



Sustainable Precision Agriculture: Research and Knowledge for Learning how to be an agri-Entrepreneur



Report on Intrapreneurship Experience

R5.3

**WP 5 – Business Model Competition
UEVORA**

December 2020



**Co-funded by the
Erasmus+ Programme
of the European Union**

The European Commission support for the production of this publication does not constitute endorsement of the contents which reflects the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

TABLE OF CONTENTS

Summary	2
Disclaimer concerning COVID-19.....	3
1. Introduction	4
2. BMC winning teams' Intrapreneurship Experience	4
2.1. Greece.....	4
2.2. Italy	6
2.3. Portugal	7
2.4. Spain	10
3. Intrapreneurship Experience Evaluation	12
3.1. Greece.....	12
3.2. Italy	15
3.3. Portugal	18
3.4. Spain	21
4. Conclusions	21
4.1. Greece.....	21
4.2. Italy	22
4.3. Portugal	22
4.4. Spain	22
4.5. Farms	22
Annexe – Intrapreneurship Experience Evaluation Questionnaires for Students and Farmers	24
Questionnaires for students	25
Before intrapreneurship experience	25
After intrapreneurship experience	26
Questionnaire for farmers	27

SUMMARY

This document aims to report the effectiveness of the Intrapreneurship Experience on the competencies and skills development of the participating students. It is based on the feedback received by the universities from students before and after the experience. To collect this information, the questionnaires were shared with the students of the Business Model Competition winning team and the farmer in each country.

DISCLAIMER CONCERNING COVID-19

Due to the current pandemic situation concerning the worldwide spread of Covid-19, most institutions and enterprises in Europe suffered restrictions of their daily work. This affected especially Universities and R&D centres, that had restrictions to all face-to-face activities but also agricultural enterprises.

Within this scenario, activities planned in the Business Model Competition Plan had some constraints and it was necessary to consider some changes.

The Sparkle consortium followed the evolution of the National and European restrictions adopting decisions in consequence, such as, for example, substituting on-site with online activities.

Sparkle partners were able to successfully adapt the project activities to the existing circumstances.

1. INTRODUCTION

The “Sparkle Challenge” is a business competition addressed to the students participating in the Sparkle Course.

Partner Universities’ launched a “Call for Challenges”, asking farms in each country to present their needs and problems they wish to solve using precision agriculture. One challenge per country has been selected and the students, organized in groups (3 to 5 students), tried to solve it presenting, in the end, a new business model proposal. The winning team spend some time on the farm keeping up with the daily activities and attempting to implement their idea. This Intrapreneurship Experience was monitored by each University and this report collects and presents the information gathered to evaluate the educational impact in the students.

According to the Business Model Competition Action Plan, the main contents of this document will refer to:

- Effectiveness of the Intrapreneurship Experience;
- Suggestions to improve the coaching activity;
- Outcomes of the experience;
- Business model improved during this experience as a case study.

2. BMC WINNING TEAMS’ INTRAPRENEURSHIP EXPERIENCE

The proposed challenges in each country are described in the report R5.2 Solutions Business Model. This report also explains how the teams worked with the support of universities and farms to solve the challenges and presents the winning BM canvas and Impact analysis for each country. The following sections explain the course of the Intrapreneurship Experience and the constraints faced due to the Covid-19 situation.

2.1. GREECE

Due to the constraints imposed by the Covid-19, the students couldn't visit the farm as planned. Besides, during the time of the implementation of the Intrapreneurship Experience, there was no work on the farm and no crops to see, all crops were harvested. Therefore, from 10.10.2020 to 18.10.20 they had only virtual meetings. The students advised the farmer about the Precision Agriculture technologies and processes that he can adopt to solve the proposed challenge. One of the days during Intrapreneurship Experience there was a pilot testing of a drone (Figure 1) so that students could get a real experience of the PA tools. This was the only physical meeting and was done at the AUTH campus using all Covid-19 safety measures (Figure 2).



Figure 1 – Winning team testing the use of a drone.



Figure 2 – Teachers and winning team.

2.2. ITALY

As established in the BM Competition Action Plan, UNIFI (supported by Euroteam Progetti) and Mazzei provided support to the winning team in developing and deepening the idea for its feasibility.

Due to the constraints imposed by the Covid-19, only three students visited the farm as planned (Figure 3), and the Intrapreneurship Experience took place for three days. Before this experience, the winning team had a skype meeting with UNIFI and Mazzei Farm. On one hand, some students could not enjoy the experience due to the job's schedule; on the other hand, Mazzei Farm had the harvesting time and it was very difficult to find common dates. So, from 29.10.2020 to 31.10.20 students and Mazzei Farm had both virtual and in presence meetings. The students advised the farmer about the Precision Agriculture technologies and processes that Mazzei can adopt to solve the proposed challenge.



Figure 3 - The BMC winning team visiting Mazzei Farm.

2.3. PORTUGAL

Before the Intrapreneurship Experience, UEvora and Quinta da Cholda discussed the proposed idea with the winning team in a virtual meeting and supported them in developing and deepening the proposed solutions for the challenge.

Due to the Covid-19 restrictions and also to the students' availability, the Intrapreneurship Experience consisted of a day visit to Quinta da Cholda. There, João Coimbra explained how and why Quinta da Cholda adopted Precision Agriculture (Figure

4). He talked about how his father managed the farm, with 50 people in the field and no one in the office and now he has 3 or 4 workers in the field and 6 in the office.



Figure 4 - The farmer explaining how and why he adopted PA.

We had lunch together (Figure 5) and then the farm technician Nuno Tomé showed us several tools they use to manage the farm like the irrigation managing system (Figure 6), how they handle all the data from a plot (Figure 7), we have seen a moisture sensor and the information collected in the computer (Figure 8). Students also discussed with João Coimbra some issues related to the challenge they had to solve.



Figure 5 - Lunchtime.

