Under the European Union's ENPARD (European Neighbourhood Programme for Agriculture and Rural Development) Initiative in Egypt

EUROPEAN UNION – JOINT RURAL DEVELOPMENT PROGRAMME (EU-JRDP)

Specific PROJECT NAME

Enhancing water productivity by improving on-farm irrigation management in Minya and Fayoum, Egypt

Specific Contract Number

6000234430

Methodological Approach (FINAL)

September 2, 2020

A project implemented by

ICARDA and ARC

This project is funded by the European Union

DISCLAIMER

The opinions expressed in this document represent the authors' points of view which are not necessarily shared by the European Commission or by the authorities of the concerned countries.

ACRONYMS

AEnRI	Agricultural Engineering Research Institute
ANOVA	Analysis of Variance
DAC	Development Assistance Committee
GAP	Good Agricultural Practices
JRDP	Joint Rural Development Programme
MALR	Ministry of Agriculture and Land Reclamation
MEL	Monitoring, Evaluation and Learning
MRB	Mechanized Raised Bed
MWRI	Ministry of Water Resources and Irrigation
OECD	Organization for Economic Co-operation and Development
SECO	(Swiss) State Secretariat for Economic Affairs
WUA	Water User Association

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1. Context of the evaluation

1.1 Short overview of the action to be evaluated

Egypt is faced by an extreme water shortage. In addition to growing needs due to a rapidly growing population, the supply of Nile water is further threatened to diminish due to upstream developments. This will put the country in a situation where priorities for water allocation will have to be set, and agriculture is expected to be the main loser. Agriculture is by far the largest water demanding sector consuming about 85% of all available water resources. Nevertheless, the agriculture sector provides livelihoods for 55% of the population and directly employs about 30% of the labor force. Thus, initiatives to save irrigation water and increase water productivity are vital for the country.

In preparation of this project, consultation meetings and focus group discussions with concerned stakeholders were held in Minya and Fayoum by the EU-JRDP to assess the challenges and constraints facing agriculture productivity and community development. The consultations indicated that the agriculture sector in Minya and Fayoum faces major challenges which can be summarized as:

1. land fragmentation,
2. lack of appropriate GAPs at field level,
3. inequitable water distribution along meskas and marwas
4. inefficient and outdated extension systems and advisory services.
5. low adoption of new/good practices
6. low investment in agriculture sector/education
7. water quantity and quality decrease
8. poor water, land, and fertilizers management
9. poor engagement and involvement of community in introduced new agricultural activities/interventions

Based on the 2nd call for proposals made by the Italian Embassy in Cairo for Scaling up Good Agriculture Practices in the Governorates of Fayoum and Minia to increase crop water productivity by improving on-farm irrigation management, ICARDA submitted a concept note followed by a full application document aiming to implement this action, which was approved by the Italian Cooperation and the EU-JRDP management. In November 2017, ICARDA signed the contract for "Enhancing water productivity by improving on-farm irrigation management in Minya and Fayoum, Egypt".

The overall objective of the action is to sustainably improve the livelihoods of rural communities in Minya and Fayoum by introducing some improvements to farming activities at the field level.
The specific objectives are:

1. Improve the productivity of small scale-farming systems through more effective and efficient use of water and land resources,
2. Improve on-farm income by scaling out the improved irrigation and agricultural practices,
3. Develop and disseminate innovative and cost-effective integrated packages at field level that increase agricultural water productivity.

The action is characterized by being applied rather than research oriented. The project targeted the introduction of a comprehensive package that, in a holistic way, should result in better water management and improved land and water productivity. The following activities have been implemented:

1) Marwas rehabilitation,
2) Laser land leveling,
3) Introduction of mechanized raised bed (MRB) production package,
4) Soil improvement through application of gypsum and/or other additives,
5) Field drain rehabilitation
6) Training of water users' associations (WUAs)

This has been supported by the estimation of crop-water requirements of the major crops in the project command areas for proper design of rehabilitated marwas section and the development of a geo-database for the project locations and activities.

The project implementation started officially in November 2018 and ended on July 31, 2020. The final project report including the economic analysis is expected to be available by August 25, 2020.

Project implementation took place in Hafez El-Sharkia in Minya and in Biahmo and Awlad Mohamed in Fayoum. The project is interrelated with the EU-JRDP Project of improving meskas implemented by the Ministry of Water Resources and Irrigation (MWRI) in the same command area. Whereas a meska serves an area of about 100 to 350 feddan (one feddan = 4200 m^2 = 0.42 hectare), a marwa typically serves an area of 3 to 5 feddan. As meskas represent a higher level of irrigation channels than marwas, improvement of marwas should follow meska improvement. This resulted in a delay of project start from November 2018 to February 2019 when the meska improvement took place.

1.2 Analytical framework of the actions

The analytical framework of the actions is best represented by the project logical framework matrix, which describes how the program activities will lead to the immediate outputs, and how these will lead to the outcomes and long-term impacts. This is shown in relation to baseline, project targets, performance indicators and means of verification. The project logical framework matrix is shown below (Project Proposal Document, September 2017).

2.1.5. Logical Framework

	Results chain	Indicators	Baseline (2017)	Current value Reference date	Targets (2019)	Sources and means of verification	Assumptions
Overall objective: Impact	The overall objective of the action is to sustainably improve the livelihoods of poor-resources rural communities in Minya and Fayoum governorates by introducing open-sources solutions that scientifically based and environmentally sound.	Improved on-farm irrigation efficiency (CE) Improved water productivity	Inefficient water use, over irrigation in	– CE = 70% – Social conflicts over water use between upstream and downstream water users – Low water productivity due to inappropriate irrigation management	Improve Conveying efficiency by 15% Improve water productivity by 50%	– Conveying efficiency improved from 70 to 85% – Water productivity increase by at least 50% – Equity of water distribution along marwa (head, middle, tail) – Yield increase by 25% – Irrigation water saved by at least 20% – Farming cost dropped by at least 20%	
Specific objective(s): Outcome(s)	The specific objective: 1. Improve the productivity of the small scale-farming system through more effective and efficient use of water and land resources; 2. Improve on-farm income by scaling out the improved irrigation and agricultural practices. 3. Develop and disseminate innovative and cost-effective integrated package at field level that can increase agricultural water productivity	At least 3 new technological packages introduced to farmers	Farmer traditional practices	95% of farmers using their own knowledge and traditional practices	20% of farmers are using new technologies	– Participatory approach is well adopted – New technologies scaled out and adopted by ate least 20% of farmers – Decision makers adopted the project's outputs and it was reflected on their decisions	Factors outside project management's control that may impact on the outcome-impact linkage.

