TITLE OF THE PROJECT:

'Developing a simplified Decision Support System For land and water management in the Central Jordan Valley to enhance food security'

FINAL REPORT

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1. INTRODUCTION TO THE PROJECT

While farming is the predominant profession for many Palestinians and Jordanians in the Jordan Valley region, the agricultural system still lacks proper planning and management. Along the region, most water and land resources are utilized for agricultural uses, and therefore, agricultural planning is more challenging under the existing conditions and limitations.

Just like any other arid regions, groundwater is the main water source for drinking, agriculture, and industrial uses, in particular in the Palestinian side where Palestinians have no access to surface water and very limited access to ground water resources. In addition, land degradation is becoming increasingly clear due to both natural and anthropogenic implications.

This research is being conducted in partnership between the Applied Research Institute – Jerusalem (ARIJ) from Palestine as a main applicant (Leader) and the Royal Scientific Society (RSS) from Jordan as a contributor.

The research aims at developing the agricultural system to improve food security in the Jordan Valley region in the light of drought, climate change, water scarcity and land deterioration. Such an objective cannot be achieved without establishing a solid foundation of information that shall be built into an integrated database. The database is one of the significant tools used to enhance our understanding of the current situation of the agricultural system, resources management, technology adoption and crop diversification to support the plant study and research to improve the capacity of this system on food security and economic approach.

Modelling is being utilized as an efficient tool in the agricultural planning and decision making on different levels. This will be done using an optimization model in which the net benefits from main cash crops cultivated in the region will be maximized under the limitations in water and land resources and the pressure of high demand in food due to the population growth.

The study areas selected from the Jordan Valley are: Jericho and Al-'Auja in the Palestinian side and Al-Shounah Al- Janoubeyeh in the Jordanian one. Both areas of study lie in the central Jordan Valley and share the same agro-ecological and climatic conditions.

There are 4 objectives to be accomplished within the project:

Objective 1: Introducing project objectives, activities, indicators and expected outputs to main stakeholders.

Objective 2: Conducting field survey and developing statistical and spatial information database for the targeted area.

Objective 3: To create a Simplified crop cultivation – production Decision Support System.
Objective 4: to disseminate the developed Decision Support System

The importance of this study is highlighted in focusing on enhancing and developing of future agricultural plans and strategies through optimizing the utilization of the available land and water resources and potential diversification of cropping types and systems to meet the need of population growth.

2. PROJECT ACCOMPLISHMENTS

This final report provides a comprehensive idea on the activities held through the project lifetime starting July 2013 until 15 January 2014. Moreover, it provides an overall comparison of the research results between Jordan and Palestine. It further provides a section on the results of the satellite images' analysis for both study areas to end up with conclusion and recommendations from both research partners.

[MILESTONE1]

a) Develop detailed work plan and timeline for all activities. Specify target areas for field work

After receiving the approval on the project and signing the agreement, several coordination meetings were conducted between ARIJ and RSS teams over video conferencing to prepare the plan of work and the time plan of the project activities. That included discussing the methodology of work, confirming the target areas of study on both sides and clarifying the communication and documentation procedures between both teams. The project timeline was modified few times to suit the changing circumstances and arising challenges. (Please see Annex 1 for the final project timeline adopted)

b) Informing the stakeholders about the project

Two kick off meetings were conducted for the purpose of informing the stakeholders about the project and enhancing their performance. One kick off meeting was conducted in the West Bank organized by ARIJ and the other in Jordan organized by the RSS. Both meetings included sending project announcements and invitations to the stakeholders, presentations provided by the project team on each side, and open discussion aiming at enriching the research indicators and different modalities.

As a result of the first kick off meeting conducted on both sides, two technical committees were formed both in the West Bank and in the Jordanian side. The interested stakeholders communicated back expressing their willingness to be part of the technical committee serving as consultants and advisors for the different aspects of the research through providing information and knowhow to

enhance participatory approach and transparency in the research activities. (Please see Annex 2 for the lists of the two technical committees).

At both sides, the technical committees were involved in all stages of the project. They were regularly informed about the progress of the project activities; they took part of all workshops conducted all through the project as advisory and consultant bodies. The variety in the fields of specialty of both technical committees has enriched the research and assisted in developing a more reliable and comprehensive decision support system.

c) Reviewing available literatures, information gap analysis, developing project indicators

The project team of ARIJ and RSS started the process of collecting secondary data and reviewing available literature and research papers done on the research topic and other related topic a few months before the project agreement was signed. A shared online folder was created for both sides to save and share the literature of use in relation to water, agriculture, land cover/ land use, climate change, economic challenges, etc on the national level and specifically in the study area.

Moreover, video conferences were regularly conducted between ARIJ and RSS teams to discuss the technical aspects of the project concerning landscape, vegetation cover, water resources, agro-activities (irrigated agriculture), climate change (drought and water scarcity), socio-economy (crop production feasibility and sustainability) and food security (self sufficiency of the targeted crops). Technical issues were also discussed in the kick off workshop conducted between both teams in Jordan in addition to the two kick off meeting conducted with the stakeholders both in the West Bank and in Jordan who enriched the research with their insights and recommendations. Literature review providing an overview of the agricultural environment of both study areas within the main factors of climate change, food security and population growth was prepared. The literature review was also uploaded on the project website. (http://proxy.arij.org/rpcd/index.php?r=site/index)

d) Conducting a workshop to discuss project developed indicators

Two workshops were planned to be conducted both in the West Bank and in Jordan to discuss project developed indicators. As clarified after signing the agreements, one of these will be planned to take place in Jordan between both teams as a kick off workshop in August 2013, and the other to take place in the West Bank in November 2013 to follow up on the progress of the project and discuss the modeling of the Decision Support System.

Accordingly, one kick off workshop took place at the RSS in Jordan. ARIJ team visited the Royal Scientific Society on the 14th and 15th of August 2013 for two working days together starting at 9:00 a.m. and closing at 4:00 p.m.

The goals of the kick off workshop were to:

1. Introduce the project team
2. Discuss the main objectives and activities of the joint project
3. Formulate the project work plan
4. Distribute the main tasks between ARIJ and RSS

In depth discussions took place concerning the development of the model, the target areas, questionnaire development, sampling and field survey and clarifying administrative and financial procedures.

The second meeting was planned to take place in November 2013 in Palestine, where the RSS project team was planned to visit ARIJ to follow up on the progress of the project activities. The RSS could not obtain their Visas of entry to Palestine, and so the coordination meeting was done through video conference between both project teams.

