tillage and fertilization, new methods of soil quality improvement	funds for soil protection	higher awareness, lower costs	soil quality assessment	Polish language in menu
SS09 Poland	16	M	student	I use no-tillage cultivation, I use spraying	increase of yields	knowledge	spent mushroom substrate availability	opening new mushroom production companies	soil quality assessment	no
SS09 Poland	17	M	student	tillage	better future for the environment	EU financial support	law public awareness and understanding	Dissemination of information about the positive impact of spent mushroom substrate on soil properties. More research on this problem.	soil parameters	no

SS09 Poland	18	M	student	I use nitrogen fertilizers and plant protection products in accordance with the regulations	increase of soil quality	EU financial support	Lack of time	opening new mushroom production companies	soil quality assessment	no
SS09 Poland	19	M	student	waste segregation	better soil quality - better yields	financial support	nothing	better availability	soil parameters	no
SS09 Poland	20	M	student	no-tillage	huge	financial support	funds	higher production of mushrooms, lower costs	soil parameters	Polish language in menu
SS09 Poland	21	M	student	waste segregation	care for soil fertility	financial support	lack of time and money	no-tillage	soil quality assessment	Polish language in menu
SS09 Poland	22	M	student	waste segregation	good quality	more time	lack of time	dissemination to farmers	soil parameters	Polish language in menu
SS09 Poland	23	M	student	no-tillage	improving soil quality	EU financial support	funds	opening new mushroom production companies	soil parameters	Polish language in menu
SS09 Poland	24	M	student	no-tillage and organic fertilizers	obtaining higher yields and improving soil structure	greater availability of spent mushroom substrate, more professional soil cultivation equipment	lack of time and money	law availability of spent mushroom substrate, lower transportation costs	soil parameters	-
SS09 Poland	25	M	student	-	reducing environmental pollution	education	possibility	higher availability of spent mushroom substrate	soil parameters	no
SS09 Poland	26	F	student	I'm not littering	better soil quality means better crops, ecology	increasing people's awareness	lack of funds	higher availability of spent mushroom substrate, lower transportation costs	soil parameters	Polish language in menu
SS09 Poland	27	F	student	I use natural fertilizers	environmental protection	greater availability of natural fertilizers	I try to do as much as possible to protect soil quality	opening new mushroom production companies, higher availability of spent mushroom substrate	soil parameters	-

SS10 Estonia	1	Male	Student	I don't take any actions	To increase yield and improve it's quality	I need more information		I don't know	The fact that the data is free and anyone can add their own data	The app should be in Estonian. I would like to read more background information. It should be in Estonian
SS10 Estonia	2	Female	Teacher	I apply manure and I incorporate the straw into the soil. I grow leguminous crops.	To increase the content of humus in the soil		Money, time, climate, the regulations of Estonian Agricultural Registers and Information Board	I don't know		
SS10 Estonia	3	Male	Student			I need more information			The content of organic carbon	It should be in Estonian
SS10 Estonia	4	Male	Farmer/student	Crop rotation	Higher yield	I need more information and demonstration events	I don't have enough information	I don't know	the recommendations it gives for sustainable land management practices	It is too soon to say
SS10 Estonia	5	Female	Researcher	Environmentally responsible behavior	I want to protect the nature	I need more information and learn new skills	I need to learn new skills and more information	Increase the awareness	The whole app is very good	It is already very good
SS10 Estonia	6	Male	Farmer	I apply green manure to the soil	Way of thinking	I need more subsidy support	The investment is too expensive for me	Investment subsidy		I would like if all the analysis results of the soil samples I take, would somehow reach to the application
SS10 Estonia	7	Male	Farmer	Minimum tillage, crop rotation, wide tyres	Higher yield and more income through soil fertility	Educated employees	I don't have enough money	More advertisement		It should be linked to field book
SS10 Estonia	8	Male	Student							It should be joined with different Estonian databases