Outputs	– Marwas in Minya and Fayoum are improved and demonstrated in pilot sites – Famers in Minya and Fayoum adopting more efficient and integrated on-farm irrigation and agricultural packages. – Guidelines for improving water productivity and farm income are produced and disseminated to communities in the two areas, – Awareness of stakeholders regarding GAPs increased through improved communication – Improved irrigation practices fine-tuned, calibrated, tested under farm conditions and disseminated to farmers. – Information/knowledge on potential benefits and trade-offs using various technologies synthesized and shared with stakeholders – Crop water productivity maps for Minya and Fayoum produced and communicated. – Project reports and publications	– 4 technologies in both governorates identified – 500 demonstration plots and 2 platform operationalized – at least 8 WUAs in both locations – farmer groups formulated, at least one of them is women group – at least 9,000 meter-length of improved marwas serving 450 beneficiary farmers – Improved soil quality of at least100 faddan – 20,000 meter-length maintained open drains, 50 faddan laser levelled – raisedbed machines manufactured and 500 faddans cultivated – training sessions, 150	Farmer traditional practices with low water productivity due to inappropriate irrigation management	95% of farmers using their own knowledge and traditional practices	– 4 technologies in both governorates identified – 500 demonstration plots and 2 platform operationalized – at least 8 WUAs in both locations – farmer groups formulated, at least one of them is women group – at least 9,000 meter-length of improved marwas serving 450 beneficiary farmers – Improved soil quality of at least100 faddan – 20,000 meter-length maintained open field drains, at least 100 faddan laser levelled – raisedbed machines manufactured	Project invested in the command area and all machines and equipment procurement handed over to farmers and being used for scaling out within the community in a collective action.	Factors outside project management's control that may impact on the output-outcome linkage.

		trainees, 2 traveling workshops, at least 4 consultation meetings in both governorates – 2 exit workshops conducted – 2 journal papers and 2 dissemination materials developed			and 500 faddans cultivated – training sessions, 150 trainees, 2 traveling workshops, at least 4 consultation meetings in both governorates – 2 exit workshops conducted – 2 journal papers and 2 dissemination materials developed		
Activities	– Desk search and stakeholders' consultation meetings to identify the improved technologies and practices to be adopted in the project area to improve water/land/crop productivities – Promote farmers' awareness (based on practical models) aiming at facilitating the adoption of good irrigation practices and improving the conventional practices to improve irrigation efficiency. – Support farmer associations (WUAs) by reinforcing existing organizations or creating new ones.	***Means:*** *To implement the proposed project, following requirements are essential* ***Staff:*** – On-farm irrigation specialist – Civil engineer – Extensionist – Water advisory services officer – Socioeconomist/Value chain specialist – Accountant – Project administrator ***Equipment*** – 2 Laser levelling machine – 6 Raisedbed machines – 2 Subsoil tillage machines – 2 Backhoe machine				1. *Low adoption of farmers to the introduced technological packages.* 2. *High fluctuation of inputs and material prices needed for activities implementation* 3. *Risk of well organizing farmers in a collective action implementation* 4. *National financial regulations*	

	– Rehabilitation of the marwas for adequate and more efficient delivery of irrigation water to farmer field. – Conduct proper land levelling for pilot areas and facilitate the maintenance of open field drainage networks – Introduce and train farmers on using the mechanized raisedbed technology for precision water and agricultural operations – Strengthen the role on collective actions by building the capacity and collectively involving growers, WUAs, water planners and decision makers to improve sustainable productivity in its all dimensions (social, economic and biophysical). aiming at facilitating the dissemination of good irrigation techniques and practices. – Promote the concept of community-based and participatory approach and beneficiaries' ownership by involving the concerned stakeholders in the whole process of implementation. – Conduct inception and validation workshop to validate and disseminate the project key-findings – Reporting and producing project publications	***Costs:*** *The cost of implementing this proposed project is as below breakdown* – Personnel 29% – Operational 64% – Indirect cost 7% Contributions: – EU-JRDP: 90% – ICARDA-AEnRI: 10%	

An updated Logical Framework Matrix was submitted with the Project Interim Narrative Report (March 31, 2019) and is presented below for comparison.

2.3. Logical Framework (updated)

	Results chain	Indicators	Baseline (2017)	Current value Reference date	Targets (2019)	Sources and means of verification	Assumptions
Overall objective: Impact	The overall objective of the action is to sustainably improve the livelihoods of poor-resources rural communities in Minya and Fayoum governorates by introducing open-sources solutions that scientifically based and environmentally sound.	Improved on-farm irrigation efficiency (CE) Improved water productivity	Inefficient water use, over irrigation in	– CE = 70% – Social conflicts over water use between upstream and downstream water users – Low water productivity due to inappropriate irrigation management	Improve Conveying efficiency by 15% Improve water productivity by 50%	– Conveying efficiency improved from 70 to 85% – Water productivity increase by at least 50% – Equity of water distribution along marwa (head, middle, tail) – Yield increase by 25% – Irrigation water saved by at least 20% – Farming cost dropped by at least 20%	
Specific objective(s): Outcome(s)	The specific objective: 1. Improve the productivity of the small scale-farming system through more effective and efficient use of water and land resources; 2. Improve on-farm income by scaling out the improved irrigation and agricultural practices. 3. Develop and disseminate innovative and cost-effective integrated package at field level that can increase agricultural water productivity	At least 3 new technological packages introduced to farmers	Farmer traditional practices	95% of farmers using their own knowledge and traditional practices	20% of farmers are using new technologies	– Participatory approach is well adopted – New technologies scaled out and adopted by ate least 20% of farmers – Decision makers adopted the project's outputs and it was reflected on their decisions	Factors outside project management's control that may impact on the outcome-impact linkage.

Outputs	– Marwas in Minya and Fayoum are improved and demonstrated in pilot sites – Famers in Minya and Fayoum adopting more efficient and integrated on-farm irrigation and agricultural packages. – Guidelines for improving water productivity and farm income are produced and disseminated to communities in the two areas, – Awareness of stakeholders regarding GAPs increased through improved communication – Improved irrigation practices fine-tuned, calibrated, tested under farm conditions and disseminated to farmers. – Information/knowledge on potential benefits and trade-offs using various technologies synthesized and shared with stakeholders – Crop water productivity maps for Minya and Fayoum produced and communicated. – Project reports and publications	– 4 technologies in both governorates identified – 500 demonstration plots and 2 platform operationalized – at least 8 WUAs in both locations – farmer groups formulated. – at least 9,000 meter-length of improved marwas serving 350 beneficiary farmers – Improved soil quality of at least100 faddan – Maintain on-farm drains, the targeted length will be determined based on the actual field situation. – 50 faddan laser levelled – raisedbed machines manufactured and 500 faddans cultivated – training	Farmer traditional practices with low water productivity due to inappropriate irrigation management	95% of farmers using their own knowledge and traditional practices	– 4 technologies in both governorates identified – 500 demonstration plots and 2 platform operationalized – at least 8 WUAs in both locations – farmer groups formulated. – at least 9,000 meter-length of improved marwas serving 350 beneficiary farmers – Improved soil quality of at least100 faddan – Maintain on-farm drains, the targeted length will be determined based on the actual field situation. – 50 faddan laser levelled – raisedbed machines manufactured	Project invested in the command area and all machines and equipment procurement handed over to farmers and being used for scaling out within the community in a collective action.	Factors outside project management's control that may impact on the output-outcome linkage.