The coordination meeting was conducted on November 20th, 2013 over video conference from 9:00 a.m to 12:00 p.m where both project teams were attendant each at their home office. The following issues were thoroughly discussed and coordinated through the coordination meeting:

- SPSS Analysis – Harmonization and Integration of SPSS database on both sides
- Modeling approach and structure
- Analysis of satellite images
- RSS visit to Palestine
- Revisiting activities and responsibilities of both teams till the end of the project and other important issues

e) Data collection through field surveys

The first step of field survey and data collection was developing the questionnaire. ARIJ and RSS teams conducted several meetings and discussions using different means (Skype meetings, emails and phone discussions) to agree on the main themes that need to be covered in the questionnaire. The main requirements of the project as well as these of the simplified decision support system were taken into consideration, and it was agreed that the questionnaire should be comprehensive in order to come up with organized and harmonized collected data through scientific approach that can help in analyzing the situation and utilizing the generated information in developing the decision support system model. It was agreed that the main sections of the questionnaire should include the following (as minimum): Demography, Water resources, Land resources, Agricultural activities, Cropping patterns, Socio-economic status, and Challenges and needs for development. The final version of the questionnaire was agreed upon by both parties.

In the West Bank, the target area was expanded to include Jericho and Al-'Auja based on the recommendations of the stakeholders in the kick off meeting. The reason for adding this area is the

fact that is inseparable from Jericho, having similar land cover and agricultural properties in addition to possessing major water resources providing the area.

This step was followed by choosing the research sample in both Jericho and Al-A'uja and Al-Shouneh Al-Janoubeyeh. Both project teams used scientific approach to choose the study sample that took into consideration the number of farming units in the existing communities of each study area. The target farming units of the study were selected according to gender, ownership and area of land. The sample size was 300 at Al-Shouneh Al-Janoubeyeh representing 22% of the number of farming units there, while the sample size was 152 at Jericho and Al-A'uja representing 58% and 60% of the farming units at both areas consecutively. Consequently, representative samples of both study areas were selected and the field survey was conducted.

On the Jordanian side, a team of (8) numerators and (3) supervisors were selected to conduct the field survey. The team usually supports DOS/Jordan in conducting similar field surveys. RSS conducted an orientation session for the team on Oct. 6th, 2013 during which the team was briefed about the project, the targeted area, the number of farming units that needs to be surveyed, as well as the rationale behind selecting the sample of farming units to be surveyed.

In the West Bank, a team made up of 2 agricultural engineers was selected to conduct the field survey. Eng. Fadi Dweik and Eng. Saher Khoury from ARIJ conducted an orientation session for them in Jericho introducing the project, explaining the purpose of the survey and its different questions and agreeing on the study sample and logistics of work.

Prior to conducting the field surveys, ARIJ and RSS informed all stakeholders in the study area about the activity.

On both sides, field surveys were conducted during the period Oct. 5th to 13th, 2013. On he Jordanian side, the field team was divided into three sub-teams that worked in parallel trying to finish in due time. ARIJ and RSS teams followed up on all issues related to the field surveys, supervised all tasks implemented by the field team, and kept in touch with the field team to handle any challenges and inquiries that may rise during field work. The field team provided the completed questionnaires on daily basis. ARIJ and RSS teams reviewed these, return non-completed ones for verification and completion.

In the meantime, ARIJ and RSS staff specialized in statistical analysis built up the Statistical Package for the Social Sciences (SPSS) database. Both teams discussed the database over a Skype meeting and by emails, and agreed on the final version that is to be utilized to analyze the collected data.

ARIJ and RSS statistical analysis teams completed data entry in consultation with the project team, the SPSS data entry utilized a fair amount of time as the required data was much detailed for the specific purpose of the Decision Support System. Detailed analysis results were presented in the analysis report. An overview of the main results of both study areas is compared in section 3 of this final report.

f) Conducting specialized focus groups for grassroots and main stakeholders in the targeted areas

Four focus groups were conducted: two in Jordan and two in the West Bank. In each area, one focus group was targeted towards stakeholders and the other towards farmers. The main purpose of these focus groups is to get more specific data and further analysis as an extension to that information provided through the field survey on both administrative and field levels.

ARIJ team conducted two focus groups in Jericho at the Agricultural Engineers Society. The first focus group was conducted on the 10th of October 2013 with the stakeholders of the project including: The

Agricultural Directorate of Jericho, Jericho and Jordan Valley Governorate Administration, Al-'Auja Cooperative, Municipality of Jericho, Al-Dyook Society, the Land Agricultural Aooperative, Ein-Alsultan Society, Arab Development Society –Jericho, Agricultural Engineers Society, and Agricultural Land Society. The meeting lasted for 3 hours that included a presentation and informative discussion

ARIJ conducted the second focus group meeting on the 26th of October 2013 with a selected number of farmers who participated in the filed survey. The meeting was successfully held for 3 hours of information sharing and in depth discussion. News about the conducted focus groups by ARIJ was published in the local newspapers and on ARIJ website: http://www.arij.org/latest-news/649-rpcd-project.html. (Please see Annex 3)

On the other side, the RSS conducted two focus groups. The first focus group was conducted at the RSS premises on the 24th of October 2013 with the stakeholders and included: Ministry of Water and Irrigation (MWI), Ministry of Agriculture (MoAgr.), National Center for Agricult ural Research and Extension (NCARE), Ministry of Planning (MOP), Department of Statistics (DOS), Agricultural directorates at the targeted area, Water Authority of Jordan (WAJ), Jordan Valley Authority (JVA). The session lasted for 3 productive hours of work.

The RSS conducted the second focus group with the selected farmers on the 27th of October 2013 at Al-Shouneh Al-Janoubeyeh/ Water Use Association premises for 3 hours.

g) Analyzing and integrating the collected statistical and spatial data into project information system

The resulted statistical data from the field survey was analyzed in addition to the information collected from focus groups and in person interviews to feed into the project information system that the model will be developed upon.

As for the spatial data, several meetings were conducted between the GIS specialists of ARIJ and RSS teams. Satellite images requirements and spatial data was discussed and agreed about for the purpose of purchasing the satellite images. The main purpose of the satellite images is analyzing and detecting the change in the land use/land cover of the study areas from the year 2000 to 2013, through providing two images a year, one at each agricultural season (winter and summer) on spot 5 and spot 2.5 scales.

The process of purchasing the satellite images consumed much time in searching for the most suitable vendor who can provide the required satellite images. Contact was established with several providers, following the procurement procedures the most suitable provider was selected and the satellite images were ordered. Receiving the satellite images took yet more time, and they were received during the third week of December 2013.

Both teams had the maximum specialized human resources working on analyzing the satellite images in an ideal time in order to integrate the results within the decision support system and present them in the dissemination workshops and final reports. The analysis of the satellite images results were integrated within the model and are presented in section 4 of this final report.

Furthermore, factsheets were prepared by both ARIJ and RSS teams in regards to the following topics:

- Water Resources
- Marketing
- Production Calendar
- Soil Fertility Soil Type

The factsheets aim at providing in depth information and analysis about a specific topic. These factsheets are prepared through available secondary data, and useful information of people of knowledge and expertise through in person interviews. This information fed into the analysis report and into the data of the decision support system.

