PROJECT REPORT ON:

DELIVERABLE WP4: D4.6; Report on Knowledge sharing workshop in Palestine

Building Capacity in Plant Breeding and Biotechnology Education and Research through Partnership Program (BREEDTECH)

Submitted by BREEDTECH Project team
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Executive Summary

Al-Quds Open University (QOU) conducted a five-day knowledge-transfer workshop under Work Package 4 (Impact and Dissemination) of the EU-funded BREEDTECH project. The project aims to strengthen education and research in plant breeding and biotechnology across Africa and the Middle East. The objective of this workshop was to present Breedtech project activities, and outputs. As well, to introduce acquired new experience and knowledge related to plant breeding and biotechnology during QOU staff visit to European universities. State-of –the-art topics were presented in this workshop such as gene editing (CRISPR-Cas9) and spray induced-gene silencing (SIGS). As well, theortical and on-hands training course about PCR and DNA markers. More than 130 participants (45-50% female) from QOU academic staff and students, researchers from national universities and agricultural research center, ministry of Agriculture, and private nurseries attended the workshop. The participants' positive feedback encouraged Palestinian higher education institutions (HEIs) to replicate the workshop in the future and expand it to other state-of-the-art topics.

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1.0 Knowledge Sharing Workshop at AlQuds Open University (QOU) Palestine

1.1 Introduction

Al-Quds Open University (QOU) held a five-day workshop titled "Applications of Biotechnology in Plant Improvement" from 15–17 February 2026. The workshop aimed to transfer and disseminate state-of-the-art knowledge and practical experience gained during a QOU staff visit to the Sant'Anna School of Advanced Studies (Pisa, Italy).This knowledge-transfer activity targeted a wide range of stakeholders, including QOU students and academic staff, researchers from agricultural research centers and universities, the Ministry of Agriculture, and non-governmental organizations (NGOs).

On the first day, the Agricultural Research Center (NARC) at the Ministry of Agriculture hosted the workshop in Jenin district. More than 60 participants joined the session.The Deputy Director General of NARC opened the workshop and highlighted the Center's commitment to developing science-based solutions to agricultural challenges. He also underscored NARC's focus on innovation, sustainability, and food security through strong partnerships with academic institutions—especially the Faculty of Agriculture at al-Quds Open University.

In his welcome remarks, Dr. Suhail Abu Mayaleh, Director of QOU's Jenin branch, emphasized the value of specialized workshops in advancing technological innovation in agriculture, strengthening participants' skills, and shaping effective strategies for crop improvement.
Dr. Aziz Salameh, BREEDTECH project coordinator, delivered a brief presentation on the project. He emphasized that the three-years project brings partners together across several countries, including **Palestine, Ethiopia, Kenya, Italy, Serbia, and Sweden**.
Moreover, the aim of this project was enhancing the building capacity in terms of human resources and infrastructure for higher education institutions in Palestine, Ethipea and Kenya through developing modern curriculu, in addition to scaling-up the laboratories, international mobility for academic and student universities.
The programme of workshop started with Dr. Osama al-Abdullah,senior researche in NARC, reviewing the various activities related to biotechnology, and improve crop productivity in

Palestine such as olive, wheat, and avocado. Dr. Khaled Hardan, Dean of the College of Agriculture at QOU, presented the experiences of different countries in improving chickpeas production through changes in cultivation methods such as growing plants on beds or using mixed chickpeas varieties, which enhanced crop yield espically under stress conditions. Dr. Aziz Salameh, a researcher at the Faculty of Agriculture, had two presentations. The first one, introduced spray-induced gene silencing (SIGS) technology for pest and insect control. Dr. Aziz showed the mechanisim of SIGS which relies primarily on the use of RNAi technology to combat various pests and how it used recently to produce bio-chemical pesticides which is safe for human and environment. In his second presentation, Dr. Aziz discussed CRISPR-Cas9 technique as a promising tool for gene editing technology, explaining that it has revolutionized the genetic improvement of many crops worldwide. He emphasized that this technology is entirely different from genetically modified organisms (GMOs). Mr. Wajdi Bisharat moderated the meeting and, at the end of the workshop, guided an open discussion on how Palestinian research institutions can introduce and adopt these emerging technologies. The discussion also explored pathways for engaging the private sector and identified the key regulations Palestine needs to establish to govern and organize the use of new technologies.