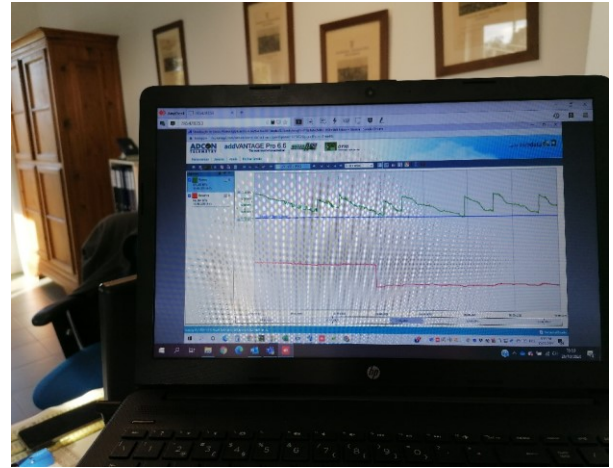
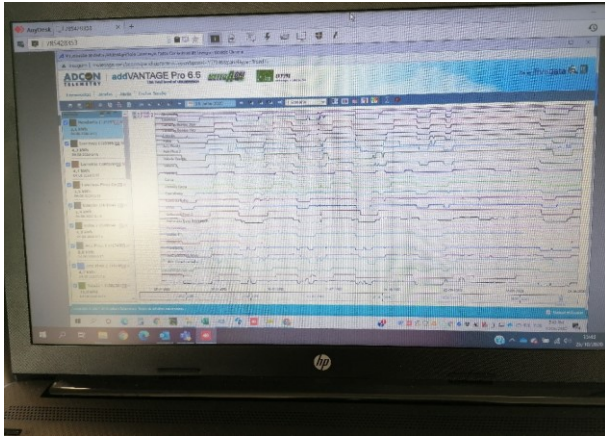


Figure 6 - Energy management and irrigation system management at Quinta da Cholda.



Figure 7 - Watching how are managed all the data from a plot at Quinta da Cholda.



Figure 8 - Learning about a moisture sensor.

Due to the heavy rain in the days before, corn harvest had stopped in that day, so the students couldn't follow that process.

2.4. SPAIN

The university and the farmer provided support to the winning team in developing and deepening the idea to better fit the farm reality. To do this, and due to the pandemic Covid-19 situation that precluded the option to visit the farmers and producers, online meetings were scheduled with the farmer that proposed the Sparkle challenge (Mr Javier Perez Caro).

The winning team was rewarded with an extra session with the farmer (25/10/20), devoted to fine tune their proposal in a consultancy-oriented scheme, as the group was decided to apply to other competitions for start-ups, and wanted more feedback from the expert.

This team was also invited to present and explain its entrepreneurial idea in the Final Sparkle Meeting, along with the winners from the other countries.

The following illustrations (Figure 9) were captured from 2 out of the 4 virtual meetings held by the farmer and the students of the winning team.

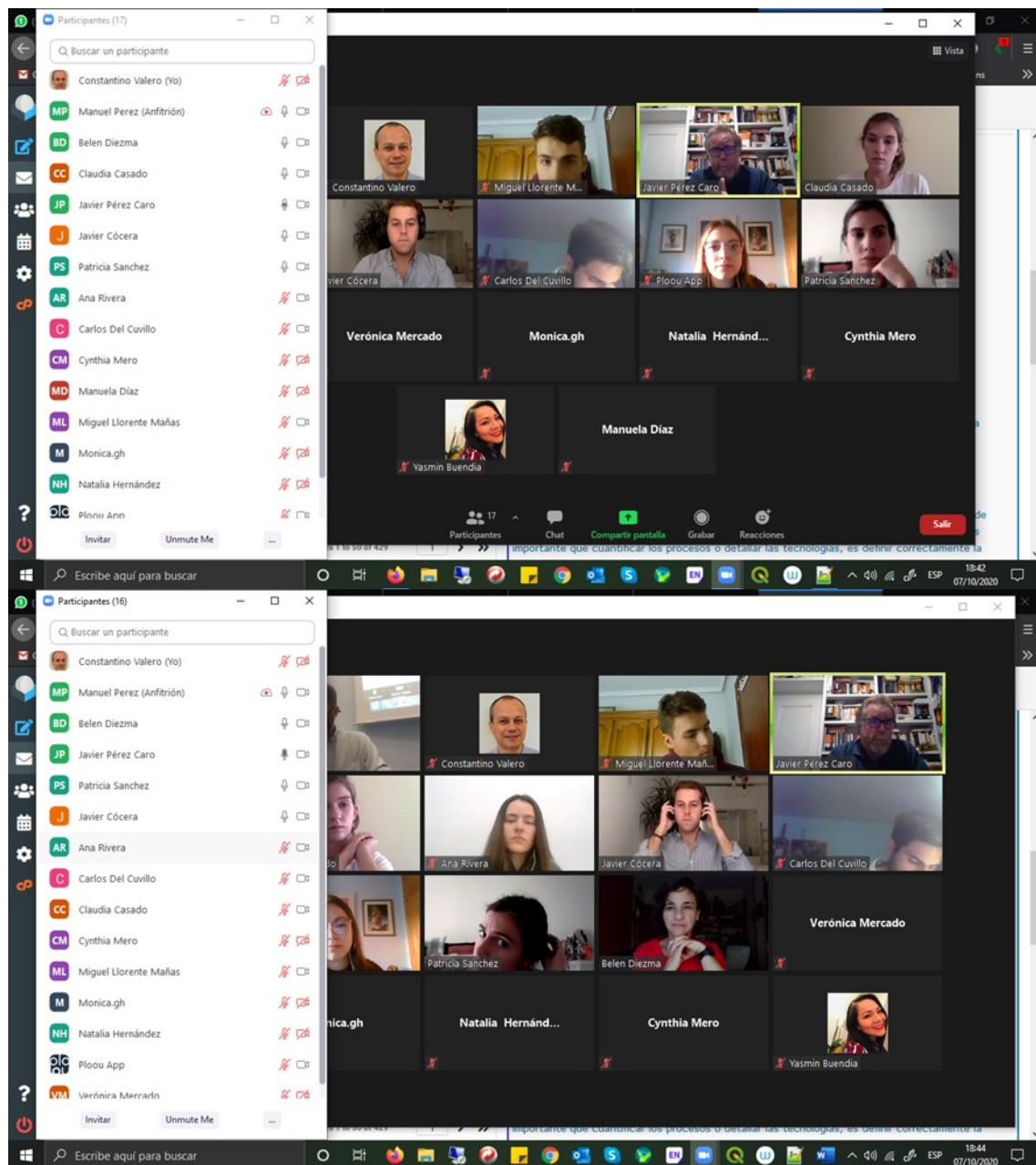


Figure 9 – Online Intrapreneurship Experience for the BMC winning team in Spain.