[MILESTONE 2]

a. Conducting in depth analysis and assessment for the targeted areas for better planning and management

The data collected through field surveys conducted at Jerich and Al-'Auja and Al-Shouneh Al-Janoubeyeh was analyzed in depth in addition to the information and assessment resulted from the focus groups, factsheets and consultancy with experts in Jordan and Palestine. This analysis was presented in details in the submitted analysis reports of both ARIJ and RSS. The following is an overall comparison of the main results of both study areas under the main categories:

Agriculture Holdings	
Jericho and Al-'Auja (Palestine)	**Al Shouneh Al-Janoubeyeh (Jordan)**
• The size of the agricultural holdings started from 0.5 Dunm. • The agricultural holdings are organized in terms of information. • All targeted agricultural holdings are plants. • Most of the agricultural holdings are managed by the owner himself. • Most of the sources of fund is from the owner himself	• The size of the agricultural holdings is between 35-40 Dunm. • The agricultural holdings are organized in terms of information and geographic location. • Most of the targeted agricultural holdings are plants in addition to animal agricultural holdings. • Most of the agricultural holdings are managed either by the owner himself or by paid manager. • Most of the source of fund is from the owner himself

Cropping System	
Jericho and Al-'Auja (Palestine)	**Al Shouneh Al-Janoubeyeh (Jordan)**
• A huge interest was found in increasing the protected cultivation (Greenhouses) for the purpose of decreasing the farmlands and water consumption, in addition to increasing the yield production. • Using agriculture and irrigation technologies.	• Same cropping system is followed • Using agriculture and irrigation technologies

Water Resources	
Jericho and Al-'Auja (Palestine)	**Al Shouneh Al-Janoubeyeh (Jordan)**
• Springs are the major source of irrigation (57.9%) • The average water consumption per dunum is 450 m^3 • The irrigation period is 1 to 2 days per week • 40.8% of the targeted sample confirmed the inadequacy of water availability for irrigation. • The average water price is 2.5 NIS	• Wells and King Abdullah canal are the main sources of irrigation (70%) • The average water consumption per dunum is 550 m^3 • The irrigation period is 1 to 2 days per week • 41% of the targeted sample confirmed the inadequacy of water availability for irrigation. • The average water price is between 0.008-0.020 JD.

Soil Fertility and Water Quality	
Jericho and Al-'Auja (Palestine)	**Al Shouneh Al-Janoubeyeh (Jordan)**
• 96.1% of the targeted sample believed that the quality of water irrigation and soil fertility are suitable for different crops • 80.9% of the targeted sample didn't do any soil fertility analysis • 82.2% of the targeted sample didn't do any water quality analysis	• 85% of the targeted sample believed that the quality of water irrigation and soil fertility are suitable for different crops • 90% of the targeted sample didn't do any soil fertility analysis • 82% of the targeted sample didn't do any water quality analysis

Land Use	
Jericho and Al-'Auja (Palestine)	**Al Shouneh Al-Janoubeyeh (Jordan)**
• 93.9% of the size of the agricultural holdings is cultivated areas • 47% of the agricultural holdings are vegetables (open cultivation)	• 93% of the size of the agricultural holdings is cultivated areas • 56% of the agricultural holdings are vegetables (open cultivation)

Production management	
Jericho and Al-'Auja (Palestine)	**Al Shouneh Al-Janoubeyeh (Jordan)**
• 82% of the targeted farmers are the ones who chose the crops to be planted • 25% of the targeted farmers rely on their experience of choosing crops • 86.2% of the targeted farmers are facing marketing problems because of: 1. Lack of export channels 2. Middle man high commissions	• 69% of the targeted farmers are the ones who chose the crops to be planted • 48.2% of the targeted farmers rely on their experience of choosing crops • 51% of the targeted farmers are facing marketing problems because of: 1. Closing Syrian borders 2. Middle man high commissions

• Contribution of the agricultural sector in the household income is 84.3%	3. Low prices • Contribution of the agricultural sector in the household income is more than 90%

Agricultural Crops	
Jericho and Al-'Auja (Palestine)	**Al Shouneh Al-Janoubeyeh (Jordan)**
• Vegetable crops: Jews mellow18%, Squash 10%, Maize 10%, tomato 10%, Cauliflower 10% • 69.9% is grown in the winter season while 30.1% is growing in the summer season • 94% of the vegetables are open agriculture planting • 21% is fruit trees • Margin profit is 50% per Dunm	• Vegetable crops: Eggplant 29%, Tomato 19%, Squash 18%, Jews mellow 7%, Cucumber 6% • 92% is grown in the winter season while 8% is grown in the summer season • 90% of the vegetables are open agriculture planting • 23% is fruit trees • Margin profit is 45% per Dunm

Climate Change	
Jericho and Al-'Auja (Palestine)	**Al Shouneh Al-Janoubeyeh (Jordan)**
• 96.7% of the targeted sample witnesses a change in climate in the last 10 years • 96.1% of the targeted sample confirmed the existence of a negative impact of climate change on the agricultural sector in the region • 90.8% of the targeted sample	• 49% of the targeted sample witnesses a change in climate in the last 10 years • 26% of the targeted sample confirmed the existence of a negative impact of climate change on the agricultural sector in the region • 12% of the targeted sample confirmed

confirmed the change in planting time and period in the last 10 years due to dry weather and Israeli control on water resources • 97.4% of the targeted sample confirmed the negative impact of the increased temperature on agricultural production • 92.5% of the owners confirmed a change in the use of agricultural lands, 97.2% of them confirmed that the area of arable land continues to drop for the following reasons: 1. Population growth and expansion of urban areas over agricultural areas. 2. Drought. 3. Israeli control over water resources 4. Other factors • 92.1% confirmed a change in the crop types (vegetables) in the last 10 years	the change in planting time and period in the last 10 years due to dry weather and Israeli control on water resources • 37% of the targeted sample confirmed the negative impact of the increased temperature on agricultural production • 89% of the owners confirmed no change in the use of agricultural lands, 85% of them confirmed the stability of the arable land. • 85% confirmed no change in the crop types (vegetables) in the last 10 years

b. Developing a simplified natural resource and agro-food production modeling system (Decision Support System)

The analyzed collected data of the filed surveys and focus groups was utilized into developing the Simple Decision Support System Model. A consultant engineer was hired for the purpose of developing the model using the excel solver approach.

The model uses linear programming for the purpose of maximizing the benefit of the farmer from agriculture. This is being achieved through re-distributing the planted areas of the main cash crops within the available amount of water to achieve maximum profit while maintaining food security. Rather than giving the most profitable distribution of land among the planted cash crops, it also provides the difference between the amount of water available and needed as a shortage or a surplus.

Two versions of the model were developed, one for Jordan and another for Palestine. Each version consists mainly of four parts depending on the season and type of cultivation:

- Summer Season: * Open Cultivation * Protected Cultivation
- Winter Season: * Open Cultivation * Protected Cultivation

The analyzed data of the main cash crops, planted areas, amount of water consumed, cost of water, prices of cash crops and other fixed and variable costs were all used to prepare the database that the model is built upon. The model works under the constraints of available water, and consumption of these main cash crops from the national food basket. Additional factors like export and losses of crops were also taken into consideration.