Figure1: first workshop hosted by NARC in the north of Palestine (Jenin District)

2.0 Outline of the Workshop

On February 16, 2026, the second day of workshop was held at theUniversitybranch in Hebron in the south of Palestine. Dr. Muhammad al-Haroub, the branch director, opened the workshop, welcoming the attendees and highlighting the importance of such meetings in enhancing the scientific knowledge of those interested, especially students. Dr. Aziz Salameh presented the main achievement of BREEDTECH project on QOU level, such as development of new course, establish molecular genetic lab, and provide the opportunities for QOU staff and students to visit European universities in Italy, Sweden, and Serbia.

Dr. Jihad Egbaryeh, a researcher at the University, presented the significant role of different biotechnology techniques in our life including plants and human. Dr. Aziz Salameh made two seperated presentions about SIGS and CRISPR-Cas9,taking the audience in an intersting journy from molecular level of SIGA and CRISPR into its practical application for crop improvement. Agricultural engineers from the agricultural directorates in the southern governorates attended the workshop, including the Director General of the Hebron Agricultural Directorate. Participants also came from Palestinian universities, and students from the Hebron branch of the Faculty of Agriculture joined as well. More than 28 participants took part in the workshop.

invitation letter-Hebron.pdf
attendance sheet-Hebron.pdf


Figure2: second-day workshop hosted by QOU-Hebron Brench in the south of Palestine (Hebron District).

At third day, with the same objectives, workshop was held at QOU- Ramallah branch on February 17, 2026. Dr. Amead Bader, the QOU branch director, welcomed the attendees and

expressed his appreciation for their participation. Dr. Ahmed confirmed that QOU presidency encourages such workshop. He also thanked the faculty of the College of Agriculture for organizing such scientific activities.Dr Aziz salameh presented the SIGS and CRISPR/Cas9 technologies, highlighted its practical application on agriculture sectorand the possibilities to adopted by HEIs in Palestine . Dr. Khaled Hardan, in his presentation showed the impact of adopting new agronomic practices such sow the seeds on the beds and use mixture of different chickpeas, could enhance its productivity. More than 50 participants attended this Knowledge sharing workshop in Ramallah city.

invitation letter-Ramallah.docx
Attendance sheet -Ramallah.pdf

Figure3: third-day workshop hosted by QOU-Ramallah Brench in the center of Palestine (Ramallah District).

On other sides, faculity of Agriculture/QOU held a hybrid two-day workshop on 11-12 Feb., 2026 (link for registration https://alumni.qou.edu/viewDetails.do?id=12368).

Figure 4: announcement for QOU students to attend hybrid workshop (virtual and practical sessions)

3.0 Hands-on Sessions

This first day of workshop, included lectures via Zoom for undergraduated agriculture students, entiteled “Application of the Polymerase Chain Reaction (PCR) apparatus and DNA markers uses”. In these lectures , students had a chance to get information about PCR machine, its objective, principles of work, and its different applications. As well, there was a lecture about DNA markers (SSR, AFLP, RAPD, SNP,…) and its applications, advantages and disadvanteges of each type. In Second day, a practical training course was held at the Al-Quds University Agricultural Research Center in Jericho. The training focused on :

- Extracting DNA from fresh wheat leaves using QiaGene Kit.
- Measuring the quality and quantity of extracted DNA, using Nano-spectrophotometer.
- Desigening and running PCR program.
- Preparing PCR mixture (DNA, Taq enzyem, DNTbase, Buffer, Primers, and Water)
- Separating PCR product on gel-electrophorisis system and detecting the product on gel documentation system.

In total, eighteen students from faculty of agriculture participated in the workshop, which was led by DR. Aziz SALAMEH and Mrs. Asma Al-Masa'eed.

Figure5: part of practical training course on molecular biology which held in QOU agricultural research center for QOU students.