3. INTRAPRENEURSHIP EXPERIENCE EVALUATION

To collect information on the effectiveness of the Intrapreneurship Experience, dedicated questionnaires to students and farmers were applied. The evaluation before the experience rated the answers from 1 ("not at all", "not a significant contribution" and "not adequate") to 5 ("very clearly", "an essential contribution" and "fully adequate"). The questionnaires for students' evaluation after the Intrapreneurship Experience rated the answers from 1 ("didn't correspond at all", "not adequate" and "not significant") to 5 ("completely corresponded", "fully adequate" and "very significant"). The questionnaire for farmers rated the answers from 1 ("didn't corresponded", "not significant" and "no") to 5 ("completely corresponded", "very significant" and "all"). The questionnaires are in the Intrapreneurship Experience Action Plan and the annexes of this report.

3.1. GREECE

The students and the farmer evaluated this educational experience and some of the points worth mentioning are:

- a) the fact that the farmer has never tried other solutions to solve the aforementioned problem and has never used the Business Model canvas, so the opportunity to get hands-on ideas by young enthusiastic students, that have participated in the SPARKLE Moodle platform was highly appreciated and
- b) the fact that the students had never had the opportunity to work within a team solving a real problem. Some of the quotes given in the evaluation are as follows:

[...] "It was a process that required a lot of research and critical thinking as we had to combine all of our knowledge from the moodle and adapt all the information to a specific-real problem. We managed to work together, delegate responsibilities and of course we had the opportunity to communicate with experienced people and draw from them many positive elements in addition to knowledge. Collaboration and team spirit mainly, of course, knowledge and a lot of information and many hours of work I think are the most appropriate words that describe our experience. I believe that it was a unique experience and with great pleasure. I would participate again in a similar project. I hope our team will continue in other competitions". [Giannis-student]

[...] I would like to remark that for solving a problem in agriculture many factors need to be considered and if there is a lack of experience, then the agripreneur should have a strong team that will help solve the problem. We felt like we were this team for our farmer. It felt like real responsibility!
[Anna-student]

According to the results of the questionnaires before the experience, the students rated highly the four aspects: Whether the challenge was clearly defined (mean rate 4.75) and whether the coaching support was adequate (mean rate 4.75). Whether the knowledge acquired by the Moodle platform (mean rate 4.25) and the knowledge from the entrepreneurial training (mean rate 4) contributed to solving the challenge (see Figure 10).

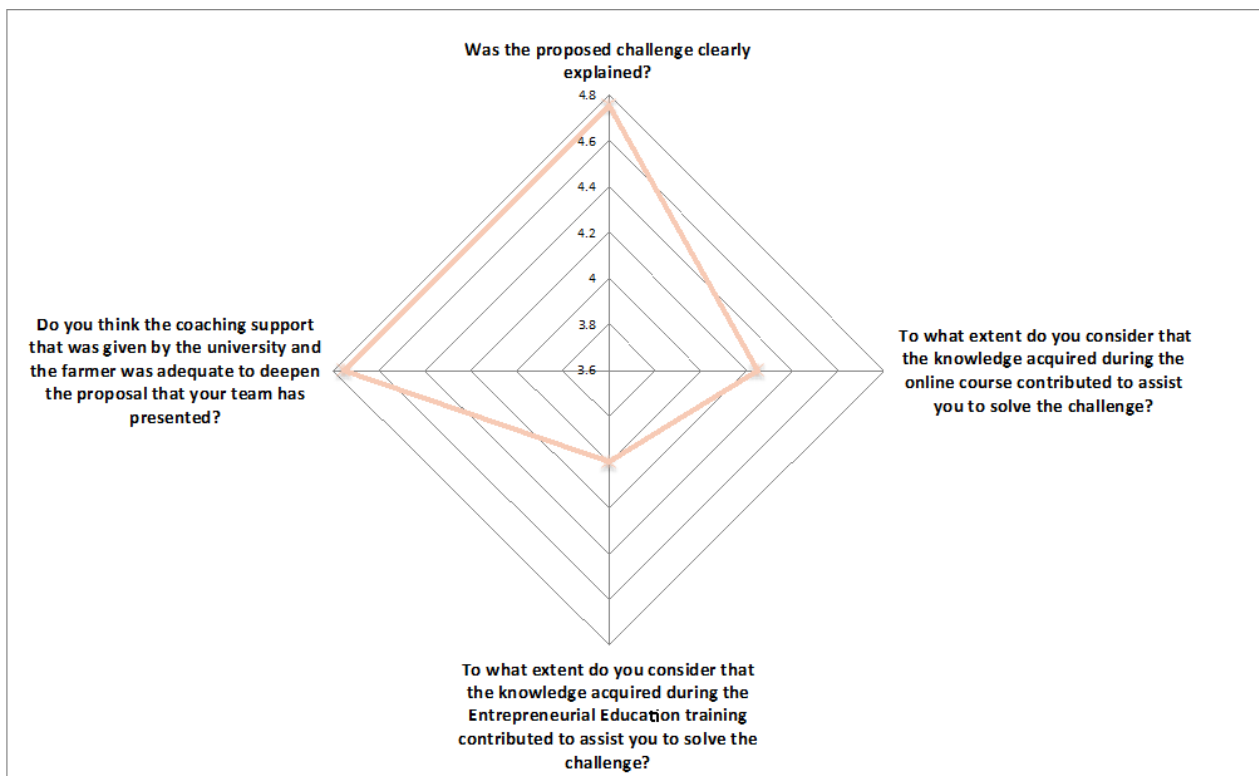


Figure 10 - Students' evaluation before the Intrapreneurship Experience in Greece.