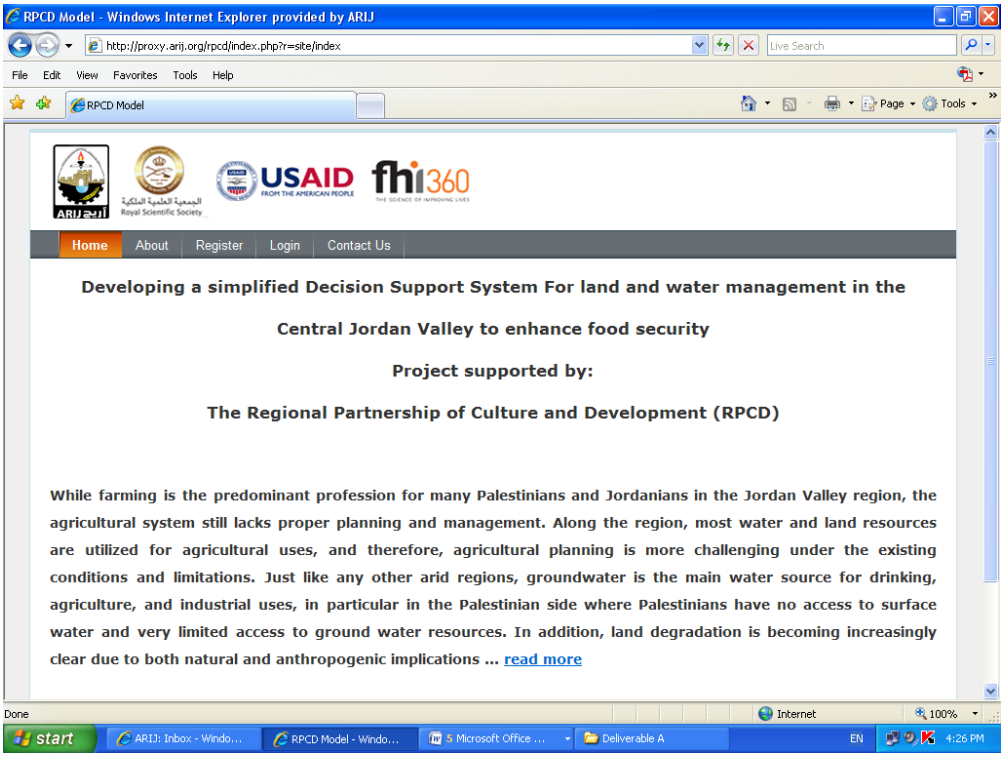
The model was tested several times; model data verification was continuously done consulting experts from both study areas to ensure the maximum reliability of the data entered in the model. Model flexibility was ensured in order to be applicable for different locations and under changing circumstances through leaving an open source for changing data upon changing conditions.

The IT department at ARIJ developed a website for the project to ensure the visibility of the different research outcomes and ease the accessibility to the decision support system. The model in its final version (after modification and upgrading based on the feedback of stakeholders from the brainstorming and training sessions) was then linked to the project website in order to be available

for the users on different levels starting from the farmers, extension agents and reaching to the decision makers and planners.

The website consists of several sections starting by a homepage providing an introduction about the project. Another section included two parts concerning Palestine and Jordan, where Literature review, reports and factsheets, maps and the decision support system are made available for each study area. In order to use the Simple Decision Support System, the user must register to the website by entering some personal and contact information and so obtaining a username and password to access the model. This is important as this information will be saved in a database in order to know the nature of the users of the model and have a directory of the examples and data they ran using the model. Support of the project team is available for the users through the provided phone numbers and e-mail addresses. The model can be accessed through the following link:

http://proxy.arij.org/rpcd/index.php?r=site/index



[MILESTONE 3]

a. Submitting midterm and final technical reports

An inception report was previously submitted to the RPCD describing the progress of the project up to the completion of Milestone 1 of the project. This report represents the final report that provides an overall idea and results of the project activities and conclusions.

b. Testing and validating the developed Decision Support System with the participation of specialized stakeholders

Two brainstorming sessions were conducted one in Jordan and the other in Palestine for the purpose of testing and validating the developed the decision support system with specialized stakeholders.

The first session was conducted at ARIJ premises on December 11th, 2013. The brainstorming session aimed at presenting the analysis results of Jericho and Al-'Auja study areas and presenting the model, its specifications and running several examples to get the feedback of the attendant stakeholders in order to modify and upgrade the model to its final version.

Interested stakeholders and the technical committee of the project were invited. Invitations were sent to the Ministry of Agriculture (MOA), The Agriculture Departments of Jericho and Bethlehem, Agriculture Engineers Association, Palestinian Central Bureau of Statistics, Palestinian Water Authority (PWA), Ministry of Planning, Land Research Center (LRC), Hebron University and Al-Najah University.

The discussion was quite fruitful. The model data was validated in consultancy with the attendant stakeholders, model variables were discussed, several questions were raised, some modifications were suggested, and several examples were run using the model. The audience expressed their satisfaction of the model and its flexibility as a tool for optimizing the utilization of land and water resources and made several suggestions for future expansion.

The second session was conducted in Jordan on December 18th, 2013 at IBIS Hotel/Amman. ARIJ was attendant at the session and both teams cooperated in preparing for it. The main objectives of the session were to present to all stakeholders the main findings of the field surveys that were conducted in the Jordanian side, and to introduce to Jordanian stakeholders the first version of the model in order to get their feedback/comments and accordingly modify and upgrade the model.

RSS team invited all technical committee members. In addition, RSS team invited other stakeholders including academic institutions and others. These include, but not limited to, the following: Ministry of Water and Irrigation (MWI), Ministry of Agriculture (MoAgr.), the National Center for Agricultural Research and Extension (NCARE), Department of Statistics (DoS), Ministry of Planning and International Cooperation (MOPIC), Agricultural directorates at the targeted area, Water Authority of Jordan (WAJ), Jordan Valley Authority (JVA), Princess Sumaya University for Technology (PSUT), University of Jordan, Farmers Associations, and others.

By the end of the session, the targeted stakeholders are aware about the main findings of the field surveys as well as the draft version of the decision support system (model). They confirmed the results of the field survey and that the results are close to the current situation in Alshouneh Al-Janoubeyeh. The audience showed interest in being involved in applying the model once upgraded and modified.

c. Provide training for different related governmental, research and NGOs

Two training workshops were implemented one in Jordan and another in Palestine to train different related governmental, research entities, and NGOs on using the Decision Support System. The model was modified according to the comments of both brainstorming sessions conducted in Jordan and Palestine. A guideline for using the model was prepared to ease the practical application of the model for stakeholders.

The first training workshop was conducted in Jordan at IBIS hotel/ Amman on December 19th, 2013. ARIJ team was attendant at the workshop to provide technical assistant for presenting and testing the model. RSS team invited representatives of different stakeholders in addition to technical committee members.

A practical training was provided where the stakeholders were trained to use the model and run their own examples. Further discussion and comments were received from the participants. Pre and post tests were given to the trainees and the results reflected an increase in the know-how of the trainees about the use of the model. All trainees believe that this tool is important for planning and utilization of land and water resources.

