

REPUBLIC OF TUNISIA
MINISTRY OF AGRICULTURE

REPUBLIC OF TUNISIA
THE PROJECT FOR THE
DEVELOPMENT
OF IRRIGATED AREA
OF NORTHERN TUNISIA

FINAL REPORT

ANNEX

MARCH 2015

JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)

NTC INTERNATIONAL CO., LTD

Table of Contents

A-1	Project Design Matrix (version 1~3).....	1
A-2	Project Flow Chart.....	11
A-3	Plan of Operation.....	15
A-4	Assignment Schedule.....	19
A-5	List of Provided and Transferred Equipments.....	23
A-6	Minutes of the JCC (The Second).....	27
A-7	Minutes of the JCC (Terminal evaluation).....	45
A-8	Minutes of the JCC (The Third).....	67
A-9	Minutes of the JCC (The Fourth).....	81
A-10	Minutes of the JCC (The Fifth).....	89
B-1	Manual for Drip Irrigation.....	123
B-2	Manual for Maintenance of Water Supplies.....	129
B-3	Handbook for Cultivation of Melon and Water Melon.....	135
B-4	Handbook for Cultivation of Tomato.....	141
B-5	Handbook for Cultivation of Pepper.....	145
B-6	Handbook for Cultivation of Sorghum.....	149
B-7	Handbook for Cultivation of Alfalfa.....	153
B-8	Handbook for Sustainable Soil Treatment.....	157
B-9	Textbook for Farmers (Organic fertilization, Mineral plant nutrition, Crop management of out season potato, Potato protection against late blight, Required water volume of water saving irrigation, Maintenance of water saving irrigation equipments).....	179
B-10	Textbook for Training on Pedology (1st day).....	211
B-11	Textbook for Training on Pedology (2nd day).....	223
B-12	Textbook for Training on Pedology (3rd day).....	229
B-13	Textbook for Training on Pedology (4th day).....	237
B-14	Training material for GDA management.....	245
B-15	Evaluation Results about Training to Technical Director and Treasurer.....	275

B-16	Merit and Function of New Billing System.....	287
B-17	Questionnaire of Social Survey about SMSA Establishment.....	293

A-1 Project Design Matrix (version 1~3)

Project Design Matrix

Project Name: The Project for the Development of Irrigated Areas of Northern Tunisia

Period: Oct. 2010 – Sep. 2013 Ver.1

Target Area: Irrigated Areas of Nefza (Béja), Sejmane (Bizerte) and Fernana (Jendouba)

Target Group: Staffs of MA (DGGREE), Staffs of CRDAs of Béja, Bizerte and Jendouba, Staffs of GDAs in Nefza, Sejmane and Fernana, Farmers in the Target Areas

Date: 24 Feb, 2012

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumption
<p>Overall Goal The suitable irrigation is performed and the efficient agriculture in 4 irrigated areas is achieved with desirable irrigation farming.</p>	<ol style="list-style-type: none"> 1. The rate of irrigation practicing areas is increased to 30%. 2. Yield per ha of agricultural field practicing the irrigation agriculture is increased. 	<p>1~2 Records of CRDA</p>	
<p>Project Purpose In pilot sites of Nefza, Sejmane and Fernana irrigated areas, the models of irrigation agriculture are achieved, and the extension system which can be adaptable in all the irrigated areas is developed.</p>	<ol style="list-style-type: none"> 1. The rate of irrigation practicing areas in pilot sites is increased to **40%. 2. Yield per ha of major crops in each pilot site are increased. 	<p>1 ~ 2 Records of CRDA, GDA and the Project</p>	<p>The budget and staff for extension of irrigation agriculture are secured.</p>
<p>Outputs</p> <ol style="list-style-type: none"> 1. Natural situation, agriculture condition, farming support and extension system supported by CRDA and GDA, etc. in the 3 irrigated areas (Nefza, Sejmane and Fernana) are grasped. 2. The irrigation agriculture which serves as a model of irrigation agriculture at pilot sites is established. 3. The farming extension support system by CRDA and GDA is strengthened. 	<ol style="list-style-type: none"> 1-1. Analysis reports are made. 2-1. Yield per ha of major crops in demonstration farms are improved. 2-2. Rate of utilization of common hydrants is increased in pilot sites. 2-3. Group activities of farmers concerning marketing are initiated in the 3 irrigated areas. 3-1. Educational tools and materials are elaborated. 3-2. All extension staffs of CRDA and GDA in the 3 irrigated areas participate in the technical guidance and trainings conducted by the Project. 3-3. The level of understanding of CRDA and GDA staffs is improved at the end of seminar. 4-1. Seminars concerning results of the project activities are carried out with more than 100 participants. 4-2. More than two thirds (2/3) of participants in the seminars recognize its effectiveness. 	<p>1~4 Records of the Project</p>	<p>Natural disasters which influence the source of water for irrigation, such as droughts, floods, etc. do not happen.</p>
<ol style="list-style-type: none"> 4. The results of activities of the Project are shared among the persons/organizations related in 4 irrigated areas (Nefza, Sejmane, Fernana and Hammam Bourguib). 			

Activities	[Japanese side]	[Tunisian side]	Domestic market needs do not worsen under the influence of the agricultural products, etc. from overseas.
<p>1-1. To conduct survey about the natural situations (meteorology, hydrology, landscape, etc.) and all farmers' situations (farmland, crop, irrigation, market, farm matter, ownership of land, income, opinion of farmers to future, etc.) in 3 irrigated areas.</p> <p>1-2. To conduct survey about the situation of management and maintenance concerning the facilities and organizational structures of CRDA and GDA.</p> <p>1-3. To analyze the data of surveys conducted on Activity 1-1&1-2</p> <p>2-1. To pick up possible pilot sites.</p> <p>2-2. To survey farmers etc. in pilot sites picked up by Activity 2-1.</p> <p>2-3. To select pilot sites and organize farmer group in each water bulb unit.</p> <p>2-4. To advise the farming plan and the water management plan in each pilot site</p> <p>2-5. To advise on improvement of market access.</p> <p>2-6. To develop appropriate water charge and collecting system of water charge.</p> <p>2-7. To demonstrate irrigation agriculture as model.</p> <p>2-8. To disseminate the model of irrigation agriculture to the farmers in the pilot sites.</p> <p>2-9. To verify effects of irrigation, improvement of farming and activities of farmers groups, etc.</p> <p>3-1. To conduct technical guidance and trainings for staff of CRDA and GDA.</p> <p>3-2. To conduct educational activities and technical trainings for members of GDA.</p> <p>3-3. To conduct educational activities for non-participated farmers to GDA</p> <p>4-1. To carry out seminars concerning results of the Project activities to the organizations and persons in all irrigated areas.</p> <p>4-2. To confirm effects of the Project to participants on Activity 4-1.</p>	<p>1. Dispatch of Japanese Experts Long term Experts Team Leader (Chief Advisor) Irrigation Technique/Water management Project Coordinator/Assistance for peasant activities Short term Experts team Team Leader /Irrigation Technique Water Management Agronomy Community Development Coordinator/ Assistant of Marketing Others</p> <p>2. Provision of Machineries and Equipment Motorbikes, Vehicles, Tractors, Sprinklers, PCs, Water meters, Equipment for training (Projectors, etc.) and others.</p> <p>3. Local Expense 1) Employment of Local Consultants Irrigation Technique Agronomy Community Development Pedologist Financial Management 2) Budget for Questionnaire Survey, Dissemination, Training, Seminar, Translation, etc. 4. Training of Tunisian personnel in Japan and/or in the third countries.</p>	<p>1. Assignment of Counterpart Personnel 1) Central level Project Director (DGGREE, MA) Project Manager (DIEEA, DGGREE, MA) Other staff in the MA</p> <p>2) Local government level Staff in CRDA (Béja, Bizerte and Jendouba)</p> <p>3) Irrigated area level Staff in GDA by irrigation area</p> <p>2. Assignment of Administrative Staff and any other necessary personnel for the smooth implementation of the Project</p> <p>3. Provision of Office and Facilities (desk, chair, etc.) Office in the DGGREE Office in one of the CRDA</p> <p>4. Necessary Budget (Necessary cost for C/P (Transportation fees on the Project, Cost of chemical examination, etc.), domestic transportation fees for training, etc.)</p>	<p>Pre-condition The situation of the existing irrigation condition does not worsen than the beginning of the Project.</p>

Project Design Matrix

Project Name: The Project for the Development of Irrigated Areas of Northern Tunisia

Period: **Oct. 2010 - Feb. 2015** Ver.2.00

Target Area: Irrigated Areas of Nefza (Béja), Sejnane (Bizerte) and Fernana (Jendouba)

Target Group: Staffs of MA (DGGREE), Staffs of CRDAs of Béja, Bizerte and Jendouba, Staffs of GDAs in Nefza, Sejnane and Fernana, Farmers in the Target Areas

Date: 20th November, 2013

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumption
<p>Overall Goal</p> <p>The suitable irrigation is performed and the efficient agriculture in 4 irrigated areas is achieved with desirable irrigation farming.</p>	<ol style="list-style-type: none"> 1. The rate of irrigation practicing areas is increased to 50%. 2. Yield per ha of agricultural field practicing the irrigation agriculture is increased. 	<p>1 ~ 2 Records of CRDA</p>	
<p>Project Purpose</p> <p>In pilot sites of Nefza, Sejnane and Fernana irrigated areas, the models of irrigation agriculture are achieved, and the extension system which can be adaptable in all the irrigated areas is developed.</p>	<ol style="list-style-type: none"> 1. The rate of irrigation practicing areas in pilot sites is increased to **%. 2. Yield per ha of major crops in each pilot site are increased. 	<p>1 ~ 2 Records of CRDA, GDA and the Project</p>	<p>The budget and staff for extension of irrigation agriculture are secured.</p>
<p>Outputs (The underlined are within the scope for the extended period)</p> <ol style="list-style-type: none"> 1. Natural situation, agriculture condition, farming support and extension system supported by CRDA and GDA, etc. in the 3 irrigated areas (Nefza, Sejnane and Fernana) are grasped. 2. <u>The irrigation agriculture which serves as a model of irrigation agriculture at pilot sites is established.</u> 3. <u>The farming extension support system by CRDA and GDA is strengthened.</u> 4. The results of activities of the Project are shared among the persons/organizations related in 4 irrigated areas (Nefza, Sejnane, Fernana and Hammam Bouguiba). 	<ol style="list-style-type: none"> 1-1. Analysis reports are made. 2-1. Yield per ha of major crops in demonstration farms are improved. 2-2. Rate of utilization of common hydrants is increased in pilot sites. 2-3. Group activities of farmers concerning marketing are initiated in the 3 irrigated areas. 3-1. Educational tools and materials are elaborated. 3-2 All extension staffs of CRDA and GDA in the 3 irrigated areas participate in the technical guidance and trainings conducted by the Project. 3-3. The level of understanding of CRDA and GDA staffs is improved at the end of seminar. 4-1. Seminars concerning results of the project activities are carried out with more than 100 participants. 4-2. More than two thirds (2/3) of participants in the seminars recognize its effectiveness. 	<p>1 ~ 4 Records of the Project</p>	<p>Natural disasters which influence the source of water for irrigation, such as droughts, floods, etc. do not happen.</p>

Activities (<u>The underlined are within the scope for the extended period</u>)	Inputs		Domestic market needs do not worsen under the influence of the agricultural products, etc. from oversea.
<p>1-1. To conduct survey about the natural situations (meteorology, hydrology, landscape, etc.) and all farmers' situations (farmland, crop, irrigation, market, farm matter, ownership of land, income, opinion of farmers to future, etc.) in 3 irrigated areas.</p> <p>1-2. To conduct survey about the situation of management and maintenance concerning the facilities and organizational structures of CRDA and GIDA.</p> <p>1-3. To analyze the data of surveys conducted on Activity 1-1&1-2</p> <p>2-1. To pick up possible pilot sites.</p> <p>2-2. To survey farmers etc. in pilot sites picked up by Activity 2-1.</p> <p>2-3. To select pilot sites and organize farmer group in each water bulb unit.</p> <p>2-4. To advise the farming plan and the water management plan in each pilot site</p> <p><u>2-5. To advise on improvement of market access.</u></p> <p>a) <u>To advise CRDA to provide farmer groups with market report containing information such as trends of demands and prices of agricultural products.</u></p> <p>b) <u>To conduct a technical-economic study as a next step" for the establishment of Mutual Society for Agricultural Services (SMSA) in Nefza, Sedjmane and Fernana</u></p> <p><u>2-6. To develop appropriate water charge and collecting system of water charge.</u></p> <p>a) <u>To give advice on spreading the high-accuracy water flow meter widely in the pilot sites</u></p> <p>b) <u>To clarify the roles and responsibilities of the stakeholders involved in the installation, operation and maintenance of the high-accuracy water flow meter and irrigation facilities</u></p> <p>c) <u>To introduce a new water charge system based on water consumption</u></p> <p>2-7. To demonstrate irrigation agriculture as model.</p> <p><u>2-8. To disseminate the model of irrigation agriculture to the farmers in the pilot sites.</u></p> <p>a) <u>To develop education materials that deal with issues such as profitability of the water saving irrigation system to convince the farmers in the pilot sites to invest in it and practice it.</u></p> <p>b) <u>To organize farmer-to-farmer technical extension activities on advanced</u></p>	<p>[Japanese side]</p> <ol style="list-style-type: none"> 1. Dispatch of Japanese Experts Long term Experts Team Leader (Chief Advisor) Irrigation Technique/Water management Project Coordinator/Assistance for peasant activities Short term Experts team Team Leader/Irrigation Technique Water Management Agronomy Community Development Coordinator/Assistant of Marketing Others 2. Provision of Machineries and Equipment Motorbikes, Vehicles, Backhoe Loader, Sprinklers, PCs, Water meters, Equipment for training (Projectors, etc.) and others. 3. Local Expense 1) Employment of Local Consultants Irrigation Technique Agronomy Community Development Pedologist Financial Management 2) Budget for Questionnaire Survey, Dissemination, Training, Seminar, Translation, etc. 	<p>[Tunisian side]</p> <ol style="list-style-type: none"> 1. Assignment of Counterpart Personnel 1) Central level Project Director (DGGREE, MA) Project Manager (DIEEA, DGGREE, MA) Other staff in the MA 2) Local government level Staff in CRDA (Béja, Bizerte and Jendouba) 3) Irrigated area level Staff in GIDA by irrigation area 2. Assignment of Administrative Staff and any other necessary personnel for the smooth implementation of the Project 3. Provision of Office and Facilities (desk, chair, etc.) Office in the DGGREE Office in one of the CRDA 4. Necessary Budget (Necessary cost for C/P (Transportation fees on the Project, Cost of chemical examination, etc.), domestic transportation fees for training, etc.) 	<p>Pre-condition The situation of the existing irrigation condition does not worsen than the beginning of the Project.</p>

			<p><u>agriculture by water saving irrigation systems.</u></p> <p>c) <u>To disseminate the output of demonstration farms of each pilot site involving neighboring competent farmers who could work as ‘promoters’ of irrigation agriculture.</u></p> <p>2-9. To verify effects of irrigation, improvement of farming and activities of farmers groups, etc.</p> <p><u>3-1. To conduct technical guidance and trainings for staff of CRDA and GDA.</u></p> <p>a) <u>To give technical guidance on the operation and maintenance of the high-accuracy water-flow meter and irrigation facilities.</u></p> <p>b) <u>To support CRDA’s preparation of the work plan on the installation, operation, and maintenance of the high-accuracy water flow meter and irrigation facilities.</u></p> <p><u>3-2. To conduct educational activities and technical trainings for members of GDA.</u></p> <p>a) <u>To enhance the capacity of GDA in terms of organizational management</u></p> <p>b) <u>To enhance the technical knowhow of GDA staff in terms of promoting irrigation agriculture</u></p> <p>3-3. To conduct educational activities for non-participated farmers to GDA</p> <p>4-1. To carry out seminars concerning results of the Project activities to the organizations and persons in all irrigated areas.</p> <p>4-2. To confirm effects of the Project to participants on Activity 4-1.</p>
--	--	--	---

Project Design Matrix

Project Name: The Project for the Development of Irrigated Areas of Northern Tunisia

Period: **Oct. 2010 - Feb. 2015** Ver.3.00

Target Area: Irrigated Areas of Nefza (Béja), Sejnane (Bizerte) and Fernana (Jendouba)

Target Group: Staffs of MA (DGGREE), Staffs of CRDAs of Béja, Bizerte and Jendouba, Staffs of GDAs in Nefza, Sejnane and Fernana, Farmers in the Target Areas

Date: 28th February, 2014

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumption
<p>Overall Goal</p> <p>The suitable irrigation is performed and the efficient agriculture in 4 irrigated areas is achieved with desirable irrigation farming.</p>	<ol style="list-style-type: none"> The rate of irrigation practicing areas is increased to 50%. Yield per ha of agricultural field practicing the irrigation agriculture is increased. 	<p>1 ~2 Records of CRDA</p>	
<p>Project Purpose</p> <p>In pilot sites of Nefza, Sejnane and Fernana irrigated areas, the models of irrigation agriculture are achieved, and the extension system which can be adaptable in all the irrigated areas is developed.</p>	<ol style="list-style-type: none"> The rate of irrigation practicing areas in pilot sites is increased to 45% at Nefza, 55% at Sedjnane, and 35% at Fernana by the end of the project. Yield per ha of major crops in each pilot site are increased. 	<p>1 ~ 2 Records of CRDA, GDA and the Project</p>	<p>The budget and staff for extension of irrigation agriculture are secured.</p>
<p>Outputs (The underlined are within the scope for the extended period)</p> <ol style="list-style-type: none"> Natural situation, agriculture condition, farming support and extension system supported by CRDA and GDA, etc. in the 3 irrigated areas (Nefza, Sejnane and Fernana) are grasped. The irrigation agriculture which serves as a model of irrigation agriculture at pilot sites is established. The farming extension support system by CRDA and GDA is strengthened. 	<ol style="list-style-type: none"> 1-1. Analysis reports are made. 2-1. Yield per ha of major crops in demonstration farms are improved. 2-2. Rate of utilization of common hydrants is increased in pilot sites. 2-3. Group activities of farmers concerning marketing are initiated in the 3 irrigated areas. 3-1. Educational tools and materials are elaborated. 3-2 All extension staffs of CRDA and GDA in the 3 irrigated areas participate in the technical guidance and trainings conducted by the Project. 3-3. The level of understanding of CRDA and GDA staffs is improved at the end of seminar. 4-1. Seminars concerning results of the project activities are carried out with more than 100 participants. 4-2. More than two thirds (2/3) of participants in the seminars recognize its effectiveness. 	<p>1 ~4 Records of the Project</p>	<p>Natural disasters which influence the source of water for irrigation, such as droughts, floods, etc. do not happen.</p>
<ol style="list-style-type: none"> The results of activities of the Project are shared among the persons/organizations related in 4 irrigated areas (Nefza, Sejnane, Fernana and Hammam Bouguiba). 			

<p>Activities (The underlined are within the scope for the extended period)</p> <p>1-1. To conduct survey about the natural situations (meteorology, hydrology, landscape, etc.) and all farmers' situations (farmland, crop, irrigation, market, farm matter, ownership of land, income, opinion of farmers to future, etc.) in 3 irrigated areas.</p> <p>1-2. To conduct survey about the situation of management and maintenance concerning the facilities and organizational structures of CRDA and GDA.</p> <p>1-3. To analyze the data of surveys conducted on Activity 1-1&1-2</p> <p>2-1. To pick up possible pilot sites.</p> <p>2-2. To survey farmers etc. in pilot sites picked up by Activity 2-1.</p> <p>2-3. To select pilot sites and organize farmer group in each water bulb unit.</p> <p>2-4. To advise the farming plan and the water management plan in each pilot site</p> <p><u>2-5. To advise on improvement of market access.</u> <u>To advise CRDA to provide farmer groups with market report containing information such as trends of demands and prices of agricultural products.</u></p> <p><u>2-6. To develop appropriate water charge and collecting system of water charge.</u> a) <u>To give advice on spreading the high-accuracy water flow meter widely in the pilot sites.</u> b) <u>To clarify the roles and responsibilities of the stakeholders involved in the installation, operation and maintenance of the high-accuracy water flow meter and irrigation facilities</u> c) <u>To introduce a new water charge system based on water consumption</u></p> <p>2-7. To demonstrate irrigation agriculture as model</p> <p><u>2-8. To disseminate the model of irrigation agriculture to the farmers in the pilot sites.</u> a) <u>To develop education materials that deal with issues such as profitability of the water saving irrigation system to convince the farmers in the pilot sites to invest in it and practice it.</u> b) <u>To organize farmer-to-farmer technical extension activities on advanced agriculture by water saving irrigation systems.</u> c) <u>To disseminate the output of demonstration farms of each pilot site, involving neighboring competent farmers who could work as "promoters" of irrigation agriculture.</u></p> <p>2-9. To verify effects of irrigation, improvement of farming and activities of farmers groups, etc.</p> <p><u>3-1. To conduct technical guidance and trainings for staff of CRDA and GDA.</u> a) <u>To give technical guidance on the operation and maintenance of the high-accuracy water-flow meter and irrigation facilities.</u> b) <u>To support CRDA's preparation of the work plan on the installation, operation and maintenance of the high-accuracy water flow meter and irrigation facilities.</u></p> <p><u>3-2. To conduct educational activities and technical trainings for members of GDA.</u> a) <u>To enhance the capacity of GDA in terms of organizational management</u> b) <u>To enhance the technical knowhow of GDA staff in terms of promoting irrigation agriculture</u></p> <p>3-3. To conduct educational activities for non-participated farmers to GDA</p> <p>4-1. To carry out seminars concerning results of the Project activities to the organizations and persons in all irrigated areas.</p> <p>4-2. To confirm effects of the Project to participants on Activity 4-1.</p>	<p>[Japanese side]</p> <p>1. Dispatch of Japanese Experts Long term Experts Team Leader (Chief Advisor) Irrigation Technique/Water management Project Coordinator/Assistance for peasant activities Short term Experts team Team Leader/Irrigation Technique Water Management Agronomy Community Development Coordinator/ Assistant of Marketing Others</p> <p>2. Provision of Machineries and Equipment Motorbikes, Vehicles, <u>Backhoe Loader</u>, Sprinklers, PCs, Water meters, Equipment for training (Projectors, etc.) and others.</p> <p>3. Local Expense 1) Employment of Local Consultants Irrigation Technique Agronomy Community Development Pedologist Financial Management</p> <p>2) Budget for Questionnaire Survey, Dissemination, Training, Seminar, Translation, etc.</p>	<p>[Tunisian side]</p> <p>1. Assignment of Counterpart Personnel 1) Central level Project Director (DGGREE, MA) Project Manager (DIEEA, DGGREE, MA) Other staff in the MA</p> <p>2) Local government level Staff in CRDA (Béja, Bizerte and Jendouba)</p> <p>3) Irrigated area level Staff in GDA by irrigation area</p> <p>2. Assignment of Administrative Staff and any other necessary personnel for the smooth implementation of the Project</p> <p>3. Provision of Office and Facilities (desk, chair, etc.) Office in the DGGREE Office in one of the CRDA</p> <p>4. Necessary Budget (Necessary cost for C/P (Transportation fees on the Project, Cost of chemical examination, etc.), domestic transportation fees for training, etc.)</p>	<p>Domestic market needs do not worsen under the influence of the agricultural products, etc. from overseas.</p>
		<p>Pre-condition</p> <p>The situation of the existing irrigation condition does not worsen than the beginning of the Project.</p>	

A-2 Project Flow Chart

Time	Beginning of March 2013	Middle of March 2013 - Middle of November 2013	Middle of November 2013 - End of January 2014	End of January 2014 - Middle of February 2015	Middle of February 2015 - End of March 2015
Work	Domestic work at the first phase (2nd assignment period)	Field work at the first phase (2nd assignment period)	Domestic work at the second phase (2nd assignment period)	Field work at the second phase (2nd assignment period)	Domestic work at the third phase (2nd assignment period)
A C T I V I T I E S	[3-1] Preparation and discussions of Work Plan (Second assignment period)	[4-1] Explanation & Discussion on the Work Plan (Second assignment period) [4-2] Extension Activities on Farming & Irrigation [4-2-1] Preparation of Extension Materials [4-2-2] Trainings of extension staff [4-2-3] Demonstration Farms [4-2-4] Extension services and related activities on the pilot site [4-2-5] Visitto and observation of advanced Irrigation district [4-2-6] Assistance in issuing posters [4-3] Strengthening capacity of GDA in terms of human capitals [4-3-1] Understanding on situation and issues of GDA's management [4-3-2] Training of executives of GDA and employees [4-3-3] Training of the staff of GDA [4-3-4] Trainings for farmers concerned [4-3-5] Improvement of the Billing System [4-4] Improvement of Market Access [4-5] Holding the workshops/seminars and JCC	[5-1] Preparation and submission of the Progress Report	[6-1] Preparation, explanation and discussion on the draft Second Work Plan (Second assignment period) [6-2] Dissemination of the model irrigated agriculture to farmers in pilot sites. [6-3] Implementation of technical guidance and trainings for staffs of CRDA and GDA [6-4] Implementation of sensitization and technical training of GDA members [6-5] Assistance for the improvement of market access [6-6] Introduction of a proper water fee and billing system [6-7] Assistance of the study to the existing irrigation networks and facilities [6-8] Assistance of the study to drainage improvement [6-9] Implementation of seminars and JCC	[7-1] Preparation of the final report [7-2] Submission and explanation of the final report
Report	Work Plan (2nd assignment period)	Work Plan (2nd assignment period)	Progress Report (Second assignment period)	Second Work Plan (Second assignment period)	Final Report
Presentation and Discussion	JICA Beginning of March	JICA Tunisia office, C/P in Tunisian side Middle of March Final Evaluation June	JICA Beginning of February	JICA Tunisia office, C/P in Tunisian side Beginning of March	JICA End of February

A-3 Plan of Operation

Plan of Operation (the first assignment period and the first phase of the second assignment period)

Project Year Year Activity Month	First assignment period												First phase of the second assignment period													
	2012												2013												2014	
	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	
Domestic Work																										
Confirmation of Perspective																										
Examination of Principles and Implementation																										
Preparation of Work Plan																										
Field Work																										
Explanation, Discussion and Submission on Work Plan																										
Preparation of Extension Materials																										
Training of Extension Staff in CTV, CRA & DGA																										
Model Exhibition at Demonstration Farms																										
Extension Activities in Pilot Sites																										
Study Tour to Advanced Area																										
Guidance on Submission of Newsletters																										
Understanding management status and challenges of GDAs																										
Training for Board Members of GDAs																										
Training for staff & Employees of GDAs																										
Sensitization Trainings for Farmers																										
Assistance on Improvement of Billing System																										
Improvement of Market Access																										
Implementation of Seminars																										
Implementation of JCC																										
Domestic Work																										
Preparation of Progress Report																										
Submission of Report																										

Legend : Domestic Work Field Work
 ▲ Report - W/P : Work Plan, P/R : Progress Report



Plan of Operation (the second phase of the second assignment period)

Project Year Year Activity Month	1st phase of 2nd Assignment Period	Second phase of the second assignment period														
	2013	2014												2015		
	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
Domestic Work																
Preparation of the draft Second Work Plan (Second assignment period)																
Field Work																
Preparation, explanation and discussion on the draft Second Work Plan (Second assignment period)																
Dissemination of the model irrigated agriculture to farmers in pilot sites																
Implementation of technical guidance and trainings for GDA (and staffs of CRDA)																
Implementation of sensitization and technical training of GDA members																
Assistance for the improvement of market access																
Introduction of a proper water fee and billing system																
Assistance of the study to the existing irrigation networks and facilities																
Assistance of the study to drainage improvement																
Implementation of seminars																
Implementation of JCC																
Domestic Work																
Preparation of the final report																
Submission of Report																

Legend : Domestic Work Field Work
 ▲ Report - W/P : Work Plan, P/R : Progress Reports, F/R : Final Report