		sessions, 150 trainees, 2 traveling workshops, at least 4 consultation meetings in both governorates – 2 exit workshops conducted – 2 journal papers and 2 dissemination materials developed			and 500 faddans cultivated – training sessions, 150 trainees, 2 traveling workshops, at least 4 consultation meetings in both governorates – 2 exit workshops conducted – 2 journal papers and 2 dissemination materials developed		
	– Desk search and stakeholders' consultation meetings to identify the improved technologies and practices to be adopted in the project area to improve water/land/crop productivities – Promote farmers' awareness (based on practical models) aiming at facilitating the adoption of good irrigation practices and improving the conventional practices to improve irrigation efficiency. – Support farmer associations (WUAs) by reinforcing existing organizations or creating new ones.	***Means:*** *To implement the proposed project, following requirements are essential* ***Staff:*** – On-farm irrigation specialist – Civil engineer – Extensionist – Water advisory services officer – Socioeconomist/Value chain specialist – Accountant – Project administrator ***Equipment*** – 2 Laser levelling machines – 6 Raisedbed machines – 2 Subsoil tillage machines – 2 Backhoe machines			1. *Low adoption of farmers to the introduced technological packages.* 2. *High fluctuation of inputs and material prices needed for activities implementation* 3. *Risk of well organizing farmers in a collective action implementation* 4. *National financial regulations*		

	– Rehabilitation of the marwas for adequate and more efficient delivery of irrigation water to farmer field. – Conduct proper land levelling for pilot areas and facilitate the maintenance of open field drainage networks – Introduce and train farmers on using the mechanized raisedbed technology for precision water and agricultural operations – Strengthen the role on collective actions by building the capacity and collectively involving growers, WUAs, water planners and decision makers to improve sustainable productivity in its all dimensions (social, economic and biophysical). aiming at facilitating the dissemination of good irrigation techniques and practices. – Promote the concept of community-based and participatory approach and beneficiaries' ownership by involving the concerned stakeholders in the whole process of implementation. – Conduct inception and validation workshop to validate and disseminate the project key-findings – Reporting and producing project publications	***Costs:*** *The cost of implementing this proposed project is as below breakdown* – Personnel 29% – Operational 64% – Indirect cost 7% Contributions: – EU-JRDP: 90% – ICARDA-AEnRI: 10%	

A comparison of the two matrices shows that they are almost identical, with the exception of the following: increasing the number of beneficiaries of marwa improvement from 350 to 450, increasing the land levelling areas from 50 to 100 feddan and stating that the actual drain improvement length shall be determined based on actual field conditions (compared to 20,000 m length in the initial workplan).

1.3 Purpose and scope of the evaluation

An evaluation is an evidence-based judgment of project performance compared to initial expectations. The main purpose of an evaluation is to guide decision making and provide input to political priority setting. It can also assist in improving the quality of ongoing interventions. It can identify areas for improvements, highlight good and bad practices, and identify unintended or unexpected effects of the action. The evaluation needs to identify what has happened on the ground, why, and how much has changed. Generally, an evaluation should be carried out after sufficient time has passed to allow changes to be identifiable and measurable.

Quoting the final evaluation Terms of Reference, the main purpose of the independent external final evaluation is to assess whether the project has been implemented successfully in terms of achieving the objectives that have been set, and achieving its targeted impact on the communities. Also, to highlight the lessons learned from the current project that would help in proposing potential improvements for implementation of similar future projects.

In addition, the final evaluation aims to determine whether those responsible for implementing the project were capacitated in carrying out monitoring and evaluation of the Action. The final evaluation should therefore be done in a participatory manner, including the project's stakeholders and beneficiaries in the work so that the review can also be a learning process for them.

The final evaluation will review the implemented activities, expenditures incurred, constraints encountered, the final outstanding activities to be undertaken and assess the impact of the project action, identify the lessons learned and how the sustainability of the project's interventions can be ensured.

The evaluator's duties include the following:

- To familiarize himself with all relevant project documentation including: The Project Proposal, Budget for the Action and updated Logical Framework Matrix; General Conditions applicable to EU financed grant contracts; Interim Narrative and Financial Reports; the Communication and Visibility Plan.
- To establish contact with key project stakeholders including the EU-JRDP PMU, EU-JRDP Field Officers in Minia and Fayoum; ICARDA's Field Officers in Minia and Fayoum, Ministry of Agriculture officials in both governorates; representatives of other EU-JRDP grant projects, other project stakeholders and final beneficiaries including farmers and water users' associations.
- To carry out field missions to Minia and Fayoum governorates for the collection of information and data needed with the assistance of ICARDA staff and ICARDA-ARC field officers.
- Weekly reporting on meetings held and site visits made. On commencement of the assignment, the evaluator will receive all available information from the project leader and appropriate visits and meetings will be arranged with the project's stakeholders and final beneficiaries.

2. Updated Evaluation Framework

Activities of the evaluation have started mid-July. A table of activities carried out to date is provided in Annex 1.

Several project documents have been received and reviewed to date. These include project reporting documents, project products and information material, and various lists of project beneficiaries. The following presents a listing of received documents.

- Project proposal document, September 2017
- Project baseline study
- Project factsheet (summary of expected project outcomes)
- Three interim narrative reports:
    - February 5, 2019
    - March 3, 2019
    - March 31, 2019
- EU project brief (one-page summary of first year's activities)
- Project brief (2-page qualitative summary of project activities and outcomes)
- PowerPoint presentation about project interventions with comparison between targets and achieved
- Infographic material (brochures, handouts, posters)
- A guideline book for farmers
- Project awareness video (7 min)
- Lists of project beneficiaries in Fayoum project implementation areas
- Lists of project beneficiaries in Minya project implementation area

Still to be received:

- Final Project Report and Economic Assessment (expected August 25, 2020)

Support documents were received from the EU-JRDP and from ICARDA to guide the carrying out of the evaluation. These include:

- General Dataset Curation Guide (ICARDA, 2019)
- EU-JRDP evaluation matrix
- Project reporting formats:
    1. Methodological Approach format
    2. Intermediary Report template
    3. Final Report template
- Data requirements for Minya and Fayoum
- Better Regulation Guidelines, European Commission, 2017

Several references were accessed through the internet:

- Principles for evaluation of development assistance (DAC, 1991)
- Guidelines for Project and Programme Evaluations (Austrian Development Cooperation, 2009)
- DAC Guidelines and Reference Series – Managing Aid – Practices of DAC member countries (OECD, 2005)
- Project Cycle Management Guidelines, European Commission 2004

- Better Criteria for Better Evaluation – Revised and Updated Evaluation Criteria (OECD, 2020)
- Evaluation Guidelines, SECO
- Survey Research (https://writing.colostate.edu/guides/guide.cfm?guideid=68)
- Research Methods for the Social Sciences (https://courses.lumenlearning.com/suny-hccc-research-methods/)

The following presents an updated project evaluation framework.