The second training workshop was conducted in Palestine at ARIJ premises on December 26th, 2013. ARIJ invited technical representatives of the interested stakeholders and technical committee members to receive a technical training on the decision support system.

The training was provided, and the trainees ran several examples on the model. Additional comments and modifications were suggested. Pre and post tests were provided, and 100% of the trainees shifted from not knowing about such models for planning to believing in the importance of using such models in planning and utilization of land and water, finding it as an informative tool providing an a clear indication of climate change across time.

d) Presenting project results for decision makers, planners and researchers

Two dissemination workshops were conducted one in Jordan and one in Palestine. The main purpose of these workshops is to present project results and the Simple Decision Support System for decision makers, planners and researchers.

The first dissemination workshop was conducted in Jordan at the RSS premises on January 7th, 2014. Invitations were sent to main stakeholders of the project and the technical committee members.

The workshop included a brief presentation about the project objectives, an overview of the findings of the research analysis, a presentation of the analysis of the satellite images and a presentation of the model and the website.

An enriching discussion took place at the end of the workshop where further suggestions and comments were made. The stakeholders think that the results of such studies should be presented for officials at top level such as the Ministry of Agriculture and the Jordan Valley Authority that need such tools for extension and guidance. The attendees expressed their opinion about the model finding it flexible and easy to change input data including the constraints.

The attendees highly appreciate efforts of the project team particularly that the lifespan of the project is relatively short. The National Center for Agricultural Research and Extension NCARE suggested working closely with RSS to further develop the model to be used for a variety of purposes.

The RSS team obtained their Visas to visit Palestine, and their visit was arranged between the 10th and 13th of January 2014. Both teams spent a working day together to finalize the different project outcomes in preparation for the final report.

The second dissemination workshop was conducted by ARIJ at the Caesar Hotel in Ramallah on January 12th, 2014. The RSS team attended the dissemination workshop and their presence was of a great importance as a partner in this project for exchanging knowledge and enriching the discussion.

At this workshop, ARIJ invited top level representatives of the project stakeholders including the Ministry of Agriculture, Ministry of Planning, Palestine Water Authority, Land Research Center, Agriculture Departments of Jericho and Bethlehem, and others.

The workshop included a welcoming speech and a brief about the project. Further it included a presentation of the comparison of the research analysis results of both study areas in Jordan and Palestine. The workshop also included a presentation of the satellite images analysis and results in addition to a presentation of the model and the website providing some practical examples.

By the end of the workshop, a fruitful discussion took place between the different stakeholders and ARIJ and RSS teams. The stakeholders expressed their gratitude for the efforts made in this research and in developing such an important tool for planning. They made several suggestions of change and modification concerning some specifications of the model and other suggestions for future development. The participants also welcomed the RSS team and encouraged such partnerships with Jordan and other countries.

A press release about the workshop was published at Al-Ayyam and Al-Quds newspapers, two local newspapers in Palestine. (Please see Annex 4)

Furthermore, a publication will be published including the results and findings of the conducted research and the results of the field survey and satellite images analysis. It will also include a description of the Decision Support System presenting few scenarios and providing some recommendations accordingly. This publication will be distributed to the interested stakeholders in Jordan and Palestine. Currently, we are at the stage of designing the publication and work on its content is in process.

3. SATELLITE IMAGES ANALYSIS

This section provides a detailed analysis of the satellite images and the mechanism used for that purpose. This section is done separately in the attached report because of maps formatting.

3. MODIFICATIONS AND CHALLANGES

Few modifications occurred while conducting the project activities:

- The area of Al-'Auja was added to the targeted area in the West Bank to be Jericho and Al-'Auja for the reasons of similarities and adjacency of both study areas.
- As a consequence, the number of distributed questionnaires increased to 152 questionnaires by adding 30 farmers at Al-'Auja

- The coordination workshop was planned to take place at ARIJ premises in Palestine as a follow up on the project's progress. The RSS team couldn't obtain their visas on time and so the workshop was re-planned to be conducted through video conference.
- The timeline of the project was adjusted in accordance with the ongoing circumstances and logistics

One of the major challenges faced during the project was time restrain. All resources of both project teams were utilized to the maximum to deliver all project outcomes. There was a major delay in receiving the satellite images due to logistic reasons that caused a request for a project extension. Furthermore, the bad weather conditions had caused the delay of some of the events to ensure maximum attendance and participation at the conducted workshops.

4. CONCLUSION AND RECOMMENDATIONS

This project has resulted in developing a simplified decision support system (SDSS) for land and water optimization and crops management which will assist in improving the agricultural sector production capacity which ended by increasing self-sufficiency and enhancing food security in the Jordan Valley region as well as on the country level. This model was achieved through implanting in integrated scientific methodology which included: field surveys, interviews, conducting focus groups with stakeholders, reviewing the literatures and related documents as well as GIS/RS applications for analysing satellite images (spot 5 and 6) are used for different years to monitor the change detection.

The designed Optimization model is concluded to be as an efficient tool especially in the agricultural planning and decision making on different levels (farmers-planners-decision makers) in which the net production/benefits from main cash crops (vegetables) cultivated in the region will be maximized under the limitations in water and land resources and the pressure of high demand in food due to the population growth and drought. The model is flexible and can easily adapted to the study area, on farmer level, even on larger scale just through changing the entered data. The value of such a model is essentially high since it can help decision makers and planners to find out/foresee the best cropping pattern, crop distribution, and production potential based on demand/supply chain, pricing system, self-sufficiency and optimizing the utilization of available resources (water and

land). The model will assist decision makers and other interested groups to understand the current state of agriculture and speculate future demand and supply in agro-food when climate and demography change.

Although, more than 70% of workshops participants were not familiar with these types of simple and effective planning systems, they emphasize the efficacy of the system for farmers, stakeholders, decision makers, and politicians because of its great benefit and guidance.
The simplified model increased the knowledge of participants on the main cash crops and factors affecting the profitability of the farmer, in addition to use such a model for proper planning on the governorate and national levels for advisory extension services to the farmers.

Based on the conducted specialized, training and dissemination workshops through which the model was operated and practiced by different stakeholders, we can present the following recommendations:

- This study is valuable and should be expanded to become on the country level.
- Ministry of Agriculture and research canters in both countries showed high interest in the developed model and the resulted information. In addition to the interest of the Palestinian Ministry of Agriculture and NGOs.
- It was recommended to improve the model to take into consideration water quality, post-harvest losses, and exportation risks.
- To link the agricultural policies whether in Jordan or Palestine on agro-commodity prices through including value chain for each crop.
- To develop the model based on agro-ecological zones.
- To create balances between water budget and maximization of production taking into consideration improving the quality of produced agro-commodities.
- To add the land value to model to protect land and avoid the fragmentation phenomena.
- It was recommended to develop national model that serve both West Bank and Gaza Strip.
- It was recommended to keep tracking the model users through the internet and to detect their selected crops and areas to understand their priorities.
- Keep updating the website and messaging the participants about these updates.