A-4 Assignment Schedule

Specified Field	Name	FY2012												FY2013												FY2014												Field Work	Domestic Work
		2012			2013			2014			2013			2014			2015																						
		1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3																				
Field	Leader / Irrigation Technique / Water Management	2.00	1.00	1.00	1.90	1.17	1.17	1.90	1.17	1.17	1.90	1.17	1.17	1.90	1.17	1.17	1.90	1.17	1.17	1.90	1.17	1.17	1.90	1.17	1.17	1.90	1.17	1.17	1.90	1.17	1.17	14.53							
	Sub Leader / Agronomy	1.00	1.50	2.00	1.53	2.50	2.50	1.53	2.50	2.50	1.53	2.50	2.50	1.53	2.50	2.50	1.53	2.50	2.50	1.53	2.50	2.50	1.53	2.50	2.50	1.53	2.50	2.50	1.53	2.50	2.50	14.03							
	Sub Leader / Agronomy																															3.67							
	Irrigation Technique 2/ Water Management		2.00				2.00			2.00			2.00			2.00			2.00			2.00			2.00			2.00			2.00	3.50							
	Community Development	1.00	1.50	2.00	1.00	1.07	1.07	1.00	1.07	1.07	1.00	1.07	1.07	1.00	1.07	1.07	1.00	1.07	1.07	1.00	1.07	1.07	1.00	1.07	1.07	1.00	1.07	1.07	1.00	1.07	1.07	10.67							
Work	Coordinator / Assistant of Marketing	2.00																														2.00							
	Coordinator / Assistant of Marketing		2.00	3.00	2.00	1.80	1.80	2.00	1.80	1.80	2.00	1.80	1.80	2.00	1.80	1.80	2.00	1.80	1.80	2.00	1.80	1.80	2.00	1.80	1.80	2.00	1.80	1.80	2.00	1.80	1.80	16.63							
	Leader / Irrigation Technique / Water Management				0.10	0.05	0.05	0.10	0.05	0.05	0.10	0.05	0.05	0.10	0.05	0.05	0.10	0.05	0.05	0.10	0.05	0.05	0.10	0.05	0.05	0.10	0.05	0.05	0.10	0.05	0.05	1.20							
	Sub Leader / Agronomy																															0.60							
	Sub Leader / Agronomy																															0.85							
Report	Community Development																															0.50							
																																65.03	3.15						
Total																																68.18	F/R						

Legend)  : Field Work in Tunisia
 : Domestic Work in Japan
W/P: Work Plan F/R: Final Report
P/R: Progress Report

A-5 List of Provided and Transferred Equipments

Year	Equipment	Specification/Model	Number
PROVIDED EQUIPMENT			
2012	Motorbike	PEUGEOT (103 VTTNB)	9
	Generator	CTH-8	3
	Electro fusion unit	+GF (MSA 230 Standard)	3
	Engine pump set	HONDA (Type WBK30)	3
	Electric jackhammer	-	3
	Portable PC	Toshiba (Satellite Intel Core i3)	3
2013	Projector	EPSON (EB-1900)	3
	Screen for projector	ORAY (TRE03B1175175)	3
	Maintenance tool set	ACEM	9
	Working clothes		18
	Desktop PC + with printer	DELL (VOSTRO 260MT : Desktop P C) SAMSUNG (ML 2160 : Printer)	13
	Fax	Brother (FAX-236S)	3
	Backhoe	VOLVO (BL61B)	3
TRANSFERRED EQUIPMENT			
2014	Vehicle	mitsubishi (4WD)	2
		CITROEN (Sedan)	1
	GPS	Magellan (eXplorist 210)	1
	Desktop Computer	HP (Pro 3120 MT)	2
	Printer / Copy Machine	SHARP (AR5520n)	1
		HP (LaserJet Pro CM1415fnw color MFP)	1
	Projector	EPSON (EB-1900)	1
	Moisture meter	Daiki (DIK-311E)	1
	PH/EC Meter	TOA DKK (WM-32EP)	3
	Leaser Distance Meter	Leica (DISTO D5)	3
LAN Storage	3.5" HDD 1TB	1	

A-6 Minutes of the JCC
(The Second)

Minutes of the Joint Coordinating Committee Meeting for (DPINT) project

(5/12/2012 in hotel Sheraton - Tunis)

Mr. Fakfakh, Director of Irrigation and Water Management Department, opened the meeting. He started by recalling to the participants the background DPINT project, stating that in 2007, a Special Assistance to the Project Sustainability SAPS was implemented at the level of Nefza and Fernana perimeters. This study put center stage the constraints impeding the promotion of the perimeters. Further to discussion between the Ministry of Agriculture officials, and JICA, DPINT project started in October 2010. The major objective of this project was the increase of the farming rate in the target irrigated perimeters. The gross surface area of the three perimeters is 7500 ha. In October 2010 a long term expert team started the implementation of the project through the baseline survey, which is a diagnosis conducted by three Tunisian consultant companies. A convention was signed by JICA in October 2011 through which the project implementation scheme was modified to adapt the project to the beneficiaries' real needs; for that reason, a team of consultants was hired. Today, the consultant team will present the results of last year's activities as well as the planned activities for next year.

Mr. Tomizawa, General Director Representative of JICA –Tunisia, in his speech he thanked the regional representatives (CRDA, CTV, GDA), farmers and the Japanese experts. He also explained the delay reasons of the activities implementation and expressed his satisfaction about the results of the demonstration farmlands, as he got the opportunity to visit them.

Then, Mr.Hori, Mr. Sako and Mr. Gueye presented, each the parts related to their fields of specialty, the results of the implemented activities.

Discussion:

- Abderraouf Radhouani (CRDA Bizerte) : Recalled to the participants the hard conditions that occurred during the last farming year (starting delay, heavy rainfall in spring, excessive heat). He considered that the results of the demonstration farmlands were satisfying. However, he complained about the absence of extensionists in Sedjnane CTV, underlying that the lack of extensionists represents a limitation to the development of the perimeter.
- Ahlem Ben Amor (AVFA) : she requested clarifications concerning the project input to demonstration farmlands. She recalled the necessity of collaboration with the AVFA training centers, which exists in the area project, focusing on the role they can play in

farmers' trainings and requesting further collaboration in the future. She informed the teams about the current intensive extension campaign about SMA, taking place with the participation of Ministry of Agriculture, and FAO.

Mondher Kharrat (AVFA):

- He wondered whether farmers who participated in the demonstration farmlands constitute a representative sample of the project beneficiaries of each irrigated perimeter.
 - The necessity to consider a cropping system and not just a single crop (tomato, piment) in order to ensure a sustainable yield for these farmers.
 - It is impossible to evaluate the impact of an extension action after one farming year.
 - L'AVFA desire is to have a manual relating to the local techniques and wish to participate more instead of playing only the editor role.
 - Suggested to integrate in the training program addressed to farming labor as they play an important role all through the cropping cycle.
 - Is it possible to provide the AVFA training centers with equipments as you did with CTV and GDA.
- Mme Nawel Boubaker (CRDA- Béja): Suggested the installation of an olive demonstration farmland, for it is a highly requested crop in the area.
 - Samir Haddad (CRDA-Bizerte): Requested the evaluation of the old water meters to compare them with those installed by the project.
 - Abderrazak Chihi (CRDA de Béja): Requested whether the collection rate of water charges improved or not.
 - Chedli Ghazouani (CRDA- Jendouba): Stipulated that being one of the counterparts that monitored the activities at the level of the Fernana IP, he underlined the difficulty to increase the number of direct beneficiaries' farmers. Concerning the SMSA, he showed conviction that it is necessary to go through preparation steps in order to number the future adherent and to analyze the feasibility of this entity.
 - Rym (cellule GDA Jendouba): underlined the importance of participation of the GDA cells officials of the three CRDA and their participation in the project activities relating to GDA
 - Several participants requested explanation about the yield discrepancies from one farmer to another.

After the answers provided by the team experts, Mr Saad Seddik, General Director of the DGGREE, recalled in his closing speech that:

- The integration of livestock breeding is necessary for the development of these IP.
- The innovation and the diversification of crops are recommended, yet we should avoid arboriculture for they would require longer period to perceive the results.
- The participation of AVFA can bring several contributions to the project.
- We should have planned evaluation sheets of the project for it would give an idea about the progress of the project activities implementation.
- He called for a meeting with JICA officials and NTCI experts to find a way to continue the implementation of the remaining and unfinished activities.

-
Meeting ended at 2 p.m.

The List of Attendants of JCC

[Member of Joint Coordination Committee (JCC)]

Saad SEDDIK	Ministry of Agriculture, DGGREE, General Director
Mohamed FAKHFAKH	Ministry of Agriculture, DGGREE, Director
Najet GHABI	Ministry of Agriculture, DGGREE, Sub-director
Chokri BAYOUDH	Ministry of Agriculture, DGPA, Sub-director
Ousselati HOUDA	Ministry of Agriculture, DGPA, Engineer
Mondher KHARRAT	AVFA, Sub-director
Ahlem BEN AMOR	AVFA, head of service department
Samira RAFRAFI	DGFIOP, Sub-director
Abderazek CHIHI	CRDA Beja, DHER
Chefik BEN SALAH	CRDA Beja, Head of irrigated perimeters department
Nawel BEN BOUBAKER	CRDA Beja, Head of farming products department
Faycal HSANI	CRDA Beja, Head of maintenance department
Salhi MOUSSA	CRDA Beja, Head of CTV Nefza
Mlrsi DEKRH	CRDA Beja
Ali KCHOUK	CRDA Bizerte, DHER
Slolr NASRI	CRDA Bizerte, Head of irrigated perimeters department
Abderaouf RADHOUENI	CRDA Bizerte, irrigated perimeters department
Samir HADDAD	CRDA Bizerte, Head of maintenance department
Chedey GHAZOUANI	CRDA Jendouba, DHER
Rym GARBI	CRDA Jendouba, Head of GDA Department
Fefhri KLBEUNI	CRDA Jendouba, EPI
Mustapha KHEMIRI	CRDA Jendouba, Head of CTV Fernana

[Embassy of Japan]

Toshiki TANAKA	Embassy of Japan, Third Secretary
----------------	-----------------------------------

[JICA]

Ryuichi TOMIZAWA	JICA Tunisia office, Chief Representative
Tetsuya TAKIMOTO	JICA Tunisia office, Representative

[JICA Project Team]

Shinwa HORI	Leader/Irrigation Technique
Masato SAKO	Sub Leader/Agronomy
Massamba GUEYE	Communication Development
Makoto HOSHI	Coordinator/Marketing (Assistant)
Tijani MERDASSI	Irrigation Engineer
Daoud AISSA	Agronomist
Ahmed SOUISSI	Soil Science Engineer
Mohamed AZOUZ	Sociologist
Zohra BOUGUERRA	Sociologist
Amira NAJAR	Interpreter




Projet de Développement des Périmètres Irrigués au Nord de la Tunisie

(The Project for the Development of Irrigated Areas Northern Tunisia - DPINT)


05 Décembre 2012
Comité mixte de Coordination (CMC)




Projet de Développement des Périmètres Irrigués au Nord de la Tunisie

(The Project for the Development of Irrigated Areas Northern Tunisia - DPINT)

1. GRANDES LIGNES DU PROJET



GRANDES LIGNES DU PROJET (1)

a) Contexte du Projet:

Le Projet est mis en œuvre dans le cadre d'une convention signée le 23 Août 2010 entre le MARHP et la JICA, la partie tunisienne ayant formulé une demande d'assistance technique en vue d'une exploitation effective des 3 périmètres irrigués de Nefza (Gouvernorat de Béja), de Sedjnane (Gouvernorat de Bizerte) et de Fernana (Gouvernorat de Jendouba).

Les problèmes liés à ces périmètres incluaient un taux stagnant d'utilisation des systèmes d'irrigation, des rendements bas et un taux faible de collecte des redevances d'eau d'irrigation auprès des agriculteurs.

3



GRANDES LIGNES DU PROJET (2)

b) Aire du projet:
Les 3 périmètres irrigués couvrent environ une superficie nette de 7.300 ha.

c) Période du projet de Coopération:
D'Octobre 2010 à Septembre 2013 (soit 36 mois) dont

- 1^{ère} Moitié déjà exécutée par une Equipe d'Experts à Long Terme
 - Etudes de reconnaissances relatives à la situation de la gestion et de la maintenance des équipements et des structures organisationnelles des CRDA et des GDA
 - Etudes de base pour les trois périmètres irrigués (Diagnostic et Analyse de la situation)
- 2^{ème} Moitié en cours d'exécution par la présente Equipe de Consultants
(Détails seront expliqués après)

4


GRANDES LIGNES DU PROJET (3)


d) Objectif Général :

Promouvoir une production agricole efficiente à travers une agriculture irriguée appropriée à Nefza, Sedjnane, Fernana et Hammam Bourguiba

e) Objectif Spécifique :

Pratiquer une agriculture irriguée modèle sur les sites pilotes des périmètres de Nefza, Sedjnane et Fernana afin de constituer un système de vulgarisation applicable à ces périmètres

5


GRANDES LIGNES DU PROJET (4)

f) Résultats attendus

- Résultat1: <Cerner la situation géographique, les conditions agricoles, l'appui aux agriculteurs et l'extension du système d'irrigation avec l'appui des CRDA et des GDA, etc. dans les 3 périmètres irrigués.>
- Résultat2: <L' agriculture irriguée servant comme modèle d'irrigation est introduite à travers des parcelles de démonstration.>
- Résultat3: <Le système d'appui des CRDA et des GDA à l'agriculture s'étend et se retrouve renforcé et consolidé.>
- Résultat4: <Les résultats obtenus suite aux activités du Projet sont diffusés et partagés avec les personnes/organismes relevant des périmètres irrigués concernés

6

Projet de Développement des Périmètres Irrigués au Nord de la Tunisie

(The Project for the Development of Irrigated Areas Northern Tunisia - DPINT)

2. ACTIVITES MENEES PAR LE PROJET

Activités Menées par le Projet (2012)

Activités de la première année	2012											
	Janv	Févr	Mars	Avril	Mai	Juin	Juillet	Août	Sept	Oct	Nov	Déc
1. Travail en Agric												
1.1.1. Accréditation de travail et des conducteurs agricoles												
1.1.2. Appuis des agriculteurs au plan de travail												
1.1.3. Préparation et discussion de plan de travail de la première année irriguée												
2. Travail sur le terrain												
2.1.1. Présentation et discussion du plan de travail de la première année irriguée												
2.2.1. Volontaires de l'agriculture engagés à travers les activités agricoles												
2.2.2. Préparation des supports didactiques de vulgarisation agricole												
2.2.3. Formation des vulgarisateurs												
2.2.4. Mission aux pays de destination												
2.2.5. Contrôle des vulgarisateurs engagés aux pays arabes palestiniens												
2.2.6. Application des méthodes agricoles aux pays arabes												
2.2.7. Aide à la planification du budget d'investissement												
2.2.8. Mise en œuvre des mesures techniques et améliorations agronomiques des GDA												
2.2.9. Formation des responsables des GDA												
2.2.10. Formation du personnel des GDA et des employés												
2.2.11. Formation des agriculteurs aux pays arabes												
2.2.12. Aide à l'amélioration du système de planification												
2.2.13. Aide à l'élaboration et proposition pour améliorer l'usage des terres												
2.2.14. Préparation du rapport d'avancement												
2.2.15. Remise et l'envoi finale de planification												
2.2.16. Présentation du rapport d'avancement												
2.2.17. Indicateurs												
Commissaire JICA												
Unité de gestion et d'entretien d'irrigation												
Administration Agricole												
Techniques d'Irrigation et Gestion de l'eau												
Département d'Agronomie												
Coopératives d'Agriculteurs												
Commissaire Europe												
Coopératives												
Associations												
Publicité												
Logistique												
Gestion Financière												

1 - Parcelles de démonstration (1)

I-1 Choix des parcelles de démonstration

Des réunions ont été tenues à l'échelle de chaque CRDA au cours desquelles, les critères de choix des parcelles de démonstration ont été discutés avec les responsables des CRDA. Ces critères sont comme suit:

- L'exploitant doit être propriétaire de ses terres ou locataire pour une période minimale de 3 ans.
- L'exploitant bénéficiaire doit être ouvert aux nouvelles techniques de production et disposé à appliquer les recommandations des services techniques qui lui seront données par les encadreurs du projet.

1 - Parcelles de démonstration (2)

- L'exploitant doit être adhérent au GDA et ne doit pas être endetté envers ce dernier.
- L'exploitant doit disposer d'une borne d'irrigation individuelle ayant une pression suffisante pour l'irrigation.
- La superficie des démonstrations a été fixée initialement à 2 ha, un critère qui n'a été respecté qu'à Fernana pour uniquement 2 parcelles, toutes les autres ont été de 1 ha (et parfois moins) en raison de la taille très réduite des exploitations notamment à Nefza et Sedjane.
- L'exploitation doit être d'un accès facile et proche d'un axe routier.

1 - Parcelles de démonstration (3)

I-1 Choix des parcelles de démonstration (suite)

Suite à ces réunions les responsables des CTV ont préparé les listes des parcelles de démonstration qui ont été présentées et discutées avec les membres de l'équipe DPINT.

Les parcelles proposées ont été visitées par les experts de l'équipe DPINT et les responsables des CTV, pour vérification et collecte des données (nature du sol, précédent cultural, point d'eau).

La liste définitive a été arrêtée en commun accord entre tous les intervenants et qui se présente comme suit :

Périmètre irrigué de Nefza :

N°	Nom de l'agriculteur	Secteur administratif	Superficie Parc Démonst	Nature du sol	Cultures installées	Variété
1	Hassen Zammali	Nefza Est	1,00	Arg-Calcaire	Piment	Anamex
2	Mouâdi Moutouari	Dj. Ediles	0,93	Argileux	Melon	Perfecto Branco
3	Hamâdi Zammali	Nefza Est	1,04	Argileux	Piment	Anamex
4	Nourédine Khouildi	Cap Negro	0,50	Argileux	Piment	Anamex
5	Taoufik Zammali	Nefza West	0,89	Argileux	Piment	Anamex/Sakuro
6	Fakhat Atouani	Nefza West	0,43	Arlimon.	Melon	Afania
7	Mekouen Brahmi	D'Arat	0,90	Argileux	Melon	Jaune canari
8*	Kamel Ouchati	Ouchata	1,04	Sableux	Agrumes	Marbol

Périmètre irrigué de Sedjnane :

N°	Nom de l'agriculteur	Secteur administ	Superficie Parc Démonst	Nature du sol	cultures installées	Variété
1	Hedi Sahbani	Shabna	0,30	Sableux	Sorgho	Super Grazer
			0,30	sableux	Luzeerne	Siriver
2	Abdalla Sahbani	Shabna	0,73	Sablo-arg	Pastèque	Crimson/Sent.
3	Taoufik Mechrgui	M'charga	0,76	Ar.limon.	Sorgho	Super Grazer
4	Jalel Sahbani	M'charga	0,57	Sablo	Tomate	Firenze/Heins
			0,50	argileuse	Pastèque	Crimson/Sent.
5	Mounir Ayari	Hchachna	0,70	Argileux	Tomate	Firenze/Heins
6	Boujmaa Saidani	Hchachna	0,35	Argilo-limon.	Sorgho	Super Grazer
			0,30	Argilo-limon.	Luzeerne	Siriver
7	Amer Mechrgui	Abesba	0,93	Argileux	Sorgho	Super Grazer
8	Massoud Saidane	Hchechna	0,64	Argileux	Tomte	Firenze/Heins
			0,21	Argileux	Piment	Anamex/Stater

Périmètre irrigué de Fernana

N°	Nom de l'agriculteur	Secteur administ	Superficie Parc Démonst	Nature du sol	cultures installées	Variété
1	Slah Aridhi	Sidi Ammar	2,00	Limon/arg	Melon	Afania
2	Mounir Ochi	Fernana	0,93	Limon/arg	Pastèque	Crimson/Sent.
3	Mourad Bousaidi	Fernana	0,77	Ar.limon.	Pastèque	Crimson/Sent.
4	Ahmed Ghazouani	Oued Ghrib	0,84	Argil-limon.	Tomate	Firenze/Heins
			0,99	Argil-limon.	Piment	Anamex/Stater

Le choix définitif des parcelles de démonstration a été achevé vers le 22 Mars 2012.

dpint I - Parcelles de démonstration (4)

I-2 Installation des équipements à la parcelle

Pour l'installation des équipements à la parcelle le projet a effectué les activités suivantes:

- Etudes Topographiques
Plans cotés et plan parcellaires
- Etudes de conception
élaboration des études et approbation par l'équipe DPINT
- Installation des équipements
 - Sur les dix neuf (19) parcelles, il y a 15 qui ont été équipées par le système G à G et 4 par aspersion.
 - Pour le suivi et le pilotage des irrigations, chaque borne a été équipée par un filtre (boîte à boue), compteur DN 50 et manomètre pour contrôler le débit et la pression.

L'installation des équipements a été achevée le 29 mai 2012.

dpint I - Parcelles de démonstration (5)

I-3 Acquisition des intrants agricoles qui ont inclus:

- Les plants et semences (plants greffés pour le melon et la pastèque
- Les divers engrais (N P K Mg)
- Les produits de traitement contre les principaux parasites des cultures mises en place

II - Suivi des parcelles de démonstration et Assistance des Agriculteurs

Pour chaque périmètre irrigué deux ingénieurs de suivi (1 agronome et 1 ingénieur irrigation (GR)) ont été recrutés par le projet pour assurer le suivi quotidien des parcelles de démonstration et ont plusieurs tâches dont nous citons principalement :

- Suivi de la conduite des cultures et assistance des agriculteurs pour une bonne application des techniques de production.
- Suivi du pilotage des irrigations
 - ❖ *Calcul des besoins en eau sur la base des données climatiques de la région,*
 - ❖ *Ajustement des besoins en eau en fonction des stades végétatifs réels,*
 - ❖ *Collecte des données pluviométriques enregistrées dans la zone du projet et ajustement des doses d'irrigation*

Suivi des récoltes et de l'écoulement de la production (1)

Les rendements enregistrés au niveau des parcelles de démonstration sont présentés au tableau suivant :

	Rendement par culture (ton / ha)						Moyenne 3 Périmètre
	Nefza		Sedjnane		Fernana		
	Rendement	Moyenne	Rendement	Moyenne	Rendement	Moyenne	
Tomate	-	-	68,9 59,5	64,2	80,6 80,6	80,6	69,7
Piment	23,8 42,3	> 32,1	24,2	> 24,2	41,8 > 41,8	41,8	33,0
Melon	40,2 31,8 19,3	30,4	-	-	16,0 16,0	16,0	26,8
Pastèque	-	> -	61,2 37,0	> 48,1	26,1 10,8	> 18,5	32,8
Sorgho	-	-	85,9 58,1 58,6 74,5	69,3	-	-	69,3
Luzeerne	-	-	84,4 65,7	75,1	-	-	75,1

Suivi des récoltes et de l'écoulement de la production (2)

Rentabilité

Tomate				Melon			
Parcelle	Recettes (TD/ha)	Coût (TD/ha)	Bénéfice (TD/ha)	Parcelle	Recettes (TD/ha)	Coût (TD/ha)	Bénéfice (TD/ha)
S4	12,850	5,379	7,471	N2	14,359	6,454	7,905
F4	13,390	6,829	6,561	N6	11,007	7,584	3,423
S8	11,642	5,703	5,939	F1	5,134	4,668	466
S5	7,392	4,797	2,595	N7	5,602	6,551	-949

Piment				Pastèque			
Parcelle	Recettes (TD/ha)	Coût (TD/ha)	Bénéfice (TD/ha)	Parcelle	Recettes (TD/ha)	Coût (TD/ha)	Bénéfice (TD/ha)
N3	24,773	8,228	16,545	S2	6,901	5,873	1,028
F4	24,825	9,057	15,768	F2	6,046	5,252	793
S8	13,125	7,562	5,563	S4	4,940	4,502	438
N1	11,650	7,059	4,591	F3	2,151	6,142	-3,991
N4	9,518	6,642	2,876				
N5	8,185	7,255	930				

Sorgho				Luzerne			
Parcelle	Recettes (TD/ha)	Coût (TD/ha)	Bénéfice (TD/ha)	Parcelle	Recettes (TD/ha)	Coût (TD/ha)	Bénéfice (TD/ha)
S7	2,233	1,335	898	S1	3,377	2,057	1,320
S1	2,577	1,690	887	S6	2,627	1,930	697
S3	1,742	1,489	253				
S8	1,757	1,711	46				

19

dpint **III. Formation (1)**

III-1 Pédologie

III-1-1 Formation pour chefs CTVs, chefs CRA et vulgarisateurs des GDAs

- La formation théorique a eu lieu au siège du CTV Nefza et ce durant la période du 04 au 07 Septembre 2012
- La formation pratique sur terrain a été faite pour chaque CTV à part et sur le périmètre irrigué concerné.

☐ Des séances de formation destinées aux chefs CTV à l'échelle du gouvernorat de Béja sont prévues au cours de la semaine prochaine.

III-1-2 Formation pour les agriculteurs

Les agriculteurs des sites pilotes ont bénéficié des séances de formation pratique sur terrain qui ont démarré au mois d'octobre et qui sont encore en cours d'exécution.

20

dpint **III. Formation (2)**

III-2 Irrigation et Agronomie

La formation des agriculteurs bénéficiaires des parcelles de démonstration et de leurs voisins a eu lieu d'une façon continue lors des visites quotidiennes effectuées par les ingénieurs chargés du suivi.

En plus de cette formation sur tas, des journées de formation et d'information, organisées au début du mois de novembre, ont rassemblé un grand nombre d'agriculteurs et ont porté sur l'irrigation et la conduite des espèces mises en culture :

21

dpint **III. Formation (3)**

III-2-1 Irrigation:

- ❖ Les techniques d'irrigation (goutte à goutte et aspersion) : avantages et inconvénients
- ❖ Connaissances minimales sur les équipements d'irrigation
- ❖ Variation des Besoins en eau en fonction des stades végétatifs
- ❖ Application des doses d'irrigation

III-2-2 Conduite des cultures :

- ❖ Choix variétal
- ❖ Avantages des plants greffés
- ❖ Rôle et mode d'application des engrais nécessaires aux cultures.
- ❖ Principaux parasites : conditions de développement et moyens de lutte
- ❖ Présentation et discussion des résultats des différentes parcelles de démonstration.