The framework shows the six evaluation criteria namely relevance, effectiveness, efficiency, impact, sustainability, and cross-cutting issues. For each evaluation criteria, the table specifies criteria for judgement and sub-questions of evaluation. The framework also presents sources of data, data collection method, method of analysis and links to the project logical framework matrix.

Sub-questions for evaluation are shown in the table in general terms. Details of the specific questions targeting all six evaluation criteria are shown in the sample data collection tools (Annexes 3 and 4).

EVALUATION CRITERIA: RELEVANCE					
EQ 1 - To what extent has the project consistently targeted defined objectives (internal coherence) in complementarity with other actions undertaken by EU-JRDP stakeholders (name other EU-JRDP Grantees active in the interested Governorate(s)) and other actors in the Governorate and sector (external coherence)?					
Criteria for judgment (CJ)	CJ1.1 – Project documentation includes a relevant context diagnosis	Source of data / information	Data collection method	Method of analysis (triangulation)	Links with logical framework
	CJ1.2 – The formulation of the project and its intervention logic are coherent and credible in relation to the context, the needs identified, the weaknesses identified, and assumptions made	Decision makers and executives in relevant ministries Strategy reports and national plans Project staff (project leader, AEnRI director/staff, local counterparts, field personnel) Personnel of other EU-JRDP projects in the region Project documents	Interviews with stakeholders of project under evaluation and other relevant projects Analysis of strategy reports and national plans Survey grids Analysis of project documents Meetings with groups of operators	Analysis of the intervention logic; Analysis of documentary studies of previous capitalization work; Analysis of interviews with stakeholders and of surveys Analysis of the relevance of the objectives in relation to national and international action plans; Verification of the relevance of the choice of geographical areas - study of the triangulation of the data used.	Project outcomes, outputs, and impacts
	CJ1.3 – The project assured the presence and the use of complementarities, synergies and coherence between project activities and the levels of intervention (regional / national)?				
Sub-questions of evaluation (cf. TOR)	To what extent was the project designed based on a need assessment and a context analysis? How does the action serve the priorities of key EU-JRDP stakeholder ministries, such as MALR and MWRI How can the action be improved in order to better fulfill the objectives and expected results? To what extent does the action encourage or facilitate sufficient coordination, complementarities, and synergy with other on-going interventions? To what extent have complementarities/partnerships been sought and established and synergies been created in the delivery of assistance? Is the institutional set-up of the action adapted to meet the objectives and expected results? Is the practical implementation of this montage faithful to its theoretical version? To what extent are the strategies and objectives of the project adequate and guarantee the coverage of the needs of the actors?				

<table>
<tr><td colspan="6">EVALUATION CRITERIA: EFFECTIVENESS (THE ATTAINMENT OF EXPECTED RESULTS)</td></tr>
<tr><td colspan="6">EQ 2 - To what extent has the project enabled the implementation of effective activities at the Governorate and local levels?</td></tr>
<tr><td rowspan="4">Criteria for judgment (CJ)</td><td>CJ2.1 – The activities have been implemented according to the plan</td><td>Source of data / information</td><td>Data collection method</td><td>Method of analysis (triangulation)</td><td>Links with logical framework</td></tr>
<tr><td>CJ2.2 – The planned results have been achieved according to intervention logic, the assumptions have materialized (or the project has adapted)</td><td rowspan="3">Project documents
Project work plan
Project interim reports
Project final report
Field investigations
Studies</td><td rowspan="3">Survey grids
Questionnaires
Interviews with beneficiaries
Interviews with project personnel
Analysis of project documents
Meetings with groups of operators</td><td rowspan="3">Comparison with preliminary studies
Interviews with stakeholders and analysis of survey results
Comparison of the results achieved with baseline;
Measures of effectiveness of monitoring processes</td><td rowspan="3">Project outputs, targets, work plan</td></tr>
<tr><td>CJ2.3 – The changes (if any) in the planned activities, due to a constant evaluation of the local needs, contributed to foster the achievement of the project objectives</td></tr>
<tr><td>Sub-questions of evaluation (cf. TOR)</td><td>To what extent have the activities been implemented according to the work plan?
What necessitated the deviation from the work plan? How has this affected project implementation
To what extent have the changes in the planned activities been timely executed?
To what extent have these changes improved the achievement of the objectives?
What have been the effects of the intervention?
To what extent do the observed effects link to the intervention?
To what extent have the planned objectives and outcomes in the project been achieved?
Which entities/stakeholders did the project coordinate with?
To what extent has coordination contributed to the achievement of project results?
Have the activities achieved results beyond the pre-established targets?</td></tr>
</table>

EVALUATION CRITERIA: EFFICIENCY (EFFECTIVENESS AT LOWER COST)					
EQ 3 - To what extent has the relationship between the means implemented and their costs, and the results achieved, been appropriate in the implementation of the action?					
Criteria for judgment (CJ)	CJ3.1 – The financial disbursements allowed the realization of the planned activities in due time and lowest costs?	Source of data / information	Data collection method	Method of analysis (triangulation)	Links with logical framework
	CJ3.2 – The costs associated with the intervention are proportionate to the benefits it has generated?	Project documents Project budget Project interim reports Project final report Project economic analysis Field investigations Studies Results of research Detailed survey grids and meetings	Survey grids Questionnaires Interviews with stakeholders Analysis of project documents Interviews with project management personnel Meetings with groups of operators	Strengths / weaknesses analysis of the different modalities, modes of operation and types of partnerships put in place Review of economic analysis of project Value for money analysis Interviews with stakeholders and analysis of surveys Analysis of the management and the transfer of information among stakeholders	Project outputs, activities, targets, project budget allocation
	CJ3.3 – The coordination between project offices (main and field) allowed the timely execution of all activities and procedures				
	CJ3.4 – Changes (if any) in the planned activities are proportionate to the allocated funds, without impacting the results achieved?				
Sub-questions of evaluation (cf. TOR)	To what extent has the intervention been cost-effective? To what extent are the costs of the intervention justified, given the changes/results it has achieved? What is the cost estimate of the benefits achieved by the different project interventions? What is the cost of implementation of project interventions beyond the project? What are the means of realization of such interventions? To what extent have the administrative procedures supported the timely implementation of the activities (including purchase of material and equipment)? How and to what extent the coordination between main and field offices affected the implementation of the activities?				