- The model is very informative and trainees started thinking how to apply it in their businesses and work.

Finally we can conclude that the created model is simple and can easily adapted to the study areas and for other areas. This model can be utilized on micro (farmers), medium (area), and lager (national) scales, just through changing the entries. All the project generated data, information, reports and model are accessible as an open source through the created sub website at ARIJ webpage http://proxy.arij.org/rpcd.

It was agreed to give special training will be provided by ARIJ and RSS for the planning units in the Ministry of Agriculture and Ministry of Planning.

Based on the stakeholders recommendations, both ARIJ and RSS have planned to develop a joint project proposal to improve the developed model based on the stakeholders' recommendations to become an advanced decision support system on different levels.

The related organizations showed high interest in using this model in their plans and in their extension services, especially in the study area by the agricultural directorates in Shouneh Janoubeyeh and Jericho and Al-'Auja areas. The Palestinian Ministry of agriculture promised to provide ARIJ with updated information about the economic cost of crop production in Palestine to work together in adapting this information in the developed model and get-out the suitable predication for different socio-political scenarios, especially the on-going peace negations will be based on agribusiness, which should take into consideration food security and small farms.

ANNEXES

Annex 1: Project Timeline

Activity	July				August				September				October				November				December				January	
	W1	W2	W3	W4	W1	W2	W3	W4	W1	W2	W3	W4	W1	W2	W3	W4	W1	W2	W3	W4	W1	W2	W3	W4	W1	W2
Reviewing available literatures, information gap analysis, developing project indicators																										
Kick off meeting (Jordan)																										
Launching Workshop (Jordan)																										
Launching Workshop (West Bank)																										
Preparing the study sample (ARIJ & RSS)																										
Orientation for Field Surveyors (ARIJ & RSS)																										
Collecting data through filling farmers field survey (ARIJ & RSS)																										
SPSS Coding																										
Preparing and filling factsheets (ARIJ)																										
Preparing and filling factsheets (RSS)																										
Focus group 1 (Stakeholders) West Bank																										
Focus Group 2 (Farmers) West Bank																										
Focus group 1 (Stakeholders) Jordan																										
Focus group 2 (Farmers) Jordan																										
Analyzing collected data																										
Coordination meeting (West Bank)																										
Conducting in depth analysis and assessments for the targeted areas for better planning and management																										
Creating a simplified natural resources and agro-food production modeling system (decision information system)																										

Session to test Decision Support System in Jordan																									
Session to test Decision Support System in West Bank																									
Training workshop in Jordan																									
Training workshop in West Bank																									
Final (dissemination) Workshop Jordan																									
Final (dissemination) Workshop West Bank																									

Annex 2: Project Technical Committees

Technical Committee (West Bank):

No.	Organization	Name
1	Palestinian Water Authority (PWA)	Hadeel Faydi
2	Agriculture Research Center	Hazem mara'ba
3	Agriculture Department of Jericho	Ammar Hussien
4	Agriculture Department of Jericho	Eng. Fahmi Njoom
5	Ministry of Planning	Anwar Qabaja
6	Agricultural Engineers Association	Eng. Kamal Dweik
7	Agricultural Development Association (Relief)	Dr. Abed Alghani Saya'ra
8	Jericho Governorate	Najah hammad
9	Land Research Center (LRC)	Mekki Al Hafeth
10	Palestinian Central Bureau of Statistics (PCBS)	Ahmed Mardawi

Technical Committee (Jordan):

No.	Name	Organization
1	Eng. Ayman Jaber	Ministry of Water and Irrigation
2	Dr. Khalil Al-Absi	Jordan Valley Authority
3	Eng. Fouad Artima	Department of Statistics
4	Dr. Ahmad Abu Obeid	Jordan Meteorological Department
5	Eng. Suleiman Sawalha	Ministry of Agriculture
6	Eng. Ameen Alokour	National Center for Agricultural Research and Extension/Amman
7	Dr. Nabil Bani Hani	National Center for Agricultural Research and Extension/Jordan Valley

Annex 3: Newspaper Article about the conducted focus group meetings by ARIJ

تسجيل الدخول | التسجيل الثلاثاء 29 تشرين الأول (أكتوبر) 2013

تقارير وتحليلات محافظات فلسطين أفلام وآراء رياضة مال واعمال صحة وطب كمبيوتر وموبايل حوارات أدب وفن اجتماعيات إعلام إعراب وفيات فلسطين

القدس: اختتام حملة الطلبة الافريقية والاعتداء على سكانها اصابة عشرات الطلبة اختناقا بالغاز المسيل في بيت لحم

لقاءان في اريحا والعوجا حول تطوير نظام إدارة الارض والم

(http://alquds.com)

28 أكتوبر 2013 - 22:50 0 تعجب 0 غير معجب 126

https://twitter.com/intent/tweet?url=http://t.mp

لقاءان حول تطوير نظام إدارة الارض والمياه

http://cdn.alquds.com/sites/default/files/styles/large/public/2013/10/28/?1439949_44_39_13_19_1_20111.jpg

بيت لحم- القدس دوت كوم- نجيب فراج- عقد معهد الابحاث التطبيقية (أريج)، في اريحا والعوجا، ورشتي عمل حول تطوير نظام إدارة الارض والمياه، من اجل تعزيز الامن الغذائي، في المنطقة الوسطى لوادي الاردن (الضفة الغربية والاردن).

وشارك في هذين اللقاءين 32 من ممثلي المؤسسات الحكومية والخاصة والتجمعات التعاونية الزراعية، والمزارعين.

وهدفت الورشتان الى مشاركة مؤسسات المجتمع المحلي والمزارعين في منطقة الدراسة (اريحا والعوجا)، من خلال الاستماع الى آرائهم واقتراحاتهم واحتياجاتهم الخاصة بالقطاع الزراعي في المنطقة، وجمع معلومات وبيانات مختلفة من اجل تطوير نموذج واقعي وملائم لإدارة الارض والمياه، حيث سيتم الاستفادة من البيانات والمعلومات المختلفة في بناء نظام داعم لاتخاذ القرار بما يخدم تعزيز الأمن الغذائي.

واشار معهد أريج الى ان هذا النظام من شانه ان يساعد صانعي القرار في مجال الزراعة، على تطوير الخطط والاستراتيجيات المؤدية الى الاستفادة من الموارد المتاحة من المياه والارض بشكل مستدام، وتنويع النظم الزراعية وأنواع المحاصيل الزراعية لتلبية الاحتياجات المستقبلية المتزايدة للسكان.

يذكر ان مشروع تطوير نظام ادارة الارض والمياه من اجل تعزيز الامن الغذائي في المنطقة الوسطى لوادي الاردن (الضفة الغربية والاردن)، هو مشروع مشترك ما بين معهد أريج والجمعية العلمية الملكية في الاردن، ويمول من قبل برنامج الشراكة الاقليمي للتعاون والتنمية، ويهدف تحسين سبل العيش للمجتمعات المحلية، وتعزيز الأمن الغذائي لديهم، واستغلال الموارد المائية والاراضي المتوفرة، اضافة الى دعم القوى العاملة والنظام المؤسساتي الخاص بهم.