4.0 Workshop Evaluation at QOU

The evaluation revealed the feedback from the participants to assess the effectiveness, relevance, and delivery of the course. Participants represented students, researchers, and QOU staff .

Overall, the training was highly appreciated with an average score of 8.72/10 . The evaluation showed satisfaction with the competence of trainers and their ability to transfer knowledge. The relevance of the content and networking opportunities received a strong average relevance score of 9.11 (Figure 6). The appropriateness of the programme received strong feedback, with an average score of 8.79 Similarly, the the quality of speeches also was considered excellent at 8.79. Participants rated consistency with the expectations, giving it an average score of 8.53. Similarly, the timetable received a score of 8.42. Finally, technical equipment received 8.26. These results confirm the strong need for continious non-degree training courses in order to enhance the building capacity in biotechnology and plabt breeding of academic and non academic communities to strengthen reseach and education process in Palestine.

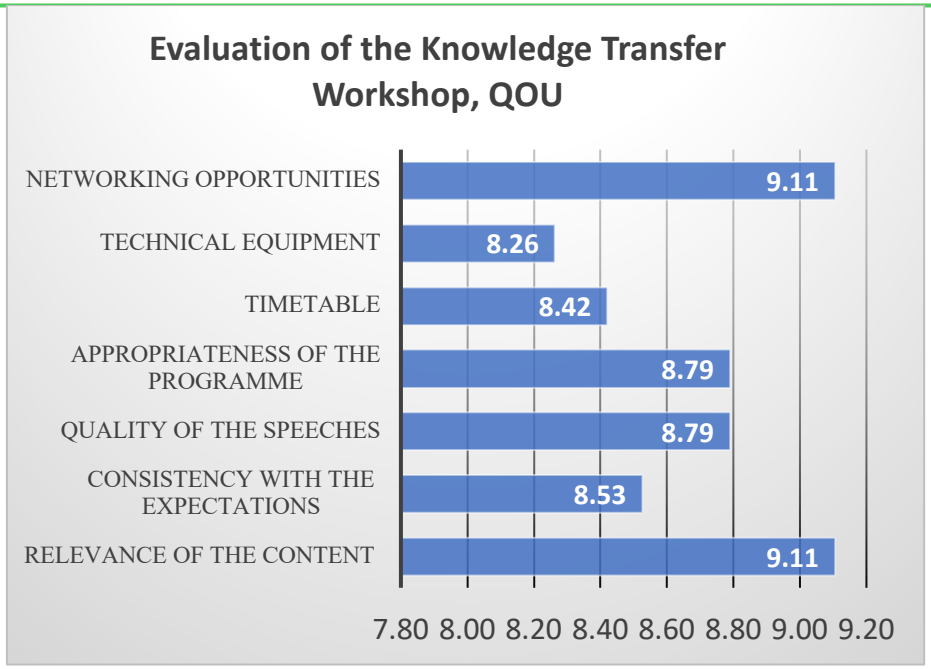


Figure6: Evaluation scores of the knowledge transfer workshop held it at AlQuds Open University, Palestine (on a scale from 1 to 10).

In the open-ended responses, several strengths of the workshp were highlighted. Presentations were comprehensive and included several practical examples, speakers presented the information in very simple and clear way.Participants appreciated the allocated time for discussion and rexplain the ambogious points.

However, the evaluation also pointed to a few areas needing improvement. The most frequently cited weakness was the practical sessions. Participants, particualrary students requested more practical activities. They recommended to conduct more workshop in future including practical training frequently and covering more stat of the art topices.

5.0 Knowledge Sharing Workshop report at An-Najah National University (ANNU) Palestine

5.1 Introduction

The Knowledge Transfer Workshop was organized at An-Najah National University (ANNU) within the framework of Work Package 4 (Impact and Dissemination), aiming to broaden the outreach of project results and ensure effective internal dissemination at the institutional level. The one-day workshop brought together 63 students from the Faculty of Science and the Faculty of Agriculture in a dynamic academic setting that encouraged dialogue, collaboration, and peer learning. This collaborative approach created a strong model of peer-to-peer knowledge transfer, where trained students acted as multipliers of expertise gained abroad.