<table>
<tr><td colspan="6">EVALUATION CRITERIA: IMPACT (IMPACT PROSPECTS)</td></tr>
<tr><td colspan="6">EQ 4 - To what extent has the project contributed to or is likely to contribute to long-term economic, environmental, and social changes for beneficiaries (individual, communities, institutions)?</td></tr>
<tr><td rowspan="2">Criteria for judgment (CJ)</td><td>CJ4.1 – The action has achieved the planned results of the project and put solid basis for the achievement of a long-term impact</td><td>Source of data / information</td><td>Data collection method</td><td>Method of analysis (triangulation)</td><td>Links with logical framework</td></tr>
<tr><td>CJ4.2 – External factors affecting impacts are identified and measured</td><td rowspan="2">Project documents
Project interim reports
Project final report
Project economic analysis
Field investigations
Studies
Results of research
Detailed survey grids and meetings</td><td rowspan="2">Analysis of project documents
Survey grids
Questionnaires
Interviews with stakeholders
Meetings with groups of operators</td><td rowspan="2">Surveys on impact, food security, nutrition, income, trade
Interviews with stakeholders and analysis of surveys
Strengths / weaknesses analysis
Types of partnerships put in place and level (local, national, governmental, private, community)
Mid-term reviews (EU-JRDP)</td><td rowspan="2">Project impacts, sources, and means of verification</td></tr>
<tr><td>Sub-questions of evaluation (cf. TOR)</td><td>To what extent have the project activities achieved the objectives?
To what extent has the sense of ownership of the activities and their results been fostered and achieved?
If any, what are the constraints and difficulties that affected the achievements of the impact?
To what extent did the constraints and difficulties affect the achievement of the impact?
To what extent have the indicators in the logical framework been updated and to what extent can they fully evaluate the achievement of the impacts?
To what extent have the Government and other levels of local governance, communities and other partners fulfilled their obligations and has this contributed to positive outputs in terms of implementation and program impact?
To what extent did external factors affect or are likely to affect, positively or negatively, the impact of the intervention?
What are the external factors affecting, positively or negatively, the impact of the intervention?</td></tr>
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<table>
<tr><td colspan="6">EVALUATION CRITERIA: SUSTAINABILITY</td></tr>
<tr><td colspan="6">EQ 5 - To what extent are the benefits of the project likely to continue after the end of the project?</td></tr>
<tr><td rowspan="3">Criteria for judgment (CJ)</td><td>CJ5.1 – The commitments and capacities of the beneficiaries exist and are implemented to ensure project sustainability</td><td>Source of data / information</td><td>Data collection method</td><td>Method of analysis (triangulation)</td><td>Links with logical framework</td></tr>
<tr><td>CJ5.2 – The action sufficiently considers an exit strategy when project intervention end</td><td rowspan="3">Interviews with project beneficiaries
Project documents
Interim reports
Final report
Field investigations
Studies
Results of research
Detailed survey grids and meetings</td><td rowspan="3">Survey grids
questionnaires
Interviews with stakeholders
Analysis of project documents
Meetings with groups of operators</td><td rowspan="3">Surveys on impact, food security, nutrition, income
Interviews with stakeholders and analysis of surveys
Strengths / weaknesses analysis</td><td rowspan="3">Project impacts, sources, and means of verification, assumptions</td></tr>
<tr><td>CJ5.3 – States, other levels of local governance, communities and other partners have fulfilled their obligations</td></tr>
<tr><td>Sub-questions of evaluation (cf. TOR)</td><td>What are the commitments and capacities of beneficiaries to ensure program sustainability?
Have other farmers tried to implement similar interventions on their own?
What is the maintenance plan for project interventions?
To what extent have the states, other levels of local governance, communities and other partners fulfilled their obligations, and has this contributed to positive outputs in the implementation and sustainability of the program?
Does the program sufficiently consider an exit strategy when program interventions end?
To what extent is the exit strategy put in place likely to produce the desired results?
To what extent is stakeholders’ engagement likely to continue, be scaled up, replicated, or institutionalized after the end of the project?</td></tr>
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<table>
<tr><td colspan="6">EVALUATION CRITERIA: CROSS CUTTING (ENVIRONMENT – SOCIAL – GENDER)</td></tr>
<tr><td colspan="6">EQ 6 - To what extent have cross cutting issues been considered and contributed to the achievement of project results?</td></tr>
<tr><td rowspan="4">Criteria for judgment (CJ)</td><td>CJ6.1 – The activities benefitted the environment in the implementation area</td><td>Source of data / information</td><td>Data collection method</td><td>Method of analysis (triangulation)</td><td>Links with logical framework</td></tr>
<tr><td>CJ6.2 – The local social structure has been strengthened through farmers associations, local action groups, committees, and water users’ associations</td><td rowspan="5">Project documents
Annual reports
Field investigations
Contacts
Lists and particulars of project beneficiaries
WUAs in project implementation areas
Local governance
Interviews and meetings (including reports)</td><td rowspan="5">Survey grids
Questionnaires
Stakeholder analysis
Interviews with stakeholders
Analysis of project documents
Meetings with groups of operators
Meetings with WUA’s
Meeting with executives at the local level</td><td rowspan="5">Interviews with stakeholders and analysis of surveys</td><td rowspan="5">Project outputs, outcomes, activities</td></tr>
<tr><td>CJ6.3 – The communication and visibility actions implemented contributed to the successful implementation of the Programme</td></tr>
<tr><td>CJ6.4 – The initiative has a strong gender component / the activities directly involving women are a strong component of the initiative</td></tr>
<tr><td>Sub-questions of evaluation (cf. TOR)</td><td>To what extent did the activities reduce the (soil, air, water) pollution?
To what extent has the social environment been strengthened by creating new social structure or by reinforcing the existing ones?
What is the composition of project beneficiaries with regards to age and gender?
To what extent have the activities helped to enhance the value and empowerment of disadvantaged or poor populations such as young people, people with special needs, the elderly, and women?
To what extent have the communication and visibility activities been implemented?
To what extent did these C&V activities create awareness and pose the basis for the sustainability of the project?
To what extent have the gender issues been given priority?
To what extent were women directly involved in the project activities?</td></tr>
</table>

3. Evaluation design and methodological approach

3.1 Sampling

The following groups shall be sampled/interviewed for the evaluation.

- Project beneficiaries
- WUA's
- EU-JRDP PMU
- EU-JRDP field officers in Minia and Fayoum
- ICARDA field officers in Minia and Fayoum
- Ministry of Agriculture officials in both governorates
- Representatives of other EU-JRDP grant projects

Lists of project beneficiaries have been collected from the different project implementation areas. These lists were found in various formats and with varying scope. In general, the project started implementation of interventions in the winter season of 2018-2019 (growing wheat) with a number of beneficiaries. This was followed by a summer season in 2019 (growing corn) and another winter season in 2019-2020 growing wheat. Generally, the list of beneficiaries grew from season to season. Interventions can be broadly classified into two clusters. Cluster 1 is related to increasing agricultural productivity through a package of interventions including (some of) the following:

1) Laser land leveling,
2) Introduction of mechanized raised bed (MRB) production package,
3) Soil improvement through application of gypsum and/or other additives
4) Field drain rehabilitation

Cluster 2 is related to improving water delivery through raising capacity of WUAs and rehabilitation of the field level water conveyance system.