22

dpint **III. Formation (4)**

III-3 Installation et essais des compteurs

Les employés (directeurs techniques et aiguadiers) des 4 GDA de Nefza ont bénéficié des séances de formation sur les thèmes suivants:

- utilisation des distomètres pour la détermination des superficies des emblavures (base d'établissement des factures de consommation d'eau)
- Installation des compteurs

23

dpint **III. Formation (5)**

Test des compteurs

- ✓ Test de 19 compteurs installés par le projet DPINT pour les parcelles de démonstration : Ces compteurs ont donné des résultats d'une marge d'erreur de 5 à 10%
- ✓ Test des compteurs existants (sur les mêmes parcelles de démonstration) dans les mêmes conditions et qui ont donné des résultats d'une marge d'erreur de 30 à 40%

24

dpint **IV. Matériel de Vulgarisation**

IV-1 Préparation des Manuels/Brochures

IV- 1-1 Science du sol

- Science du sol (personnels des CTV)
- Elaboration des posters

IV-1-2 Agronomie

- Tomate, luzerne, Sorgho et piment : Adaptation des manuels existants (AVFA) aux conditions de la zone du projet

IV-1-3 Irrigation

- Irrigation goutte à goutte
- Irrigation par aspersion (en cours)
- Maintenance du réseau d'irrigation

25

V. Organisation, Formation et Sensibilisation (1)

V-1 En ce qui concerne les GDA

V-1-1 Diagnostic de la situation des GDA après la révolution et Identification des Insuffisances telles que:

- Manque de budget des Cellules GDA (CRDA) pour la formation des membres du CA du GDA
- Insuffisances logistiques au niveau des Cellules pour mener convenablement le travail de formation/sensibilisation
- Manque d'un minimum de connaissances des membres du CA sur la mission et tâches des GDA, sur les prérogatives réelles de ces GDA

26

V. Organisation, Formation et Sensibilisation (2)

V-1-2 Autres Insuffisances touchent surtout:

- La gestion financière et administrative
- Le suivi du recouvrement des dettes
- La résolution des conflits entre agriculteurs
- L'entretien préventif, etc.
- Les Agriculteurs, qui dans leur grande majorité, manquent d'expérience en cultures irriguées, sont faiblement familiers avec les notions du GDA, des droits et des devoirs des adhérents, des contrats d'abonnement à l'eau, etc.
- Les femmes, qui pourtant jouant un rôle important dans l'agriculture irriguée, comme ouvrières agricoles, sont en général marginalisées et ne sont pas associées à la vie des GDA

27

V. Organisation, Formation et Sensibilisation (3)

V-1-3 Organisation:

- Assistance des GDA pour la collecte des redevances
- Redynamisation et re-sensibilisation des GDA suite au relâchement constaté après la révolution
- Assistance de la cellule GDA pour l'organisation de l'AG et les élections d'un nouveau CA à Fernana
- Organisation des réunions de sensibilisation pour la préparation aux AG et les élections de nouveaux CA aux PI de Nefza et Sedjnane

28

V. Organisation, Formation et Sensibilisation (4)

V-1-4 Formation et Sensibilisation:

- Formation des membres du nouveau CA du GDA Fernana-Barbara (Fernana)
- Formation des membres du CA des GDA de Nefza et Sedjnane
- Formation des agriculteurs hommes et femmes (activité en cours)

29

V. Organisation, Formation et Sensibilisation (5)

V-2 En ce qui concerne les SMSA

• Mener une enquête sur la faisabilité sociale d'une SMSA à Fernana (en cours)

(Il s'agit d'une enquête sociale sur les SMSA à Fernana dont les objectifs sont :1) Définir le degré d'acceptation par les agriculteurs d'une Société Mutuelle de Services Agricoles dans leur zone;2) Leur volonté et leur capacité financière à participer au capital social de cette société; 3)Les domaines d'activité de cette SMSA)

• Il est à noter que l'enquête sociale n'est qu'une phase d'initiation d'une SMSA, les autres phases d'établissement étant: 1) une étude technico-économique (faisabilité économique); 2) la confection d'un programme de sensibilisation pour promouvoir l'esprit de groupe; et 3) la création même de la SMSA

30

dpinT

VI. Séminaires

Suivi et présentation des résultats du Projet avec les CRDA

VII. Visites des zones avancées

Etape de planification et de collection des informations sur les zones recommandées

31

VIII. Amélioration du système de facturation

Le système de facturation actuel se base en majorité sur l'estimation de la consommation des cultures par hectare et même dans certains cas le forfait à l'hectare sans tenir compte du type de la culture et ses besoins en eau.

Pour les parcelles de démonstration le projet a installé des compteurs qui ont été testé et qui ont donné des résultats satisfaisants. Donc le gouvernement Tunisien/GDA peuvent se procurer des compteurs de mêmes caractéristiques pour résoudre le problème de facturation.

Des ordinateurs ont été acquis par le projet et des logiciels de facturation sont prévus pour améliorer le système de facturation.

32



dpinT **jica**

Projet de Développement des Périmètres Irrigués au Nord de la Tunisie

(The Project for the Development of Irrigated Areas Northern Tunisia - DPINT)

3. APPORTS AU PROJET (Equipements)

33

I - Acquisition des équipements (1)

Objectif: Permettre une mise en œuvre réussie des activités du Projet

I-1 Equipements acquis

I-1-1 Equipements destinés aux CRDA

Pour chaque CRDA les équipements suivants ont été acquis :

- > Ordinateur Portable
- > Groupe électrogène
- > Machine électro-soudable
- > Groupe motopompe
- > Marteau piqueur

I-1-2 Equipements destinés aux GDA

- > Cyclomoteurs (livrés)
- > Caisses à outils + tenues de travail

(acquis mais pas encore livrés vu la situation actuelle des GDA)

36

I - Acquisition des équipements (2)

I-2 Equipements d'entretien et de maintenance en cours d'acquisition

I-2-1 Equipements destinés aux CRDA
➢ Tractopelles : Acquisition en cours

I-3 Equipements pour le suivi et la Vulgarisation


I-3-1 Equipements destinés à la DGREE
➢ Ordinateur de bureau

I-3-2 Equipements destinés aux CRDA
➢ Ordinateurs de bureau + imprimantes (destinés aux CTV)
➢ Appareils Fax (destinés aux CTV)
➢ Projecteurs (destinés aux CTV) (acquis)

I-3-3 Equipements destinés aux GDA
➢ Ordinateurs de bureau + imprimantes

37



dpinT 

Projet de Développement des Périmètres Irrigués au Nord de la Tunisie
(The Project for the Development of Irrigated Areas Northern Tunisia – DPINT)

4. PREPARATION POUR LA DEUXIEME ANNEE

38

PREPARATION POUR LA DEUXIEME ANNEE (1)

1. Choix des parcelles de démonstration

Les nouvelles parcelles de démonstration prévues pour la prochaine campagne, ont été choisies en se basant sur les mêmes critères de choix appliqués cette année. Les parcelles prévus sont au nombre de 22 parcelles qui sont ventilées comme suit :

Nefza: 7 parcelles concernant les cultures de piment, tomate, melon et pastèque.

Sedjane: 8 parcelles concernant les cultures de luzerne, sorgho fourrager, Pastèque, melon et tomate.

Fernana: 7 parcelles concernant les cultures de pastèque, tomate, piment et pomme de terre de saison.

40



PREPARATION POUR LA DEUXIEME ANNEE (2)

2. Travaux Topographiques

Les travaux topographiques pour l'élaboration des plans parcellaires et plans cotés des parcelles de démonstration (campagne 2012/2013) vont démarrer dans les jours qui viennent.

41



Projet de Développement des Périmètres Irrigués au Nord de la Tunisie

(The Project for the Development of Irrigated Areas Northern Tunisia - DPINT)


5. ACTIVITES RESTANTES

43

Activités Restantes (2013)

Activités de la douzième année	2013											
	janv	févr	mars	avr	mai	juin	juil	août	sept	oct	nov	déc
1. Travail au siège												
1.1 Préparation et discussion du plan de travail (2 mois)												
2. Travail sur le terrain												
2.1 Présentation et discussion du plan de travail de la douzième année (proposé)												
2.2 Vulgarisation de l'agriculture irriguée à travers les activités pilotes												
2.2.1 Préparation des supports didactiques de vulgarisation												
2.2.2 Formation des vulgarisateurs												
2.2.3 Médiatisation par matériel de démonstration												
2.2.4 Activités de vulgarisation agricole sur les sites pilotes												
2.2.5 Inspection des périmètres irrigués performants												
2.2.6 Aide à la production de matériel d'irrigation												
2.3 Renforcement des ressources humaines et renforcement matériel des CRA												
2.3.1 Formation des responsables des CRA												
2.3.2 Formation du personnel des CRA et des employés												
2.3.3 Formation des agriculteurs des sites												
2.3.4 Aide à l'amélioration du système de formation												
2.4 Etude de marketing et propositions pour améliorer l'accès aux produits												
2.4.1 Préparation du rapport final												
2.4.2 Séminaire et Comité parité de coordination												
2.4.3 Présentation du rapport final												
Irrigation												
Consultants JICA												
- Chef de parcelle / Techniciens d'irrigation												
- Ingénieur / Régulation agricole												
- Techniciens d'irrigation et techniciens de tests												
- Organisation d'agriculteurs												
- Coordinateurs / Etude de marché (Assistant)												
Consultants Lorrain												
- Irrigation												
- Agriculture												
- Pédagogie												
- Sociologie												
- Gestion Financière												

44



I - Parcelles de démonstration

I-1 Etudes pédologiques

I-2 Installation des équipements


I-3 Suivi des parcelles :

- *conduite des cultures*
- *Pilotage des irrigation*

I-4 Visites commentées et journées d'information à chaque stade végétatif

I-5 Suivi de la récolte et de l'écoulement des produits (CRDA)

45



II - Formation (1)

II-1 Irrigation

Cette formation va concerner les intervenants à l'échelle du périmètre irrigué (personnel CRDA et GDA) et les agriculteurs

II-1-1 Chefs CTVs, chefs CRA, vulgarisateurs et directeurs techniques des GDAs et responsables exploitation des PI

- Techniques d'irrigation
- Besoins en eau des cultures et pilotage des irrigations


II-1-2 Directeurs techniques et aiguilleurs des GDA

- Installation des équipements d'irrigation
- Maintenance des équipements du réseau d'irrigation
- Installation et entretien des équipements d'irrigation à la parcelle

II-1-3 Agriculteurs

- Procédures de formation des dossiers pour l'acquisition des équipements d'économie d'eau
- Besoins en eau des cultures, doses et fréquence des irrigation (connaissance de base)
- Installation et entretien des équipements d'irrigation à la parcelle;

46



II - Formation (2)

II-2 Production agricole (1)

II-2-1 Chefs CTVs, chefs CRA et vulgarisateurs des GDAs


Nutrition minérale des plantes : variation des besoins en fonction des stades de développement (cas des cultures maraichères)

Techniques de conduite de la ferti-irrigation en cultures maraichères.

Les champignons parasites des cultures maraichères : biologie, symptômes et moyens de lutte intégrée.

Les insectes parasites des légumes d'été : biologie, symptômes et moyens de lutte intégrée.

47



II - Formation (3)

II-2 Production agricole (2)

II-2-2 Agriculteurs

- L'assolement des cultures dans le secteur irrigué.
- Fertilisation organique et minérale des cultures maraichères.
- Protection phytosanitaires des solanacées (tomate piment)
- Protection phytosanitaires des cucurbitacées (melon, pastèque)

48

dpint **III - Matériel de Vulgarisation**
Préparation des Manuels/Brochures

III-1 Agronomie
Fumure organique

III-2 Irrigation
Irrigation par aspersion
Besoins en eau des cultures (brochure/périmètre irrigué)

49

IV. Organisation, Formation et ensibilisation (1)

IV-1 En ce qui concerne les GDA
IV-1-1 Organisation

- Assister les cellules GDA pour l'organisation des AG et les élections de nouveaux CA à Sedjnane
(A noter que pour Nefza, les dates de ces élections sont déjà fixées pour l'année en cours)
- Visites et échanges avec des GDA avancés

50

IV. Organisation, Formation et ensibilisation (2)

IV-1 En ce qui concerne les GDA
IV-1-2 Formation et Sensibilisation

- a. Formation des nouveaux membres des CA sur:
 - Rôle, mission et tâches du GDA ; les prérogatives et les limites des GDA
 - Les relations entre le GDA et le CRDA : le contrat de gérance
 - La gestion financière et administrative
 - La gestion des conflits entre les agriculteurs
- b. Formation des directeurs techniques et assistants sur:
 - Rôle, mission et tâches du GDA ; les prérogatives et les limites des GDA
 - Les relations entre le GDA et le CRDA : le contrat de gérance
 - La tenue des fiches de suivi des agriculteurs
 - La gestion financière et administrative : planification, budget, bilan financier, facturation, classement, archivage, législation sociale et fiscale.

51

IV. Organisation, Formation et ensibilisation (3)

- c. Formation des aiguadiers sur :
 - Les tâches de l'aiguadier
- d. Formation des agriculteurs sur:
 - Le contrat d'abonnement à l'eau
 - Le contrat de gestion entre le CRDA et le GDA
 - Les composantes du coût de l'eau
 - Pourquoi les agriculteurs doivent payer le coût de l'eau
 - Les pertes d'eau, l'eau non facturée
 - Les techniques d'économie de l'eau et le choix d'une technique appropriée
- e. Sensibilisation de l'environnement institutionnel (CRDA et Officiels concernés) sur les problèmes recensés au niveau des agriculteurs au cours des séances de sensibilisation)
- f. Séminaires de restitution avec les agriculteurs sur la solution des problèmes recensés

52

IV. Organisation, Formation et ensibilisation (4)

IV-2 En ce qui concerne les SMSA
Enquête Sociale pour les SMSA de Nefza et de Sedjnane

Il est à rappeler que l'enquête sociale n'est qu'une phase d'initiation d'une SMSA, les autres phases d'établissement étant: 1) une étude technico-économique (faisabilité économique); 2) la confection d'un programme de sensibilisation pour promouvoir l'esprit de groupe; et 3) la création même de la SMSA

53



V - Amélioration du système de facturation

Actuellement, et en absence des compteurs fiables, les GDA vont continuer à facturer l'eau consommée sur la base des emblavures. Donc des GPS seront acquis par le projet pour faciliter la tâche de quantifier les superficies irriguées.

Etablissement des logiciels de facturation et formation des directeurs techniques pour leurs exploitation

Coordonner entre les intervenants concernés par la gestion des eaux d'irrigation (SECADENORD, CRDA et GDA) pour établir un système adéquat concernant la distribution des eaux d'irrigation (temps de pompage, volume à distribuer...).

54

 **dpint** 

Projet de Développement des Périmètres Irrigués au Nord de la Tunisie
(The Project for the Development of Irrigated Areas Northern Tunisia - DPINT)

6. APPORTS DU PROJET (Equipements)

56

dpint **1 - Acquisition des équipements (1)**

I-1 - Acquisition des équipements d'entretien et de maintenance

I-1-1 Equipements destinés aux CRDA

- Tractopelles : A délivrer

I-1-2 Equipements destinés aux GDA

- Caisses à outils + tenues de travail (A délivrer aux GDA jugés fonctionnels)

58

dpint **1 - Acquisition des équipements (2)**

I-2 Equipements pour le suivi et la Vulgarisation en cours d'acquisition

I-2-1 Equipements destinés à la DGREE

- Ordinateur de bureau + imprimantes (à délivrer)

I-2-2 Equipements destinés aux CRDA



- Ordinateurs de bureau + imprimantes (à délivrer aux CTV)
- Appareils Fax (à délivrer aux CTV)
- Projecteurs (à délivrer aux CTV)

I-2-3 Equipements destinés aux GDA

- Ordinateurs de bureau + imprimantes (à délivrer aux GDA jugés fonctionnels)

57



 **dpint** 

Projet de Développement des Périmètres Irrigués au Nord de la Tunisie
(The Project for the Development of Irrigated Areas Northern Tunisia – DPINT)

6. Contraintes de mise en Valeur

59

dpint **Contraintes de mise en Valeur (1)**

Certains problèmes, qui ont été identifié par l'étude de diagnostic « Etude de base » peuvent entraver le développement des périmètres irrigués et essentiellement l'augmentation du taux d'exploitation en culture irriguée qui est l'objectif primordiale de notre projet :

60

dpint Contraintes de mise en Valeur (2)

I- Capacité des infrastructures hydrauliques (périmètre irrigué de Sedjnane)

- D'après les responsables de la CTV et des GDA les débits actuel des stations de pompage ne couvre pas les besoins des cultures mises en place.
- Pression insuffisante au niveau de certaines antennes pour assurer une irrigation rationnelle.

⇒ *Une étude du fonctionnement hydraulique des réseaux en fonction des nouveaux paramètres d'irrigation s'avère nécessaire.*

61

dpint Contraintes de mise en Valeur (3)

II- Disponibilité en eau

II-1 au niveau de la station de pompage du PI de Fernana

- Absence de coordination entre la SECADENORD fournisseur d'eau à partir du barrage Barbra et le CRDA acheteur d'eau au profit du GDA.
- Le débit lâché par la SECADENORD ne peut pas être mobiliser par la station de pompage.
(débit lâché de 20000 m3 durant 2 heures et capacité des pompes seulement de 2850m3/heure).

62

dpint Contraintes de mise en Valeur (4)

II- Disponibilité en eau

II-2 au niveau du PI de Sedjnane

- Les GDA jugent que la durée de pompage effectuée par SECADENORD, est insuffisante et mal réparti dans la journée.

⇒ *L'étude de la situation et l'établissement d'un programme de pompage, en fonction des besoins en eau d'irrigation dans ces deux périmètres (Fernana et Sedjnane) s'avèrent nécessaire.*

63

dpint Contraintes de mise en Valeur (5)

III- Assainissement

III-1 au niveau du périmètre irrigué de Sedjnane

- Engorgement des sols en eau pendant l'hiver ce qui réduit leur productivité (hydromorphie) et empêche leurs exploitation en dehors de la période estivale.

⇒ *Une étude de renforcement du réseau d'assainissement existant s'impose.*

III-2 au niveau du périmètre irrigué de Nefza

- Une étude d'assainissement a été effectuée par le CRDA de Béja en 2009. Les travaux ne sont pas encore réalisées.

64

Merci pour votre attention

65

A-7 Minutes of the JCC
(Terminal evaluation)

MINUTES OF MEETING
ON
THE TERMINAL EVALUATION
FOR
THE PROJECT FOR THE DEVELOPMENT OF IRRIGATED AREAS OF
NORTHERN TUNISIA
IN THE REPUBLIC OF TUNISIA

The Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched the mission, headed by Mr. Hiroshi SUZUKI, to the Republic of Tunisia (hereinafter referred to as "Tunisia") from 11th to 21st of June, 2013 for the purpose of conducting Terminal Evaluation for the Project for the Development of irrigated areas of Northern Tunisia (hereinafter referred to as "the Project") in accordance with the Record of Discussions of the Project.

After review and analysis of the activities and the achievements of the Project by Japanese mission members and Tunisian concerned authorities, Joint Terminal Evaluation Report (hereinafter referred to as "the Report") was prepared and presented to the Joint Coordinating Committee (hereinafter referred to as "JCC") of the Project.

JCC discussed the major issues pointed out in the Report and agreed the matters attached hereto.

Tunis, June 20, 2013



Mr. Hiroshi SUZUKI
Executive Technical Advisor to the Director
General,
Rural Development Department,
Japan International Cooperation Agency



Mr. Saad SEDDIK
Director General
General Direction of Rural Engineering and Water
Management
Ministry of Agriculture



ATTACHED DOCUMENTS

I. Clarification of the scope of the Project for Terminal Evaluation

The Japanese mission members mentioned that the Terminal Evaluation shall be executed in line with not "Action Plan" of the baseline survey, which was conducted by Tunisian consulting firm, but the current framework of the Project / Project Design Matrix (hereinafter referred to as "PDM") which was mutually agreed upon since the commencement of the Project in an official manner.

The Tunisian side understood the explanation on the scope and framework of the Terminal Evaluation of the Project from the Japanese mission members.

II. The accepting of Terminal Evaluation Report

Both sides agreed the contents of the Report (as per ANNEX) and will take necessary measures recommended in the Report.

III. The extension of the project duration

The Tunisian side expressed their expectation on extending the current project duration for the two reasons as mentioned below;

- 1) The Project was initially designed for five years duration at the timing of preliminary study. However, it was amended to three years cooperation project when the Record of Discussions (hereinafter referred to as "R/D") of the Project was agreed upon by both sides. So the two years extension of the Project was taken into consideration at that time.
- 2) Due to the revolution occurred in Tunisia in 2011 and other various reasons, there was little progress at the field level in the first year of the Project.

For this request and reasons, Japanese mission replied as below;

- 1) As long as R/D of the Project is still legitimate, it is determined that the project purpose and outputs shall be achieved within the three years project duration on R/D.
- 2) It is sure that due to the two months freezing the project activities and the absence of the Japanese experts caused by the insurgency situation in Tunisia, the Project's progress was slower than expected in the first year. Although the progress was partly recovered to a certain degree by the efforts of Japanese short-term experts and Tunisian counterparts, the project purpose is not likely to be achieved within the original schedule.
- 3) Therefore, considering the request from Tunisian side and the negative impact of disturbance caused by the revolution, extension of project duration for two months, which is almost equal to the duration of the freezing of the project activities and the absence of the Japanese experts, can be considered as long as the Tunisian side will surely take necessary measures mentioned in the recommendation of the Report.

Accepting the above offer from Japanese mission member, Tunisian side again requested to extend the project duration for two months, until the end of November, 2013 and both side agreed to take prompt actions necessary for revising the project implementation schedule.

IV. Further effort of the Tunisian side required for achieving project purpose and overall goal of the Project after the completion

Tunisian side presented the "Action Plan" before mentioned as the development scenario to achieve the project purpose and overall goal of the Project and requested Japanese mission members to support the execution of this "Action Plan".

Japanese mission members replied that they will convey the proposal to JICA HDQs. In addition, Japanese mission members stressed that the "Action Plan" shall be refined in consideration of the progress of the activities and outputs to be generated during the remaining period of the Project. The refined "Action Plan" will be discussed at the timing of the extended project completion.

Annex: Joint Terminal Evaluation Report

H.S.

[Handwritten signatures]

TABLE OF CONTENTS

ABBREVIATIONS.....	1
1. OUTLINE OF THE EVALUATION STUDY	2
1-1. BACKGROUND OF THE EVALUATION STUDY.....	2
1-2. OBJECTIVES OF EVALUATION	2
1-3. METHODS OF THE EVALUATION.....	2
1-4. MEMBERS OF THE JOINT EVALUATION TEAM.....	3
1-5. SCHEDULE OF THE EVALUATION	3
1-6. LIST OF PERSONNEL VISITED BY THE JOINT EVALUATION TEAM.....	4
2. OUTLINE OF THE PROJECT.....	5
2-1. BACKGROUND OF THE PROJECT	5
2-2. SUMMARY OF THE PROJECT.....	5
3. ACHIEVEMENTS OF THE PROJECT	7
3-1. ACHIEVEMENT OF INPUTS	7
3-2. ACHIEVEMENT OF ACTIVITIES.....	8
3-3. ACHIEVEMENT OF OUTPUTS.....	11
4-1. PROGRESS IN PROJECT IMPLEMENTATION	15
4-2. PROJECT IMPLEMENTATION AND MONITORING SYSTEM	16
4-3. OWNERSHIP OF THE TUNISIAN SIDE	16
4-4. COMMUNICATION AND INFORMATION SHARING	16
5. RESULTS OF THE EVALUATION	18
5-1. RELEVANCE	18
5-2. EFFECTIVENESS	18
5-3. EFFICIENCY	19
5-4. IMPACT	20
5-5. SUSTAINABILITY	21
5-6. CONCLUSIONS	21
6. RECOMMENDATIONS	28
6-1. ACTIONS TO BE TAKEN WITHIN THE REMAINING PROJECT PERIOD.....	23
6-2. ACTIONS TO BE TAKEN BY TUNISIAN SIDE AFTER THE PROJECT COMPLETION	24

Annexes
 Annex-1: Provision of Equipment
 Annex-2: Local Cost Expenditure
 Annex-3: Appointment of Counterpart (C/P) Personnel

JOINT TERMINAL EVALUATION REPORT FOR THE PROJECT FOR THE DEVELOPMENT OF IRRIGATED AREAS OF NORTHERN TUNISIA

20 June 2013

Mr. Hiroshi Suzuki Leader Japanese Evaluation Team	Mr. Mohamed Fakhkh Leader Tunisian Evaluation Team
Executive Technical Advisor Japan International Cooperation Agency	Director of Rural Engineering and Water Management Ministry of Agriculture

Abbreviations

AVFA	Agricultural Popularization and Training Agency
C/P	Counterpart
CRA	Agricultural Popularization Center
CRDA	Regional Directorate General for Agricultural Development
CTV	Local Unit for Agricultural Popularization
DGGRREE	General Direction of Rural Engineering and Water Management
DPINT	Project for the Development of Irrigated Areas of Northern Tunisia
GDA	Developing Grouping for Agriculture and Fishery Sector
GOJ	Government of Japan
GOT	Government of Tunisia
JBIC	Japan Bank for International Cooperation
JCC	Joint Coordinating Committee
JICA	Japan International Cooperation Agency
JPY	Japanese Yen
L/A	Loan Agreement
MA	Ministry of Agriculture
M/M	Minutes of Meeting
ODA	Official Development Assistance
PDM	Project Design Matrix
PO	Plan of Operation
R/D	Record of Discussion
SAPS	Special Assistance for Project Sustainability
SECADENORD	Water channel and Conduits Development Company
TND	Tunisian Dinar
USD	US dollar

I. OUTLINE OF THE EVALUATION STUDY

I-1. Background of the Evaluation Study

JICA's technical cooperation "The Project for the Development of Irrigated Areas of Northern Tunisia" (hereinafter referred to as "the Project") was launched in October 2010 with the purpose of improving the stability of agricultural production and income of the farmers in the regions through utilization of the irrigation facilities constructed in 2 ODA loan projects, i.e., "Water Pipeline Construction and Irrigation Project in the North of Tunisia" and "Barbara Irrigation Project". The Project is being implemented for more than two and half years and will be completed by the end of September 2013. Thus, JICA and Tunisian side formed a joint terminal evaluation team for the purpose of reviewing the achievements of the Project, evaluating them, and suggesting directions for both remaining period of the Project and after the Project completion.

I-2. Objectives of Evaluation

The objectives of the Terminal Evaluation are:

- (1) To examine the degree of achievements, overall effects and strategies of the Project based on the R/D, the PDM, and the PO;
- (2) To evaluate the Project in terms of the five criteria (relevance, effectiveness, efficiency, impact and sustainability);
- (3) To make recommendations on necessary arrangements to be made for i) the successful completion of the Project and ii) the sustainable development after the Project completion; and
- (4) To compile lessons learnt from the Project which could be utilized for planning and implementation of similar type of projects in the future.

I-3. Methods of the Evaluation

The evaluation was conducted:

- (1) jointly by Tunisian and Japanese evaluation teams (hereinafter referred to as "the Joint Evaluation Team")
- (2) by collecting data and information through;
 - i) examining the reports and documents prepared by the Project
 - ii) Interviewing with Japanese experts, Tunisian counterparts, and other stakeholders (GDA member farmers, etc.)
- (3) assessing the degree of achievement of the Project; and
- (4) analyzing the overall achievement based on the five evaluation criteria listed below
 - i) Relevance: It measures the extent to which the Project is consistent with the priorities and policies of the target group, GOT and GOJ.
 - ii) Effectiveness: It concerns the extent to which the Project purpose has been achieved, in relation to the outputs produced by the Project.
 - iii) Efficiency: It measures the outputs in relation to the inputs, in terms of timing, quality and quantity.
 - iv) Impact: It refers to direct and indirect, positive and negative impacts caused by implementing the Project.
 - v) Sustainability: This is to question whether the Project effects will be sustained after the Project, focusing on institutional, financial and technical aspects.

1-4. Members of the Joint Evaluation Team

(1) Japanese team
Mr. Hiroshi Suzuki

Leader
Executive Technical Advisor
Rural Development Department
Japan International Cooperation Agency (JICA)
Evaluation Management
Deputy Director, Field Crop Based Farming Area Division,
Rural Development Department, JICA
Evaluation Analysis
Consultant, KRI International Corporation
Interpreter

Mr. Yoshinobu Kinoshita

Ms. Junko Suijawa

Ms. Keiko Tsutsumi

(2) Tunisian team

Mr. Mohamed Fakhrak

Leader
Director, D/IEEA, General Direction of Rural Engineering and
Water Management (DGGREE), Ministry of Agriculture (MA)
Engineer, D/IEEA, DGGREE
Engineer, D/IEEA, DGGREE
Chief of DHER, CRDA Beja
Chief of CTV Nefza, CRDA Beja
Chief of DHER, CRDA Jendouba
Chief of CTV Fernana, CRDA Jendouba
Chief of DHER, CRDA Bizerte
Chief of CTV Sedjmane, CRDA Bizerte

Mr. M'hir Anis

Mrs. Mnedha Amei

Mr. Chihri Abdelrazak

Mr. Moussa Salhi

Mr. Ghazouani Chady

Mr. Khmiri Mustapha

Mr. Kchok Ali

Mr. Sahbani Abdelmajid

19 th	Wed	Finalizing Evaluation Report and drafting M/M.
20 th	Thu	Joint Coordinating Committee. Report to JICA Tunisia Office.
21 st	Fri	Leave Tunis.