Finally, an additional question was made to the students asking them to give one or two words describing the overall feeling of the experience. According to their answers in-depth "research" was the most popular as well as "cooperation" (Figure 11).



Figure 11 - Words describing the BMC process in Greece from the student's point of view.

After the Intrapreneurship Experience, the students once again evaluated the process and the outcome is presented in Figure 12. The level of fulfilment was not highly rated (mean rate 3) mainly because there was no "real" activity on the farm as promised/scheduled before the Covid-19 restrictions. Also, the learning impact of this activity on their entrepreneurial skills was rated low (mean rate 3). Entrepreneurship entails taking risks and this was not embedded in the simulation of the experience. The students had no risks to take in terms of investing money on the PA toll or taking real decisions. Therefore, it was "more of an educational experience rather an entrepreneurial one".

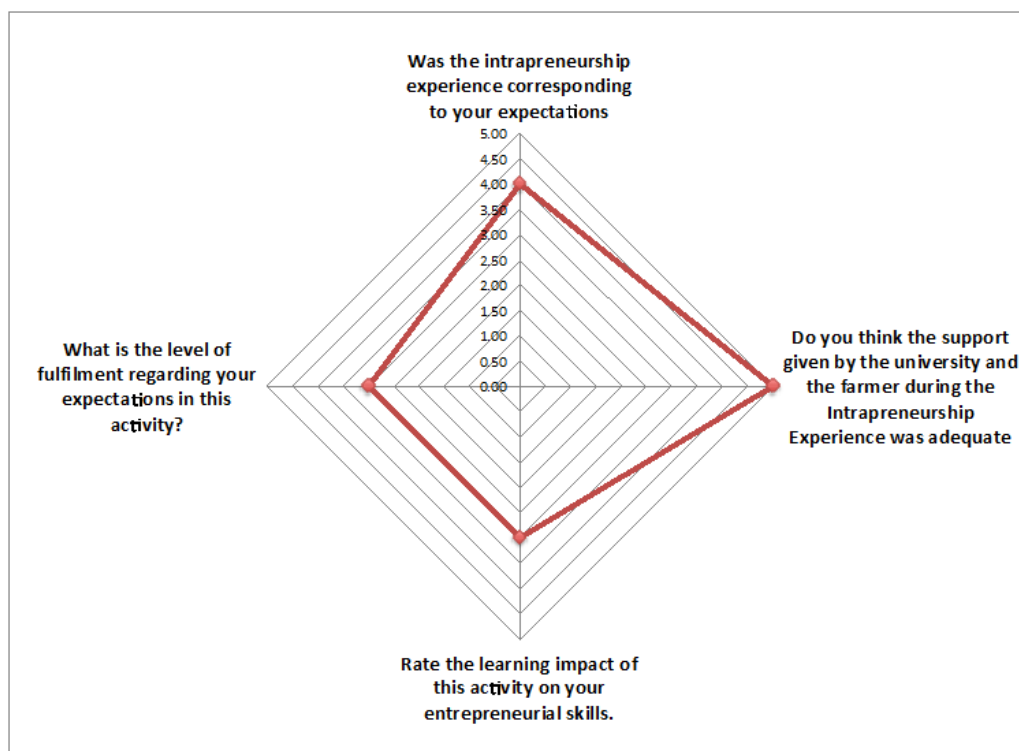


Figure 12 – Students' evaluation after the Intrapreneurship Experience in Greece.

From the point of view of the farmer, the Intrapreneurship Experience did not correspond to his expectations, as the original plan to meet on the farm was not possible. The Intrapreneurship Experience had a smaller impact on the students'

entrepreneurial skills, according to him, and *"could not be compared to the expected outcome with the full-time experience on the farm"*. The impact of the activity on his entrepreneurial skills was rated not significant in terms of actual outcome but in terms of providing a platform for students to test their knowledge and contributing to the project's success it was quite important and he was *"very glad to be a part of it"*. Finally, the farmer does consider the implementation of the solution proposed by the students and the most interesting part was the combination of the solution with the outcome of the BM canvas.

"I am open to ideas from the students, they are at the top of their craft and why not to incorporate some improvements they learned that will help me change my business model through PA". [Michalis, farmer, Aetheleon Greek Oregano Organic Farm]

3.2. ITALY

The students were asked to evaluate "before" and "after" the Intrapreneurship Experience, through a simple questionnaire composed of 4 closed questions and one open.

According to the results of the questionnaires before the experience (Figure 13) the students rated highly the four aspects: Whether the challenge was clearly defined (mean rate 3.8) and whether the coaching support was adequate (mean rate 4.4). Whether the knowledge acquired by the Moodle platform (mean rate 3.6) and the knowledge from the entrepreneurial training (mean rate 4) contributed to the solving of the challenge.