SS10 Estonia	9	Female	Student	Adding manure and compost to the soil	Higher yield	I need more information	The Lack of knowledge and experience		Different soil parameters and the recommendations	It should be in Estonian
SS10 Estonia	10	Male	Farmer			I need more information			Easily accessible and free	
SS10 Estonia	11	Male	Farmer	No-tillage, diverse crop rotation, permanent plant cover	Better future	I need more information how to protect the soil and about their economic incentive		More know-how		
SS10 Estonia	12	Male	Farmer	I grow cover crops and apply compost to the soil	To improve soil quality	I need more information about good agricultural management practices		More subsidies, awareness, scientific results	Soil threats	Joining it with the field book
SS10 Estonia	13	Female	Researcher			I need to attend more demonstration events		How to protect plants from different diseases	The evaluation of nutrient content in the soil	It should be joined with different Estonian databases
SS10 Estonia	14	Male	Researcher			New available literature		There should be more demonstration events about no-tillage sowers. Also more dissemination about the advantages and disadvantages of no-till farming.		
SS10 Estonia	15	Female	Researcher	I don't take any actions, but I try to research which management practices are beneficial and which are not.				To raise awareness of the farmers. Lack of research on plant diseases and pests in Estonia.	Soil nutrient content and structure	It should be joined with different Estonian databases

SS10 Estonia	16	Female	Farmer/researcher	Crop rotation with legumes, cover crops, protecting the lands that are eroded	To maintain soil fertility	Digitalized data storage solution and the possibility to track it in time to evaluate soil quality		The slug and pesticide suitability problems should be addressed.	The possibility to add or change data	The possibility to change and save soil parameters
SS10 Estonia	17	Male	Farmer/student	Crop rotation	Higher yield, better soil quality	I need more resources	The lack of resources and knowledge		Adding my own data and getting recommendations based on that	It should be joined with Estonian soil map. Also it would be better if the whole application is in Estonian
SS10 Estonia	18	Male	Student				The lack of knowledge		Soil data	
SS10 Estonia	19	Male	Student	Crop rotation					Getting information about soil on-site	
SS10 Estonia	20	Female	Student	I apply compost to the soil	Higher yield and better food quality	I need more information and experience	The lack of knowledge		The data about chemical soil quality indicators	It should be in Estonian
SS10 Estonia	21	Female	Student	Reducing soil disturbance	To protect the soil as it is an important part of the environment	I need more information	The lack of knowledge	Problems regarding pests, fertilization and climate	The evaluation of nutrient content in the soil	It should be in Estonian
SS10 Estonia	22	Female	Student			I need more information about agricultural practices that improve soil quality			the recommendations it gives for sustainable land management practices	It should be in Estonian
SS10 Estonia	23	Male	Student	I don't use any					It determines your location and gives results based on that spot	I need more guidance about how the application works
SS10 Estonia	24	Male	Student	Reducing soil compaction and avoiding soil contamination	To protect the soil environment	I need to attend more demonstration events		Slug and compaction problems should be addressed.		It should be in Estonian

SS10 Estonia	25	Male	Student	Fertilization	Higher yield	I need more information				the recommendations it gives for sustainable land management practices	
SS10 Estonia	26	Male	Farmer/student	I try to choose the right time to cultivate. I also apply cattle and green manure and grow cover crops.	Sustainable farming	I need diverse agrotechnology	I don't have enough resources and not all of the actions are cost-effective	The farmers should educate themselves more	Soil threats	Joining it with Estonian soil map and I think it would be better if the whole application is in Estonian	It should be in Estonian
SS10 Estonia	27	Male	Student	I practice crop rotation and try to increase organic matter content in the soil	Higher yield and humus content in the soil				Soil data		
SS10 Estonia	28	Male	Farmer/student	Fertilization	Higher yield	I need more information	I am not interested	People need more information about how no-tillage affects the soil	the recommendations it gives for sustainable land management practices	Additional information about Estonian soils	
SS10 Estonia	29	Male	Student	I try to avoid overgrazing and adding too much fertilizers to the soil	Protecting the environment and water quality. I want to improve yield quality.	I need more information	The lack of knowledge	Farmers that use no-tillage practice have often problems with weeds and pests.	the recommendations it gives for sustainable land management practices	The application is not easy to use	
SS10 Estonia	30	Male	Student	I avoid compaction by cultivating when the soil is not wet	Higher yield	I need more resources to buy better agricultural machinery	I don't have enough resources and experience	Sometimes the soil surface is not flat enough under no-tillage farming			
SS10 Estonia	31	Female	Student	Environmentally responsible behavior	Clean environment			People in agriculture should be more educated	Soil fauna		