1-6. List of Personnel Visited by the Joint Evaluation Team

< Ministry of Agriculture >

Mr. Saad Seddik
Mr. Mohamed Fakhrak

General Director, DGGREE
Director, DGGREE

< Nefza >

Mr. Chihri Abdelrazak
Mr. Ben Salah Chefik
Mr. Maimoun Youssef
Mr. Zammeli Ahmed
Mr. Sahli Mousa
Mr. Remdhoumi Habib
Mr. Saïdi Habib
Ms. Kouaïli Mouna
Mr. Deltai Hedi Ali

Chief DHER, CRDA Beja
CRDA Beja
CRDA Beja
Ad/Expert, CRDA Beja
Chief, CTV Nefza
GDA Ennoulhouth & El Wifak
GDA Ennoulhouth & El Wifak
GDA Touila
GDA Ouchlata

< Sedjmane >

Mr. Radhouani Abdelmajid
Mr. Eliafi Mohamed
Mr. Samir Haddad
Mr. Nasr Slah
Mr. Ben Ghidafa Ali
Mr. Ali Keleuk
Mr. Sahbani Abdel Majid
Mr. Hedhly Boujemaa
Mr. Dhaoif Farma
Mr. Maalaoui Faouzi

CRDA Bizerte
CRDA Bizerte
Chief of Maintenance Dep., CRDA Bizerte
AIEPT, CRDA Bizerte
CRDA Bizerte
CRDA Bizerte
Chief, CTV Sedjmane
FE, CTV Sedjmane
Chief of CRA, CTV Sedjmane
CTV Sedjmane

< Fernana >

Mr. Chedly Chazouani
Mr. Bengagi Chaabane
Mr. Alyam Anis
Mr. Khemiri Mustapha
Mr. Ghribi Ammar
Mr. Hamdi Khediri
Mr. Abdelrazak Ghazouani

Chief of DHER, CRDA Jendouba
CRDA Jendouba
CRDA Jendouba
Chief, CTV Fernana
CTV Fernana
CTV Fernana
GDA

< JICA Tunisia Office >

Mr. Atsushi Asano
Mr. Tetsuya Takimoto

President Representative
Representative

< DPINT Project Team >

Mr. Shinwa Hori
Mr. Masato Sako
Dr. Massamba Gueye
Mr. Makoto Hoshi
Mr. Tijani Merdassi
Mr. Daoued Aissa
Ms. Amira Najjar

Leader/Irrigation Technique
Sub-leader/Agronomy
Community Development
Coordinator/Assistance of Marketing
Tunisian staff (Irrigation)
Tunisian staff (Agronomy)
Tunisian staff (Interpreter)

1-5. Schedule of the Evaluation

The Evaluation was conducted from 5th June to 21st June 2013 for carrying out the following activities:

Date	Activities
5 th Jun.	Arrive at Tunis.
6 th	Interview at CTV Sedjmane (CRDA Bizerte, CTV Sedjmane) and at CTV Nefza (CRDA Beja, CTV Nefza, GDA).
7 th	Interview at CTV Fernana (CRDA Jendouba, CTV Fernana, GDA).
8 th	Interview with DPINT Team. Information compilation and preparation of the report.
9 th	Interview with DPINT Team. Information compilation and preparation of the report.
10 th	Interview with DGGREE.
11 th	Meeting with JICA Tunisia Office. Courtesy call to DGGREE.
12 th	Internal meeting. Field visit in Fernana and interview at CTV Fernana (CRDA Jendouba, CTV Fernana, GDA).
13 th	Field visit in Sedjmane, interview at CTV Sedjmane (CRDA Bizerte, CTV Sedjmane), and interview at CTV Nefza (CRDA Beja, CTV Nefza, GDA).
14 th	Internal meeting. Discussion with DGGREE.
15 th	Drafting Evaluation Report. Interview with DPINT Team.
16 th	Drafting Evaluation Report.
17 th	Discussion on draft Evaluation Report.
18 th	Report to Embassy of Japan.

2. OUTLINE OF THE PROJECT

2-1. Background of the Project

Most agriculture land in Tunisia is located in arid or semi-arid areas. Water supply for agriculture during the dry season in Tunisia is a major problem. Japanese three loan projects, which are "Water Pipeline Construction and Irrigation Project in the North of Tunisia (L/A in 1996)", "Irrigated Project of Goubellat (L/A in 1998)", and "Irrigated Project of Barbarr (L/A in 1998)" have been conducted in order to improve the stability of agricultural production and to increase yields. After the completion of the construction of facilities, it was expected to water resources efficiently, to stabilize agriculture production and to increase yields.

However, by the evaluation study in 2006 and 2007 on the above projects by the Japan Bank for International Cooperation (JBIC), the problems such as low extension rate of irrigated land, little increased yield, and low collection rate of water charge were observed. Thus, JBIC conducted Special Assistance for Project Sustainability (SAPS) to establish manuals and action plans for the full utilization of irrigation systems. These manuals and action plans presented to MARHP (Ministry of Agriculture, Water Resources and Fishery). Due to lack of enough human resources and limited budget, etc. of MARHP, certain progress has been made for some items mentioned in the action plans but some other items have not been taken into action yet.

With this background, the Government of Tunisia (GOT) requested support of the Government of Japan (GOJ) under the form of technical cooperation for effective utilization of the irrigated areas in Nafza, Sejnane, and Fernana. Responding to the request, the record of discussion (R/D) was signed in August 2010. The three-year technical cooperation project "The Project for the Development of Irrigated Areas of Northern Tunisia" was launched in October 2010 and Japanese long-term experts were dispatched.

Due to effects of the revolution in Tunisia in January 2011, activities of the Project were much delayed and relations between GOT and their farmers were changed. Accordingly, JICA dispatched the project consultation missions in September 2011 and February 2012 in order to discuss the new project implementation arrangement with concerned Tunisian authorities of the Project. As a result of discussions, it was agreed between both parties that the Project would be implemented by team of Japanese short-term experts (consultants) together with Tunisian counterparts and Tunisian consultants. Revised PDM was also agreed. This team of Japanese short-term experts (consultants) started undertaking Project activities in February 2012.

2-2. Summary of the Project

The Project design is stipulated as follows:

(1) Overall Goal

The suitable irrigation is performed and the efficient agriculture in 4 irrigated areas is achieved with desirable irrigation farming.

(2) Project Purpose

In pilot sites of Nefza, Sejnane and Fernana irrigated areas, the models of irrigation agriculture are achieved, and the extension system which can be adaptable in all the irrigated areas is developed.

(3) Outputs

- 1) Natural situation, agriculture condition, farming support and extension system supported by CRDA and GDA, etc. in the 3 irrigated areas (Nefza, Sejnane and Fernana) are grasped.
- 2) The irrigation agriculture which serves as a model of irrigation agriculture at pilot sites is established.
- 3) The farming extension support system by CRDA and GDA is strengthened.
- 4) The results of activities of the Project are shared among the persons/organizations related in 4 irrigated areas (Nefza, Sejnane, Fernana and Hammam Bourguiba).

See the Project Design Matrix (PDM) which was modified in February 2012, which includes more detailed description such as project activities and indicators.

3- ACHIEVEMENTS OF THE PROJECT

3-1. Achievement of Inputs

3-1-1. Japanese Side

(1) Dispatch of Experts

Four-long term experts and short-term experts (consultants) team were dispatched to Tunisia as follows:

1) Long-term expert:

#	Name	Position	Duration Mar-Month
1.	Mr. Chikanobu Kajiwara	Chief Advisor	2010/10/01 – 2011/01/19 2011/03/18 – 2012/03/31
2.	Mr. Takashi Kimura	Irrigation Technique/Water Management	2010/10/01 – 2011/01/19 2011/03/18 – 2011/12/04
3.	Ms. Mayumi Yokoyama	Project Coordinator/Assistance for Peasant Activities	2010/11/22 – 2011/01/19 2011/03/18 – 2012/03/31
4.	Mr. Jun Chujo	Farming	2011/06/17 – 2011/11/14

2) Short-term experts (consultants) team:

#	Name	Position	Duration	Man-Month
1	Mr. Shinwa Hori	Leader/Irrigation Technique	2012/02 – 2012/04	2.00
			2012/07 – 2012/08	1.00
			2012/11 – 2012/12	1.00
			2013/03 – 2013/05	1.90
			2013/06 – 2013/07	1.60
2.	Mr. Masato Sako	Sub-leader/Agronomy	2012/02 – 2012/03	0.50
			2012/04 – 2012/05	1.00
			2012/06 – 2012/08	2.00
			2012/09 – 2012/10	1.50
			2012/11 – 2012/12	2.00
3.	Mr. Akira Yonumoto	Irrigation Technique 2/Water Management	2013/03 – 2013/04	1.00
			2013/03 – 2013/04	1.53
			2013/05 – 2013/07	2.50
			2013/09	0.50
			2012/04 – 2012/06	2.00
4.	Dr. Massamba Gueye	Community Development	2012/09 – 2012/10	1.50
			2012/04	1.00
			2012/07 – 2012/08	1.50
			2012/10 – 2012/12	2.00
			2013/03 – 2013/04	1.00
5.	Mr. Makoto Hoshi	Coordinator/ Assistance of Marketing	2013/06 – 2013/08	2.00
			2013/09	0.47
			2012/04 – 2012/06	2.00
			2012/07 – 2012/08	1.00
			2012/09 – 2012/12	3.00
6.	Mr. Makoto Hoshi	Coordinator/ Assistance of Marketing 2	2013/03 – 2013/05	2.00
			2013/06 – 2013/08	2.00
			2013/09	0.50
			2012/02 – 2012/04	2.00
			Total	44.00

(2) Provision of Equipment

The equipments listed in the Annex-1 were provided by Japanese side. They are basically in good condition; however, some of them have not yet been used.

(3) Local Cost Expenditure

Around 53,080 TND has been spent by the end of FY 2010 (March 2011), 420,085 TND by the end of FY 2011 (March 2012), 1,036,176 TND by the end of FY 2012 (March 2012) and around 252,341 TND by 24th May 2013 for the Project activities. Please see Annex-2 for detail.

3-1-2. Tunisian Side

(1) Appointment of Counterpart (C/P) Personnel

Personnel in nineteen posts from Ministry of Agriculture (2), CRDA Beja (5), CRDA Jeriduba (6), and CRDA Bizerte (6) have been assigned as C/P personnel for the Project. Please see Annex-3 for detail.

(2) Provision of Office and Facilities

The project office was housed in Ministry of Agriculture in Tunis.

(3) Local Cost Expenditure

Expenditures incurred for Project activities (e.g. transportation, accommodation, and allowances for C/Ps, etc.) have been covered not from Project specific budget, but from the general budget. Thus, these figures are not available.

3-2. Achievement of Activities

The Project has undertaken several activities for generating the following outputs:

- Output 1: Natural situation, agriculture condition, farming support and extension system supported by CRDA and GDA, etc. in the 3 irrigated areas (Neifza, Sejnane and Fernana) are grasped.
- Output 2: The irrigation agriculture which serves as a model of irrigation agriculture at pilot sites is established.
- Output 3: The farming extension support system by CRDA and GDA is strengthened.
- Output 4: The results of activities of the Project are shared among the persons/organizations related in 4 irrigated areas (Neifza, Sejnane, Fernana and Hammam Bourguiba).

Planned activities and those which have been undertaken are summarized as follows.

3-2-1. Activities for Output 1

	Activities in PDM	Status of Activities	Achievement
1-1	To conduct survey about the natural situations (meteorology, hydrology, landscape, etc.) and all farmers' situations (farmland, crop, irrigation, market, farm matter, ownership of land, income, opinion of farmers to irrigated areas, etc.) in 3 irrigated areas.	- Baseline survey covering farmers' situations in 3 irrigated areas had been conducted by February 2012.	Completed.
1-2	To conduct survey about the situation of management and maintenance concerning the facilities and	- Baseline survey covering these issues in 3 irrigated areas had been conducted by February 2012. - Additional survey for grasping actual situations of GDA by interviewing with CRDA officers in charge of GDA, board members of GDA, and farmers was conducted in March and April	Completed.

organizational structures of CRDA and GDA.	2012.	completed.
1-3 To analyze the data of survey conducted on Activity 1-1 & 1-2.	- Results of the baseline survey were analyzed and compiled as baseline survey reports.	completed.

3-2-2. Activities for Output 2

Activities in PDM	Status of Activities	Achievement
2-1 To pick up possible pilot sites.	- It was agreed between Project (DPINT) Team and CRDA/CTV that pilot sites would be selected after deciding demonstration farms. Since setting of demonstration farms were done over two years (2012 and 2013) based on agreement of both parties, selection of pilot sites was delayed and has just been completed (14 sites, 1.450ha) in June, 2013. - List of farm plots (location and area) and their cultivator (owner) farmers in the selected pilot sites will be prepared.	75% will be continued until July 2013.
2-2 To survey farmers etc. in pilot sites picked up by Activity 2-1.	- Short time of water supply pumping by SECADENORD (water supply public corporation) have led demand-supply gap of water in irrigation peak season. Due to shortage of absolute water quantity, trust relations between farmers and CRDA are in difficult situation. - Without solving this water supply issue, step for organizing farmer group could not be proceeded.	75% will be continued until July 2013.
2-3 To select pilot sites and organize farmer group in each water bulb unit.	- Guidance and trainings on soil analysis for staff of CTV, CRA, and GDA were provided with using demonstration farms. - Sustainable farming model such as introduction of rotation cropping and companion planting were shown with using demonstration farms. - Guidance related to appropriate on-farm water management is continued to be given to farmers in pilot sites.	75% will be continued until July 2013.
2-4 To advise the farming plan and the water management plan in each pilot site.	- As a part of preparation for establishing SMSA, social survey was conducted at 3 irrigated areas. - Results of the survey will be analyzed and submitted to the concerned organizations.	75% will be continued until July 2013.
2-5 To advise on improvement of market access.	- Issues relating to existing water charge collecting system were clarified through hearing from concerned parties. Since water quantity used by farmers is not correctly measured, water charges accounted by current system are unfairly imposed on user farmers. - High-accuracy water meters were installed and operated at demonstration farms. It was shown to Tunisian C/Ps that using high-accuracy water meters would improve water charge collection system. Since ensuring funds for installation of such water meters are not expected, full-scale introduction of these meters has not yet decided, despite partially installed on trial base. - Other possible measures for improving water collecting system still based on size of irrigated area will be examined and proposed to concerned parties.	75% will be continued until July 2013.
2-6 To develop appropriate water charge and collecting system of water charge.	- Through series of discussions with CRDA/CTV, 20 demonstration farms in 3 irrigated areas were decided for the 1 st year (Feb. 2012 ~ Jan. 2013). Necessary equipment and materials were provided. Based on soil analysis, cultivated crops and cultivation methods were decided, and guidance was provided to concerned people (e.g. farmers and extension staff of CRDA/CTV). Tunisian irrigation expert and agronomy expert were assigned from the Project team to respective irrigated areas and they went around the demonstration farms to monitor water management, fertilization, pest management, and crop marketing.	75% will be continued until July 2013.

2-8 To disseminate the model of irrigation agriculture to the farmers in the pilot sites.	- For the 2 nd year (Mar. 2013~), additional 21 demonstration farms were selected and irrigation cropping was already started for those farms. - In some case of the activities on demonstration farm, the analysis of data necessary for comparison was insufficient thus the Project could not obtain the result such as the neighboring farmers were interested in. - Model demonstration activities at those 41 farms will be continued until July 2013.	50% will be continued until July 2013.
2-9 To verify effects of irrigation, improvement of farming and activities of farmers groups, etc.	- Grafted nursery plants of melon and water melon introduced at the demonstration farms were shown to neighboring farmers. - Target farmers will be selected and their advanced farming will be exhibited in the pilot sites. - Seminars will be held in July 2013 for CRDA, CTV, CRA, GDA and some farmers, where applicability of the irrigation agriculture model demonstrated by the Project as well as appropriateness of its approaches will be verified based on the results and process of the Project activities at pilot sites.	0% will be continued until July 2013.

3-2-3. Activities for Output 3

3-1 To conduct technical guidance and trainings for staff of CRDA and GDA.	Status of Activities	Achievement																
	- Following draft manuals on irrigation and agronomy were prepared: i) manual for drip irrigation; ii) manual for maintenance of water supply equipment; iii) handbook for cultivation of melon and water melon; iv) handbook for cultivation of tomato; v) handbook for cultivation of pepper; vi) handbook for cultivation of sorghum; vii) handbook for cultivation of alfalfa; viii) handbook for sustainable soil treatment. They will be finalized with reflecting comments from Tunisian concerned officials. - 3 kinds of posters for disseminating technical information to farmers were prepared and distributed to CTV offices. - Technical trainings on soil management were conducted for staff of CTV and CRA of 3 irrigated areas (4-days classroom lecture and field practices, Sep.~ Nov. 2013). The number of participants for these training is 44 in total. - Trainings on agronomy and irrigation were conducted in Nov. 2012 as follows:	75% will be continued until July 2013.																
	<table border="1"> <thead> <tr> <th>Date</th> <th>Place</th> <th>Target</th> <th>Participants</th> </tr> </thead> <tbody> <tr> <td>6th Nov.</td> <td>Ferhat</td> <td>GDA, CTV</td> <td>3</td> </tr> <tr> <td>7th Nov.</td> <td>Sedjaine</td> <td>GDA, CTV, CRDA</td> <td>9</td> </tr> <tr> <td>8th Nov.</td> <td>Nefza</td> <td>GDA, CTV, CRA, CRDA</td> <td>7</td> </tr> </tbody> </table>	Date	Place	Target	Participants	6 th Nov.	Ferhat	GDA, CTV	3	7 th Nov.	Sedjaine	GDA, CTV, CRDA	9	8 th Nov.	Nefza	GDA, CTV, CRA, CRDA	7	
Date	Place	Target	Participants															
6 th Nov.	Ferhat	GDA, CTV	3															
7 th Nov.	Sedjaine	GDA, CTV, CRDA	9															
8 th Nov.	Nefza	GDA, CTV, CRA, CRDA	7															
	- Meetings with GDAs were held in Mar. and Apr. 2012 for discussing issues (e.g. organizational activation, promotion of payment of water charge, etc.) and countermeasures for strengthening GDA. - Trainings for board members of all 9 GDAs were conducted in Jul.~Aug. 2012 (2days) and Mar. 2013 (4days) at each irrigated area. - Trainings for GDA staff on administrative and financial matters are underway. Trainings on maintenance of irrigation equipment will be done before Ramadan. - Technical trainings (e.g. fertilization, pest prevention, maintenance of irrigation equipment, how to use soil analysis kit, pH/EC meter, etc.) for extension staff of CTV, CRA and GDA will be conducted in collaboration with AVFA before Ramadan. - Visit to advance irrigation district with staff of CRDA, CTV, CRA, GDA, and some farmers will be conducted before Ramadan in 2013.																	

<p>3-2 To conduct educational activities and technical trainings for members of GDA.</p>	<p>- Trainings for farmers for discussing issues relating to GDA were conducted in Oct. ~ Dec. 2012. Trainings on payment obligation of water charge are underway.</p> <p>- Trainings on soil management for farmers at pilot sites (tentative) were conducted in Oct. 2012 as follows:</p> <table border="1" data-bbox="287 1344 478 1814"> <thead> <tr> <th>Date</th> <th>Place</th> <th>Participants</th> </tr> </thead> <tbody> <tr> <td>10, 11, 12, 16 Oct.</td> <td>Nefza</td> <td>Approx. 10</td> </tr> <tr> <td>17, 19 Oct.</td> <td>Fernana</td> <td>Approx. 10</td> </tr> </tbody> </table> <p>- Trainings on agronomy and irrigation for farmers at pilot sites were conducted in Nov. 2012 as follows:</p> <table border="1" data-bbox="383 1344 478 1814"> <thead> <tr> <th>Date</th> <th>Place</th> <th>Participants</th> </tr> </thead> <tbody> <tr> <td>6th Nov.</td> <td>Fernana</td> <td>23</td> </tr> <tr> <td>8th Nov.</td> <td>Sedjanne</td> <td>20</td> </tr> <tr> <td></td> <td>Nefza</td> <td>26</td> </tr> </tbody> </table> <p>- Trainings on payment obligation of water charge for GDA member/non-member farmers are underway.</p> <p>- Seminar with field visit and lecture for GDA member /non-member farmers will be conducted at each irrigated area with utilizing demonstration farms.</p>	Date	Place	Participants	10, 11, 12, 16 Oct.	Nefza	Approx. 10	17, 19 Oct.	Fernana	Approx. 10	Date	Place	Participants	6 th Nov.	Fernana	23	8 th Nov.	Sedjanne	20		Nefza	26	<p>75% will be continued until July 2013.</p>
Date	Place	Participants																					
10, 11, 12, 16 Oct.	Nefza	Approx. 10																					
17, 19 Oct.	Fernana	Approx. 10																					
Date	Place	Participants																					
6 th Nov.	Fernana	23																					
8 th Nov.	Sedjanne	20																					
	Nefza	26																					
<p>3-3 To conduct educational activities for non-participated farmers to GDA.</p>	<p>- Trainings on payment obligation of water charge for GDA member/non-member farmers are underway.</p> <p>- Seminar with field visit and lecture for GDA member /non-member farmers will be conducted at each irrigated area with utilizing demonstration farms.</p>	<p>75% will be continued until July 2013.</p>																					

3-2-3. Activities for Output 4

Activities in PDM	Status of Activities	Achievement
<p>4-1 To carry out seminars concerning results of the Project activities to the organizations and persons in all irrigated areas.</p>	<p>Workshop with participation of DGGREF, CRDA and CTV of 3 irrigated areas was held on 18th Oct. 2012 at Tunis to share progress of activities in respective areas and exchange their opinions.</p> <p>- 2nd JCC was held on 5th Dec. 2012 at Tunis.</p> <p>- Seminars for confirming and disseminating the results of the Project activities will be held at each irrigated area with participation of CRDA, CTV, CRA, and GDA in July 2013.</p> <p>- JCC will be held in Sep. 2013 to confirm the results of Project activities and propose for continuation of the activities by the initiative of Tunisian side. Concerned parties from Hammam Bourguiba will be invited.</p>	<p>50% will be continued until Sep. 2013.</p>
<p>4-2 To confirm effects of the Project to participants on Activity 4-1.</p>	<p>- The effects of the Project will be confirmed at the above seminars and JCC to be held in Jul. and Sep. 2013.</p>	<p>0% will be continued until Sep. 2013.</p>

3-3. Achievement of Outputs

The status of achievements of the Project Outputs in terms of verification indicators as per PDM is shown as follows.

Narrative Summary	Verification Indicators	Achievements
<p>Output 1: Natural situation, agriculture condition, farming support and extension system supported by CRDA and GDA, etc. in the 3 irrigated areas (Nefza, Sedjanne and Fernana) are grasped.</p>	<p>1-1. Analysis reports are made.</p>	<p>- Baseline survey report including analysis and action plans were prepared; thus, this indicator was achieved.</p>
<p>Output 2: The irrigation agriculture which serves as a model of irrigation agriculture at pilot sites is established.</p>	<p>2-1. Yield per ha of major crops in demonstration farms are improved.</p>	<p>- Higher yields of pepper and tomato were recorded in some of 1st year demonstration farms which were cultivated by farmers with experiences of irrigated farming. They were 42t/ha for pepper and 80t/ha for tomato while average figures for northern part of</p>

<p>Output 3: The farming extension support system by CRDA and GDA is strengthened.</p>	<p>3-1. Educational tools and materials are elaborated.</p> <p>3-2. All extension staffs of CRDA and GDA in the 3 irrigated areas participate in the technical guidance and trainings conducted by the Project.</p> <p>3-3. The level of understanding of CRDA and GDA staffs is improved at the end of seminar.</p>	<p>Tunisia were 16t/ha and 50t/ha respectively. Based on the data of 1st year, this indicator was achieved. However, the results of the 2nd year should be referred.</p> <p>- Actions for organizing farmers by water bulb unit is suspended due to absolute shortage of water supply, as mentioned. It is not expected that this indicators will be achieved by the Project completion.</p> <p>- As a part of planned activities (to achieve on improvement of market access), social survey for establishing SMSA was conducted. In order to achieve this indicator for Output2, further activities are required.</p> <p>- Further necessary procedures (technical & economic F/S, sensitization of farmers, establishment/registration, etc.) are required for starting activities of SMSA which usually takes 1~2 years. Thus, this indicator will not be achieved by the Project completion.</p> <p>- Manuals (draft), handbooks (draft), and posters on irrigation and agronomy were prepared. Since they will be finalized with reflecting comments from concerned parties, this indicator is expected to be achieved by the Project completion.</p> <p>- Although trainings for only some staff of CTV and CRA were conducted in the 1st year, additional trainings covering all extension staff of CRDA, CTV, and GDA will be conducted in the 2nd year. Thus, it is expected that this indicator will be achieved by the Project completion.</p> <p>- It was heard from concerned parties that understanding of CRDA and GDA on irrigation agriculture and its dissemination had been improved through DPINT activities but not reached to sufficient level. Thus, this indicator has been partially achieved.</p> <p>- It will be verified at seminars to be held in Jul. 2013.</p>
<p>Output 4: The results of activities of the Project are shared among the persons/organizations related in 4 irrigated areas (Nefza, Sedjanne, Fernana and Hammam Bourguiba).</p>	<p>4-1. Seminars concerning results of the project activities are carried out with more than 100 participants.</p> <p>4-2. More than two thirds (2/3) of participants in the seminars recognize its effectiveness.</p>	<p>- Technical seminars and JCC were held in 2012 (participants of Tunisian side are 33 in total) to share progress of the Project activities. Seminars and JCC (with also inviting concerned parties of Hammam Bourguiba) will be held in coming Jul. and Sep. 2013 to confirm the results of Project activities. Thus, it is expected that this indicators will be achieved with certain level.</p> <p>- It will be verified at coming seminars and JCC. However, judging from that many of C/Ps interviewed with recognized the effects by the DPINT activities although they are not sufficient, it is expected that this indicator will be achieved with certain level.</p>

Output1: Since the baseline survey report including analysis and action plans were prepared, the Output1 was achieved.

Output2: Judging from improvement in yields in demonstration farms, it could be said that certain level of outputs has been generated by the Project activities relating to these demonstration farms although it is still not sufficient as establishment of a model. However, it has been difficult to take actions for organizing farmers by water bulb unit especially in Sedjane since necessary quantity of water supply has not been ensured. Social survey for establishing SMSA and other means of cooperative shipping for better access to markets was conducted. Since further necessary procedures (technical & economic F/S, sensitization of farmers, establishment/registration, etc.) are required for starting activities of SMSA which usually takes more than 1 year, it will not be achieved by the Project completion. Thus, it is difficult to say that an irrigation agriculture model will be established by the Project completion.

Output3: Manuals, handbooks, and posters on irrigation and agronomy were prepared. Guidance and trainings were provided for some staff of CTY and CRA and additional trainings covering all extension staff of CRDA, CTY, and GDA are planned to be conducted by July, 2013. On the other hand, it was heard from concerned parties that CRDA and GDA staff could enhance their capability/knowledge on irrigation agriculture through Project activities but not reached to sufficient level. Thus, it could be said that Output3 has been partially achieved.

Output4: Since seminars and JCC with also inviting concerned parties of Hamman Bourguiba are planned to be held to confirm the results of Project activities, it is expected that Output4 will be achieved with certain level. However, it should be noted that Output2 and Output3 to be shared at these seminars and JCC are not sufficiently achieved.

Judging from these situations, it has to be said that the Project Purpose is not likely to be achieved by the end of Project period.

3-4. Achievement of Project Purpose

Status of indicators that measure attainment level of the project purpose is show as follows.

Narrative Summary	Verification Indicators	Achievements
Project Purpose: In pilot sites of Nefza, Sejmene and Fernana irrigated areas, the models of irrigation agriculture are achieved, and the extension system which can be adaptable in all the irrigated areas is developed.	1. The rate of irrigation practicing areas in pilot sites is increased to XX%. 2. Yield per ha of major crops in each pilot site are increased.	Pilot sites have been just confirmed. Therefore, this figure for last year is not available. Figure for this year will be obtained in Oct. after cropping season. Thus, it is difficult to judge achievement level. - Same to the above, figures for last year are not available. Figures for this year will be obtained in Oct. after cropping season.

Increase in rate of irrigation practicing areas and yield per ha of major crops in pilot sites are set as indicators to verify achievement of the Project Purpose.