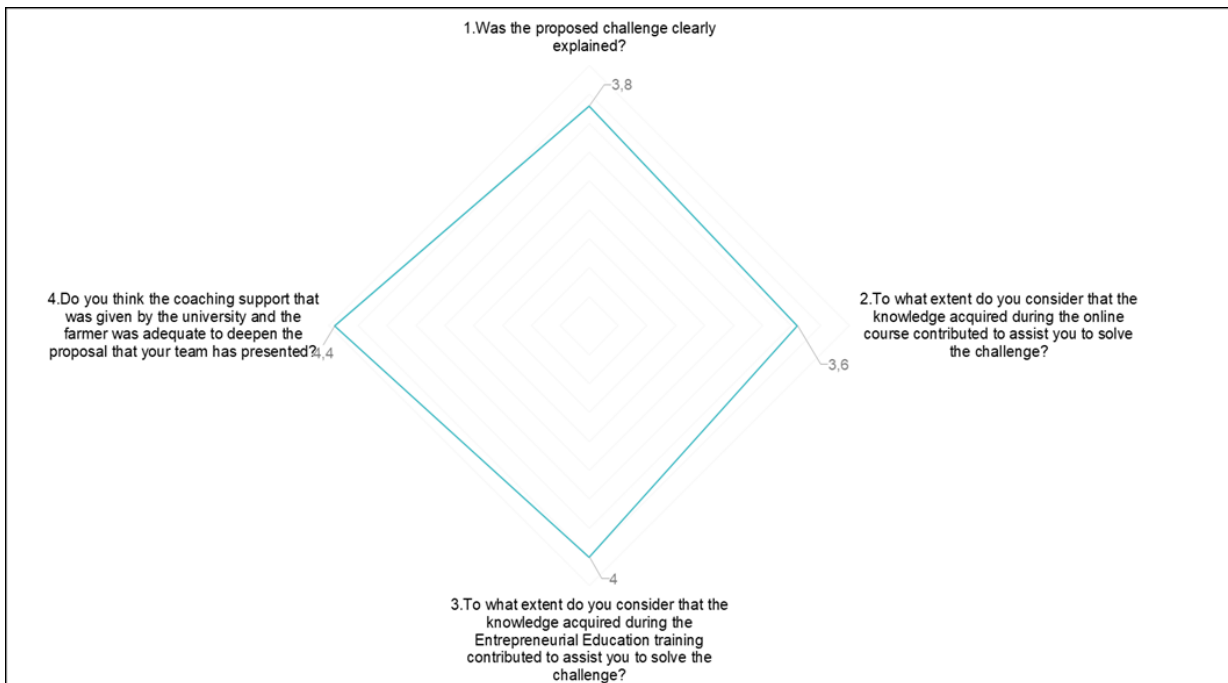


Figure 13 – Students' evaluation before the Intrapreneurship Experience in Italy.

After the Intrapreneurship Experience, the students once again evaluated the process and the outcome is presented in Figure 14. The level of fulfilment was highly rated (mean rate 3.8) even though to the fact that there was no "real" activity on the farm due to the Covid-19 restrictions. In addition to this, the learning impact of this activity on their entrepreneurial skills was rated good (mean rate 3.6) and the level of fulfilment regarding student's expectation was high (mean rate 4). In conclusion, the Intrapreneurship Experience was quite appreciated by students, even if with COVID-19 restrictions.

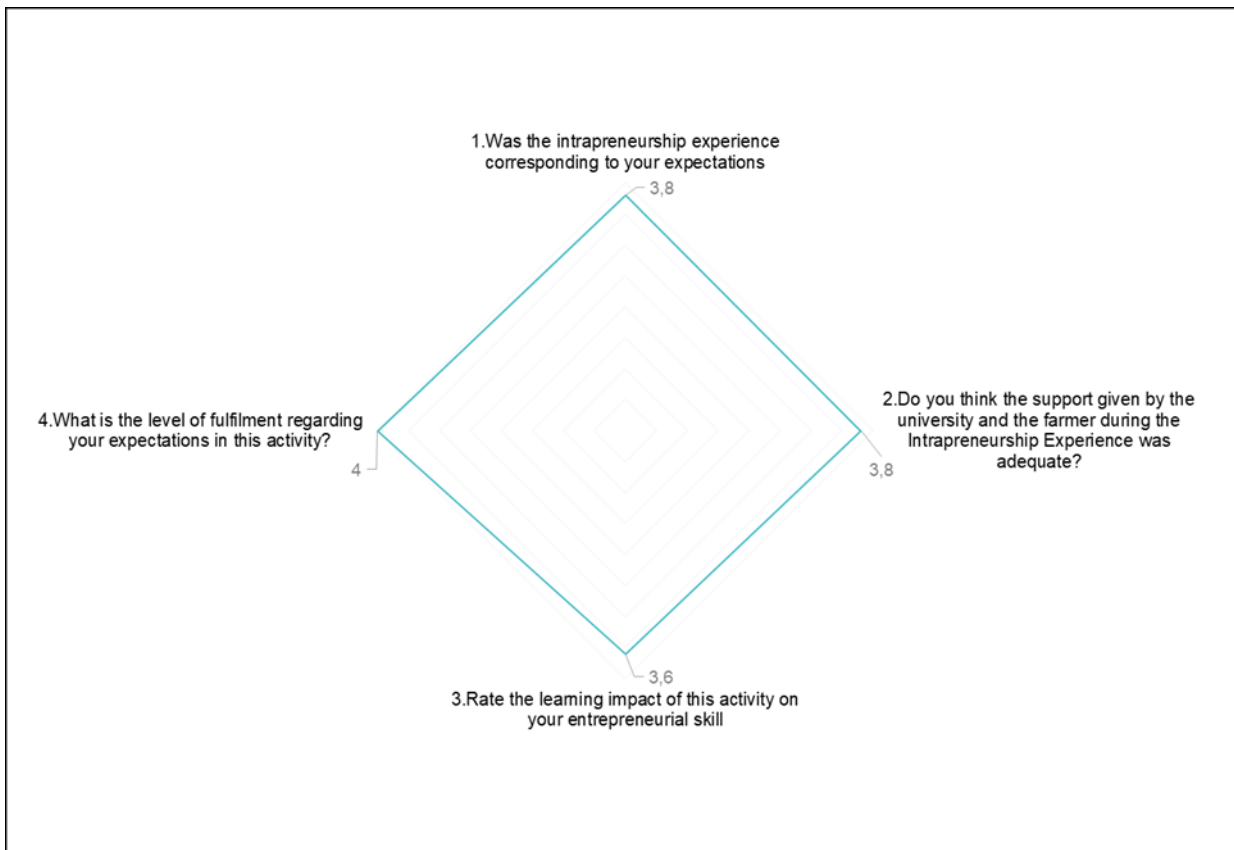


Figure 14 - Students' evaluation after the Intrapreneurship Experience in Italy.

From the point of view of the Mazzei Farm (Figure 15), the Intrapreneurship Experience met its expectation. The Intrapreneurship Experience had a high impact on the students' entrepreneurial skills. In terms of the impact of the activity on Mazzei Farm entrepreneurial skills, it was rated very significant in terms of the actual outcome. Finally, Mazzei Farm considers the implementation of the solution proposed by the students:

"Excellent idea of the union of university research of students with an agricultural company and an equipment manufacturer partner to increase agricultural technology."