SS10 Estonia	32	Male	Student	I don't use counterfeit pesticides. Also I practice precision agriculture.	Sustainability and better soil quality	I need more information and resources to buy better agricultural machinery	I don't have enough resources and experience	Soil compaction under no-tillage and reducing weediness		Soil quality indicators should have short explanations
SS10 Estonia	33	Male	Student	I practice precision agriculture and avoid soil contamination	Better soil quality	I need more resources to buy better agricultural machinery. I also need more information about scientific results about good management practices.	I don't have enough resources and experience	Soil compaction under no-tillage	the recommendations it gives for sustainable land management practices	It should be in Estonian
SS10 Estonia	34	Female	Student	I try to use less pesticides	Better soil quality	I need more information	The lack of knowledge		Soil data	It should be joined with Estonian soil map
SS10 Estonia	35	Female	Student	I don't use any	To protect the soil as it is an important part of the environment	I need more information	The lack of knowledge	Plant residue management problems to decrease the spread of plant diseases	Detailed soil information	Recommendations that are more suitable in Estonian conditions
SS10 Estonia	36	Male	Student	I try to reduce tillage intensity as much as possible. Also I incorporate straw into the soil and apply green manure.	Sustainable farming			How to have leveled ground for sowing		
SS10 Estonia	37	Female	Student	I don't use any pesticides	Higher yields and sustainable farming				the recommendations it gives for sustainable land management practices	The application is not easy to understand for everyone

SS10 Estonia	38	Male	Student	I use lighter machinery to avoid compaction. Also I try not to overfertilize the soil.	Good soil quality	I need scientific results that the actions provide me higher yields. Also there should be some political motivation.	The lack of knowledge	Lack of local advice and financial support	Fast results about soil quality	It should be joined with Estonian soil map
SS10 Estonia	39	Female	Farmer/student	I try not to compact the soil. I also practice integrated plant protection and include leguminous crops into the crop rotation plan.	Good soil quality	I need more information	The lack of employees and machinery	Plant protection under no-tillage		
SS10 Estonia	40	Male	Student	I don't use any		I need more information how to improve soil quality	The lack of knowledge and time	Dissemination of the positive aspects of no-tillage farming		It is not user-friendly
SS10 Estonia	41	Female	Student	I use irrigation, cultivation and apply compost to the soil.	Higher yield	I need more information	The lack of knowledge			
SS10 Estonia	42	Female	Farmer/student	I don't practice deep tillage	Soil protection, less time consuming, higher yields	I need more information and diverse selection of fertilizers and pesticides	I think that not all the actions are cost-effective	There is not enough research on no-tillage		
SS10 Estonia	43	Female	Input sales/student	I try to reduce pesticide usage and plough less	Healthier food	I need to see more research on the subject and good examples on how these actions are improve soil properties	The lack of knowledge and experience	More awareness		Improved local accuracy

SS10 Estonia	44	Female	Student	I don't use any		I need more information				The application is not user-friendly
SS10 Estonia	45	Male	Student	I use soil improvers	Higher yield	I need more information	I am not interested		the recommendations it gives for sustainable land management practices	
SS11 Quiyang	1	Male	agro-technician	Applying organic and inorganic fertilizers, popularizing straw returning technology	1、Improve soil fertility and increase crop yield.2、Prevent soil acidification	Application rate of organic fertilizer in the middle fertility soil.	Lack of financial support and guidance from professional and technical personnel.	I think it needs some policy support and the cooperation of farmers.	The data can be updated in real time	Should be compatible with Android
SS11 Quiyang	2	Female	agro-technician	Promote sustainable land use management	Reduce fertilizer input and increase crop yields	I need some financial support and professional planting guidance.	Transforming the concept of peasants	More promotion and publicity for farmers to accept	It can provide fertilization advice	This APP should be compatible with Android.
SS11 Quiyang	3	Female	agro-technician	Demonstration and promotion of green manure cultivation techniques	Fertilize soil quality and reduce the amount of chemical fertilizer	Government policy support and technical support from research institutes	Lack of promotion funds and varying degrees of acceptance by farmers	Improve the mechanization of agricultural management	The data can be updated at any time.	I hope to develop Chinese version.
SS11 Quiyang	4	Male	agro-technician	Promote fertilizer reduction technology	Increase crop yields and farmers' income.	Strengthening field infrastructure construction and heavy metal pollution control.	Lack of promotion funds	It is required to give farmers more subsidies	Its data can be updated and reviewed at any time.	I hope it can have a Chinese version.
SS11 Quiyang	5	Male	agro-technician	Promoted soil quality testing and straw returning technology.	Fertilize soil, control acidification, increase crop yield.	Specific fertilizer ratio of different farmland.	Farmers have low enthusiasm and low cooperation.	I think we need policy support and subsidize farmers.	The database is powerful and up to date.	Compatible with Android