Since pilot sites have been just confirmed in June 2013, data regarding these indicators for last year are not available. Those for this year will be obtained in October after cropping season.

Some C/Ps commented that these indicators might be achieved not by the Project completion but within near future if the Project activities will be continued because such positive effects as high yields in some demonstration farms have been already generated. On the other hand, many C/Ps expressed that the Project activities related to strengthening extension support system have progressed with normal speed from this year and their outputs have been gradually generated; thus they could not forecast whether the Project Purpose would be achieved or not by September 2013 which would be still in the cropping season. Therefore, achievement status of the Project Purpose could be judged with confirming the achievements of these indicators after October this year. In addition, it is not expected that Output2 and Output3 will be sufficiently achieved by the Project completion.

farmers due to postponement of confirming the pilot sites, the effects of these activities were not properly monitored and evaluated.

4-2. Project Implementation and Monitoring System

Regarding arrangement of Japanese experts, it was changed from long-term experts team (from October 2010 to March 2012) to short-term experts (consultants) team (from February 2012 to September 2013). Personnel in nineteen posts from Ministry of Agriculture (Director of DGGREE, staff of GDPA), concerned departments in 3 CRDAs and Chiefs of CTVs in the target 3 irrigated areas have been assigned as C/P personnel for the Project. In response to requests from JICA in November 2011, these C/Ps were clarified. Although only two C/Ps are assigned at the central level, Director of DGGREE plays a sufficient role for coordinating all C/Ps. C/Ps of CRDA and CTV have participated in discussions relating to the Project activities and trainings with sufficient level. Thus, the project implementation system has been basically functioned. However, since they are not full-time staff for the Project and they do not have sufficient means of transportation, their commitments to the Project field activities such as monitoring on demonstration farms and disseminating the outputs of these farms are limited.

Overall progress of the Project activities and their outputs were confirmed at the JCC and seminars with participation of the Tunisian concerned parties. Although regular meetings between the Project team and C/Ps are not set, the Project team meets Director of DGGREE at least once a week to share the Project progress and to request him to provide necessary directions to CRDA for smooth implementation of the Project activities. Thus, the monitoring system for the Project has been functioned sufficiently.

4-3. Ownership of the Tunisian Side

Since C/Ps especially CRDA did not sufficiently understand the gist of JICA's scheme of technical cooperation ("C/Ps should also be major actors for implementing the Project activities"), their commitments to the Project activities were limited. Since JICA requested Director of DGGREE to provide directions to CRDA, unstable situation after the revolution has gradually been calmed down, and since the commencement of practical activities based on demonstration farms in the target irrigated areas it seems that CRDA's commitments have been enhanced. According to hearing from the Project team, it is observed that staff of CRDA and CTV have understood objective of the Project and their roles in the Project activities through discussions at the JCC and seminars, and have positively cooperated with and participated in the Project activities at the target irrigated areas. During the interviews with CRDA, CTV and GDA, they commented to make efforts to spend more time for involving with the Project activities with recognizing the results of these activities. Under the current situation that the number of C/Ps and their staff are limited, increase of the number of demonstration farms in response to the requests from Tunisian side might have relatively decreased ownerships of Tunisian side toward the Project activities.

4-4. Communication and Information Sharing

It was pointed out by both concerned parties that there was little communication between long-term experts and C/Ps because of lack of C/Ps' understanding on JICA technical cooperation.

4. PROJECT IMPLEMENTATION PROCESS

4-1. Progress in Project Implementation

Several internal and external factors have greatly influenced progress of the Project as follows:

- Long-term experts were forced to leave Tunisia for two months due to insurgency caused by the revolution in January 2011.
- The baseline survey for target 3 irrigated areas should have been conducted with simplified way (all procedure including analysis was planned to be completed within 8 months); however, it was agreed between Tunisian and Japanese sides that the survey would be conducted by sub-contracted Tunisian consultant firms. Nine months had been passed after the Project's start when these three consultant firms were selected because of delay in preparation work caused by the revolution. The field survey was conducted and its analysis was completed in February 2012.
- After the short-term experts (consultants) team was dispatched in February 2012, activities related to demonstration farms, dissemination of their effects, and provision of technical guidance and trainings for the concerned Tunisian parties were launched. After the revolution, farmers became more conscious of their rights and demanding. Then, these Project activities were often forced to be suspended due to disturbances occurred at the sites. Although it was originally planned that a branch office of the Project would be set up at Beja for efficient implementation of the field activities, it was not realized due to several reasons including security issues; thus the experts were forced to make day trips from Tunis for monitoring the field activities.
- Based on the agreement between the Project (DPINT) team and Tunisian C/Ps, the number of demonstration farms was almost doubled up to Forty-one from the one originally planned number, Twenty. Project activities such as provision of technical guidance and monitoring for these demonstration farms were started with Twenty farm sites in the 1st year, which required more time and efforts than expected; accordingly decreased time and efforts which could be spent for other Project activities such as supports for disseminating the effects from these demonstration farms and conducting trainings for Tunisian concerned parties. Twenty-one demonstration farms were added in the 2nd year, and the Project activities for total Forty-one farms are underway. Cropping by farmers in these farms are continued to be monitored, which still requires time and efforts and affects implementation of other Project activities.
- Due to the problems in relation to planning/designing of the irrigation system as well as lack of coordination with SECADENORD on operating hours of their pumps, necessary amount of irrigation water are not ensured and water distributions are not properly done in the irrigation facilities of the target areas. Insufficient water supply for the farms has impaired farmers' trusts for irrigation facilities. Thus, there is no point in implementing water-saving measures by water rotation under such situations. Accordingly, some Project activities of organizing farmers in each water bulb unit have not been launched.
- With consideration of strong requests from Tunisian side that visible outputs should be ensured at early stage, it was agreed between both parties that demonstration farms should be selected and their activities would be started first of all, then pilot sites including these demonstration farms could be set. Guidance on farming has been given to the farmers in demonstration farms and activities on disseminating the effects of these farms to neighboring farmers have been also conducted, then some effects were observed. However, since these activities were done without specifying the target

Communication between present short-term experts (consultants) and C/Ps seem to be smooth since they have frequent meetings with Director of DGGREE to share information. It was heard from CRDA, CTV and GDA that communications with the Project (DPINT) team are appropriate since they surely informed C/Ps prior to the Project activities at the sites. On the other hand, some C/Ps expressed their desires to be shared with more information regarding monitoring activities on the demonstration farms which could be utilized for their future extension activities.

Regarding information sharing and communication within C/P organizations, they have been appropriately done through necessary meetings.

5. RESULTS OF THE EVALUATION

5-1. Relevance

Project is still relevant in view of consistency with Tunisian development policies, Japanese ODA policies, and needs of C/Ps and the target farmers, as follows:

(1) Relevance to Tunisian Development Policy

Even after the revolution in January 2011, *Water Sector Development Policy "EAU XXI (1998)"* and *"12th Five-Year Economic and Social Development Plan (2010-2014)(September 2010)"* have not been changed and are still followed by the GOT. *"EAU XXI (1998)"* regards effective utilization of water resources and appropriate management of facilities as long-term issues of water sector, and presents policy for introducing sprinklers and dripping irrigations for improving efficient water utilization at the farms. On the other hand, *"12th Five-Year Plan"* aims to achieve annual average growth rate of 2.4% for agriculture sector and increase agricultural productivity. Thus, the Project aiming to establish a irrigation agriculture model including improvement of agriculture productivity through effective utilization of irrigation facilities is in line with Tunisian development policies.

(2) Relevance to Japanese ODA Policy

Country Assistance Policy for Tunisia (March 2013) raises "sustainable industrial development" as one of its priority areas, which includes this Project as for improving infrastructure necessary for employment generation and industrial development.

(3) Consistency with needs of C/Ps and the target farmers

Factors relating to C/Ps (GDA) can not undertake their duties independently due to low rates of irrigation practicing areas and water charge collection, personnel resources and capacity of GDA are insufficient, insufficient farming extension activities by CTV/CIRA due to lack of their personnel and capacity, etc.) as well as to farmers (lack of knowledge and skills on irrigation agriculture, difficulty in obtaining credits for introducing irrigation facilities, insufficient market channels for agricultural products, etc.) were recognized as obstacles for introducing irrigation agriculture. Thus, the Project which has been implemented to overcome these obstacles is corresponding to the needs of C/Ps and the target farmers.

5-2. Effectiveness

As mentioned above, the Project activities have been delayed due to several reasons. Activities relating to demonstration farms in the target irrigated areas, dissemination of their effects, and provision of technical guidance and trainings for Tunisian concerned personnel were started last year. Since security situations at the sites were gradually improved in the latter half of last year, these Project activities have been progressed with normal speed and their outputs have been gradually generated: e.g. high yields in some demonstration farms and C/Ps' recognition of obtaining new knowledge and skills from technical guidance and trainings by the Project.

However, since it is not expected that Output2 and Output3 leading to achievement of the Project Purpose will be sufficiently achieved by the Project completion, it has to be said that the Project Purpose is not likely to be achieved by its completion. Data on indicators to verify achievement of the Project Purpose (increase in rate of irrigation practicing areas and yield per ha of major crops in pilot sites) will be obtained in October after cropping season.

Installation of irrigation equipment is required if farmers in the target areas actually adopt an irrigation agriculture model demonstrated and disseminated by the Project. Although there are subsidy and credit systems for installing irrigation equipment, it seems to be difficult for farmers to actually apply for these systems. On the other hand, considering that market prices of agricultural products are generally so cheap in Tunisia, selection of profitable crops and ensuring quality of products are required for recouping the inputs for production in addition to improving yields addressed in the Project Purpose.

5-3. Efficiency

5-3-1. Efficiency of Inputs

(1) Inputs of Japanese Side

1) Dispatch of Experts

Due to limited commitments of C/Ps to the Project activities at the initial stage because of their insufficient understanding on JICA's technical cooperation as well as evacuation of long-term experts from Tunisia because of the revolution, Project activities such as baseline survey and procurement of equipment were delayed.

Short-term experts (consultants) team was dispatched in February 2012, which was slightly late for undertaking preparation works (e.g. selection of demonstration farms, survey and design, procurement of equipment and materials, etc.) if cropping season starting from May is considered. Although preparation works was completed with efforts of both experts and C/Ps before start of cropping season in 2012, it was not able to ensure sufficient time for C/Ps (CRDA/CTV) to examine selection method of demonstration farms and make prior explanations to possible target farmers.

2) Provision of Equipment

It was found in February 2012 that there was misunderstanding between Tunisian and Japanese sides on some item of equipment listed at the time of concluding R/D. Tunisian side regarded that item as "tractopelle" while Japanese side regarded it as "tractor". Afterward, Tunisian side explained necessity and priority of the tractopelle and promised to properly utilize them, procurement of the tractopelle was started. It took more time than expected for procuring and delivering them, then it was April 2013 that they were handed over to each CRDA/CTV. While CTV Neftza started using the tractopelle for excavating ditches and land preparation of irrigation farms, other CTVs are still searching for operators; thus have not yet used them.

(2) Inputs of Tunisian Side

1) Assignment of C/Ps

Personnel in relevant departments/divisions have been assigned as C/Ps. However, since they and staff in their departments/divisions are not full-time staff for the Project, time they can spend for Project activities is limited.

2) Local Cost Expenditure

Expenditures incurred for Project activities (e.g. transportation, accommodation, and allowances for C/P, etc.) have been covered from the general budget. Although this budget is not sufficient according to the Director of DGGREE, CRDA and CTV have participated in discussions and trainings relating to the Project with sufficient level. However, due to lack of means of transportation, their commitments to

the Project field activities such as monitoring on demonstration farms and disseminating the effects of these farms are limited.

5-3-2. Efficiency of Activities

There are some factors which affected efficiency of the Project activities as follows:

- DGGREE quickly provided information regarding candidate Tunisian consultant companies for survey, design, procurement and installation of equipment for demonstration farms, which enabled completion of selection of the company and installation of equipment within relative short time.
- C/Ps in CRDA usually provide necessary directions to their concerned staff at the Project sites with timely manner, which facilitates efficiency of Project activities.
- Showing visible outputs of the Project such as high yields in some demonstration farms was effective in motivating C/Ps and farmers to participate in Project activities. On the other hand, the number of demonstration farms was doubled in response to the strong request from Tunisian side to provide more opportunities for farmers to observe activities in these farms, which seems to decrease quality of the activities at each farm.
- Irrigated areas of Sedjmane and part of Neftza are subject to flooding to a greater or lesser extent, then their poor drainage delays preparation of farms. Farm fields in these areas were flooded due to heavy rains in spring of 2012, cropping was delayed.
- Due to delay in collecting water charges by GDAs in Sedjmane, water supply by pumping were stopped several times, which delayed cropping in some demonstration farms. Based on their feeling of unfairness on payments for water charges, troubles occurred among farmers, which impeded implementation of trainings by the Project.
- Because of roadblocks by demonstrations and restrictions of staying overnight at the sites due to security reasons, it took more time to travel to the sites, which have impeded efficiency of Project activities. There has been other constraints that trainings should be implemented with avoiding seasons of Ramadan, Eid, cropping, and harvesting.

5-4. Impact

5-4-1. Prospect for Achievement of the Overall Goal

There has not been any involvement of the concerned parties in Hammam Bourgaiba with Project activities so far and prospects for achievement of the Project Purpose are unclear. In the course of this Terminal Evaluation, Ministry of Agriculture's determined principles of promoting increase in rate of irrigation practicing areas for contributing regional employment generation and economic development as well as their commitments to increase number of extension staff were confirmed. However, since it is not expected to ensure sufficient level of budget and number of staff for disseminating irrigation agriculture, it has to be said that it is quite difficult to achieve the Overall Goal within 3 ~ 5 years after the Project completion.

5-4-2. Other Impacts

The Project has brought other positive impacts as follows:

- Technical trainings on soil management by the Project received good reputations. CIRDA Beja who heard the good reputations requested the Project team to conduct same trainings for extension staff

in other irrigated areas in Beja.

- Tests on water flow were conducted with using high-accuracy water meters installed at demonstration farms: --It was shown to C/Ps that using high-accuracy water meters would improve water charge collection system. Some effects were heard that CRDA who understood the effects of the high-accuracy water meters actually purchased and installed them.
- It was observed that some farmers engaged in demonstration farm activities have provided advices to neighboring farmers based on their experiences of demonstration farms. Other case was heard that one farmer started making seedlings this year. There is certain possibility that these competent farmers could play certain roles in dissemination of irrigation agriculture in future.

5-5. Sustainability

5-5-1. Policy Aspects

Since efficient utilization of water and improvement of agricultural productivity are major issues for Tunisia and included in current development policies, policy supports from the government are expected to be continued even after the Project completion.

5-5-2. Organizational and Technical Aspects

It was observed that knowledge and skill of C/Ps (CRDA, CTV/CRA, GDA) have been enhanced to certain level through the Project activities. However, the number of their staff and their capacity level are not sufficient for continuing operation and management of irrigation facilities and farming extension by themselves efficiently and effectively for increasing irrigation rate and agricultural productivity. Thus, it could be predicted that these activities continued by C/Ps would be slowed down as also pointed out by C/Ps. Although Ministry of Agriculture resumed recruitment of new staff, it was not known that how many of them would be assigned as extension staff. On the other hand, requests could be made from DGGREE to AVFA to dispatch their extension staff preferentially to the target irrigated areas.

5-5-3. Financial Aspects

While development budget of Ministry of Agriculture has been decreased, its general budget including O&M costs of facilities and personnel costs has slightly been increased. Thus, it is expected that certain level of budgets for C/Ps to implement O&M of irrigation facilities and dissemination of farming would be ensured.

Financial independence of GDA will depend on collection of water charges. Since conditions for improving water charge collection rates including capacity level of GDA have not yet prepared at this time, it cannot be judged that GDA could be financially independent within near future.

5-6. Conclusions

Based on the above findings and evaluation, the Joint Evaluation Team has concluded:

- This Project is still relevant, since it is in line with Tunisian development policies, Japanese ODA policies, and needs of C/Ps and the target farmers.
- Project activities have been delayed due to several reasons. Activities relating to demonstration

farms in the target irrigated areas, dissemination of their effects, and provision of technical guidance and trainings for Tunisian concerned personnel were started last year, and visible outputs have been gradually generated. However, since some Outputs are difficult to be achieved by the Project completion, it has to be said that the Project Purpose is not likely to be achieved within the Project period.

Regarding sustainability after the Project completion, there remains issues especially on organizational and technical aspects of Tunisian side.

6. RECOMMENDATIONS

6-1. Actions to be taken within the remaining Project period

In order to achieve the Outputs and the Project Purpose, both DPINT team (experts' team) and Tunisian C/Ps are required to work actively on the following issues for the rest of the Project period. Activities for achieving the Project Purpose are to be continuously implemented by Tunisian side (C/Ps and other concerned parties). For smooth transferring roles and responsibilities of the Project activities, it is required that Tunisian side should be further involved with Project activities for the rest of the Project period while DPINT team shall, in principle, gradually decrease their direct involvements but continue to support for Tunisian side.

(1) Preparation of grasping rate of irrigation practicing areas and yields of major crops in pilot sites

Pilot sites were confirmed in June 2013. In order to surely obtain data on irrigation rate and yields of major crops in pilot sites for verifying achievement of the Project Purpose, following actions should be taken in short order:

- Confirm farms and their farmers in the selected pilot sites as soon as possible.
- Agree on procedures and schedule for data collection: before start of harvesting at the latest.
- Agree on C/Ps in charge and their roles and responsibilities on collecting and compiling data: before start of harvesting at the latest.

(2) Completion of knowledge obtained through monitoring activities on demonstration farms

Knowledge on extension services obtained through monitoring activities on demonstration farms has been mainly accumulated in DPINT team, particularly in their field engineers. This knowledge has to be sufficiently transferred to CTV staff since they need to utilize these related information and know-how for their future extension activities. In this regard, they should be compiled such as FAQ to be used as references for practical extension activities.

(3) Completion of the remaining activities relating to dissemination of an irrigation agriculture model to farmers in pilot sites and sharing of its results

While much time and efforts have been spent for activities relating to demonstration farms, they have not sufficiently been spent for activities relating to disseminating the effects of demonstration farms to neighboring areas. Both DPINT team and Tunisian C/Ps are required to make best efforts to undertake the remaining activities relating to this issue (skill transfer among farmers, visit to advance irrigation areas, etc.), and share results of these activities with other concerned parties through seminars.

(4) Utilization of equipment procured

Tractopelle procured have not been used in CTV Sejname and CTV Femama. These CTVs together with their supervisory CRDAs are required to assign operators as soon as possible and to start using these tractopelle.

(5) Preparation of a scenario for achieving the Project Purpose and Overall Goal

It is judged to be difficult to achieve the Project Purpose within the Project period. In this regard, Tunisian side (with initiatives of DGGREE and CRDA) are required to prepare a scenario with refining the existing Action Plan for achieving the Project Purpose and Overall Goal with considering progress of

the activities and outputs to be generated during the remaining period of the Project.

6-2. Actions to be taken by Tunisian side after the Project completion

In order to sustain effects of the Project activities and achieve dissemination of irrigation agriculture, Tunisian side is required to continue to work on the following issues:

(1) Coordination with SECADENORD on water supply

Keeping trusts among farmers on water supply is a precondition to work on disseminating irrigation agriculture in the target areas. Even under the present situation that irrigation rate is still not high, the case that water demands exceed its supply at demand peak time in dry season is observed. There is almost no doubt that this issue will be worsen if irrigation agriculture will be extended in future. In order to solve this issue, CRDAs in the target areas in collaboration with DGGREE should have opportunities for discussion and coordination with SECADENORD. In the process of coordination, differences in irrigation systems in respective areas as well as in level of GDA's debts to CRDA should be taken into consideration.

(2) Supports for establishment of SMSA and their activities

Market prices of agricultural products are relatively low in Tunisia, and those prices are likely to be determined under buyers' initiatives. In order to motivate farmers to invest in irrigation agriculture, it requires grouping agricultural producers, which would realize fair prices and accordingly ensure farmers' income. In this regard, establishing SMSA could contribute to these points through cooperative shipping. Under the Project, social survey was already conducted in 3 target areas. Thus, Tunisian side is required to continue supports for undertaking necessary procedures for its establishment.

It is necessary to continue supports for disseminating new approaches derived from demonstration farm activities such as producing seedlings in order to decrease production costs.

(3) Improvement of irrigation water charge system

It is recognized among concerned parties that i) water charging system based on water quantity instead of area size of farms, is fair and acceptable for farmers and ii) it is necessary to install high-accuracy water meters to correctly measure water quantity used. In order to promote changing to water charging system based on water quantity, following measures are necessary to be taken by Tunisian side:

- Discuss who should bear costs for installation of high-accuracy water meters and meter reading and confirm the policy for these issues.
- Examine concrete measures for changing water charging system from current one to water-quantity based one by CRDA and GDA.

(4) Support for strengthening capacity of CRDA and GDA

It was recognized that capacities of CRDA/CTV and GDA have been enhanced through the Project activities. It is difficult to say that their capacities have reached to the sufficient level to response to the needs from farmers on various and advanced skills. Systems to complement deficits of their capacities (e.g. regular technical inputs to CTV and GDA by CRDA) should be prepared.

In order to supplement shortage of CRDA and CTV staff, AVFA should actively examine on utilization of know-how on extension services in private sector. Based on the results of AVFA's examination, CRDA should take necessary actions.

(5) Promoting irrigation agriculture in Hammam Bourguiba

There has not been any intervention on Hammam Bourguiba under the Project. Since progress of irrigation agriculture is required for achieving the Overall Goal, it is necessary to work on this irrigated area with appropriate approach.

(6) Implementation of the scenario prepared for achieving the Project Purpose and Overall Goal, monitoring on it, and sharing its progress with JICA

A scenario for achieving the Project Purpose and Overall Goal shall be prepared by Tunisian side by the Project completion. In order to implement this scenario consistently, Tunisian side is required to make best efforts.

Progress in implementing this scenario should be appropriately monitored by Tunisian side. Progress situation should be periodically shared by Tunisian side with JICA.










Projet de Développement des Périmètres Irrigués au Nord de la Tunisie
(The Project for the Development of Irrigated Areas Northern Tunisia - DPINT)

Date: 20/06/2013

Lieu: Ministry of Agriculture

Objet: JCC about Terminal Evaluation

Mission
LISTE DES PRESENTS

Nom	Prénom	Organisme	Fonction	Contact (tel / e-mail)	Signature
TAKIMOTO	Tetsuya	JICA	Représentant	97432059	
YERDASSI	Tijani	Equipe DPINT	Ingénieur	98353280	
Lachrouani	Abdelmajid	C.R.D.A Bizerte	Nuancier	97473777	
SALHI	MOUSSA	ERDA de Bizerte	Ch. F. ETV Nafza	97494520	
Kchaouk	Ali	ERDA Bizerte	D. H. C. R.	ale.kchaouk@yahoo.fr	
Shazouani	Chedly	ERDA Jendouba	D. H. E. R.	shazouani@yahoo.fr	
Khemiri	Toussapha	ETV Fernane	chef CTV	khemiri_mustophe@yahoo.com	
ASANO	ATSUSHI	JICA Tunisie	Rep. Res	97.432.059	
SABBAH	Abdelmajid	CRDA Bizerte	chef CTV	97344492	

Projet de Développement des Périmètres Irrigués au Nord de la Tunisie
(The Project for the Development of Irrigated Areas Northern Tunisia - DPINT)




Date: 20/06/2013

Lieu: Ministry of Agriculture

Objet: JCC about Terminal Evaluation

mission

LISTE DES PRESENTS

Nom	Prénom	Organisme	Fonction	Contact (tel / e-mail)	Signature
Hiroshi	Sasaki	JICA			
Yoshinobu	Kinoshita	JICA			
Junko	Saikawa	JICA			
Keiko	Tsutsami	JICA			
Shinwa	HORI	DPINT Team			
Masato	SAKO	"			
Massamba	GUEYE	"			
Flakots	HOSHI	"			
Amel	Amel	DG/GREE	Ingénieur	9900778	
FANAFAMH	Yahmed	DG/GREE	Director	9171756 med.fahfah@dpint.gov.tn	
CHAH	Abdelmajid	DPINT B&J	DR / B&J	98678992	

A-8 Minutes of the JCC
(The Third)

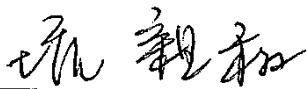
Minutes of Meeting
for
the third meeting of the Joint Coordinating Committee
of
the Project for the Development of
Irrigated Areas of Northern Tunisia (DPINT)

The Project for the Development of Irrigated Areas of Northern Tunisia (DPINT) has been implemented within the frame of a technical assistance of the Japan International Cooperation Agency (JICA) in accordance with the Record of Discussions (R/D) signed in August 23, 2010.

The Project Team, which consisted of JICA experts and Tunisian counterparts, has carried out a series of activities since October 2010. The third meeting of the Joint Coordinating Committee (JCC) was held with officials concerned in attendance at the conference hall of Ministry of Agriculture in Tunis on November 4, 2013.

In the meeting, the latest progress of the Project was explained by the Project Team and was discussed among the attendants. The Tunisian and Japanese attendants agreed on the matters described in the attachment 1.

Tunis, November 4, 2013



Mr. Shinwa HORI
Team Leader
JICA Project Team

Mr. Ridhe GOBOUJ
Director General
General Direction of Rural Engineering and
Water Management,
Ministry of Agriculture



Minutes of Meeting for the third meeting of the Joint Coordinating Committee of the Project for the Development of Irrigated Areas of Northern Tunisia (DPINT)

The third meeting of the Joint Coordinating Committee (JCC) of the Project was held on November 4, 2013, at the conference hall of Ministry of Agriculture in Tunis. The agenda and attendants are listed in Attachment 2. After the opening address of Mr. Saâd SEDDIK, the Ex-Director General of DGGREE, the Project Team explained the activities of the Project. Then, the participants discussed about the activities of the Project.

1) Activities of the Project

The project activities, constraints, and recommendations presented by the project team were mostly grasped.

The main activities are the following:

- Monitoring Demonstration Plots
- Surveying Pilot Sites
- Trainings for GDA, CRDA and farmers
- Holding workshops and seminars
- Improving the billing system

2) Discussion

The following topics about the activities were discussed:

- Preparation of Manuals/Brochures for extension
- Transportation for acquired equipments
- Documents used in trainings
- Involvement of JCC member such as DGFIOP and AVFA to the activities of the Project
- Results of the Project and remaining constraints in Sedjnane
- Data of water requirement of crop in Nefza
- Data about the yield of crops
- Innovation of new crops
- Billing system and water flow meter in Nefza
- Exchange visit between Tunisia and Japanese farmers
- Object of profit and quantity of crops
- Technical transfer to Tunisia
- Importance of implementation and management by Tunisian side
- Fluctuation of market price and role of SMSA

End

Agenda:

Time	Item
09 :30 – 09 :40	Opening Remarks (Mr. Saâd SEDDIK, General Director, DGBGTH)
09 :40 – 11 :35	Presentation of activities and results of the project (Mr. Shinwa HORI, Mr. Masato SAKO, Mr. Massamba GUEYE, Project Team)
11 :35 – 11 :50	Coffee Break
11 :50 – 13 :00	Discussions (Attendants)
13 :00 – 13 :10	Closing Remarks (Mr. Ridha GABOUJ, General Director, DGGREE)

Attendants:

Name	Position	Organization
Member of Joint Coordinating Committee (JCC)		
Abderazek CHIHI	DHER	CRDA Béja
Chefik BEN SALAH	Head of irrigated perimeters department	CRDA Béja
Mohamed JEMLI	Director of Irrigated perimeters Department	DGGREE
Kaouther KHELIFET	Senior Technician	DGGREE
Najet RTIMI	Senior Engineer	DGGREE
Ridha GOBOUJ	General Director	DGGREE
Faycal HSANI	Head of maintenance department	CRDA Béja
Mohamed FAKHFAKH	Director	DGGREE
Salhi MOUSSA	Head of CTV Nefza	CRDA Béja
Saad SEDDIK	General Director	DGBGTE
Slah Nasri	Head of irrigated perimeters department	CRDA Bizerte
Samir HADDAD	Head of maintenance department	CRDA Bizerte
Messoud LIMAM	DHER	CRDA Bizerte
Abderaouf RADHOUANI	irrigated perimeters department	CRDA Bizerte
Abdelmajid SAHBANI	CTV Sedjnane	CRDA Bizerte
Embassy of Japan		
Toshiki TANAKA	Third Secretary	Embassy of Japan
JICA		
Noriaki NAGATOMO	Deputy Director General	JICA HQs
Hiroshi SUZUKI	Technical Advisor	JICA HQs
Taro KIKUCHI	Representative	JICA Tunisia Office
Tetsuya TAKIMOTO	Representative	JICA Tunisia Office
Karima KEFI	Representative	-
Ahlem SELMI	Interpreter	-
DPINT Project Team		
Shinwa HORI	Leader/Irrigation Technique/Water Management	JICA Expert
Masato SAKO	Sub Leader / Agronomy	JICA Expert
Massamba GUEYE	Community Development	JICA Expert
Makoto HOSHI	Coordinator / Marketing (Assistant)	JICA Expert
Tijani MERDASSI	Irrigation Engineer	Local Consultant
Daoud AISSA	Agronomist	Local Consultant
Amira NAJAR	Interpreter / Translator	Local Consultant



GRANDES LIGNES DU PROJET (1)

a) Contexte du Projet:
 Le Projet est mis en œuvre dans le cadre d'une convention signée le 23 Août 2010 entre le MARHP et la JICA, la partie tunisienne ayant formulé une demande d'assistance technique en vue d'une exploitation effective des 3 périmètres irrigués de Nefza (Gouvernorat de Béja), de Sedjnane (Gouvernorat de Bizerte) et de Fernana (Gouvernorat de Jendouba).