عودة () 0 تعجب 0 غير معجب 126 0

التعليقات على: لقاءان في اريحا والعوجا حول تطوير نظام إدارة الارض والمياه

«أريج» يعقد ورشتي عمل لممثلين عن مؤسسات المجتمع المحلي في أريحا والعوجا

بيت لحم - نجيب فراج -عقد معهد الابحاث التطبيقية (أريج) في مقر جمعية المهندسين الزراعيين في أريحا، ورشتي عمل لمشروع تطوير نظام لإدارة الارض والمياه من اجل تعزيز الامن الغذائي في المنطقة الوسطى لوادي الاردن (الضفة الغربية والاردن) حضرها ١٧ شخصا من ممثلي المؤسسات الحكومية والخاصة بالإضافة الى عدد من الجمعيات التعاونية الزراعية. في حين حضر الورشة الثانية ١٥ من مزارعي اريحا والعوجا، اضافة الى ممثل عن الجهة الممولة للمشروع برنامج الشراكة الاقليمي للثقافة والتنمية، د. بدر الادرج.

هدفت كلتا الورشتين الى مشاركة مؤسسات المجتمع المحلي والمزارعين في منطقة الدراسة "اريحا والعوجا"، من خلال الاستماع الى آرائهم واقتراحاتهم واحتياجاتهم الخاصة بالقطاع الزراعي في المنطقة. كذلك تم جمع معلومات وبيانات مختلفة من اجل تطوير نموذج واقعي وملائم لإدارة الارض والمياه حيث سيتم الاستفادة من البيانات والمعلومات المختلفة في بناء نظام داعم لاتخاذ القرار، وذلك لتعزيز الأمن الغذائي باستخدام كل من نتائج النموذج والموارد المتوفرة في قاعدة البيانات المتكاملة للمشروع. سوف يساعد هذا النظام صانعي القرار والمخططين في مجال القطاع الزراعي وإنتاجه على تطوير الخطط والاستراتيجيات المؤدية الى الاستفادة من الموارد المتاحة ومتوفرة لجميع المهتمين وعلى كافة المستويات للقطاع الزراعي من أجل تعميم الفائدة الممكنة. كما سيتم نشر السيناريوهات والتوصيات التي ستسفر عنها الدراسة إلى كافة أصحاب العلاقة في جميع القطاعات ذات العلاقة للاستفادة منها واعتماد النظام المنوي إقامته.

ومن الجدير ذكره ان مشروع تطوير نظام ادارة الارض والمياه من اجل تعزيز الامن الغذائي في المنطقة الوسطى لوادي الاردن (الضفة الغربية والاردن)، هو مشروع مشترك ما بين معهد أريج والجمعية العلمية الملكية في الاردن والممول من قبل برنامج الشراكة الاقليمي للثقافة والتنمية، ويهدف الى تحسين سبل العيش للمجتمعات المحلية، تعزيز الامن الغذائي لديهم، استغلال الموارد المائية والاراضي المتوفرة، اضافة الى دعم القوى العاملة والنظام التسويقي الخاص بهم. حيث تعتبر الزراعة المهنة الاساسية والسائدة في المنطقة الوسطى لوادي الاردن، وبالتالي يعتبر تخطيط وادارة هذا القطاع ذا اهمية بالغة للسكان في منطقتي الدراسة من الجانب الفلسطيني (أريحا والعوجا)، ومن الجانب الاردني (الشونة الجنوبية).

"أريج" ينظم ورشتي عمل في أريحا حول "مشروع تطوير نظام إدارة الأرض والمياه"

أريحا – "الايام": نظم معهد الأبحاث التطبيقية (أريج) في مقر جمعية المهندسين الزراعيين في أريحا ورشتي عمل لمشروع تطوير نظام إدارة الأرض والمياه من اجل تعزيز الامن الغذائي في المنطقة الوسطى لوادي الاردن (الضفة الغربية والاردن)، حضر الأولى ١٧ شخصا من ممثلي المؤسسات الحكومية والخاصة، وعدد من ممثلي الجمعيات التعاونية الزراعية، في حين حضر الورشة الثانية ١٥ من مزارعي أريحا والعوجا، وممثل عن الجهة الممولة للمشروع؛ برنامج الشراكة الاقليمي للثقافة والتنمية د. بدر الادرج.

وهدفت كلتا الورشتين الى مشاركة مؤسسات المجتمع المحلي والمزارعين في منطقة الدراسة "أريحا والعوجا"، من خلال الاستماع الى آرائهم واقتراحاتهم واحتياجاتهم الخاصة بالقطاع الزراعي في المنطقة. وتم جمع معلومات وبيانات مختلفة من اجل تطوير نموذج واقعي وملائم لإدارة الارض والمياه، حيث سيتم الاستفادة من البيانات والمعلومات المختلفة في بناء نظام داعم لاتخاذ القرار، وذلك لتعزيز الأمن الغذائي باستخدام كل من نتائج النموذج والموارد المتوفرة في قاعدة البيانات المتكاملة للمشروع.

وسيساعد هذا النظام صانعي القرار والمخططين في مجال القطاع الزراعي وإنتاجه على تطوير الخطط والاستراتيجيات المؤدية الى الاستفادة من الموارد المتاحة من المياه والاراضي بشكل مستدام، وتنويع النظم الزراعية، وأنواع المحاصيل الزراعية لتلبية الاحتياجات المستقبلية المتزايدة للسكان، بمتكون مخرجات هذه الدراسة متاحة ومتوفرة لجميع المهتمين وعلى كافة المستويات للقطاع الزراعي من أجل تعميم الفائدة الممكنة، كما سيتم نشر السيناريوهات والتوصيات التي ستسفر عنها الدراسة إلى كافة أصحاب العلاقة في جميع القطاعات ذات العلاقة للاستفادة منها واعتماد النظام المنوي بناؤه.

يذكر ان مشروع تطوير نظام ادارة الارض والمياه من اجل تعزيز الامن الغذائي في المنطقة الوسطى لوادي الاردن (الضفة الغربية والاردن)، هو مشروع مشترك ما بين معهد أريج والجمعية العلمية الملكية في الاردن، والممول من قبل برنامج الشراكة الاقليمي للثقافة والتنمية.

ويهدف المشروع الى تحسين سبل العيش للمجتمعات المحلية، وتعزيز الامن الغذائي لديهم، واستغلال الموارد المائية والاراضي المتوفرة، اضافة الى دعم القوى العاملة والنظام التسويقي الخاص بهم، حيث تعتبر الزراعة المهنة الاساسية والسائدة في المنطقة الوسطى لوادي الاردن، وبالتالي يعتبر تخطيط وإدارة هذا القطاع ذا اهمية بالغة للسكان في منطقتي الدراسة من الجانب الفلسطيني (أريحا والعوجا)، ومن الجانب الاردني (الشونة الجنوبية).