[Marchesi Mazzei S.p.A Farm]



Figure 15 - Farmer evaluation of the Intrapreneurship Experience in Italy.

3.3. PORTUGAL

Students were asked to evaluate this activity before and after the Intrapreneurship Experience.

The answers to the questionnaires are represented in the following figures. We can see that before the experience (Figure 16) students considered that the challenge was clearly explained and that the skills acquired during the online training were an important asset to help to solve the challenge. The knowledge acquired during the Entrepreneurial Education classes was moderately important to assist them to solve the challenge. They rated highly the support given by the university and the farmer to deepen their proposal.

The students' comments before the Intrapreneurship Experience:

"I think it was a good way to apply what we learned in theory during the course."

"Congratulations on this first edition of a project that can have a substantial positive impact on the competitiveness of the European farming sector. I sincerely recommend it to students in Agriculture related studies."

"I think it was a very well-designed business model competition and a very complete course. The fact that there were practical applications (fieldwork and the business model competition) of the knowledge presented throughout the course helped me better understand the theoretical concepts."

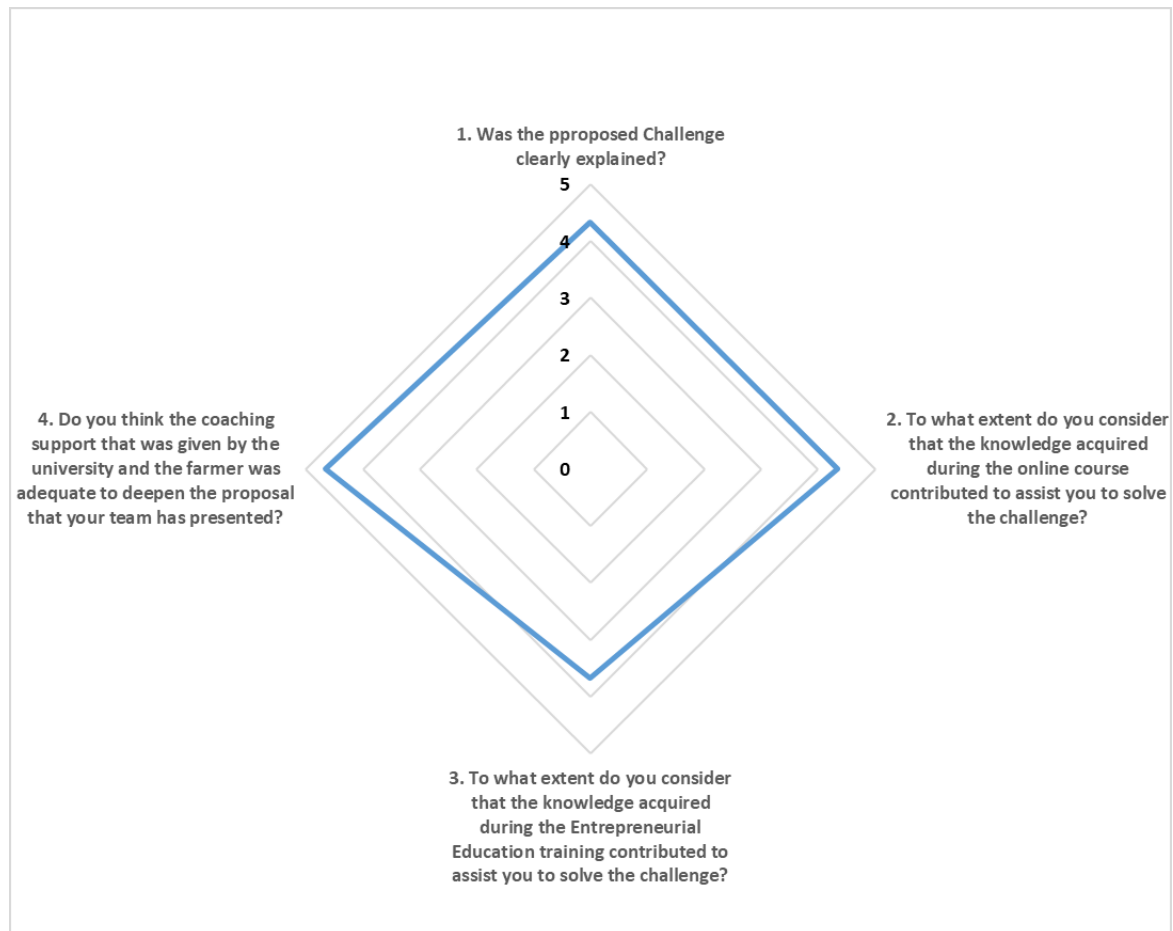


Figure 16 - Students evaluation before the Intrapreneurship Experience in Portugal (1 is not a significant contribution and 5 is an essential contribution).

This activity completely corresponded to the students' expectations and completely fulfilled those expectations, since all the students rated questions 1 and 4 with 5 (Figure 17). They have considered the support from the university and the farmer fully adequate and that this activity had a significant impact on their skills.

Students' words after the Intrapreneurship Experience were:

"The visit was amazing. The teachers and the farmer were very friendly and very knowledgeable. I think I really learned a lot and I just feel sorry that it wasn't more time."

"It was a privilege to visit Mr João Coimbra in his farm Quinta da Cholda, a real-life solid example of Precision Agriculture and farm management best practices. An absolute must for any student or professional in the Portuguese agricultural sector."

"It was a very fulfilling and informative experience, unfortunately, the pandemic situation forced the experience to be short, it was very well organized and we got the most possible out of it, I would like to thank the organization for this experience."