Les problèmes liés à ces périmètres incluaient un taux stagnant d'utilisation des systèmes d'irrigation, des rendements bas en qualité et en quantité, des problèmes de commercialisation, et un taux faible de collecte des redevances d'eau d'irrigation auprès des agriculteurs.

GRANDES LIGNES DU PROJET (2)

b) Aire du projet:
 Les 3 périmètres irrigués couvrent environ une superficie nette de 7.300 ha. (Nefza: 2.550ha; Sedjnane: 3.650 ha; Fernana: 1.100 ha)

c) Période du projet de Coopération:
 Octobre 2010 à Novembre 2013 (soit 38 mois) dont

- 1^{ère} Moitié déjà exécutée par une Equipe d'Experts à Long Terme
- Etudes de reconnaissances relatives à la situation de la gestion et de la maintenance des équipements et des structures organisationnelles des CRDA et des GDA
- Etudes de base pour les trois périmètres irrigués (Diagnostic et Analyse de la situation)

□ 2^{ème} Moitié appelée 1^{ère} année et 2^{ème} année exécutée par la présente Equipe de Consultants

GRANDES LIGNES DU PROJET (3)

d) Objectif Général :

Promouvoir une production agricole efficiente à travers une agriculture irriguée appropriée à Nefza, Sedjnane, Fernana et Hammam Bourguiba

e) Objectif Spécifique :

Pratiquer une agriculture irriguée modèle sur les sites pilotes des périmètres de Nefza, Sedjnane et Fernana afin de constituer un système de vulgarisation applicable à ces périmètres

GRANDES LIGNES DU PROJET (4)

f) Résultats attendus

- Résultat1: <Cerner la situation géographique, les conditions agricoles, l'appui aux agriculteurs et l'extension du système d'irrigation avec l'appui des CRDA et des GDA, etc. dans les 3 périmètres irrigués.>
- Résultat2: <L' agriculture irriguée servant comme modèle d'irrigation est introduite dans les Sites Pilotes.>
- Résultat3: <Le système d'appui des CRDA et des GDA à l'agriculture s'étend et se retrouve renforcé et consolidé.>
- Résultat4: <Les résultats obtenus suite aux activités du Projet sont diffusés et partagés avec les personnes/organismes relevant des périmètres irrigués concernés





Projet de Développement des Périmètres Irrigués au Nord de la Tunisie

(The Project for the Development of Irrigated Areas Northern Tunisia - DPINT)

2. ACTIVITES MENEES PAR LE PROJET

7

Activités menées par le Projet en 1ere année (2012)

Activités de la première année	2012												2013											
	jan	fév	mars	avr	mai	juin	juil	août	sept	oct	nov	dec	jan	fév	mars	avr	mai	juin	juil	août	sept	oct	nov	dec
1. Travail au Japon																								
1-1 Administration du terrain et des connaissances																								
1-2 Approuver des plans de travail et des plans de travail																								
1-3 Préparation et discussion de plan de travail de la première année																								
2. Travail sur le terrain																								
2-1 Présentation et discussion de plan de travail de la première année																								
2-2 Vulgarisation de l'agriculture irriguée à travers les activités pilotes																								
2-2-1 Préparation des supports didactiques de vulgarisation																								
2-2-2 Formation des vulgarisateurs																								
2-2-3 Aide au matériel de vulgarisation																								
2-2-4 Activités de vulgarisation agricole sur les sites pilotes																								
2-2-5 Inspection des activités agricoles effectuées																								
2-2-6 Aide à la publication de bulletins d'information																								
2-3 Renforcement des ressources humaines et renforcement conceptuel des GDA																								
2-3-1 Formation des responsables des GDA																								
2-3-2 Formation des membres des GDA et des comités																								
2-3-3 Formation des agriculteurs des sites																								
2-3-4 Aide à la maintenance du matériel d'irrigation																								
2-4 Etude de marketing et propositions pour améliorer l'accès aux marchés																								
2-5 Préparation du rapport d'avancement																								
2-6 Révision et correction du rapport d'avancement																								
2-7 Préparation du rapport final																								
Consultants JICA																								
Chef de projet / Techniques d'Irrigation / Gestion de l'eau																								
Adjoint / Exploitation agricole																								
Technicien d'irrigation / Gestion de l'eau																								
Coordination / Etude de marché (Assistant)																								
Consultants Locaux																								
Irrigation																								
Agronomie																								
Pédologie																								
Sociologie																								
Gestion financière																								

8

Activités menées par le Projet en 2eme année (2013)

Activités de la deuxième année	2013												2014											
	jan	fév	mars	avr	mai	juin	juil	août	sept	oct	nov	dec	jan	fév	mars	avr	mai	juin	juil	août	sept	oct	nov	dec
3. Travail au Japon																								
3-1 Préparation et discussion du « plan de travail »																								
4. Travail sur le terrain																								
4-1 Présentation et discussion du « plan de travail »																								
4-2 Vulgarisation de l'agriculture irriguée à travers les activités pilotes																								
4-2-1 Préparation des supports didactiques de vulgarisation																								
4-2-2 Formation des vulgarisateurs																								
4-2-3 Aide au matériel de vulgarisation																								
4-2-4 Activités de vulgarisation agricole sur les sites pilotes																								
4-2-5 Visite et observation des périmètres irrigués avancés																								
4-2-6 Aide à la publication des bulletins d'information																								
4-3 Renforcement des capacités des GDA en terme de capital humain																								
4-3-1 Compréhension de la situation et des problèmes de gestion des GDA																								
4-3-2 Formation du Conseil d'Administration (CA) des GDA																								
4-3-3 Formation des membres des GDA																								
4-3-4 Formation des agriculteurs concernés																								
4-3-5 Appui à l'installation du système de irrigation																								
4-4 Apui à l'installation de l'accès aux marchés																								
4-5 Tenue des séminaires et JCC																								
4-6 Elaboration du rapport final																								
4-7 Soumission du rapport final																								
Ingénieurs																								
Consultants JICA																								
Chef de projet / Techniques d'Irrigation / Gestion de l'eau																								
Adjoint / Exploitation agricole																								
Technicien d'irrigation / Gestion de l'eau																								
Coordination / Etude de marché (Assistant)																								
Consultants Locaux																								
Irrigation																								
Agronomie																								
Pédologie																								
Sociologie																								
Gestion financière																								

DPINT | - Parcelles de démonstration (1)

I - 1 Sélection des parcelles de démonstration en fonction des critères convenus avec le CRDA

- a. 41 parcelles au total (20 en 1ère année, 21 en 2e année); Taille moyenne de la parcelle: 0,9 ha
- b. Les cultures sont :
 - Nefza: 15 parcelles en tomate, piment, pastèque, melon et agrume
 - Sedjane: 15 parcelles en tomate, piment, pastèque, Luzerne et Sorgho
 - Fernana: 11 parcelles en tomate, piment, pastèque, melon et pomme de terre

10

DPINT | - Parcelles de démonstration (2)

I - 2 Installation de l'équipement à les parcelles

Pour l'installation des équipements à la parcelle le projet a effectué les activités suivantes:

- Etudes Topographiques
Plans cotés et plans parcellaires
- Etudes de conception
Elaboration des études et approbation par l'équipe DPINT
- Installation des équipements
- Etudes pédologiques pour toutes les parcelles

34 parcelles ont été équipées en goutte à goutte et 6 parcelles en aspersion, la parcelle d'agrumes a été équipée en goutte à goutte par l'agriculteur

a. Chaque borne était équipée d'un filtre (boîte à boue), d'un compteur DN:50 et d'un manomètre pour contrôler la pression

DPINT | - Parcelles de démonstration (3)

I - 3 Acquisition des intrants agricoles qui incluaient:

- Plantes (plantes greffées pour le melon et la pastèque) et semences (fourrage)
- Engrais divers (N P K Mg)
- Produits chimiques contre les principaux ravageurs des cultures mises en place

12

Parcelles de démonstration (4)

- Compagnonnage végétal-

Compagnonnage végétal introduit dans les Parcelles de Démonstration pour la lutte contre les Nématodes et autres Ravageurs

Parcelles de Tomates

Tagetes
Basilic

Parcelles de Pastèques

Maïs (Sorgho)
Ail (Poireau, Oignon)

(Se référer aux photos en ANNEXE)

*La combinaison entre les cultures et le compagnonnage végétal doit être faite avec soin. Des combinaisons inadéquates peuvent causer de graves dommages.

13

II. Suivi des parcelles de démonstration et Assistance aux Agriculteurs

Pour chaque périmètre irrigué deux ingénieurs de suivi (1 agronome et 1 ingénieur irrigation (GR)) ont été recrutés par le projet pour assurer le suivi quotidien des parcelles de démonstration et ont plusieurs tâches dont nous citons principalement :

- Suivi des activités culturales avec les agents de vulgarisation:
 - ❖ Contrôle des conditions culturales liées à la croissance et à l'incidence des ravageurs
 - ❖ Supervision de l'application du fumier et de la lutte contre les ravageurs
 - ❖ Suivi des coûts de production et de la commercialisation
- Suivi du pilotage d'irrigation
 - ❖ Calcul des besoins en eau sur la base des données climatiques de la région,
 - ❖ Ajustement des besoins en eau en fonction des stades végétatifs réels,
 - ❖ Collecte des données pluviométriques enregistrées dans la zone du projet et ajustement des doses d'irrigation
 - ❖ Assister et encadrer les agriculteurs pour l'application des doses d'irrigation suivant les cultures et les stades végétatifs
 - ❖ Assister et encadrer les agriculteurs pour l'installation, l'entretien ¹⁴ et la maintenance des équipements à la parcelle

Suivi des récoltes et de l'écoulement de la production (1)

Les rendements enregistrés au niveau des parcelles de démonstration sont présentés au tableau suivant :

	Nefza		Sedjane		Fernana		Moyenne 3 Périmètre
	Rendement	Moyenne	Rendement	Moyenne	Rendement	Moyenne	
Tomato	-	-	68.9 59.5	64.2	80.6	80.6	69.7
Pepper	23.8 42.3	33.1	24.2	24.2	41.8	41.8	33.0
Melon	40.2 31.8 19.3	30.4	-	-	18.0	18.0	28.8
W.Melon	-	-	61.2 37.0	49.1	28.1 10.8	18.5	33.8
Sorghum	-	-	85.9 59.1 58.6 74.5	69.3	-	-	69.3
Alfalfa	-	-	84.4 65.7	75.1	-	-	75.1

15

Suivi des récoltes et de l'écoulement de la production (2)

Rendement 2012-2013 (ton / ha)

	Nefza		Sedjane		Fernana		Moyenne 3 Périmètre
	Rendement	Moyenne	Rendement	Moyenne	Rendement	Moyenne	
Tomato	48.8 28.8 38.0 21.5 21.8 29.8	48.8	38.5 47.0 63.0	46.7	64.9 37.3	46.1	48.3
Pepper	24.2 24.4 36.0 21.8 29.8	28.9	42.2 37.8	38.9	42.2 23.8 38.2	34.0	30.8
Melon	34.2 38.8 36.5 29.5	34.5	32.7	32.7	17.2	17.2	31.3
W.Melon	14.8 18.7	16.7	38.7 34.8 41.4 18.4 27.0	31.6	23.3 42.5 26.2 33.8 32.8	31.8	28.9
Sorghum	-	-	60.6 65.9 67.8 66.1 77.4	72.3	-	-	72.3
Alfalfa	-	-	82.1 53.0 46.4	48.1	-	-	44.9

16

Suivi des récoltes et de l'écoulement de la production (3)

Rentabilité de Parcelles de Démonstration (2011-2012)

Tomate				Melon			
Parcelle	Recettes (TD/ha)	Coût (TD/ha)	Bénéfice (TD/ha)	Parcelle	Recettes (TD/ha)	Coût (TD/ha)	Bénéfice (TD/ha)
S4	12,850	6,375	6,475	N2	14,359	7,450	6,909
F4	13,390	7,824	5,566	N6	11,007	8,580	2,427
S8	11,842	6,099	4,943	F1	5,134	5,864	-730
S5	7,392	5,793	1,599	N7	5,802	7,547	-1,745

Piment				Pastèque			
Parcelle	Recettes (TD/ha)	Coût (TD/ha)	Bénéfice (TD/ha)	Parcelle	Recettes (TD/ha)	Coût (TD/ha)	Bénéfice (TD/ha)
N3	24,773	8,224	16,549	S2	8,901	6,888	2,013
F4	24,925	10,053	14,742	F2	8,948	8,249	699
S8	13,125	8,658	4,467	S4	4,940	5,488	-548
N1	11,850	8,065	3,785	F3	2,151	7,137	-4,986
N4	9,518	7,538	1,980				
N5	8,188	8,281	-93				

Sorgho				Luzerne			
Parcelle	Recettes (TD/ha)	Coût (TD/ha)	Bénéfice (TD/ha)	Parcelle	Recettes (TD/ha)	Coût (TD/ha)	Bénéfice (TD/ha)
S7	2,233	2,114	120	S1	3,377	2,835	542
S1	2,577	2,886	-309	S8	2,827	2,708	119
S3	1,742	2,288	-546				
S8	1,757	2,490	-733				

17

Suivi des récoltes et de l'écoulement de la production (4)

Rentabilité de Parcelles de Démonstration (2012-2013)

Tomate				Melon			
Parcelle	Recettes (TD/ha)	Coût (TD/ha)	Bénéfice (TD/ha)	Parcelle	Recettes (TD/ha)	Coût (TD/ha)	Bénéfice (TD/ha)
F1	19,518	7,850	11,668	N3	18,905	8,906	9,999
F5	13,043	6,327	6,716	N13	16,319	8,885	7,434
S14	8,889	5,265	3,624	N10	14,380	6,338	7,942
S18	11,511	7,868	3,643	N1	13,920	8,993	4,927
N12	9,844	8,919	925	S8	13,887	9,959	3,928
S10	6,053	5,218	835	F4	7,452	7,058	394

Piment				Pastèque			
Parcelle	Recettes (TD/ha)	Coût (TD/ha)	Bénéfice (TD/ha)	Parcelle	Recettes (TD/ha)	Coût (TD/ha)	Bénéfice (TD/ha)
F10	19,327	10,353	8,974	F4	13,585	8,906	4,679
F1	19,883	11,050	8,833	S8	14,835	7,839	6,996
S2	15,841	8,753	7,088	S4	12,000	6,332	5,668
S4	14,324	8,748	5,576	S5	10,714	8,840	1,874
N2	14,038	8,288	5,750	S15	10,385	6,711	3,674
N7	12,296	8,025	4,271	F7	10,098	6,830	3,268
N4	13,212	9,428	3,784	F11	9,758	6,509	3,249
N6	11,387	7,868	3,519	N15	8,298	6,468	1,830
N9	10,588	8,114	2,474	F8	7,948	6,505	1,443
N14	10,113	8,345	1,768	F2	8,989	6,254	2,735
F9	11,076	9,222	1,854	S11	6,432	6,050	382
N11	9,217	8,311	906	N8	5,281	6,192	-911
F3	5,828	8,880	-3,052				

Sorgho				Luzerne			
Parcelle	Recettes (TD/ha)	Coût (TD/ha)	Bénéfice (TD/ha)	Parcelle	Recettes (TD/ha)	Coût (TD/ha)	Bénéfice (TD/ha)
S8	4,380	1,858	2,522	S12	3,388	2,142	1,246
S9	3,870	1,982	1,888	S1	3,227	1,982	1,245
S1	4,090	2,372	1,718	S3	3,847	2,898	949
S7	2,955	1,628	1,327	S7	2,310	2,275	35
S3	2,845	1,884	961				

18

IV. Sites Pilotes (1)

II - 1 Selection des Sites Pilotes:

a. Mise en place provisoire basée sur la répartition spatiale des parcelles de démonstration

b. Mise en place définitive et délimitation effective sur les cartes (Google Earth) basées sur la disposition de toutes les parcelles de démonstration suivant des critères de sélection concertés et des discussions avec les C / P et les parties concernées (Juin 2013).

Les sites pilotes sont les suivants:

- Nefza: 4 sites, 660 ha
- Sedjnane: 6 sites, 760 ha
- Fernana: 4 sites, 600 ha

IV. Sites Pilotes (2)

II- 2 Etude sur la superficie irriguée et les taux d'exploitation dans les Sites Pilotes

Les résultats sont présentés aux tableaux suivants:

IV. Sites Pilotes (3)

Superficies irriguées et taux d' exploitation dans les sites pilotes en 2011/2012-2012/2013

(1) Nefza

Sites Pilotes	Superficie totale (ha)	Superficie Irriguée (ha)		Taux exploitation (%)	
		2011/2012	2012/2013	2011/2012	2012/2013
Bouzenna2	256	97	110.2	38%	43%
Bouzenna3	126	52.8	59.1	42%	47%
Jimila	122	33.5	31.6	27%	26%
Touila	159	63.8	62.9	40%	40%
(Total)	663	247.1	263.8	37%	40%

IV. Sites Pilotes (4)

Superficies irriguées et taux d' exploitation dans les sites pilotes en 2011/2012-2012/2013

(2) Sedjnane

Sites Pilotes	Superficie totale (ha)	Superficie Irriguée (ha)		Taux exploitation (%)	
		2011/2012	2012/2013	2011/2012	2012/2013
CP1(RD)	80	41.1	51.7	51%	65%
CP1(RG)	254	106.2	149.4	42%	59%
CP2	123	61.4	77.5	50%	63%
CP2'	74	33.8	35.8	46%	48%
CP3	80	26.2	27.4	33%	34%
CP4	155	77.8	72.7	50%	47%
(Total)	766	346.5	414.5	45%	54%

IV. Sites Pilotes (5)

Superficies irriguées et taux d' exploitation dans les sites pilotes en 2011/2012-2012/2013

(3) Fernana

Sites Pilotes	Superficie totale (ha)	Superficie Irriguée (ha)		Taux exploitation (%)	
		2011/2012	2012/2013	2011/2012	2012/2013
Ain Albaya	126	32.7	31.1	26%	25%
Sedi Ammar	115	56	62.2	49%	54%
Fernana	143	18.7	20.6	13%	14%
Oued Ghrib	220	29.6	66.8	13%	30%
(Total)	604	137	180.7	23%	30%

V. Formation (1)

V-1 Pédologie

V-1-1 Formation pour chefs CTVs, chefs CRA et vulgarisateurs des GDAs

- La formation théorique a eu lieu au siège du CTV Nefza et ce durant la période du 04 au 07 Septembre 2012
- La formation pratique sur terrain a été faite pour chaque CTV à part et sur le périmètre irrigué concerné.

V-1-2 Formation pour les agriculteurs

Les agriculteurs des sites pilotes ont bénéficié des séances de formation pratique sur terrain qui ont eu lieu au mois d'octobre 2012.

dpinT **V. Formation (2)**

V-2 Phytopathologie, science du sol et Irrigation

V-2-1 Formation pour chefs CTVs et chefs CRA

➤ Une formation théorique a eu lieu au siège du CTV Nefza et ce durant les périodes 21, 22 et 23 Octobre 2013:

Jour 1: Phytopathologie dispensée par M. Karbous Boujemaa; Chef de Station de Défense des Cultures du Nord

Jour 2: Sciences du sol dispensée par M. Mustapha Sanaa: Professeur à l'INAT

Jour 3: Irrigation dispensée par M. Merdassi Tijani: Ingénieur Principal, Equipe DPINT

V-2-2 Formation pour les agriculteurs en Agronomie et Irrigation au CFPA Testour

➤ Les agriculteurs des parcelles de démonstration et sites pilotes ont bénéficié des séances de formation en agronomie et en irrigation au centre de formation professionnelle Agricole (CFPA) de Testour les 8, 9 et 10 Octobre 2013 :

Jour 1: Agronomie dispensée par M. Bahrini Rached: Instructeur au CFPA Testour

Jours 2 et 3: Irrigation dispensée par M. Boughdiri Amor: Enseignant à l'ESIER, Medjez El Bab

dpinT **V. Formation (3)**

V-3 Irrigation et Agronomie

La formation des agriculteurs bénéficiaires des parcelles de démonstration et de leurs voisins dans les sites pilotes a eu lieu d'une façon continue lors des visites quotidiennes effectuées par les ingénieurs chargés du suivi.

En plus de cette formation sur le tas, des journées de formation et d'information, dispensées par les experts de l'équipe DPINT, ont été organisées au début du mois de novembre 2012, et en mai, juillet et août 2013, et ont rassemblé un grand nombre d'agriculteurs, mettant le point sur l'irrigation et la conduite des espèces mises en culture.

26

dpinT **V. Formation (3)**

V-3-1 Irrigation:

- ❖ Les techniques d'irrigation (goutte à goutte et aspersion) : avantages et inconvénients
- ❖ Répartition des secteurs hydrauliques en irrigation goutte à goutte
- ❖ Connaissances minimales sur les équipements d'irrigation
- ❖ Variation des Besoins en eau en fonction des stades végétatifs
- ❖ Application des doses d'irrigation

V-3-2 Conduite des cultures :

- ❖ Choix variétal
- ❖ Avantages des plants greffés
- ❖ Rôle et mode d'application des engrais nécessaires aux cultures.
- ❖ Principaux parasites : conditions de développement et moyens de lutte
- ❖ Présentation et discussion des résultats des différentes parcelles de démonstration.

27

dpinT **V. Formation (4)**

V-4 Installation et test des compteurs d'eau

V-4-1 Test des compteurs

➤ Test des compteurs d'eau installés par le projet DPINT dans les parcelles de démonstration: 15 testés sur 19 installés en première année et 15 testés sur 21 installés en 2ème année. Ces compteurs ont donné des résultats avec une marge d'erreur d'environ 5%.

➤ Le test des compteurs existants installés par le CRDA au périmètre irrigué de Nefza (sur les mêmes parcelles de démonstration) dans les mêmes conditions l'année dernière (2012) a donné des résultats avec une marge d'erreur de 30 à 40%.

➤ Cette année (2013), le CRDA de Bizerte a livré des compteurs DN 65 pour le périmètre irrigué de Sedjnane. Le projet DPINT a installé 4 de ces compteurs en série avec 4 compteurs livrés par le projet qui sont de diamètre DN 50. Parmi ces 4 compteurs, 3 ont été testés, respectivement. Les compteurs du projet (DN50), et ceux fournis par le CRDA (DN65), ont montré la même précision.

28

dpinT **V. Formation (5)**

V-5 Formation sur le GPS

Les employés (Directeurs techniques et aiguadiers) des GDAs de Fernana, Nefza et Sedjnane ont été formés sur le GPS en traitant les données de superficies mesurées par l'appareil avec un logiciel spécial (Map source) les 1er, 9 et 22 Juillet 2013, respectivement à Fernana , à Nefza et à Sedjnane.

29

dpinT **VI. Matériel de Vulgarisation**

VI-1 Préparation des Manuels/Brochures

VI-1-1 Science du sol

- Science du sol (personnels des CTV)
- Elaboration des posters

VI-1-2 Agronomie

- Tomate, luzerne, Sorgho et piment : Adaptation des manuels existants (AVFA) aux conditions de la zone du projet

VI-1-3 Irrigation

- Irrigation goutte à goutte
- Irrigation par aspersion
- Maintenance du réseau d'irrigation

30

dpinT VII. Séminaires

VII-1 Suivi et présentation des résultats du Projet avec les CRDA

- Tous les CRDA à la DGGREE en 2012
- CRDA de Nefza à Nefza en 2013

VIII. Visites des zones avancées

VIII-1 Visite du périmètre irrigué de Ras Jbel en 2013

Les caractéristiques du périmètre irrigué incluent: 1) Le GDA n'a presque pas de dettes sur les redevances de l'eau, 2) La borne foyer est très bien gérée, si un agriculteur ne paie pas les frais d'eau, il ne bénéficie pas de son tour d'eau; 3) L'irrigation est pratiquée toute l'année; 4) Les agriculteurs cultivent la patate douce, une nouvelle culture; 5) la culture maraîchère est combinée à l'arboriculture

➢ Sur la base de ce qui précède, la visite a servi à promouvoir un échange fructueux entre les agriculteurs et GDAs du Projet et ceux de la zone avancée.

31

IX. Amélioration du système de facturation (1)

Le système de facturation actuel se base sur les besoins en eau des cultures pour les deux périmètres irrigués de Nefza et Fernana, alors que pour le périmètre de Sedjnane sur un forfait de consommation à l'hectare sans tenir compte du type de la culture et ses besoins en eau. Ce forfait mensuel est calculé par complexe de pompage, en divisant le volume totale mensuel pompé par la superficie totale irriguée

Pour les parcelles de démonstration le projet a installé des compteurs qui ont été testé et qui ont donné des résultats satisfaisants. Donc le gouvernement Tunisien/GDA peuvent se procurer des compteurs de mêmes caractéristiques pour résoudre le problème de facturation.

32

X. Amélioration du système de facturation (2)

A ce sujet nous précisons que les compteurs livrés par le CRDA de Bizerte ont les même caractéristiques que les compteurs installés par le projet et ont donnés des bon résultats.

Par ailleurs le CRDA de Béja a aussi livré aux GDA un premier lot de 30 compteurs ayant les mêmes dimensions et les mêmes caractéristiques que ceux installés par le projet DPINT

Il est aussi important à signaler que pour garantir la fiabilité des compteurs il faut veiller à une installation adéquate.

Des ordinateurs ont été acquis par le projet et des logiciels de facturation sont prévus pour améliorer le système de facturation.

33

XI. Activités renforçant la gestion des GDA(1)

XI-1 Organisation, Formation et Sensibilisation

- XI-1-1 Diagnostic de la situation des GDA après la révolution**
- XI-1-2 Assistance des GDA pour la collecte des redevances**
- XI-1-3 Assistance à la cellule GDA pour l'organisation de l'AG et les élections de nouveau CA à Fernana (1ere année) et Nefza (2e année)**
- XI-1-4 Organisation des réunions de sensibilisation pour la préparation aux AG et les élections de nouveaux CA aux 4 GDA de Sedjnane**
- XI-1-5 Formation des CA des 9 GDA des 3 périmètres (1ere année) et ceux nouvellement formés des 4 GDA de Nefza (2e année)**
- XI-1-6 Formation des agriculteurs hommes et femmes sur la notion du GDA**

34

XII. Activités renforçant la gestion des GDA(2)

XII-1 Organisation, Formation et Sensibilisation

XII-1-7 Formation des employés des GDA (2eme année)

- **Directeurs Techniques et Assistants**

La présente formation a été destinée aux Directeurs techniques et trésoriers des 9 GDA de Nefza, Fernana et Sedjnane. Elle s'est déroulée entre le 5 juin et le 26 juin 2013 à travers des ateliers de 12 jours , repartis inégalement sur les GDAs comme suit

Nefza :	6 jours
Fernana :	3 jours
Sedjnane	3 jours

Elle était centrée sur:

- ❖ Rôle, mission et tâches du GDA ; les prérogatives et les limites des GDA
- ❖ Les relations entre le GDA et le CRDA : le contrat de gérance
- ❖ La tenue des fiches de suivi des agriculteurs
- ❖ La gestion financière et administrative : planification, budget, bilan financier, facturation, classement, archivage, législation sociale et fiscale.