Annex 4: News about the dissemination workshop conducted by ARIJ

Wednesday 15 Ja

لتعزيز الأمن الغذائي بالمنطقة الوسطى لوادي الأردن

اختتام ورشة لمشروع تطوير نظام لإدارة الأرض والمياه

بيت لحم - نجيب فراج - عقد معهد الأبحاث التطبيقية - القدس (أريج)، الورشة الختامية لمشروع تطوير نظام إدارة الأرض والمياه من أجل تعزيز الأمن الغذائي في المنطقة الوسطى لوادي الأردن (الضفة الغربية والأردن) - بحضور قاسم عبده وكيل مساعد للمصادر الطبيعية في وزارة الزراعة وعلي أبو ظاهر وكيل مساعد الشؤون الادارية والاقتصادية في نفس الوزارة، بالإضافة الى مشاركة العديد من الجهات العاملة ذات العلاقة من المؤسسات الحكومية.

وافتتح الورشة، المهندس نادر هريمات نائب المدير العام لمعهد "أريج"، مرحبا بالمشاركين وبشركاء المشروع من الجمعية العلمية الملكية الذين حضروا من الأردن، وأوضح أن المشروع هو مشروع ريادي يمكن اتخاذه كنموذج يحتذى به في مجال إدارة الأرض والمياه سواء على مستوى المزارع أو مستوى الجهات صانعة القرار، كما ويعزز أواصر العلاقة بين فلسطين والأردن من خلال تبادل الخبرات والمعرفة في المجالات البحثية المختلفة.

من الجدير ذكره، أنه تم اختيار منطقة أريحا والعوجا من الجانب الفلسطيني والشونة الجنوبية من الجانب الأردني، حيث يهدف المشروع الى تحسين سبل العيش للمجتمعات المحلية وتعزيز الأمن الغذائي لديها، والاستغلال الأمثل للموارد المائية والأرض المتوفرة، ودعم القوى العاملة، ودعم النظام التسويقي والتخطيط والادارة المثلى للقطاع الزراعي في المناطق المستهدفة مع التركيز على تحقيق عنصر الأمن الغذائي.

وقدم فريق عمل المشروع من معهد "أريج"، شرحا مفصلا عن نتائج المسح الميداني الذي استهدف المزارعين الزراعيين في منطقتي الدراسة (أريحا والعوجا)، ونتائج تحليل صور الأقمار الصناعية من خلال تسليط الضوء على التغير في مساحة وكثافة الغطاء النباتي خلال السنوات الماضية، ونظام ادارة المياه والأرض الذي تم اعداده خلال فترة المشروع ويهدف الى مساعدة صناع القرار على التوزيع الأمثل للمساحات الزراعية من المحاصيل المختلفة.

واختتم فريق العمل، العرض بإعطاء شرح عن الموقع الالكتروني الذي تم انشاؤه للمشروع والذي يحتوي على جميع النتائج والبيانات المستخرجة، ويرتبط بموقع معهد "أريج" الالكتروني.

واختتمت الورشة، بنقاش عام للحضور تم من خلاله وضع توصيات مهمة للمشروع وكيفية الاستفادة منها وتطبيقها على باقي أرجاء محافظات الوطن.

نظمها "أريج" في رام الله

ورشة عمل ختامية لـ"مشروع تطوير نظام لإدارة الأرض والمياه من أجل تعزيز الأمن الغذائي"

رام الله - "الأيام": نظم معهد الأبحاث التطبيقية القدس (أريج) في رام الله الورشة الختامية لمشروع تطوير نظام إدارة الأرض والمياه من أجل تعزيز الأمن الغذائي في المنطقة الوسطى لوادي الأردن (الضفة الغربية والأردن).

وحضر الورشة قاسم عبده وكيل مساعد للمصادر الطبيعية في وزارة الزراعة وعلي أبو ظاهر وكيل مساعد للشؤون الادارية والاقتصادية في وزارة الزراعة، إضافة الى مشاركة العديد من الجهات العاملة ذات العلاقة من المؤسسات الحكومية (وزارة الزراعة، مديرية زراعة أريحا، الجهاز المركزي للإحصاء، وزارة التخطيط، محافظة أريحا والأغوار)، وغير الحكومية (اتحاد لجان العمل الزراعي، مركز أبحاث الأراضي، الاغاثة الزراعية)، كما شارك وفد ممثل عن الجمعية العلمية الملكية (الأردن) الشريك في المشروع.

وأوضح المهندس نادر هريمات نائب المدير العام لمعهد أريج أن المشروع هو مشروع ريادي يمكن اتخاذه كنموذج يحتذى به في مجال إدارة الأرض والمياه سواء على مستوى المزارع أو مستوى الجهات صانعة القرار، كما يعزز المشروع أواصر العلاقة بين فلسطين والأردن من خلال تبادل الخبرات والمعرفة في المجالات البحثية المختلفة.

يذكر أنه قد تم اختيار منطقة أريحا والعوجا من الجانب الفلسطيني، والشونة الجنوبية من الجانب الأردني، حيث يهدف المشروع الى تحسين سبل العيش للمجتمعات المحلية، وتعزيز الأمن الغذائي لديها، والاستغلال الأمثل للموارد المائية والأرض المتوفرة، ودعم القوى العاملة، ودعم النظام التسويقي والتخطيط والإدارة المثلى للقطاع الزراعي في المناطق المستهدفة في المشروع، مع التركيز على تحقيق عنصر الأمن الغذائي.

وخلال الورشة، قام فريق عمل المشروع من معهد أريج بتقديم شرح مفصل عن نتائج المسح الميداني الذي استهدف المزارعين الزراعيين في منطقتي الدراسة (أريحا والعوجا)، ونتائج تحليل صور الأقمار الصناعية من خلال تسليط الضوء على التغير في مساحة وكثافة الغطاء النباتي خلال السنوات الماضية، ونظام إدارة المياه والأرض الذي تم إعداده خلال فترة المشروع، والذي يهدف الى مساعدة صناع القرار على التوزيع الأمثل للمساحات الزراعية من المحاصيل المختلفة.

واختتم فريق العمل العرض بإعطاء شرح عن الموقع الالكتروني الذي تم انشاؤه للمشروع، والذي يحتوي على جميع النتائج والبيانات المستخرجة من المشروع، والذي يرتبط بموقع معهد أريج الالكتروني.

واختتمت الورشة بنقاش عام للحضور تم من خلاله وضع توصيات مهمة للمشروع وكيفية الاستفادة منها وتطبيقها على باقي أرجاء محافظات الوطن، وقد لوحظ الاهتمام الرسمي والمؤسساتي بهذا المشروع.

وشكر معهد أريج جميع المؤسسات الحكومية وغير الحكومية التي شاركت في انجاح المشروع، من خلال المشاركة في ورش العمل المختلفة، وتوفير البيانات اللازمة لتطوير نظام إدارة الأرض والمياه من أجل تعزيز الأمن الغذائي.