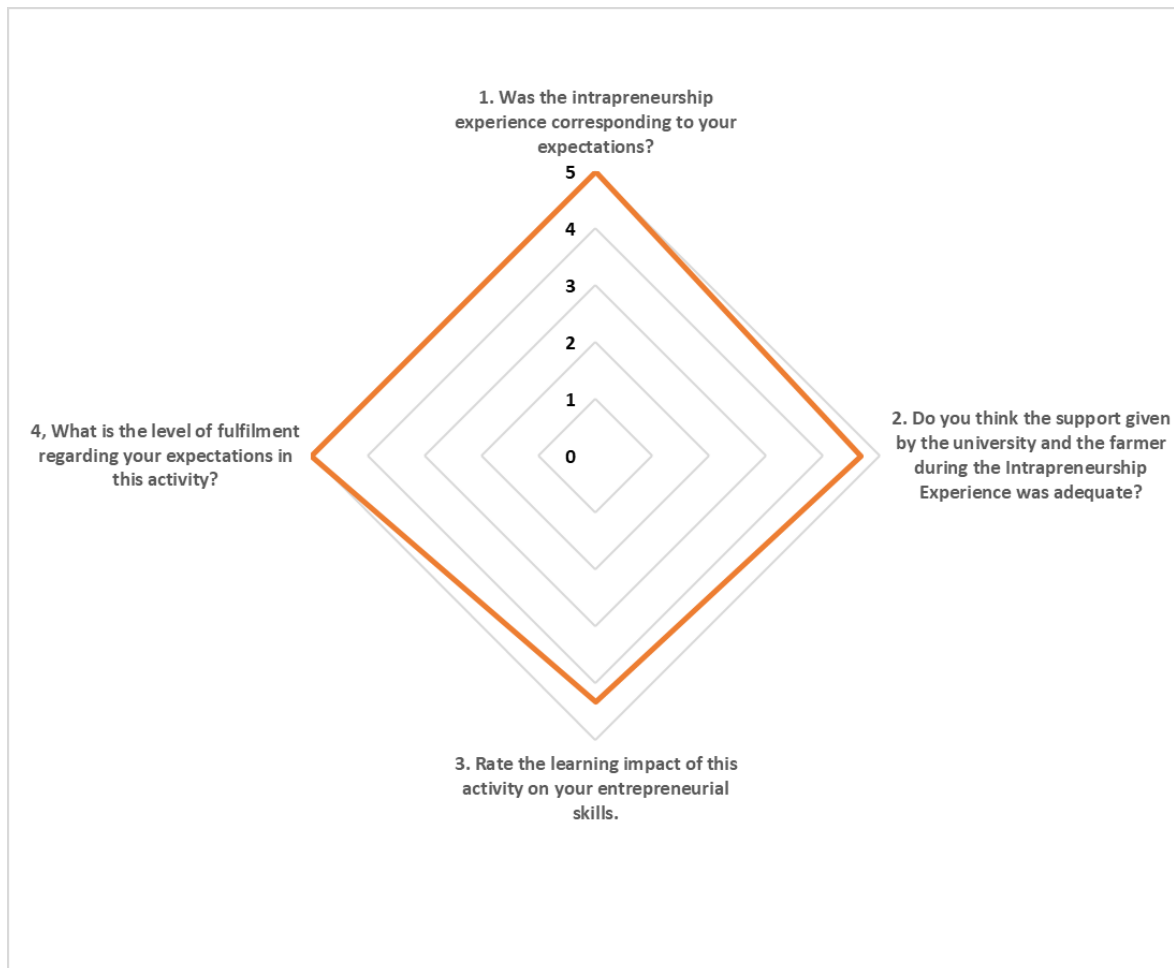


Figure 17 - Students evaluation after the Intrapreneurship Experience in Portugal (1 is not a significant contribution and 5 is an essential contribution).

Regarding the evaluation from the farmer point of view, we can see in Figure 18 that he rated highly the correspondence to the expectations question and the positive impact in the student's skills. The farmer considered a low impact on his entrepreneurial skills and also rated with 3 the possibility of adopting the solutions proposed by the students. These answers are expectable since the company already has great experience in Precision Agriculture technologies and uses it widely.