35

XII. Activités renforçant la gestion des GDA(3)

XII-1 Organisation, Formation et Sensibilisation

XII-1-7 Formation des employés des GDA (2eme année)

- **Aiguadiers**

Elle a eu lieu à Nefza le 26 Septembre 2013 et a regroupé principalement les aiguadiers et directeurs techniques des 9 GDA du Projet. Elle était centrée sur la maintenance et entretien des réseaux d'irrigation.

Elle a été dispensée par un ingénieur de la SOCOPEC, et l'ingénieur Irrigation de l'équipe DPINT et a porté principalement sur les thèmes suivants:

- Soudure des conduites Pehd : Utilisation de la machine électro-soudable et ses accessoires (équipements fournis par la JICA)
- Entretien des ventouses et des vannes
- Installation des compteurs d'eau

La séance s'est terminée par une démonstration sur terrain avec l'utilisation du tractopelle et groupe motopompe (équipements fournis par la JICA).

36

XII. Activités renforçant la gestion des GDA(4)

XII-1 Organisation, Formation et Sensibilisation

XII-1-8 Visite des zones avancées (Ras Jbel) (Promouvoir les échanges entre agriculteurs and GDA du Projet et ceux des zones avancées) (2eme année)

XII-1-9 Préparation pour la sensibilisation de l'environnement institutionnel (activité mise en attente à cause de la situation dans le pays)

37

XIII. Appui à la création de SMSA

XIII-2 En ce qui concerne les SMSA

XIII-2-1 Conduite des enquêtes sur la faisabilité sociale d'une SMSA à Fernana (1ere année), et à Nefza et Sedjnane (2eme année)

(Il s'agit d'une enquête sociale sur les SMSA dont les objectifs sont :1) Définir le degré d'acceptation par les agriculteurs d'une Société Mutuelle de Services Agricoles dans leur zone;2) Leur volonté et leur capacité financière à participer au capital social de cette société; 3)Les domaines d'activité de cette SMSA).

Les résultats qui seront confinés dans des rapports futurs ont montré que:

- Nefza: 1ere priorité en termes de faisabilité sociale
- Fernana: 2eme priorité
- Sedjnane: 3eme priorité

Il est à noter que l'enquête sociale n'est qu'une phase d'initiation d'une SMSA, les autres phases d'établissement étant: 1) une étude technico-économique (faisabilité économique); 2) la confection d'un programme de sensibilisation pour promouvoir l'esprit de groupe; et 3) la création même de la SMSA

38



Projet de Développement des Périmètres Irrigués au Nord de la Tunisie

(The Project for the Development of Irrigated Areas Northern Tunisia - DPINT)

3. CONTRAINTES TECHNIQUES ET SOCIALES DU PROJET ET RECOMMANDATIONS MAJEURES

39

Contraintes Techniques et Sociales et Recommandations Majeures (1)

CONTRAINTES TECHNIQUES ET SOCIALES	RECOMMANDATIONS MAJEURES
- Encadrement insuffisant des agriculteurs par manque d'agents vulgarisateurs.	- Renforcement des CTV en moyens matériel et humains et plus particulièrement celles de Fernana et Sedjnane où 2 à 3 personnes manquant souvent de moyens couvrant l'ensemble de la délégation.
- Manque de maîtrise des techniques modernes de conduite des cultures irriguées (Nature, doses et moment d'application des engrais, lutte préventive contre les parasites...)	- Intensifier la vulgarisation des cultures irriguées en faisant appel aux formateurs des Centre de Formation Professionnel Agricole (CFPA)
- Absence de normes techniques spéciales aux périmètres du nord-ouest qui se caractérisent par un milieu particulier (température, pluviométrie, sol...)	- Impliquer les services de recherche agricole dans des actions de recherche-développement afin de répondre aux besoins spécifiques des exploitants de ces zones

40

Contraintes Techniques et Sociales et Recommandations Majeures (2)

CONTRAINTES TECHNIQUES ET SOCIALES	RECOMMANDATIONS MAJEURES
- Les agriculteurs bénéficiaires du projet ont certes amélioré leur degré de technicité, mais ils ont encore besoin d'assistance pour bien assimiler les techniques de conduite qu'ils ont appliquées durant 1 ou 2 campagnes.	- Poursuivre l'encadrement technique des agriculteurs ayant fait partie du projet considérant leurs exploitations comme des fermes pilotes qui rayonneront sur les autres exploitations environnantes.
- Manque remarquable d'emplois du fumier sur le maintien de la fertilité des sols.	- Introduire la production animale dans les futures actions de vulgarisation afin d'assurer un plus grand développement de l'élevage bovin, une activité indispensable à la pérennité de développement des périmètres irrigués.
- L'approvisionnement en eau d'irrigation commence généralement au mois d'avril, ce qui retarde le démarrage de la campagne agricole.	- Les opérations d'entretien doivent s'effectuer en saison hivernal afin de démarrer la campagne d'irrigation au mois de mars

41

Contraintes Techniques et Sociales et Recommandations Majeures (3)

CONTRAINTES TECHNIQUES ET SOCIALES	RECOMMANDATIONS MAJEURES
- Absence de drainage en hiver, ce qui empêche les agriculteurs de pratiquer une culture d'hiver et se limiter à une seule culture d'été et ce qui engendre aussi un retard de la campagne agricole surtout au périmètre irrigué de Sedjnane	- Assurer le drainage des périmètres irrigués en hiver pour permettre aux agriculteurs de recourir à une agriculture d'hiver, à côté de l'agriculture d'été pratiquée actuellement et aussi ne pas retarder la campagne agricole
- A Sedjnane, le débit actuel de la station de pompage ne couvre pas les besoins des cultures mises en place et la pression est insuffisante au niveau de certaines antennes pour assurer une irrigation rationnelle.	- Une étude du fonctionnement hydraulique des réseaux en fonction des nouveaux paramètres d'irrigation s'avère nécessaire.
- Perte de pression dans le réseau de distribution affectant le débit des bornes éloignées du à l'irrigation de surface	- Promouvoir l'irrigation avec les équipements d'économie d'eau (goutte à goutte et l'aspersion) et décourager l'irrigation de surface
- Le système de facturation entre CRDA –GDA et GDA-agriculteurs reste un point ambigu	- Installer des débitmètres sur les départs des antennes qui servent à comptabiliser les eaux facturées aux GDAs - Introduire progressivement les compteurs au niveau des bornes d'irrigation. - En attendant la généralisation des compteurs au niveau des bornes d'irrigation, il faudrait se baser sur les besoins en eau des cultures pour l'établissement des factures aux exploitants. Interdire l'irrigation de surface à des fins d'économie d'eau

Contraintes Techniques et Sociales et Recommandations Majeures (4)	
CONTRAINTES TECHNIQUES ET SOCIALES	RECOMMANDATIONS MAJEURES
- Les neuf GDA du projet sont déficitaires et se trouvent actuellement dans des situations financières très difficiles pour plusieurs raisons: le faible taux d'exploitation des périmètres en cultures irriguées, le faible taux de recouvrement, et le coût de vente d'eau qui ne tient pas compte des dépenses et recettes réelles des GDAs.	- Revoir le coût de l'eau en se basant sur un calcul réel sur la base des situations des cinq dernières années (volumes d'eau consommés, frais d'entretien, nombre d'adhérents etc....
- Les neufs GDAs ne préparent pas leurs budgets prévisionnels annuels ce qui peut engendrer : ✓ L'application d'une tarification inadéquate ✓ Déficit financier au niveau de la trésorerie du GDA dans le cas où le tarif appliqué est inférieur au coût réel ✓ Manque de transparence vis à vis des bénéficiaires ce qui peut engendrer une réticence de paiement des redevances de l'eau par manque de conviction.	- Les GDAs doivent préparer leurs budgets prévisionnels annuels et les arrêter de situation et les présenter aux bénéficiaires lors de l'assemblée général.
- Faible fonds de roulement en début de campagne agricole, en raison de la situation socio-économique des agriculteurs (dominance de la petite propriété (souvent très dispersée) ayant un faible revenu et le coût élevé des intrants	- Développer le dialogue avec l'environnement institutionnel (gouverneur, institutions régionales) pour promouvoir: ✓ L'intervention de l'AFA pour terminer les travaux de remembrement des terres ✓ Des mécanismes de micro-crédit ✓ Soutenir la commercialisation des produits agricoles ✓ Créer des sociétés mutuelles de service agricole (SMSA) pour répondre aux besoins des agriculteurs.




Projet de Développement des Périmètres Irrigués au Nord de la Tunisie

(The Project for the Development of Irrigated Areas Northern Tunisia - DPINT)

3. APPORTS AU PROJET (Equipements)

44

I - Acquisition des équipements (1)

Objectif: Permettre une mise en œuvre réussie des activités du Projet

I-1 Equipements acquis

I-1-1 Equipements destinés aux CRDA

Pour chaque CRDA les équipements suivants ont été acquis :

- Tractopelle avec accessoires
- Groupe électrogène
- Machine électro-soudable
- Groupe motopompe
- Marteau piqueur
- Ordinateur Portable
- Ordinateurs de bureau + imprimantes (destinés aux CTV)
- Appareils Fax (destinés aux CTV)
- Projecteurs (destinés aux CTV)

45

I - Acquisition des équipements (2)

I-1-2 Equipements destinés aux GDAs

Pour chaque GDA les équipements suivants ont été acquis :

- 1 Cyclomoteur
- 1 Caisse à outils + tenues de travail
- 1 GPS avec logiciel Map Source
- Ordinateurs de bureau + imprimantes

I-1-3 Equipements destinés à la DGREE

- Ordinateur de bureau

46



A-9 Minutes of the JCC
(The Fourth)

Minutes of Meeting
for
the fourth meeting of the Joint Coordinating Committee
of
the Project for the Development of
Irrigated Areas of Northern Tunisia (DPINT)

The Project for the Development of Irrigated Areas of Northern Tunisia (DPINT) has been implemented within the frame of a technical assistance of the Japan International Cooperation Agency (JICA) in accordance with the Record of Discussions (R/D) signed in August 23, 2010 and its amendment signed in November 29, 2013.

The Project Team, which consisted of JICA experts and Tunisian counterparts, has carried out a series of activities since October 2010. The fourth meeting of the Joint Coordinating Committee (JCC) was held with officials concerned in attendance at the conference hall of Ministry of Agriculture in Tunis on February 28, 2014.

In the meeting, the project approach, the studies progress and the PDM numerical indicators were explained by the director of the DGGREE and the Project Team, and discussed among the attendants. The Tunisian and Japanese attendants agreed on the matters described in the attached document.

Tunis, February 28, 2014



Mr. Kenichi KATO
Director of Field Crop Based Farming
Area Division,
Rural Development Department,
Japan International Cooperation Agency



Mr. Ridha GABBOUJ
Director General
General Direction of Rural Engineering and
Water Management,
Ministry of Agriculture

ATTACHED DOCUMENT

(1) Target numerical indicators in the PDM

Target numerical indicators of the irrigated farming rate in the pilot sites of the three irrigated perimeters are decided as below:

Irrigated perimeter	Rate of irrigated farming area 2014 – 2015 (%)
Nefza	45
Sedjnane	55
Fernana	35

Annex: PDM



Project Design Matrix

Project Name: The Project for the Development of Irrigated Areas of Northern Tunisia

Period: **Oct. 2010 - Feb. 2015** Ver.3.00

Target Area: Irrigated Areas of Nefza (Béja), Sejnane (Bizerte) and Fernana (Jendouba)

Target Group: Staffs of MA (DGGREE), Staffs of CRDAs of Béja, Bizerte and Jendouba, Staffs of GDAs in Nefza, Sejnane and Fernana, Farmers in the Target Areas

Date: 28th February, 2014

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumption
<p>Overall Goal The suitable irrigation is performed and the efficient agriculture in 4 irrigated areas is achieved with desirable irrigation farming.</p>	<ol style="list-style-type: none"> The rate of irrigation practicing areas is increased to 50%. Yield per ha of agricultural field practicing the irrigation agriculture is increased. 	<p>1~2 Records of CRDA</p>	
<p>Project Purpose In pilot sites of Nefza, Sejnane and Fernana irrigated areas, the models of irrigation agriculture are achieved, and the extension system which can be adaptable in all the irrigated areas is developed.</p>	<ol style="list-style-type: none"> The rate of irrigation practicing areas in pilot sites is increased to 45% at Nefza, 55% at Sejnane, and 35% at Fernana by the end of the project. Yield per ha of major crops in each pilot site are increased. 	<p>1 ~ 2 Records of CRDA, GDA and the Project</p>	<p>The budget and staff for extension of irrigation agriculture are secured.</p>
<p>Outputs (The underlined are within the scope for the extended period)</p> <ol style="list-style-type: none"> Natural situation, agriculture condition, farming support and extension system supported by CRDA and GDA, etc. in the 3 irrigated areas (Nefza, Sejnane and Fernana) are grasped. <u>The irrigation agriculture which serves as a model of irrigation agriculture at pilot sites is established.</u> <u>The farming extension support system by CRDA and GDA is strengthened.</u> 	<ol style="list-style-type: none"> 1-1. Analysis reports are made. 2-1. Yield per ha of major crops in demonstration farms are improved. 2-2. Rate of utilization of common hydrants is increased in pilot sites. 2-3. Group activities of farmers concerning marketing are initiated in the 3 irrigated areas. 3-1. Educational tools and materials are elaborated. 3-2. All extension staffs of CRDA and GDA in the 3 irrigated areas participate in the technical guidance and trainings conducted by the Project. 3-3. The level of understanding of CRDA and GDA staffs is improved at the end of seminar. 4-1. Seminars concerning results of the project activities are carried out with more than 100 participants. 4-2. More than two thirds (2/3) of participants in the seminars recognize its effectiveness. 	<p>1~4 Records of the Project</p>	<p>Natural disasters which influence the source of water for irrigation, such as droughts, floods, etc. do not happen.</p>
<ol style="list-style-type: none"> The results of activities of the Project are shared among the persons/organizations related in 4 irrigated areas (Nefza, Sejnane, Fernana and Hammam Bouguitba). 			

Activities (<u>The underlined are within the scope for the extended period</u>)	Inputs	Domestic market needs do not worsen under the influence of the agricultural products, etc. from overseas.
<p>1-1. To conduct survey about the natural situations (meteorology, hydrology, landscape, etc.) and all farmers' situations (farmland, crop, irrigation, market, farm matter, ownership of land, income, opinion of farmers to future, etc.) in 3 irrigated areas.</p> <p>1-2. To conduct survey about the situation of management and maintenance concerning the facilities and organizational structures of CRDA and GDA.</p> <p>1-3. To analyze the data of surveys conducted on Activity 1-1&1-2</p> <p>2-1. To pick up possible pilot sites.</p> <p>2-2. To survey farmers etc. in pilot sites picked up by Activity 2-1.</p> <p>2-3. To select pilot sites and organize farmer group in each water bulb unit.</p> <p>2-4. To advise the farming plan and the water management plan in each pilot site</p> <p>2-5. To advise on improvement of market access.</p> <p>To advise CRDA to provide farmer groups with market report containing information such as trends of demands and prices of agricultural products.</p> <p>2-6. To develop appropriate water charge and collecting system of water charge.</p> <p>a) To give advice on spreading the high-accuracy water flow meter widely in the pilot sites.</p> <p>b) To clarify the roles and responsibilities of the stakeholders involved in the installation, operation and maintenance of the high-accuracy water flow meter and irrigation facilities</p> <p>c) To introduce a new water charge system based on water consumption</p> <p>2-7. To demonstrate irrigation agriculture as model.</p> <p>2-8. To disseminate the model of irrigation agriculture to the farmers in the pilot sites.</p> <p>a) To develop education materials that deal with issues such as profitability of the water saving irrigation system to convince the farmers in the pilot sites to invest in it and practice it.</p> <p>b) To organize farmer-to-farmer technical extension activities on advanced agriculture by water saving irrigation systems.</p> <p>c) To disseminate the output of demonstration farms of each pilot site, involving neighboring competent farmers who could work as "promoters" of irrigation agriculture.</p> <p>2-9. To verify effects of irrigation, improvement of farming and activities of farmers groups, etc.</p> <p>3-1. To conduct technical guidance and trainings for staff of CRDA and GDA.</p> <p>a) To give technical guidance on the operation and maintenance of the high-accuracy water-flow meter and irrigation facilities.</p> <p>b) To support CRDA's preparation of the work plan on the installation, operation and maintenance of the high-accuracy water flow meter and irrigation facilities.</p> <p>3-2. To conduct educational activities and technical trainings for members of GDA.</p> <p>a) To enhance the capacity of GDA in terms of organizational management</p> <p>b) To enhance the technical knowhow of GDA staff in terms of promoting irrigation agriculture</p> <p>3-3. To conduct educational activities for non-participated farmers to GDA</p> <p>4-1. To carry out seminars concerning results of the Project activities to the organizations and persons in all irrigated areas.</p> <p>4-2. To confirm effects of the Project to participants on Activity 4-1.</p>	<p>[Japanese side]</p> <p>1. Dispatch of Japanese Experts Long term Experts Team Leader (Chief Advisor) Irrigation Technique/Water management Project Coordinator/Assistance for peasant activities Short term Experts team Team Leader /Irrigation Technique Water Management Agronomy Community Development Coordinator/ Assistant of Marketing Others</p> <p>2. Provision of Machines and Equipment Motorbikes, Vehicles, Backhoe Loader, Sprinklers, PCs, Water meters, Equipment for training (Projectors, etc.) and others.</p> <p>3. Local Expense 1) Employment of Local Consultants Irrigation Technique Agronomy Community Development Pedologist Financial Management</p> <p>2) Budget for Questionnaire Survey, Dissemination, Training, Seminar, Translation, etc.</p>	<p>[Tunisian side]</p> <p>1. Assignment of Counterpart Personnel 1) Central level Project Director (DGGREE, MA) Project Manager (DIEEA, DGGREE, MA) Other staff in the MA</p> <p>2) Local government level Staff in CRDA (Béja, Bizerte and Jendouba)</p> <p>3) Irrigated area level Staff in GDA by irrigation area</p> <p>2. Assignment of Administrative Staff and any other necessary personnel for the smooth implementation of the Project</p> <p>3. Provision of Office and Facilities (desk, chair, etc.) Office in the DGGREE Office in one of the CRDA</p> <p>4. Necessary Budget (Necessary cost for C/P (Transportation fees on the Project, Cost of chemical examination, etc.), domestic transportation fees for training, etc.)</p>
		<p>Pre-condition The situation of the existing irrigation condition does not worsen than the beginning of the Project.</p>

Projet de Développement des Périmètres Irrigués au Nord de la Tunisie
(The Project for the Development of Irrigated Areas Northern Tunisia - DPINT)

Date 28 February 2014

Lieu : Ministry of Agriculture, Tunis

Objet : JCC

LISTE DES PRESENTS

Nom	Prénom	Organisme	Fonction	Contact (tel / e-mail)	Signature
HADDAD	Semir	CRDA-Bizerta	chef A/MEH	98 296 298 hachess1@yahoo.fr	
CHIH	Abderrazak	CRDA-Béja	DHER	98 6789 92	
KHEMIRI	FETHI	CRDA-Jendouba	chef A/EP	abder- chih@hotmail.fr 98 680 113 / Kheir.Fethi@yahoo.fr	
Trabelsi	Imen	DG/GREE	Ingenieur	27 787 158	
EL Khaffet	Kaouthar	DG/G-REE	Technicien en chef	Khaffet-Kaouthar@hotmail.com	
SALHI	MOUSSA	ERDA-BESJA	chef CTV Netza	97 994 580	
Maalouzi	Faouzi	CTV sejnane	chef CTV sgn	99 666 044	
KHEMIRI	Mustapha	CTV Farana	chef CTV	97 199 506 khemir.mustapha@yahoo.com	
Ghozouani	Cheikh	DHER/CRDA	technicien	98 50 549 ghozouanich@yahoo.fr	
LIMAM	Messoud	DHER Bizerte	chef Division	98 610 081 Limamen@yahoo.fr	
Jearli	Mohamed	DG/REE	Director	52 280662 jearli.Mohamed@yahoo.fr	
Kenichi	Kato	Jica	mission		
AÏSSA	Daoud	DPINT/proj	Agronomes	22769407	

dpint

2/2

Projet de Développement des Périmètres Irrigués au Nord de la Tunisie
(The Project for the Development of Irrigated Areas Northern Tunisia - DPINT)

Date 28 February 2014

Lieu : Ministry of Agriculture, Tunis

Objet : JCC

LISTE DES PRESENTS

Nom	Prénom	Organisme	Fonction	Contact (tel / e-mail)	Signature
CHABIR	KARIM	JICA	Chargé de programme	57.514.310 karim.chabir.JS@jica.go.jp	
Tetsuya	TAKIMOTO	JICA		takimoto.tetsuya@jica.go.jp	
MITSUKIKO	OTA	DPINT Team	Agronomy	m.ota@ntc-i.co.jp	
MERDASSI	Tijani	DPINT Team	Ing. Irrigation	merdessi.t@planet.tn	
HORI	Shinwa	DPINT	leader		
KIKUCHI	Taro	JICA		Kikuchi.Taro@jica.go.jp	
NAJAR	Amirze	DPINT	Interpreter		
Makoto	HOSHI	DPINT		m.hoshi@ntc-i.co.jp	
GABOUS	Ridho	DG-RES	DG	ri.gabousj@yasho.fu	

A-10 Minutes of the JCC
(The Fifth)

**Minutes of Meeting
for
the fifth meeting of the Joint Coordinating Committee
of
the Project for the Development of
Irrigated Areas of Northern Tunisia (DPINT)**

The Project for the Development of Irrigated Areas of Northern Tunisia (hereinafter referred to as “DPINT”) has been implemented within the frame of a technical assistance of the Japan International Cooperation Agency (JICA) in accordance with the Record of Discussions (hereinafter referred to as “R/D”) signed in August 23, 2010 and its amendment signed in November 29, 2013.

The Project Team, which consisted of JICA experts and Tunisian counterparts, has conducted series of activities since October 2010. The fifth meeting of the Joint Coordinating Committee (hereinafter referred to as “JCC”) was held with attendance of the concerned officials at the conference hall of Ministry of Agriculture in Tunis on February 16, 2015.

JCC confirmed the achievement of the Project purpose and recommendations of further activities to Tunisian counterparts after completion of the Project. JCC members agreed on the matters described in the attached hereto.

Tunis, February 16, 2015

Mr. Atsushi ASANO
Chief Representative
JICA Tunisia Office
Japan International Cooperation Agency

Mr. Ridha GABOUJ
Director General
General Direction of Rural Engineering and
Water Management,
Ministry of Agriculture

ATTACHED DOCUMENT

1. Achievement of the Project purpose

- (1) JCC members confirmed that the project purpose had been achieved as indicators set for in February 28, 2014.
- (2) DPINT will be completed by the end of February as agreed on the Minutes of Meeting signed in November 4, 2013.

2. Major results of the Project

- (1) Indicators for the project purpose were achieved as follows;

Due to some impeding factors such as flooding and damages by wild boars, targeted ratios have not achieved slightly, however the irrigation ratio of each Pilot site has been improved and it is expected to reach target ratio .(See Annex 1)

Irrigated perimeter	Actual 2011/2012 (%)	Actual 2012/2013 (%)	Actual 2013/2014 (%)	Estimation* 2014/2015 (%)	Targets of ratio of irrigated farming area 2014/2015 (%)
Nefza	38	39	42	63	45
Sedjnane	42	52	-	44	55
Fernana	35	35	33	25**	35

* Farmers have not prepared cultivation for the next season yet. However, DPINT made interview surveys of the farmers from one pilot site of each perimeter to estimate irrigation ratio of 2014/2015.

** Expected potato cultivation area in autumn 2015 is not included. In the previous seasons (2012/13 & 2013/14), it covered around 20-22% of total cultivation area of Oued Ghrib, one of the pilot site in Fernana .

Yield per ha of major crops; especially tomato and pepper have increased in each Pilot site. (See Annex 2)

JCC members assessed that DPINT contributed to strengthen capacity of irrigated farming in the Pilot sites though there had been still some constraints to be tackled by the Tunisian counterparts.

- (2) Activities and outputs of DPINT were almost completed and the summary of achievements was given in Annex 3.

3. Recommendations to the Tunisian counterparts

JCC members and DPINT recommended to the Tunisian counterparts to take necessary measures after the completion of the project.

(1) Irrigation

To supply sufficient irrigation water in time to irrigation farmland with coordination of SECADENORD and GDA.

To get information for the next cultivation season from farmers to make irrigation plan.

(2) Drainage

To allocate budget for a project for improvement of drainage system.

To implement the project for improvement of drainage system based on the study conducted by DPINT.

(3) Irrigation facilities

To improve irrigation facilities including hydrants for effective use of irrigation water based on the hydraulic study of irrigation networks and the irrigation hydrants study conducted by DPINT.

To promote water saving irrigation method such as drip irrigation.

To promote water billing system based on water consumption by credible flow meters.

To provide financial support to farmers to purchase and install equipment such as water saving irrigation.

(4) Establishment of SMSA

To assist farmers to establish SMSA.

To provide advices on management of SMSA.

Annexes:

Annex 1 : Transition of irrigated farming rate and willingness of irrigation farming for 2014/2015

Annex 2 : Yields of major crops

Annex 3 : The summary of achievements on activities and outputs

Irrigated Area and Irrigated Farming rate in the Pilot Sites in 2011/2012 to 2013/2014 and 2014/2015
(The results excluding the impeding factors against irrigated agriculture)

Perimeter	Pilot site	Total Area (ha)	Irrigated Area (ha)			Irrigated Farming Rate (%)			
			2011/2012	2012/2013	2013/2014	2011/2012	2012/2013	2013/2014	2014/2015 ⁵
NEFZA 1	BZ2	261	93.7	102.3	108.6	36%	39%	42%	
	BZ3	125.6	51.8	56.7	71.9	41%	45%	57%	
	Touila	162.5	62.5	56.4	49.9	38%	35%	31%	
	Total	549.1	208.1	215.4	230.4	38%	39%	42%	63%
SEDJNANE	CP1 (RD)	81.5	37.1	51.6	2	46%	63%	2	
	CP1 (RG)	254	101.2	149.1	2	40%	59%	2	
	CP 2	122.8	52.5	77	2	43%	63%	2	
	CP 2'	75.7	32.5	35.8	2	43%	47%	2	
	CP 3	83	25.5	26.7	2	31%	32%	2	
	CP 4	167	77.2	70.3	2	46%	42%	2	
	Total	784	326	410.5	2	42%	52%	2	44%
FERNANA	Ain El Baya	125.6	32.7	32.7	3	26%	26%	3	
	Sidi Ammar	114.7	52.3	62.7	37.8	46%	55%	33%	
	Fernana	142.1	4	4	48.2	4	4	34%	
	Oued Ghrib	218.2	4	66.7	70.3	4	31%	32%	
	Total	600.6	85.0	162.1	156.3	35%	35%	33%	25% ⁵

1 P/S of Jmila in Nefza is not counted due to the damages on production caused by wild boars.

2 Delay of water distribution happened in 2014 in Sedjnane and farmers didn't use irrigation services.

3 Farmers avoided irrigation farming due to the shortness of time of water supply by a pump of Ain El Baya

4 Farmers avoided irrigated farming for out-season potato, caused by damage of heavy rain at Oued Ghrib and Fernana

5 Expected potato cultivation area in autumn 2015 is not included. In the previous seasons (2012/13 & 2013/14), it covered around 20-22% of total cultivation area of Oued Ghrib, one of the pilot site of Fernana.