Throughout the workshop, emphasis was placed on linking theoretical knowledge with practical implementation. Demonstrations, case examples, and real research scenarios were presented to illustrate how advanced techniques could be applied within Palestinian higher education institutions. Participants showed strong interest and active engagement, contributing to discussions and expressing enthusiasm for future training opportunities. Training materials and presentations were shared with attendees, and attendance was documented in accordance with dissemination and reporting requirements.

Overall, the workshop not only strengthened students' technical understanding but also fostered a culture of academic collaboration and leadership. By empowering trained students to disseminate their acquired expertise, the activity reinforced the sustainability of project outcomes and enhanced institutional capacity. The event contributed significantly to achieving the objectives of Work Package 4, particularly in increasing visibility, promoting knowledge exchange, and ensuring the long-term impact of project results

5.2 Opening session and program overview: Workshop agenda

Time	Activity
9:00 – 9:30	Registration
9:30 – 10.00	BREEDTECH Project overview, achieved results and planned activities Prof. Dr. Munqez Shtaya
10:00 - 11:00	Knowledge sharing Mr. Fayez Alkhandaqji
11:00 – 12:00	Marker Assisted Selection application in crop improvement Prof. Dr. Munqez Shtaya
12:00-14:00	Breeding for disease resistance Prof. Dr. Munqez Shtaya
12:00 – 12:30	Open Q&A session

6.0 BREEDTECH Project Overview, Achieved Results and Planned Activities – Prof. Dr. Munqez Shtaya

An overview of the BREEDTECH project highlighting its objectives, key achievements to date, research outcomes, and the strategic roadmap for upcoming activities and future impact.

6.1 Knowledge Sharing – Mr. Fayez Alkhandaqji

The student presenters shared their experiences from the training in Pisa, highlighting innovative laboratory techniques, modern breeding strategies, and emerging research trends. Their presentations were complemented by academic staff who contextualized the knowledge within local curricula and research priorities. The interactive nature of the sessions allowed participants to engage in meaningful discussions, raise questions about practical applications, and explore potential research ideas related to crop improvement and biotechnology tools.

6.2 Marker Assisted Selection Application in Crop Improvement – Prof. Dr. Munqez Shtaya

A technical session introducing the principles of Marker Assisted Selection (MAS) and demonstrating how molecular markers are applied to accelerate crop improvement, enhance precision breeding, and increase selection efficiency.

6.3 Breeding for Disease Resistance – Prof. Dr. Munqez Shtaya

A comprehensive presentation on strategies for developing disease-resistant crop varieties, including genetic approaches, screening methods, and integration of conventional and molecular breeding techniques.

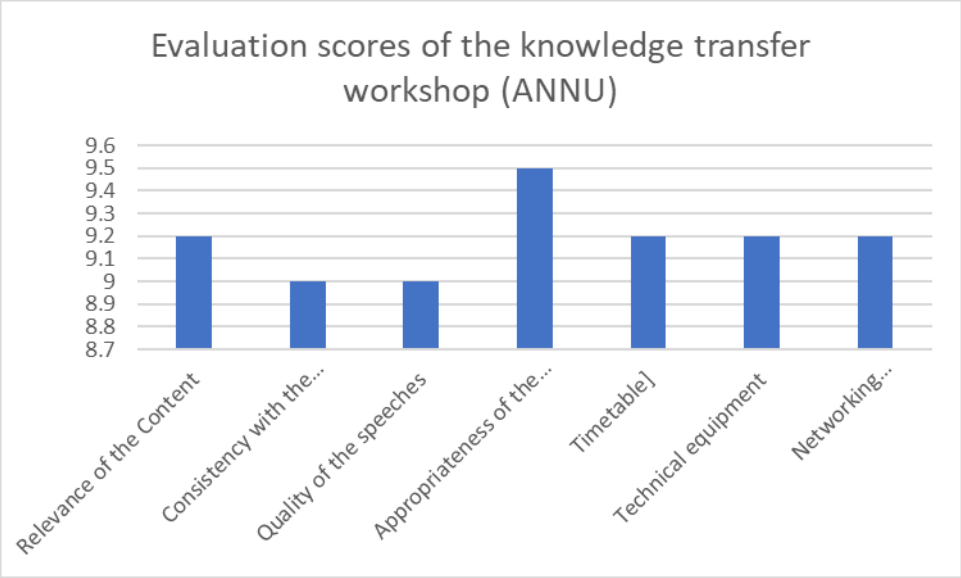
6.4 Open Q&A Session

An open discussion period allowing participants to ask questions, seek clarification, and engage directly with the speakers on the topics presented during the workshop.