SS11 Quiyang	6	Male	agro- technician	Promote green manure cultivation techniques	Improve soil fertility and reduce chemical fertilizer use.	Government support, guidance from scientific researchers, and cooperation with farmers.	Low economic efficiency, low farmers' cooperation	Vigorously develop mechanization and give farmers subsidies	Data can be updated at any time	I hope it can develop Chinese version.
SS11 Quiyang	7	Male	agro- technician	Promote green manure technology and straw returning 。	Fertilize soil and improve the quality of cultivated land.	Vigorously develop and promote green manure planting technology.	Green manure is time- consuming and labor-intensive, with low returns and low rate of farmers' acceptance.	Improve farmers' acceptance of new technologies.	Data can be updated at any time	Develop Android version
SS11 Quiyang	8	Male	agro- technician	Promote the utilization of green manure and straw returning technology.	Fertilize soil and increase crop yield.	To optimize the amount of organic fertilizer used in agricultural management.	The cost of organic fertilizer is too high.	Transforming farmers' attitudes toward new technologies.	Data download is very convenient	Should be compatible with Android and need to develop Chinese version.
SS11 Quiyang	9	Male	agro- technician	Promote conservation tillage	I hope that farmers will increase their income by using new technologies.	I hope to get help from more research institutions and researchers.	Insufficient funds	Transforming the minds of farmers and increasing the enthusiasm of farmers	Simple to use	Develop Android version
SS11 Quiyang	10	Male	Governmen t official	Promotion of new technologies for soil fertility and improvement and construction of field infrastructure.	Protecting the quality of cultivated land, preventing soil acidification, and promoting sustainable use of agricultural soils.	Obtain new technology for controlling soil acidification and soil heavy metal pollution	Green manure planting has low efficiency and is difficult to promote.	It needs to solve the problem of insufficient water resources in farmland.	It can be globally positioned.	It needs to be developed in Chinese and compatible with Android.

SS11 Quiyang	11	Male	Government official	Soil testing and fertilization project and control paddy field acidification.	Complete the task of seniors and increase the income of farmers.	Appropriate policy relaxation and increased financial support	1 Farmers do not trust new technology.2 Lack of field infrastructure.	The government should issue policies to encourage farmers to participate in the quality improvement of cultivated land.	Strong database, can guide farmers to fertilize in real time.	Compatible with Android and develop Chinese version.
SS11 Quiyang	12	Male	Farmer	Using crop rotation and straw returning	Improve soil fertility and increase production	Get some specific advice	Heavy metal in rice fields exceeds the standard values	More technical training and guidance	Be able to keep track of soil information	Develop Chinese version
SS11 Quiyang	13	Male	Farmer	Application of organic fertilizer	Increase production	Professional guidance on fertilizer use	The price of organic fertilizer is too high	Improve the mechanization of agricultural management.	View soil data in real time	It can be used more conveniently
SS11 Quiyang	14	Male	Farmer	Application of manure and green manure	Fertilize the soil and increase the yield.	Get some professional guidance on the amount of organic fertilizer.	Fertilizer price is too high	I hope to give me some subsidies.	It can view data at any time	I hope it can have a Chinese version.
SS11 Quiyang	15	Male	Farmer	I take over protective tillage and straw returning measures.	Increase crop yields and income.	I want to get some professional guidance about the application of organic fertilizer.	No relevant policy encouragement and technical support.	In agricultural management, I need more automated machinery.	Fast data update and easy operation.	It should be compatible with the Android version.
SS11 Quiyang	16	Male	Farmer	I use organic fertilizer and advocate straw returning.	Fertilize the soil and increase the yield.	I need to solve the problem of slow rate of straw returning to the field.	The application of organic fertilizer has a large workload, the fertilizer efficiency is slow, and the effect is not obvious.	I think there should be a more professional training and guidance.	Strong database	No Chinese version, I will not use
SS11 Quiyang	17	Male	Farmer	I advocate and use straw to return to the field.	Fertilize soil and increase crop yield	I want to know the ratio of organic fertilizer to inorganic fertilizer.	Organic fertilizer application takes more time and effort.	I want to know how to make a more scientific fertilizer.	Data is always updated and easy to use	Cannot fit Android