1) Marwas rehabilitation
2) Training of water users' associations (WUAs)

Entering the lists into excel and applying sorting and removal of repetitions enabled the determination of the actual total number of beneficiaries for each region. Random sampling from the list of beneficiaries has been carried out to select a representative sample. The sample size has been determined based on a confidence level of 90% and a margin of error of 10%. The following table shows the total number of beneficiaries in each project location and the corresponding sample size:

Project location	Intervention Cluster 1 total beneficiaries	Sample size based on 90% confidence level and 10% margin of error	Intervention Cluster 2 total beneficiaries	Sample size based on 90% confidence level and 10% margin of error
Fayoum Awlad Mohamed	200	51	-	-
Fayoum Biahmo	193	51	80	37
Minia	284	55	259	54

Each sample size shall be increased by 10% as a safety margin to account for possibility of no or erroneous response. From the total list of beneficiaries, a sample has been selected randomly through random number generation in excel. Annex 2 shows the lists of selected beneficiaries for Fayoum after ordering according to the random number column. The first n beneficiaries have been selected from each list, where n denotes the sample size.

3.2 Data collection

For executives and WUAs data collection shall follow a structured interview approach. Interview questions have been prepared for the different groups (Annex 3). For project beneficiaries, data collection shall be carried out through questionnaires. A questionnaire form has been prepared (Annex 4). The questionnaire shall be sent out for testing this week to a small number of beneficiaries to determine time needed to fill the questionnaire and identify any ambiguities or omissions.

During the field visits, samples which have been selected shall be gathered in groups based on their locations. A meeting shall be held with each group to hand out and explain the questionnaire and to answer any questions. Then participants will be allowed time to fill their questionnaire (with possible assistance from the evaluator but without interaction between participants). The option of taking the questionnaire home and collecting it the next day shall also be allowed to accommodate illiterate participants who might need help from a literate family member.

After returning from the field, the filled questionnaires shall be converted into digital files. A separate file shall be prepared for each subgroup. This is followed by data curation to allow for future use of the data in different software and operating system environments.

Issues that have been or could be faced during the data collection process are discussed in this section. At the beginning of the evaluation it became evident that the project ended officially July 31, 2020 (as compared to April 30, 2020 according to the ToR of the evaluation). This resulted in a delay of the issuance of the final project report and economic assessment, which is expected beginning of September, 2020. This will result in a very tight data collection schedule, which needs to be well designed to be as efficient as possible. A difficulty may also arise from the illiteracy of some of the project beneficiaries. This might be more prevalent in older participants. One solution to this might be to hand out the questionnaire to participants and collect it after a certain period, possibly the next day, to allow for assistance from literate household members. Another issue is related to inaccuracy of answers. Triangulation techniques shall be applied to limit this.

3.3 Data analyses

Once the data are entered and checked for accuracy, data analysis will take place. Analysing data will start with looking at response rates and focusing on top research questions s.a. how the overall rating of the intervention is. Consideration shall be given to the type of question, whether categorical, ordinal, interval, and ratio. This is followed by cross-tabulating and filtering results. After the survey is conducted and the data collected, the results shall be assembled in a format that allows comparison within the survey group, between groups, or both. Benchmarking may be applied by comparing to stakeholder consultation results at the start of the intervention. Cross-tabulating will give an impression of how sub-groups compare to one another in answering the question. Filtering will narrow the focus to a particular sub-group. Numbers may be converted into ranges as applicable, and yes/no answers into binary form. This is followed by assessing statistical significance, accuracy, and representativeness of the (sub)-sample. An important step is assessing correlation between results. The results shall be analysed in a number of ways. A T-test shall be used to determine if scores of two groups differ on a single variable. It is useful in analysing scores of two groups of participants on a particular variable or in analysing scores of a single group of participants on two variables. For example, it could be used to determine whether change in productivity differs among different locations for the same intervention(s). A matched T-Test could also be applied to determine if scores of the same participants in a study differ under different conditions. ANOVA (analysis of variance) shall be applied to compare multiple groups on one or more variables. A One-Way ANOVA can determine if there are differences on a single set of scores, whereas a Multiple ANOVA can test groups to test if there are differences on two or more variables. Correlation measurements shall also be constructed to compare the results of two interacting variables within the data set.

General challenges which might be faced during data analysis are discussed in this paragraph. One challenge which might be encountered is related to identifying cause-effect relations. How much is the project actually to be credited or accountable for the observed changes. For example, it was observed through data collected by the project in the study area that production increased in the subsequent growing season of project implementation, and then dropped to about 70% of the improved value in the next season, although interventions were in place. Investigating this indicated that this was attributed to extreme climatic factors encountered during that season. Another challenge is related to the multitude of sub-interventions of the project, many of which lead to desired targets but with different costs and at varying degree. Singling out these effects requires careful consideration of sub-groups of beneficiaries and applying statistical analysis for identification.

Reporting on results shall follow the EU Final Reporting Template.

4. Workplan

The following presents a tentative work plan for the remainder of the consultation.

Date(s)	Activity
Wed 26/8	Sending out draft questionnaire for field testing of draft questionnaires Collection of Project Final Report Document and Economic Analysis
Thu 27/8	Analysing responses on questionnaire testing. Updating and finalizing questionnaires as needed Study of Project Final Report Document and Economic Analysis

Sat 29/8	Finalization and printing of required number of survey questionnaires for Fayoum
Sun 30/8 – Wed 2/9	Field visit to Fayoum Project Sites
Thu 3/9	Data entry and review Analysis of Fayoum data Printing of required number of survey questionnaires Minya
Sat 5/9 – Mon 7/9	Field visit to Minya Governorate
Tue 8/9	Minya data entry and review
Wed 9/9 – Thu 10/9	Data Analysis
Sat 12/9 – Sun 13/9	Preparation of Intermediary Report and PPT presentation
Mon 14/9	Offering PPT presentation of evaluation outcomes
Tue 15/9 – Thu 17/9	Preparation of Draft Final Report
Thu 17/9	Draft final report submitted for revision and comments
Tue 22/9	Final report submitted and evaluation process completed

5. Annexes

Annex 1:

Activities carried out to date

Date(s)	Activity
Wed 15/7	Project kick-off meeting with Dario Mancinelli, Programme Officer, EU-JRDP, Enrico Bonaiuti, Research Team Leader - Monitoring, Evaluation and Learning, ICARDA, Marco Costantini, Monitoring, Evaluation and Learning - Research Fellow, ICARDA
Mon 20/7	Receipt of signed consultancy agreement from ICARDA
Tue 21/7 – Tue 28/7	Review of received project related documents; studying EU DAC evaluation criteria, evaluation principles and evaluation guidelines; studying dataset curation guidelines; studying evaluation matrix, reporting formats and requirements
Wed 29/7	Meeting with Atef Swelam, ICARDA project leader at ICARDA Cairo Office for receiving information about actual project implementation activities and collection of available project documentation (listed below).
Thu 30/7 – Mon 3/8	Eid vacation, reading of received project documentation, preparation of draft questionnaires for stakeholder surveys
Tue 4/8	Skype call with Marco Costantini, briefing about activities and meetings to date and discussion of methodological approach document; Preparation of draft methodological approach
Wed 5/8	Visit of Agricultural Engineering Research Institute – Agricultural Research Center of the Ministry of Agriculture and Land Reclamation in Dokki, Giza, and meeting with Essam Wasef, Institute Director; Hazem Mehawed, Deputy Director and Mohamed Abdelmotaleb, Agricultural Extension
Thu 6/8 – Mon 10/8	Preparation of draft methodological approach
Sat 15/8 – Tue 25/8	Analysis of stakeholder data Preparation of stakeholder lists Preparation of survey forms and questionnaires Preparation of Rev 2 of draft methodological approach