7.0 Participants feedback about the workshop

The graph indicates that the ANNU knowledge transfer workshop was evaluated very positively, with all criteria receiving high scores between approximately 8.9 and 9.5 out of 10. The highest rating was for the appropriateness of the workshop, reflecting strong alignment

with participants' needs and expectations. Relevance of the content, timetable, technical equipment, and networking opportunities also scored highly, suggesting effective organization and valuable engagement. While consistency with expectations and quality of the speeches received slightly lower scores, they were still rated very favorably, demonstrating overall strong satisfaction with the workshop.



8.0 Means of Verification

8.1 Attendance List

الرقم	الاسم
1	عمر منذر ابراهيم سمان
2	زكريا وصفي عزات اشقر
3	تالا اياد وديع ابو زهره
4	مها يوسف فؤاد ابو حمده
5	لين مصطفى سمير بنا
6	شادن مصباح محمد مخارزه
7	ميمونه محمود محمد عوايصه
8	رؤى جميل أحمد سليم
9	علي ثائر باسم غفري
10	حنان عبدالله ابراهيم دار صالح
11	انسام فيصل غازي جروان
12	رغد نبيل محمد زهور
13	دينا يوسف عبد الكريم حموده
14	شهد كمال يوسف صفدي
15	رزان نضال محمود خضر
16	تحرير صابر أحمد بني جابر

17	نور سليمان هشام سالم
18	نورالهدى حمزه عبد الرحمن هنديه
19	منى سري عبد الفتاح سمور
20	تالا حسن جميل شحادة
21	حنين رياض ابراهيم لافي
22	ريم سامر صالح منصور
23	بشرى عماد هلال بني شمسه
24	راما سمير منير سباعنه
25	هند منير محمد عطعوط
26	ذكرى جمعه حسين ساخن
27	منة الله ابراهيم محمد ياسين
28	ايمان خالد محمد خوالد
29	منى خالد وليد خير
30	تقوى نضال أحمد ابورجب
31	سجود حمدان محمد خطيب
32	غرام زياد حسين ربايعه
33	عز الدين محمد عبد الحفيظ الرجوب
34	عماد ابراهيم حامد صلاحات
35	عمادالدين محمد علي غالب صابر
36	عمر شمس الدين غنام ابو عصيده
37	عمر منتصر كمال البحش
38	عمرالمختار وجيه وجيه ابو شحاده
39	عمرو ظافر عبد الوهاب جود الله
40	غادة وليد محمد كبها
41	غيداء فاروق عبد المجيد ابو جيش
42	فنان عبد سليمان دويكات
43	كريم محمد عبد الحفيظ نجار
44	كنده يوسف ياسر نصاصره
45	ليث أحمد يوسف عصفور
46	ماريا صالح عادل عبدالله
47	محمد اياد عاطف ابو جيش
48	محمد عماد كمال ربايعه
49	محمد فراس عبد الكريم ابومسلم
50	محمد ماجد محمد سلايمة
51	محمد مروان عادل علاونه
52	محمد ناصر غالب عبد الجواد
53	محمد وجدي محي الدين مرشد
54	منتصر عودة عبد الرحمن نصار
55	منى فادي يوسف تصلق
56	ميسم باسل تحسين ياسين
57	ندى أحمد عبد الحفيظ ابوعيشة
58	نصيره وصفي عزام عوض

59	نور مفيد محمود موسى
60	نورا وضاح محمد وليد استيتيه
61	هادي حسين محمد رشيد
62	يحيى عياش حسن حنيني
63	يوسف فراس حاتم زاغه

8.2 Presentations


6. MAS.ppt


4. Breeding for disease resistance.ppt