SS11 Quiyang	18	Female	Farmer	Straw returning and applying chicken manure.	Save costs and increase revenue	I hope to have a machine that smashes straw.	Unable to find solutions for the disease invasion on corn crop	Need to have the guidance of a technician	I can know the quality of my farmland by the APP.	I think it should be more convenient to use.
SS11 Quiyang	19	Male	Farmer	I apply manure and straw returning.	I hope to increase crop yields.	Some experts help me with farmland management.	I hope that farmland management can be more mechanized.	I hope to have more technical training.	I can get a lot of data from the APP.	Develop Chinese version and increase promotion.
SS11 Quiyang	20	Female	Farmer	Applying organic fertilizer in my field.	I want to increase my income.	Expert guidance on farmland management	Organic fertilizer is too expensive.	I hope that organic fertilizer can get cheaper and cheaper.	The APP has a lot of data, I can understand the quality of my land.	I hope it can have Chinese version.
SS11 Quiyang	21	Male	Farmer	Apply green manure	Improve crop yield and quality	Strengthening the construction of field infrastructure and the treatment of heavy metal polluted soil.	I don't have enough money to support the expansion of production.	More professional training and guidance	Can view data at any time	Develop Chinese version
SS11 Quiyang	22	Male	Farmer	I advocate straw returning and applying green manure.	Reduce fertilizer application and increase production	I hope you can help us solve the problem of excessive heavy metals in the soil.	The price of my product is too low	I hope the government can give me some subsidies.	The database is very powerful	I hope it can give some specific fertilization advice.
SS11 Quiyang	23	Female	Researcher	Exploring soil nutrient regulation and rational fertilization	Reduce nutrient loss and increase nutrient use efficiency.	Increase exchange with farmers and understand the issues they urgently need to solve.	Research results are difficult to promote.	Farmers apply fertilizer excessively.	All users can update the data.	I hope it can give specific fertilization advice.
SS11 Quiyang	24	Male	Researcher	Learn about soil quality assessment.	Conserve the soil	Can communicate more with farmers	Scientific research and production are difficult to combine.	I think there must be government support.	It can provide a lot of basic data for scientific research.	Improve the accuracy of your data.

SS11 Quiyang	25	Female	Researcher	Research on straw returning technology	Promote straw returning technology, fertilize soil.	Apply theory to practice	The promotion is very difficult	It needs policy support and subsidies to farmers.	It can provide soil fertility data	It needs to increase the accuracy of positioning
SS11 Quiyang	26	Male	Researcher	I started research on the replacement of chemical fertilizers with organic fertilizers.	Soil fertility to ensure sustainable use of soil.	Conduct more exchanges between relevant researchers	Insufficient research on the mechanism of organic fertilizer for fertilizing soil.	It requires certain policy support and the improvement of soil awareness by farmers.	I can get local soil quality data in real time and free of charge.	Develop Android version.
SS11 Quiyang	27	Male	Researcher	Carry out research and promotion demonstration of soil fertility technology	Fertilizing and improving soil	Accelerate the development of new fertilizers	1、 Technological breakthroughs are difficult and lack new technologies.2、 Low acceptance of farmers in the process of technology promotion. Insufficient promotion funds.	The cost is too high and some subsidies need to be given to farmers.	Strong database	Improve the accuracy and usability of your data.
SS11 Quiyang	28	Male	Researcher	Study on the effect of applying organic fertilizer on crop yield	Improve soil quality and increase farmers' income.	I hope to get government policy support and financial support.	Insufficient promotion funds.	Need adequate funding and policy support.	Fast data update.	In order to facilitate the use of the public, develop the Chinese version as soon as possible
SS11 Quiyang	29	Male	Researcher	I studied conservation tillage and prevented soil acidification.	Sustainable use of soil	I hope to get good fertilizer, good crop varieties.	Insufficient policy support and insufficient research funding	Promotion should be strengthened to make farmers more willing to accept	Ability to understand soil quality data in real time	Should develop a simple Chinese version