Annex 2:

Selected sample from Awlad Mohamed beneficiaries (Cluster 1), Fayoum

Meska	Farmer Name	Random Number	
		100537	1
		102520	2
		116021	3
		122702	4
		136787	5
		138281	6
		143966	7
		146370	8
		147311	9
		153227	10
		155529	11
		169683	12
		172135	13
		179878	14
		180815	15
		187044	16
		188791	17
		190346	18
		192438	19
		201718	20
		203031	21
		206857	22
		209124	23
		214450	24
		219265	25
		224378	26
		228945	27
		229622	28
		230221	29
		232098	30
		240332	31
		240558	32
		240598	33
		247604	34

		249722	35
		251286	36
		254388	37
		260773	38
		262884	39
		273256	40
		280171	41
		285031	42
		286866	43
		286881	44
		287932	45
		294828	46
		299693	47
		304937	48
		311746	49
		320264	50
		320309	51
		320979	52
		327432	53
		327919	54
		339795	55
		350131	56

Selected sample from Biahmo beneficiaries (Cluster 1), Fayoum

Miska	Farmer Name	Random Number	
		101128	1
		106780	2
		108542	3
		109464	4
		112850	5
		112985	6
		118956	7
		119837	8
		122698	9
		123281	10
		125189	11
		125465	12
		130647	13
		131675	14
		131879	15
		133424	16
		133997	17
		135209	18
		137758	19
		138584	20
		139647	21
		143355	22
		144162	23
		144333	24
		144334	25
		146910	26
		148439	27
		148563	28
		151424	29
		152088	30
		154704	31
		157191	32
		162846	33

		163017	34
		164845	35
		166736	36
		167953	37
		170811	38
		171394	39
		177121	40
		179038	41
		185555	42
		186169	43
		192318	44
		197081	45
		197735	46
		200987	47
		207229	48
		209221	49
		210529	50
		213105	51
		213924	52
		215106	53
		215496	54
		228406	55
		230081	56

Selected sample from Biahmo beneficiaries (Cluster 2), Fayoum:

Miska	Farmer Name	Random Number	
		106964	1
		109150	2
		127039	3
		130230	4
		138757	5
		142552	6
		143697	7
		146234	8
		160954	9
		165785	10
		172418	11
		184258	12
		198639	13
		204785	14
		210874	15
		218411	16
		224419	17
		227016	18
		245083	19
		252557	20
		253751	21
		265427	22
		273517	23
		293195	24
		296083	25
		303061	26
		304750	27
		313879	28
		332378	29
		336681	30
		343940	31
		359917	32
		369124	33
		401797	34

		403703	35
		413875	36
		422109	37

Annex 3: Structured Interview Questions

Structured Interview Questions with government officials and executive stakeholders

1. Does this project serve the priorities of your organization?
2. Please explain in what way and to what extent.
3. Does this project complement other previous funded projects?
4. What added value does the project bring to the project implementation area?
5. What added value does the project bring to stakeholders within the project implementation area?
6. How did the project link to ongoing funded projects?
7. How does the project complement/assist the plans and activities in the two governorates?
8. Was the institutional setup of the project adequate to achieve results?
9. To what extent are the strategies of the project fulfilling of the needs of the stakeholders?
10. Prior to the project implementation, the following observations were made in the baseline. To what extent did the project help alleviate each of these issues?
    1. Land fragmentation,
    2. Lack of appropriate GAPs at field level,
    3. Inequitable water distribution along meskas and marwas
    4. Inefficient and outdated extension systems and advisory services.
    5. Low adoption of new/good practices
    6. Low investment in agriculture sector/education
    7. Water quantity and quality decrease
    8. Poor water, land, and fertilizers management
    9. Poor engagement and involvement of community in introduced new agricultural activities/interventions
11. How was cooperation from other administrative and government sectors
12. How did external factors impact achievement of project results (Covid-19, climate conditions, others)?
13. What is the extent of commitment of WUAs to guarantee sustainability?
14. What is the capacity of WUAs to guarantee sustainability?
15. What is the notable exit strategy of the project?
16. How did the project impact the community structure?
17. What was the level of complaints from the project area?
18. What were the types of complaints received?
19. Has the project resulted in fewer complaints?
20. What are the types of complaints being received now?
21. Have project interventions been institutionalized?
22. What is the potential for project interventions to be continued?
23. What is the potential for project interventions to be scaled up?
24. What is your overall rating of the project?
25. How could future interventions be improved?

Annex 4: Questionnaire form for project beneficiaries

"Enhancing water productivity by improving on-farm irrigation management in Minya and Fayoum, Egypt" EU-JRDP

Thank you for taking the time to participate in this survey. Your response will be very valuable to assess the project interventions, see if anything could be improved within this intervention and to provide guidance for improving future interventions. This survey is expected to take about 20 minutes. Any responses received will be kept confidential. If you are in doubt about any question or need assistance, please call Ashraf Ghanem at 01221171725 or send a WhatsApp inquiry to the same number. Thanks again for your time.

1. Introductory information

Name: …….. Age: …… Gender: M – F Mobile #: …….....

Governorate: …… Name of village: …… Name of water delivery Miska: ……

Are you a farmer: Y/N Do you have another profession? Y/N If yes, please indicate other profession: …….

Land area: ……feddan ……quirat Do you own the land? Y/N

Since when have you been cultivating this land? ……

Main summer crop cultivated: …… Main winter crop cultivated: ……..

Are you part of a WUA? Y/N

If yes, name of WUA …… Year of establishment …..…, Area served …… feddan, Number of members ……

2. Please indicate the types of project interventions which apply to you and provide the timing of intervention

Intervention	Participated (Y/N)	Timing (month/year)
1. Marwa lining		
2. Laser land leveling		
3. Mechanized raised bed		
4. Soil improvement through additives		
5. Field drain rehabilitation		

3. Conditions before the project

What was the soil condition of your land before the project? Give rating from 1 (poor) to 5 (excellent) ……

Which machinery did you use before the project?

…… , …… , …… ,

Which of the technologies introduced by the project had you already applied before the project?

……..…… , ……..…….…… , ……..…… , ……..…… , ……..……

Was your marwa lined before the project? Y/N

Did you have periods of shortage in irrigation water? Y/N

If the marwa was not lined, how many times did you have to remove weeds per year? ……..

How many man-days did weed removal take each time? ……

What is the cost of one man-day? …… LE

Did you apply laser land leveling to your land before the project? Y/N

If yes, when was the last time (year) …….

What was the source of the machine? Private contractor …… Government …….. Other ……

What was the cost of leveling per feddan? ……. LE

Did you apply mechanized raised bed (MRB) to your land before the project? Y/N

If yes, when was the last time (year) …….

What was the source of the MRB machine? Private contractor …… Government…….. Other ……

What was the cost of preparation per feddan? ……. LE

If you did NOT apply MRB, what was the number of irrigations for your land in a) summer …… b) winter …….