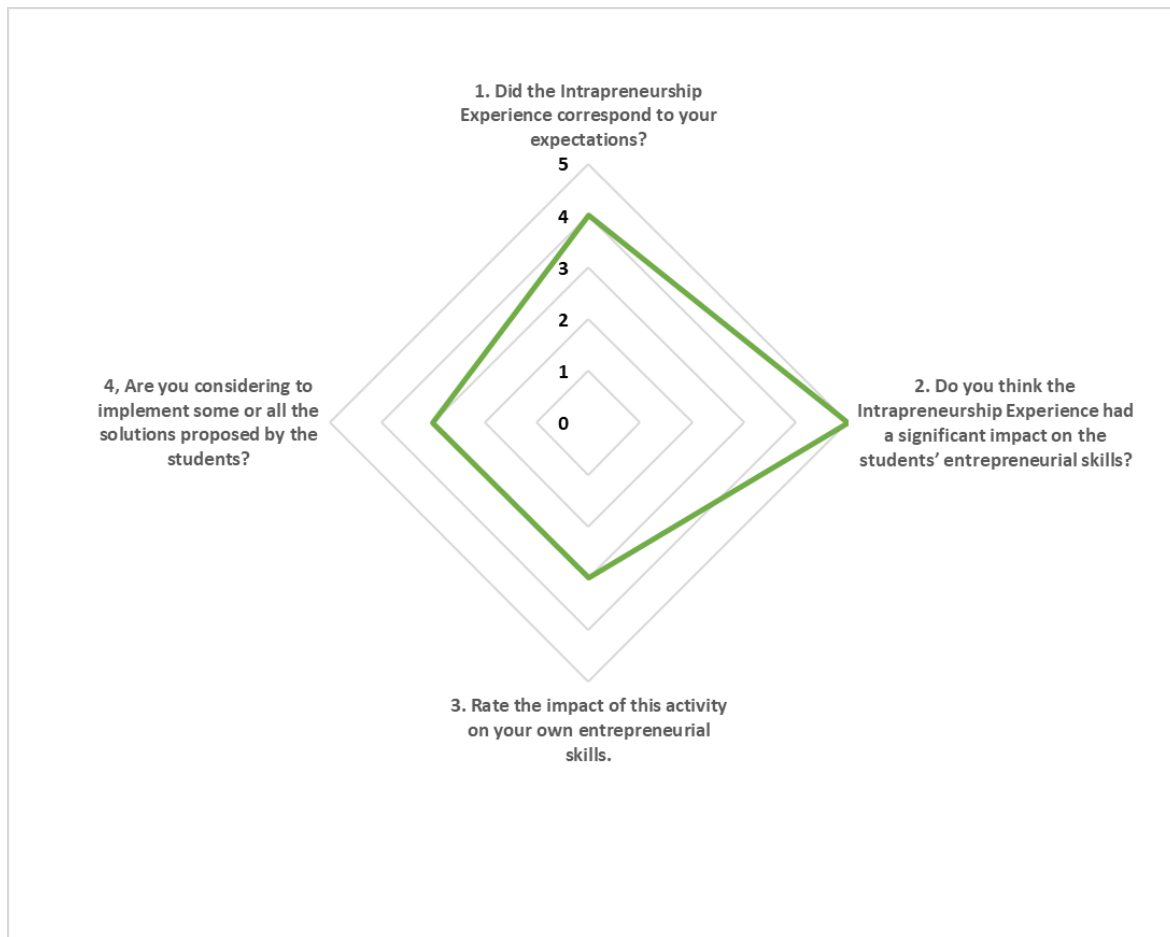


Figure 18 - Farmer evaluation of the Intrapreneurship Experience in Portugal.

3.4. SPAIN

In Spain, due to the constraints caused by COVID-19, the Intrapreneurship Experience had to be virtual. For that reason, responsible partners did not apply the before and after evaluation questionnaires to students neither the farmer questionnaire.

4. CONCLUSIONS

4.1. GREECE

After analysing the evaluation instruments, we consider that this Intrapreneurship Experience could be improved by:

- Adding to the team professionals on team-building;
- Consider the timing in terms that the farmer has work on the farm to show to the students during the Intrapreneurship Experience (attending to the physical cycle of the crop).

Real-time spend on the farm can't be replaced by virtual tours.

4.2. ITALY

The Intrapreneurship Experience was well appreciated by students. They get involved immediately and get proactive and motivated to put into practice what they learnt. They collaborated each other to achieve objectives given.

Some relevant points emerged at the end of this experience:

- Overlapping of Intrapreneurship Experience with harvesting time;
- Meeting in presence and real experiences have more impact on actors involved in the process.

4.3. PORTUGAL

Although it only lasted one day, the Intrapreneurship Experience was a great success. Due to the restrictions imposed by the pandemic situation we are living, it would be impossible to do it otherwise. Despite that, we would also be limited by the students' school and professional compromises.

The added value of this activity for the students was mainly the opportunity to see the daily work on the farm and the application of the Precision Agriculture technologies they have been studying.

4.4. SPAIN

After analysing this activity, we consider that the Intrapreneurship Experience could be improved by finding a larger set of farmers/enterprises interested in presenting their problems to the students, which could create a rich discussion group where new business ideas could emerge. Also, face to face sessions and visits to the farmers and industries could have been desirable, if the Covid-19 situation allows it in the future.

4.5. FARMS

For the farms involved in Italy and Portugal, the changes in their Business Models were not significant, because they already use PA technologies. However, in Greece, the improvements proposed by the students can be used by the farmer to achieve better results and optimize the harvesting process. In Italy and Portugal, the Intrapreneurship Experience allowed the students the opportunity to see the PA technologies already implemented and working. The farmers had the opportunity to show and discuss their work and to disseminate the use of AP. In Greece, the BM Competition had a greater impact in the farm Business Model, but usually, it takes some time to implement this changes and the students might not be able to see them during the Intrapreneurship Experience. The proposed challenge and solution in Spain involves the farmer and also the olive oil industries.

Either one way or the other, the Intrapreneurship Experience was an educational tool of undeniable value to complement the e-learning training materials because the learning impact can be more significant in the field.

This activity requires the availability of students, farmers and teachers. It can be limited by the farm activities calendar and by other factors like the weather.

Although the Intrapreneurship Experience was constraint by the pandemic situation that we are living, mostly in Spain, it was possible to make it happen successfully in all the consortium countries.

ANNEXE – INTRAPRENEURSHIP EXPERIENCE EVALUATION QUESTIONNAIRES FOR STUDENTS AND FARMERS

QUESTIONNAIRES FOR STUDENTS

BEFORE INTRAPRENEURSHIP EXPERIENCE

1. Was the proposed challenge clearly explained?

(1 is not at all and 5 is very clearly)

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

2. To what extent do you consider that the knowledge acquired during the online course contributed to assist you to solve the challenge?

(1 is not a significant contribution and 5 is an essential contribution)

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

3. To what extent do you consider that the knowledge acquired during the Entrepreneurial Education training contributed to assist you to solve the challenge?

(1 is not a significant contribution and 5 is an essential contribution)

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

4. Do you think the coaching support that was given by the university and the farmer was adequate to deepen the proposal that your team has presented?

(1 is not adequate and 5 is fully adequate)

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

5. Please add any comments or remarks.

AFTER INTRAPRENEURSHIP EXPERIENCE

1. Was the intrapreneurship experience corresponding to your expectations?

(1 is didn't corresponded at all and 5 is completely corresponded)

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

2. Do you think the support given by the university and the farmer during the Intrapreneurship Experience was adequate?

(1 is not adequate and 5 is fully adequate)

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

3. Rate the learning impact of this activity on your entrepreneurial skills.

(1 is not significant and 5 is very significant)

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

4. What is the level of fulfilment regarding your expectations in this activity?

(1 is not significant and 5 is very significant)

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

5. Please add any comments or remarks.

QUESTIONNAIRE FOR FARMERS

1. Did the Intrapreneurship Experience correspond to your expectations?

(1 is didn't corresponded at all and 5 is completely corresponded)

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

2. Do you think the Intrapreneurship Experience had a significant impact on the students' entrepreneurial skills?

(1 is not significant and 5 is very significant)

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

3. Rate the impact of this activity on your entrepreneurial skills.

(1 is not significant and 5 is very significant)

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

4. Are you considering to implement some or all the solutions proposed by the students?

(1 is no and 5 is all)

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

5. Please add any comments or remarks.