SS11 Quiyang	30	Male	Researcher	Study on the prevention of soil acidification by lime and organic fertilizer.	Fertilize and improve soil to ensure high yield and stable yield of grain	In the promotion and application of technology, it is supported by the agricultural technology department.	Insufficient research on the mechanisms of organic fertilizer controls on acidification.	Increase subsidies for farmers and encourage farmers to use organic fertilizers	Fast access to soil information	Improve the accuracy of date.
SS11 Quiyang	31	Male	Researcher	Research on straw returning to the field.	Improve soil fertility and increase crop yield.	Apply soil fertility technology to production	Farmers' acceptance of new technologies is low	Strengthen the training and promotion of farmers	Strong database	Not compatible with Android in China
SS11 Quiyang	32	Male	Researcher	Promote straw returning technology	Improve soil fertility and increase crop yield.	Establish a reasonable and effective soil quality evaluation standard.	Straw returning to the field increases costs and yields less.	To provide farmers with good technical guidance	Data can be updated at any time, and the amount of data is large	Compatible with Android and develop Chinese version
SS11 Quiyang	33	Female	Researcher	Study the proportion of organic fertilizer and inorganic fertilizer.	Fertilizer reduction, while fertilizing soil	I hope to get more comprehensive data.	The data obtained is not accurate enough and the error is large.	Increase promotion efforts	Huge amount of data	Improve the accuracy of your data
SS11 Quiyang	34	Male	Researcher	Study techniques for improving soil fertility and controlling soil acidification.	Enrich the theory of soil fertility and provide theoretical support for soil quality improvement.	Policy and funding support.	Difficulties in research results.	The cost of organic fertilizer and lime must be reduced.	Large amount of data, providing data reference for cultivated land management.	Develop Android version
SS11 Quiyang	35	Female	Researcher	Study on application of organic fertilizer to control soil acidification.	Control soil acidification, fertilize soil and increase crop yield.	Policy promotion and financial support.	The price of organic fertilizer on the market is high and the quality is uneven.	Formulate quality standards for organic fertilizers.	Provides rich soil quality information.	I hope it can give specific fertilization advice.

SS11 Quiyang	36	Male	Researcher	Promote the application technology of organic fertilizer and lime.	To control soil acidification, improve soil fertility and crop yield.	In-depth study on the application of organic fertilizer.	Insufficient government promotion and expensive organic fertilizer.	To promote the promotion of adequate and conservation tillage	Data can be updated in real time	Add Chinese version
SS11 Quiyang	37	Female	Researcher	Study soil nutrient changes and provide a theoretical basis for fertilizer reduction.	Maintain sustainable use of soil	Adequate financial support	Little communication with farmers, not understanding the market demand	Government policy support and technical guidance from professionals	Real-time integration of geographic location information and soil quality information	Improved local accuracy.
SS11 Quiyang	38	Male	Researcher	1、Optimize field nutrient management and improve soil fertility.2、Training young researchers.	1 Promote the green development of China's agriculture.2 Sustainable use of agricultural resources.3 Increase farmers' income.	1 Government support and participation.2 Agricultural enterprise participation.	1 Farmers lacks knowledge of rationale fertilization.2 Fertilizer companies produce products that are not suitable for a given soil type	1 Researchers, fertilizer manufacturers and farmers must cooperate.2 Government subsidies and concessions for farmers.	It can provide information on soil quality and management.	Software operation should be more convenient.
SS11 Quiyang	39	Male	Researcher	Studying organic fertilizer application and straw returning technology.	Promote soil sustainable management technology.	Increase government subsidies.	Low prices of agricultural products and high labor costs.	It needs government policy to promote.	Provide soil quality information in real time	Chinese version should be available and compatible with Android.
SS11 Quiyang	40	Male	Researcher	Research techniques to improve soil fertility.	To help increase farmers' income.	More convenient to get more data	Lack of policy promotion	Increase the promotion of conservation tillage	easy to use	Develop Android version
SS11 Quiyang	41	Male	Researcher	Controlling soil acidification by applying organic fertilizer.	Fertilize soil to achieve sustainable use of soil.	Get more funding in the soil fertility evaluation research processes.	Lack of policy support in the promotion of organic control of soil acidification.	Government should formulate policies to promote the application of organic fertilizers.	It can give detailed soil quality data.	I think it needs improvement in accuracy.