What was the duration of each irrigation in a) summer …….. hours b) winter ……. hours

Did you use any of the additive types which were provided by the project already before the project? Y/N
If the answer to the last question was yes, please fill the following table:

Additive used before project	Amount applied (kg)	Cost of application per feddan	Rate impact on soil condition (1 poor to 5 excellent)	Rate impact on productivity (1 poor to 5 excellent)

Was there a field drainage system in place in your land before the project? Y/N

If yes, how efficient was the field drainage system? Give rating from 1 (poor) to 5 (excellent) ……

Did you experience water logging in your land? Y/N

4. **Please provide production data for the following growing seasons. Please provide all data for your actual plot size, not per feddan:**

Growing season	Crop cultivated	Variety	Were seeds provided by project (Y/N)	Seed amount (kg)	Fertilizer type	Amount applied (kg)	No of irrigations applied	Duration of first irrigation (hours)	Duration of each subsequent irrigation (hours)	Crop production of your plot (Ardab)	Selling price (LE/Ardab)
Summer 2017											
Winter 2017-18											
Summer 2018											
Winter 2018-19											
Summer 2019											
Winter 2019-20											
Summer 2020											

Before the project implementation, did you experience days of irrigation water shortage? Y/N

If yes, how many days per growing season on average? Winter season …….. Summer season …….

After the project implementation, do you experience days of irrigation water shortage? Y/N

If yes, how many days per growing season on average? Winter season …….. Summer season …….

What is your estimate of overall water saving due to the project? 0%, 5%, 10%, 15%, 20%, 25%, other …….%

5. If you did not participate in Marwa lining during the project, please proceed to section number 6

Did the Marwa lining result in saving of irrigation water? Yes …..... , No ……., Not sure …….

If yes, what is your estimate of water saving due to marwa lining alone: 0%, 5%, 10%, 15%, 20%, 25%, other ……..%

What was the area occupied by the marwa before lining? ……. Quirat

What is the area occupied by the marwa after lining? ……. Quirat

Has the marwa lining helped in better water allocation to users? Give rating from 1 (not at all) to 5 (significantly) ……

6. If you did not participate in laser land leveling during the project, please proceed to section number 7

Did the laser land leveling result in increased production? Yes …..... , No ……., Not sure …….

What is your estimate of production increase due to laser land leveling alone: 0%, 5%, 10%, 15%, 20%, 25%, other ……..%

Did the laser land leveling result in saving of irrigation water? Yes …..... , No ……., Not sure …….

What is your estimate of water saving due to laser land leveling alone: 0%, 5%, 10%, 15%, 20%, 25%, other ……..%

Did the laser land leveling result in reduction of fertilizer utilization? Yes …..... , No ……., Not sure …….

What is your estimate of fertilizer reduction due to laser land leveling alone: 0%, 5%, 10%, 15%, 20%, 25%, other ……..%

Did the laser land leveling result in reduction of seeds needed for production? Yes …..... , No ……., Not sure …….

What is your estimate of seed need reduction due to laser land leveling alone: 0%, 5%, 10%, 15%, 20%, 25%, other ……..%

Do you plan to apply laser land leveling in the future? Yes …..... , No ……., Not sure …….

If yes, how often? Every …….. years

Has the project facilitated application of laser land leveling in the future? Yes …..... , No ……., Not sure …….

What will be the cost per feddan? ……. LE

7. If you did not participate in mrb during the project, please proceed to section number 8

Did the mrb result in increased production? Yes …..... , No ……., Not sure …….

What is your estimate of production increase due to mrb alone: 0%, 5%, 10%, 15%, 20%, 25%, other ……..%

Did the mrb result in saving of irrigation water? Yes …..... , No ……., Not sure …….

What is your estimate of water saving due to mrb alone: 0%, 5%, 10%, 15%, 20%, 25%, other ……..%

Did the mrb result in reduction of fertilizer utilization? Yes …..... , No ……., Not sure …….

What is your estimate of fertilizer reduction due to mrb alone: 0%, 5%, 10%, 15%, 20%, 25%, other ……..%

Did the mrb result in reduction of seeds needed for production? Yes …..... , No ……., Not sure …….

What is your estimate of seed need reduction due to mrb alone: 0%, 5%, 10%, 15%, 20%, 25%, other ……..%

Did the mrb result in reduction in labor requirements? Yes …..... , No ……., Not sure …….

If yes, how many man-day did it save? …….. man-days

Do you plan to apply mrb in the future? Yes …..... , No ……., Not sure …….

If yes, how often? Every …….. years

Has the project facilitated application of mrb in the future? Yes …..... , No ……., Not sure …….

What will be the cost per feddan? ……. LE

8. If you did not participate in application of soil additives activities, please proceed to section number 9

Please fill in the following table:

Growing season	Additives used	Amount applied (kg)	Rate impact on soil condition (1 weak to 5 excellent)	Rate impact on productivity (1 weak to 5 excellent)
Winter 2018-2019	1 2 3	1 2 3		

Summer 2019	1 2 3	1 2 3		
Winter 2019-2020	1 2 3	1 2 3		
Summer 2020	1 2 3	1 2 3		

Do you plan to apply any of the soil additives tested during the project in the future? Yes …..... , No ……., Not sure …….

If yes, which ones? 1)……. 2) …… 3) ……..

What will be the source of these additives in the future? …….

What will be the cost per feddan? ……. LE

9. If you did not participate in drain rehabilitation activities, please proceed to section number 10

Has drain rehabilitation improved the drainage of your land? Yes……..., No ……..., Not sure …...……

Did drain rehabilitation result in increased production? Yes …..... , No ……., Not sure …….

What is your estimate of production increase due to drain rehabilitation alone: 0%, 5%, 10%, 15%, 20%, 25%, other ……..%

Did drain rehabilitation result in increased demand of irrigation water? Yes …..... , No ……., Not sure …….

What is your estimate of water use increase due to drain rehabilitation alone: 0%, 5%, 10%, 15%, 20%, 25%, other ……..%

10. Did you participate in any training activities by the project? Y/N
If the answer is no, please proceed to section 11

Please fill the following table:

Training timing	Training topic	Training duration (days)	Key new knowledge gained or skills acquired	Level of satisfaction (1 not satisfied to 5 very satisfied)
			1 …… 2 …… 3 ……	
			1 …… 2 …… 3 ……	
			1 …… 2 …… 3 ……	

Did you apply any of the knowledge gained in your farm? Y/N
Please specify what you applied
…….

11. What did you like most about the project?

1. ……
   …
2. .
   ……..
3. ……
   …

12. What did you NOT like about the project?

1. ……..
2. ……
   .
3. ……
   …

13. Please provide any suggestions for improvement of further initiatives or projects

1. ……..

2. ……..
3. ……
…
4. ……
…

14. What is your overall rating of the project? (1 poor to 5 excellent) ……..

Thank you very much for taking the time to participate in this survey. Your answers will be carefully taken into consideration to help improve future initiatives.