SS11 Quiyang	42	Male	Researcher	Buy organic food	Promote the production of organic products and increase the enthusiasm of farmers to protect the soil.	Improve the yield and quality of organically grown crops.	Organic food is too expensive	Give farmers more subsidies	A huge amount of data, can give a reference to field management	Develop Chinese version
SS11 Quiyang	43	Female	Researcher	I advocate organic farming practices	Promote environmental protection	Ability to learn more about soil-plant-environment sciences.	How to relate this theoretical knowledge to practice ?	Need more policy support and promotion	Large amount of data, easy to use.	Should be compatible with Android and need to develop Chinese version.
SS12 Suining	1	Male	Researcher	I have done work on soil quality improvement and soil organic carbon improvement.	Increase soil fertility, reduce environmental pollution problems caused by crop residues.	A method for measuring indicators of soil quality evaluation simply and rapidly.	Research funding cannot be continuously supported.	The amount of organic fertilizer and the ratio of organic fertilizer to chemical fertilizer.	1.Ability to directly test soil nutrient changes in system fields. 2.Ability to update data in real time.	1.I hope that all the text in the software can be switched to Chinese. 2. I hope Android can also install this software.
SS12 Suining	2	Male	Researcher	I am engaged in research on the rational use of chemical fertilizers, the application of organic fertilizers, and rational irrigation.	Improve fertilizer use efficiency and reduce soil pollution.	Propose and promote soil management techniques adapted to regional soil characteristics.	There are many types of soil and lack of human and material support.	Further refine the soil property data to provide more basis for the improvement of management measures.	Comprehensive evaluation of soil fertility.	1.Optimize slow running problems; 2.Solve problems limiting mobile phone systems; 3.Supplement user manual.
SS12 Suining	3	Male	Researcher	Study soil improvement techniques and explore mechanisms.	Soil improvement and cultivation is very important and is my task.	Get government incentives, a professional research guide.	Lack of funding and low social attention.	Efficient cropping system	Soil environment	The data is all open and free.

SS12 Suining	4	Male	Researcher	Promote rational fertilization, rational use of land, and popularize basic soil protection measures for farmers.	Only protect the soil to protect humans.	Encourage people around me to take the initiative to participate in soil conservation.	Lack of funds, time and manpower.	The development of soil management measures needs to be combined with soil quality characteristics and adapted to local conditions.	It allows us to understand the quality of the soil and have a clearer understanding of the soil.	1.All the text in the software can be switched to Chinese. 2.Android can also install this software.
SS12 Suining	5	Female	Researcher	Planting trees.	Reduce carbon dioxide emissions.	Engaged in research related to carbon dioxide emissions from farmland.	No funds.	Not sure	Not very interested	Maybe it is perfect.
SS12 Suining	6	Male	Researcher	Provide optimized solutions for soil protection and promote related technologies. Such as organic fertilizers and inorganic fertilizers to improve soil quality.	By increasing the application of organic fertilizer, the soil organic matter content is increased, the soil fertility level is improved, and food security is ensured.	Improve government attention and raise farmers' awareness of soil protection.	Farmers' acceptance of technical programs is low, and the cost of agricultural land production is increasing year by year.	Strengthen technical training and popular science education.	The indicators are chosen very comprehensively.	The operation interface needs to be simplified.
SS12 Suining	7	Male	Researcher	Analysis soil properties and suggest famer to fertilize properly.	To protect our earth, and save a good future for our children.	Have more data to better help farmers and protect the soil.	Good quality data and diversity ways of getting this data.	Balance fertilization	Provide well data for us.	The data could download.
SS12 Suining	8	Male	Researcher	Reduced fertilization; Straw returning measures; No-till measures.	Increase soil fertility and increase crop yield.	Promote and encourage researchers to participate.	The research direction is inconsistent with the research content and lacks relevant research.	Not clear.	Soil quality assessment can be performed quickly.	Provide Chinese version and user manual.

SS12 Suining	9	Male	Researcher	Rationally supplement organic fertilizer, planting hedgerows on sloping farmland	Organic fertilizer can improve soil organic nutrients, improve soil structure, and hedgerows prevent soil erosion.	Reduce pesticide application by reducing pesticide application; planting soil for planting and fertilizing soil in farmland management.	High labor costs and low crop prices have led farmers to be less motivated to protect the soil.	Increase government support.	Consider comprehensive and accurate data.	Running slowly.
SS12 Suining	10	Male	Researcher	Promote and innovate the ecological use of land, and promote the demonstration of new technologies and new products.	Improve soil and increase yield and quality.	Technology investment and policy support.	Research area limitations and limited time and effort.	Rotation, returning fields and organic fertilizer inputs.	Soil risk	Can be applied to Android systems.
SS12 Suining	11	Male	Researcher	Promote scientific fertilization knowledge to farmers, control the amount of chemical fertilizer application, and carry out straw returning and organic fertilizer application.	Pay attention to soil quality, prevent soil acidification and nutrient enrichment.	Need more time and energy to communicate with farmers.	Lack of enough time and effort.	Let farmers realize the importance of rational fertilization and need government support.	The information provided is very complete.	Hope to provide Chinese.
SS12 Suining	12	Female	agro-government	Fertilizer reduction technology	Increase farmers' income, Reduce soil heavy metal pollution	Specific fertilizer ratio of different farmland.	Farmers have low enthusiasm and low cooperation.	It need to give farmers more subsidies	Data can be updated at any time	I hope it can have a Chinese version.

SS12 Suining	13	Male	agro-government	Increase the application of organic fertilizer	Improve soil fertility and increase crop yield	The amount of organic fertilizer used in agricultural management.	The price of organic fertilizer is too high.	It need to give farmers more subsidies	Data can be updated at any time	Compatible with Android
SS12 Suining	14	Male	agro-government	Straw returning technology	Fertilize the soil and protect the quality of cultivated land.	The amount of straw used in agricultural management.	Lack of promotion funds	Transforming farmers' attitudes toward new technologies.	Data can be updated at any time	Compatible with Android
SS12 Suining	15	Male	agro-government	Simple application fertilizer technology	Increase farmers' income, Reduce the labour force	Strengthening field infrastructure construction and heavy metal pollution control.	Lack of promotion funds	It need to give farmers more subsidies	Data can be updated at any time	Compatible with Android and develop Chinese version.
SS12 Suining	16	Male	Farmer	Using chemical fertilizer, Crop special fertilizer	Increase crop yields and increase income.	Get some specific advice	Good soil quality	More technical training and guidance	It can view data at any time	Develop Chinese version
SS12 Suining	17	Female	Farmer	Application of organic fertilizer	Fertilize the soil quality	Professional guidance on fertilizer use	The price of organic fertilizer is too high	Improve the mechanization of agricultural management.	View soil data in real time	Compatible with Android and develop Chinese version.
SS12 Suining	18	Female	Farmer	Application of farmyard manure and commodity manure	Fertilize the soil and increase the yield.	Get some professional guidance on the amount of organic fertilizer.	Fertilizer price is too high	I hope to give me some subsidies.	It can view data at any time	I hope it can have a Chinese version.
SS12 Suining	19	Male	Farmer	I use protective tillage and straw returning.	Increase crop yields and increase income.	I want to get some professional guidance about the application of organic fertilizer.	No relevant policy allowance	I hope to give me some subsidies.	Fast data update and easy operation.	It should be compatible with the Android version.
SS12 Suining	20	Female	Farmer	Using chemical fertilizer or crop special fertilizer	Increase crop yields	Get some specific advice on fertilization	soil acidification	More technical training	View soil data in real time	Compatible with Android and develop Chinese version.

SS12 Suining	21	Male	Farmer	Using crop rotations	Fertilize the soil and reduce soil disease	Increase farmers' income	Fertilizer price is too high, and policy allowance	Improve the mechanization of agricultural management, reduce force.	View soil data in real time	Compatible with Android and develop Chinese version.
SS12 Suining	22	Male	Farmer	Application of farmyard manure and commodity manure	Improve soil fertility and increase production	Guidance about the application of organic fertilizer.	The price of organic fertilizer is too high	I hope to give me some subsidies.	View soil data in real time	Compatible with Android and develop Chinese version.

SS13
Zifanggou
SS14
Gongzhuling