6 Estimation has made through interview survey to some farmers from one pilot site of each perimeter. Therefore, these figures will be replaced to the actual figures after the next cultivation season.

Average crop yields in different pilote sites (2012/2013, 2013/2014)

Crops	Perimeter	Nefza					Sedjane					Fernana					Average and rate of increase			
		Bouzenna I		Jemila		Touila	CP1(RD)		CP1(RG)	CP2	CP2'	CP3	CP4	Average and rate of increase	Oued Ghrit	Fernana		Sidi Amma	Ain Beya	Average Standard Yield in the Area
		2012/2013	2013/2014	2012/2013	2013/2014	2012/2013	2013/2014	2012/2013	2013/2014	2012/2013	2013/2014	2012/2013	2013/2014	2012/2013	2013/2014	2012/2013		2013/2014	2012/2013	2013/2014
Tomato	ratio of increase	35	39	33	30	30	40	39	50	50	48	45	45	48	60	-	60	50	60	56.7
	2013/2014	-	50	-	-	-	50	50	48	48	50	48	48	48.5	65	62	68	60	64	63.8
Pepper	ratio of increase	19	22	17	15	15	16	18.3	20	18	18	20	15	19.3	15	14	-	13	16	14
	2013/2014	30	35	28	25	25	18	29	24	24	22	23	23	23.3	25	10	30	20	21	21.3
Watermelon	ratio of increase	-	-	12	-	-	30	1.58	40	30	30	30	30	30.8	30	25	29	35	30	29.8
	2013/2014	-	50	-	55	55	45	-	28	26	25	27	26.5	0.86*	32	25	33	31	32	30.3
Melon	ratio of increase	31	35	26	23	23	28	29	28	25	30	25	25	27.2	12	-	-	-	18	12
	2013/2014	33	36	28	25	25	23	30.5	30	25	22	24	25.3	0.93*	15	22	25	-	21	15

*Yields of watermelon and melon at Sedjane in 2013/2014 were low because of the delay of the supply of irrigation water in cropping season 2014.

Annex 3 The summary of achievements on activities and outputs

Activities for Output 1

	Activities in PDM	Status of Activities as of June 2013 ¹	Status of Activities as of February 2015	Achievement
1-1	To conduct survey about the natural situations (meteorology, hydrology, landscape, etc.) and all farmers' situations (farmland, crop, irrigation, market, farm matter, ownership of land, income, opinion of farmers to future, etc.) in 3 irrigated areas.	- Baseline survey covering farmers' situations in 3 irrigated areas had been conducted by February 2012.	ditto	Completed.
1-2	To conduct survey about the situation of management and maintenance concerning the facilities and organizational structures of CRDA and GDA.	- Baseline survey covering these issues in 3 irrigated areas had been conducted by February 2012. - Additional survey for grasping actual situations of GDA by interviewing with CRDA officers in charge of GDA, board members of GDA, and farmers was conducted in March and April 2012.	ditto	Completed.
1-3	To analyze the data of survey conducted on Activity 1-1 & 1-2.	- Results of the baseline survey were analyzed and compiled as baseline survey reports.	ditto	Completed.

Activities for Output 2

	Activities in PDM	Status of Activities as of June 2013 ²	Status of Activities as of February 2015	Achievement
2-1	To pick up possible pilot sites.	- It was agreed between Project (DPINT) Team and CRDA/CTV that pilot sites would be selected after deciding demonstration farms. Since setting of demonstration farms were done over two years (2012 and 2013) based on agreement of both parties, selection of pilot sites was delayed and has just been	ditto	Completed.

¹ Cited from Evaluation Report in June, 2013

² Cited from Evaluation Report in June, 2013

Annex 3 The summary of achievements on activities and outputs

		completed (14 sites, 1,450ha) in June, 2013.		
2-2	To survey farmers etc. in pilot sites picked up by Activity 2-1.	<ul style="list-style-type: none"> - List of farm plots (location and area) and their cultivator (owner) farmers in the selected pilot sites will be prepared. 	<ul style="list-style-type: none"> - Each P/S's profile (location, area, and cultivators (or owners)) in the pilot sites in the three irrigated areas was developed from August to October 2013. The survey on farming area, irrigated area, and number of farmers using irrigation facilities was conducted in the P/Ss in September and October, 2014. 	Completed
2-3	To select pilot sites and organize farmers' group in each water bulb unit.	<ul style="list-style-type: none"> - Short time of water supply pumping by SECADENORD (water supply public corporation) have led demand-supply gap of water in irrigation peak season. Due to shortage of absolute water quantity, trust relations between farmers and CRDA are in difficult situation. - Without solving this water supply issue, step for organizing farmers' group could not be proceeded. 	<ul style="list-style-type: none"> - For season 2014/15, a problem on scarcity of water supply, which is similar to the last season, occurred in all Sedjnane P/Ss and Ain El Baya P/S of Fernana. The planned activity on organizing farmers group and introducing rotation irrigation about each hydrant was canceled due to fragile relationships between farmers and CRDA with consideration of opinions cancelling the planned activities from Tunisian side. 	Incomplete (canceled)
2-4	To advise the farming plan and the water management plan in each pilot site.	<ul style="list-style-type: none"> - Guidance and trainings on soil analysis for staff of CTV, CRA, and GDA were provided with using demonstration farms. - Sustainable farming model such as introduction of rotation cropping and companion planting were shown with using demonstration farms. - Guidance related to appropriate on-farm water management is continued to be given to farmers in pilot sites. 	<ul style="list-style-type: none"> <Advice on farming and water management plan> - Technical guidance on water management and farming (fertilization, crop protection, disease control, weeding, farming management, and so on) was provided to farmers in the pilot sites through training and Field Days. <Implementation of study based on Tunisia side's request> - In order to improve the farming condition, drainage study was requested by Tunisia side, which was conducted at Sedjnane and Fernana. The study was completed by January 2015 and study reports were prepared so that Tunisian side could tackle this issue following suggestions described in the study report. - In order to improve the problems of water distribution networks, hydraulic systems, and/or unsuitable locations of irrigation hydrants, hydraulic studies was requested by Tunisian side, which were conducted at Nefza and Sedjnane area. The study was completed by January 2015 and survey report was prepared, which enabled Tunisian side to tackle this issue. 	Completed
2-5	To advise on improvement of market	<ul style="list-style-type: none"> - As a part of preparation for establishing SMSA, social survey was conducted at 3 irrigated areas. 	<ul style="list-style-type: none"> - Results of social survey at the three irrigated areas that would be a basis of establishment of SMSA (from April 	Completed

Annex 3 The summary of achievements on activities and outputs

	<p>access.</p> <ul style="list-style-type: none"> To advise CRDA to provide farmer groups with market report containing information such as trends of demands and prices of agricultural products 	<p>- Results of the survey will be analyzed and submitted to the concerned organizations.</p>	<p>to June 2014) were analyzed and compiled. The report was delivered to concerned agencies (2012 and 2013).</p> <ul style="list-style-type: none"> - Technical and economic survey for SMSA establishment at Nefza and Sedjane (from April to June 2014) were conducted. In addition, Sensitization programs on type of SMSA, authority, management structure and legislative frameworks, role of SMSA's executives (e.g. responsibility of leading farmers groups for better production, sale, and procurement) were implemented in Nefza and Sedjane between June and September 2014. - SMSA in Nefza was established and authorized through official procedures in the end of October. As a result, market information such as trends of demands/supply and prices of agricultural products are expected to be shared among farmers through SMSA. Concerning SMSA of Sedjane, it is at the stage of collecting fund for establishment. CRDA, AFIOP, and CTV are the core agencies for supporting its establishment, following the results of surveys. 	Completed
2-6	<p>To develop appropriate water charge and collecting system of water charge.</p> <p>a) To give advice on spreading the high-accuracy water flow meter widely in the pilot sites</p> <p>b) To clarify the roles and responsibilities of the stakeholders involved in the installation, operation and maintenance of the high-accuracy water flow meter and irrigation facilities</p> <p>c) To introduce a new</p>	<p>- Issues relating to existing water charge collecting system were clarified through hearing from concerned parties. Since water quantity used by farmers is not correctly measured, water charges accounted by current system are unfairly imposed on user farmers.</p> <ul style="list-style-type: none"> - High-accuracy water meters were installed and operated at demonstration farms. It was shown to Tunisian C/Ps that using high-accuracy water meters would improve water charge collection system. Since ensuring funds for installation of such water meters are not expected, full-scale introduction of these meters has not yet decided, despite partially installed on trial base. - Other possible measures for improving water collecting system still based on size of irrigated areas will be examined and proposed to concerned parties. 	<p>- Necessity of budget allocation for procurement of high-accuracy flow meters and installation schedule were advised to CRDA. The procurement, exchange and installation started at a part of Nefza and Sedjane irrigated areas from September 2013.</p> <ul style="list-style-type: none"> - At a part of Nefza irrigated areas where existing billing system was relatively smoothly working, a model area for water billing system based on water consumption quantity measured by high-accuracy flow meters was defined in order to carry out the trial activities. Methods of installation of accessories that keep accuracy stable, i.e. stabilizers and filters, and method of accuracy test on the flow meters were instructed to CRDA Béja and GDAs at Nefza. - A billing system based on water consumption with highly accurate flow meter was introduced on a trial basis to the above mentioned model area. Roles and responsibilities for installation, operation, and maintenance of devices were notified to CRDAs and GDAs in the three irrigated areas in consideration of applicability to the three irrigated areas in future. 	Completed

Annex 3 The summary of achievements on activities and outputs

	water charge system based on water consumption		<ul style="list-style-type: none"> - Besides introducing water billing system based on water consumption, the more precise and proper calculation method based on size of irrigated areas was recommended to C/Ps in the three irrigated areas, in which the species of crops and crop water requirements of each cultivation season, etc., were considered. 	
2-7	<p>To demonstrate irrigation agriculture as model.</p>	<ul style="list-style-type: none"> - Through series of discussions with CRDA/CTV, 20 demonstration farms in 3 irrigated areas were decided for the 1st year (Feb. 2012 ~ Jan. 2013). Necessary equipment and materials were provided. Based on soil analysis, cultivated crops and cultivation methods were decided, and guidance was provided to concerned people (e.g. farmers and extension staff of CRDA/CTV). Tunisian irrigation expert and agronomy expert were assigned from the Project team to respective irrigated areas and they went around the demonstration farms to monitor water management, fertilization, pest management, and crop marketing. - For the 2nd year (Mar. 2013~), additional 21 demonstration farms were selected and irrigation cropping was already started for those farms. - In some demonstration farms, the activities related to the analysis of data necessary for comparison was insufficient, thus the Project could not obtain results such as the interest of neighboring farmers in the project. - Model demonstration activities at the 41 farms will be continued until July 2013. 	<ul style="list-style-type: none"> - Model demonstration activities at the 41 farms were continued until November 2014 (a demonstration at one farm was cancelled due to a farmer's unwillingness). - In the third cropping year, 13 demonstration farms that were chosen from each pilot site were intensively guided and monitored by the project team and were regarded as crucial for extension works. Other demonstration farms were monitored mainly by C/Ps for the purpose of enhancing their capabilities and experiences on instruction activities, with assistance of the project team. - Yield of main crops such as Tomato, Melon, Watermelon, and Pepper at each demonstration farm exceeded the average standard yield at the end of the third cropping year, except the regular cases such as delay of water distribution in Sedjnane in 2014, etc. Furthermore, almost all of the farmers who own demonstration farms were satisfied with their profits (Detailed data are shown in Annex 12 ~14). - Regarding fodder cultivation at Sedjnane, improvement of profitability was remarkable. Its yield and profits per ha exceeded average standard of those in the same area at the third cropping year. - In 2013 and 2014, farmers around the P/Ss participated in Field Day activities many times. Through carrying out the Field Days, Demonstration farms and surrounding farming areas were compared in terms of profitability. As a consequence, irrigated farming demonstrated by the Project was verified to be appropriate as a model. 	Completed
2-8	<p>To disseminate the model of irrigation agriculture to the farmers in the pilot sites.</p>	<ul style="list-style-type: none"> - Grafted nursery plants of melon and water melon introduced at the demonstration farms were shown to neighboring farmers. - Target farmers will be selected and their advanced farming will be exhibited in the pilot sites. 	<ul style="list-style-type: none"> <Visit on advanced irrigated areas> - Representing farmers in the pilot sites, GDA, and CTV visited the advanced case of irrigated farming and successful cases were introduced in September 2013. <Field Day> 	Completed

Annex 3 The summary of achievements on activities and outputs

<p>a) To develop education materials that deal with issues such as profitability of the water saving irrigation system to convince the farmers in the pilot sites to invest in it and practice it</p> <p>b) To organize farmer-to-farmer technical extension activities on advanced agriculture by water saving irrigation systems</p> <p>c) To disseminate the output of demonstration farms of each pilot site, involving neighboring competent farmers who could work as “promoters” of irrigation agriculture</p>	<p>- Field Day, as training scheme for farmers, including farming by water saving irrigation were carried out from May to September 2013 at demonstration farms in pilot sites of Nefza and Sedjnane (9 times, 178 participants).</p> <p>- Field Days were conducted from April to September 2014 at demonstration plots in pilot sites of the three irrigated areas (23 times, 219 participants). Through these trainings, both of irrigation farmers and non-irrigation farmers actively exchanged and shared their opinions. In addition, materials with which farmers can understand merits of water saving irrigation were developed and provided to extension agencies.</p> <p><Other trainings></p> <p>- Training on introduction of drip / sprinkler irrigation, crop protection, and required water amount and cost for application of water saving irrigation was held at Testour training center on October 2013 (3 days, 50 farmers).</p> <p>- Training on protection for summer crops was conducted at three irrigated areas in June 2014 (87 participants).</p> <p>- At Nefza and Sedjnane, CTV spontaneously held invitation program for farmers outside of pilot sites and CTV / CRA personnel in Beja and Bizerte to demonstration farms. The Project provided advices pertaining to this program.</p>	<p>Completed</p>
<p>2-9 To verify effects of irrigation, improvement of farming and activities of farmers groups, etc.</p>	<p>- Seminars will be held in July 2013 for CRDA, CTV, CRA, GDA and some farmers, where applicability of the irrigation agriculture model demonstrated by the Project as well as appropriateness of its approaches will be verified based on the results and process of the Project activities at pilot sites.</p>	<p>- Most C/Ps accepted the results of the following projects outcomes which were shared with Tunisia side at the final seminar in December 2014.</p> <ol style="list-style-type: none"> 1) Assistance for GDA and sensitization program 2) Development of a calculation system for water billing system 3) Demonstration farms activities 4) Assistance for SMSA establishment 5) Result of irrigation ratio improvement, and so on

Annex 3 The summary of achievements on activities and outputs

Activities for Output 3

	Activities in PDM	Status of Activities as of June 2013 ³	Status of Activities as of February 2015	Achievement																
3-1	<p>To conduct technical guidance and trainings for staff of CRDA and GDA.</p> <p>a) To give technical guidance on the operation and maintenance of the high-accuracy water-flow meters and irrigation facilities</p> <p>b) To support CRDA's preparation of the work plan on the installation, operation and maintenance of the high-accuracy water flow meters and irrigation facilities</p>	<p>- Following draft manuals on irrigation and agronomy were prepared: i) manual for drip irrigation; ii) manual for maintenance of water supply equipment; iii) handbook for cultivation of melon and water melon; iv) handbook for cultivation of tomato; v) handbook for cultivation of pepper; vi) handbook for cultivation of sorghum; vii) handbook for cultivation of alfalfa; viii) handbook for sustainable soil treatment. They will be finalized with reflecting comments from Tunisian concerned officials.</p> <p>- 3 kinds of posters for disseminating technical information to farmers were prepared and distributed to CTV offices.</p> <p>- Technical trainings on soil management were conducted for staff of CTV and CRA of 3 irrigated areas (4-days classroom lecture and field practices, Sep.~ Nov. 2013). The number of participants for these trainings is 44 in total.</p> <p>- Trainings on agronomy and irrigation were conducted in Nov. 2012 as follows:</p> <table border="1" data-bbox="917 1041 1149 1668"> <thead> <tr> <th>Date</th> <th>Place</th> <th>Target</th> <th>Participants</th> </tr> </thead> <tbody> <tr> <td>6th Nov.</td> <td>Fernana</td> <td>GDA, CTV</td> <td>3</td> </tr> <tr> <td>7th Nov.</td> <td>Sedjnane</td> <td>GDA, CTV, CRDA</td> <td>9</td> </tr> <tr> <td>8th Nov.</td> <td>Nefza</td> <td>GDA, CTV, CRA, CRDA</td> <td>7</td> </tr> </tbody> </table> <p>- Meetings with GDAs were held in Mar. and Apr. 2012 for discussing issues (e.g. organizational activation, promotion of payment of water charge, etc.) and countermeasures for strengthening GDA.</p> <p>- Trainings for board members of all 9 GDAs were conducted in Jul.~Aug.2012 (2days) and Mar. 2013 (4</p>	Date	Place	Target	Participants	6 th Nov.	Fernana	GDA, CTV	3	7 th Nov.	Sedjnane	GDA, CTV, CRDA	9	8 th Nov.	Nefza	GDA, CTV, CRA, CRDA	7	<p><Technical instructions and workshops for CRDA and GDA staff></p> <p>- Training course on plant pathology, soil and water requirements was conducted for extension agents in charge of the three irrigation pilot areas for 3 days continuously in October, 2013.</p> <p>- Visit for case study of advanced irrigation for staff of CTV and GDA, and farmers' representatives was conducted in September, 2013. (as already mentioned in 2-8)</p> <p>- Concerning the water billing system (developed in 2014) based on water consumption, operation and management methods were instructed to CRDA and GDA. Furthermore, necessity of preparation for future project plan including budget allocation was suggested at the final seminar held in December 2014.</p> <p>< Technical instructions and workshops for GDA staff ></p> <p>- Training for GDA staff in the three irrigated areas on administrative and financial matters was conducted in June, 2013. (Total 12 days, 69 participants)</p> <p>- Training for GDA staff in the three irrigation irrigated areas on GPS and data processing were conducted for 3 days in July, 2013 (Total 34 staff participated).</p> <p>- Training on proper installation and maintenance of irrigation equipments for GDA staff (Water guards) of the three pilot areas was conducted in September, 2013 (1 day, 17 persons participated)</p> <p>- Training on formulation of GDA budget and balance sheet for GDA staff of Nefza and Sedjnane was conducted in February, 2014 (4 days, 18 persons participated)</p> <p>- Trainings on proper installation and maintenance of flow meters and irrigation accessories for technical</p>	Completed
Date	Place	Target	Participants																	
6 th Nov.	Fernana	GDA, CTV	3																	
7 th Nov.	Sedjnane	GDA, CTV, CRDA	9																	
8 th Nov.	Nefza	GDA, CTV, CRA, CRDA	7																	

³ Cited from Evaluation Report in June, 2013

Annex 3 The summary of achievements on activities and outputs

	<p>days) at each irrigated area.</p> <ul style="list-style-type: none"> - Trainings for GDA staff on administrative and financial matters are underway. Trainings on maintenance of irrigation equipment will be done before Ramadan. - Technical trainings (e.g. fertilization, pest prevention, maintenance of irrigation equipment, how to use soil analysis kit, pH/EC meter, etc.) for extension staff of CTV, CRA and GDA will be conducted in collaboration with AVFA before Ramadan. - Visit to advance irrigation district with staff of CRDA, CVT, CRA, GDA, and some farmers will be conducted before Ramadan in 2013. - Trainings for farmers for discussing issues related to GDA were conducted in Oct. ~ Dec. 2012. - Trainings on soil management for farmers at pilot sites (tentative) were conducted from Oct. to Dec.2012 as follows: <table border="1" data-bbox="790 1030 957 1646"> <thead> <tr> <th>Date</th> <th>Place</th> <th>Participants</th> </tr> </thead> <tbody> <tr> <td>10, 11, 12, 16 Oct.</td> <td>Nefza</td> <td>39</td> </tr> <tr> <td>19 Oct</td> <td>Fernana</td> <td>12</td> </tr> <tr> <td>4, 7 Dec</td> <td>Sedjane</td> <td>27</td> </tr> </tbody> </table> <ul style="list-style-type: none"> - Trainings on agronomy and irrigation for farmers at pilot sites were conducted in Nov. 2012 as follows: <table border="1" data-bbox="1013 1030 1173 1646"> <thead> <tr> <th>Date</th> <th>Place</th> <th>Participants</th> </tr> </thead> <tbody> <tr> <td>6th Nov.</td> <td>Fernana</td> <td>23</td> </tr> <tr> <td>7th Nov.</td> <td>Sedjane</td> <td>23</td> </tr> <tr> <td>8th Nov.</td> <td>Nefza</td> <td>24</td> </tr> </tbody> </table>	Date	Place	Participants	10, 11, 12, 16 Oct.	Nefza	39	19 Oct	Fernana	12	4, 7 Dec	Sedjane	27	Date	Place	Participants	6 th Nov.	Fernana	23	7 th Nov.	Sedjane	23	8 th Nov.	Nefza	24	<p>directors and water guards in GDA were carried out on May and June 2014 in Nefza, utilizing a new model of water billing system with flow meter.</p>	<p>Completed</p>
Date	Place	Participants																									
10, 11, 12, 16 Oct.	Nefza	39																									
19 Oct	Fernana	12																									
4, 7 Dec	Sedjane	27																									
Date	Place	Participants																									
6 th Nov.	Fernana	23																									
7 th Nov.	Sedjane	23																									
8 th Nov.	Nefza	24																									
<p>3-2 To conduct educational activities and technical trainings for members of GDA.</p> <p>a) To enhance the capacity of GDA in terms of organizational management</p> <p>b) To enhance the technical knowhow of GDA staff in terms of promoting irrigation agriculture</p>	<p><Reinforcement of GDA's organizational management></p> <ul style="list-style-type: none"> - Workshops on various issues for management of GDA and sensitization program were conducted between October and December 2012 (28 days, 641 participants). - Trainings for capacity building of GDA board members inclusive of roles, responsibility and authority were held in March 2013 for new board members of 4GDA in Nefza (8 days, 24 participants). - Trainings (mainly as a form of meetings) on duty of payment of water bill were conducted for 4GDA at Sedjane from April to May 2013 (9 days, 245 participants) <p><Enhancement of GDA staff's technical knowledge></p> <ul style="list-style-type: none"> - Training for GDA staff in the three irrigated areas on administrative, budgetary, and financial matters was conducted in June 2013 and February 2014. - Trainings on GPS and data utilization for GDA staff at the three irrigated areas were held in July 2013.(as already mentioned in 3-1) - Trainings on proper installation and maintenance of irrigation equipment for GDA staff (water guards) at the three irrigated areas were conducted in September 2013. <p>Trainings on proper installation and maintenance of water flow meters and its accessories for technical</p>	<p>Completed</p>																									

Annex 3 The summary of achievements on activities and outputs

		directors and water guards of GDA at Nefza were conducted from May to June 2014.	
3-3	To conduct educational activities for non-participated farmers to GDA.	<ul style="list-style-type: none"> - Trainings on payment obligation of water charge for GDA member/non-member farmers are underway. - Seminar with field visit and lecture for GDA member /non-member farmers will be conducted at each irrigated area, utilizing the demonstration farms. 	<ul style="list-style-type: none"> - Non-GDA members also participated in the sensitization program “strengthening of GDA’s organizational management” as already mentioned in the section 3-2. - Non- GDA members were also invited to the Field Days organized at Pilot Sites and merits of irrigation agriculture were appealed in 2014.

Activities for Output 4

	Activities in PDM	Status of Activities as of June 2013 ⁴	Status of Activities as of February 2015	Achievement
4-1	To carry out seminars concerning results of the Project activities to the organizations and persons in all irrigated areas.	<ul style="list-style-type: none"> - Workshop with participation of DGGREE, CRDA and CTV of 3 irrigated areas was held on 18th Oct. 2012 at Tunis to share progress of activities in respective areas and exchange their opinions. - 2nd JCC was held on 5th Dec. 2012 at Tunis. - Seminars for confirming and disseminating the results of the Project activities will be held at each irrigated area with participation of CRDA, CTV, CRA, and GDA in July 2013. - JCC will be held in Sep. 2013 to confirm the results of Project activities and propose for continuation of the activities by the initiative of Tunisian side. Concerned parties from Hammam Bourguiba will be invited. 	<ul style="list-style-type: none"> <Holding seminars> - Workshops / Seminars were held for DGGREE CRDA, CTV and GDA in Nefza in September 2013 (15 attendees). - Also, seminar was held with CRDA Jendouba in November 2013 for sharing the result of discussion of third JCC (12 attendees). - Seminars were held on December 2014 (27 attendees) in order to share the following results of DPINT on-site activities in 2014 with Tunisia side and to secure the sustainability of the Project. <ol style="list-style-type: none"> 1) Assistance and sensitization for GDA 2) Development of a calculation system for hydraulic billing system 3) Follow-up of demonstration farms 4) Assistance for SMSA establishment 5) Survey on irrigation ratio, and so on <Holding workshops> - Workshops were held in the three irrigated areas in September and October, 2014, which was organized 	Completed

⁴ Cited from Evaluation Report in June, 2013

Annex 3 The summary of achievements on activities and outputs

4-2	To confirm effects of the Project to participants on Activity 4-1.	- The effects of the Project will be confirmed at the above seminars and JCC to be held in Jul. and Sep. 2013.	<p>by CTV to share issues and achievements of irrigation farming. Around 30 persons concerned participated in each workshop.</p> <p><Holding JCC></p> <ul style="list-style-type: none"> - The third JCC was held in November 2013 in Tunis (29 attendees). - The fourth JCC was held in February 2014 to confirm the future's implementation plan in consideration of the achievements in the past two years and to set numerical target of PDM indicators (22 attendees). - The fifth JCC was held in February 2015. Achievements of project activities and the Project Purposes were shared. - Nobody from Hammam Bourguiba where GDA is still dismantled attended at the main seminars and JCCs. Therefore, CRDA Jendouba requested DGGREE to share information on the achievements of the project to Hammam Bourguiba. DGGREE provided information on main achievements of the Project. 	Almost completed
-----	--	--	--	------------------

Annex 3 The summary of achievements on activities and outputs

Achievements of outputs

Narrative Summary	Verification Indicators	Achievements as of June 2013 ⁵	Achievements as of February 2015
<p>Output 1: Natural situation, agriculture condition, farming support and extension system supported by CRDA and GDA, etc. in the 3 irrigated areas (Nefza, Sedjnane and Fernana) are grasped.</p> <p>Output 2: The irrigation agriculture which serves as a model of irrigation agriculture at pilot sites is established.</p>	<p>1-1. Analysis reports are made.</p> <p>2-1. Yield per ha of major crops in demonstration farms are improved.</p>	<p>- Baseline survey report including analyses and action plans were prepared; thus, this indicator was achieved.</p>	<p>- ditto</p>
		<p>- Higher yields of pepper and tomato were recorded in some of the first year demonstration farms which were cultivated by farmers with experiences of irrigated farming. They were 42t/ha for pepper and 80t/ha for tomato while average figures for northern part of Tunisia were 16t/ha and 50t/ha respectively. Based on the data of the first year, this indicator was achieved. However, one should refer to the results of the second assignment period.</p>	<p>- For the first assignment period, comparisons between the average yields of crops at demonstration farms and those of overall area show that about half of the demonstration farms in Nefza and Fernana surpassed the average figures in the area. While in Sedjnane, almost all of demonstration farms surpassed the average figures.</p> <p>- Most of the demonstration farms in Nefza, 70% of demonstration farms in Sedjnane, and 50% of demonstration farms in Fernana surpassed average yield figures of the area in second cropping season.</p> <p>- Due to the shortage of delivered water amount, the result of yield on demonstration farms in Sedjnane was almost same as average. On the other hand, almost all of the demonstration farms in Nefza and Fernana surpassed the average in the third cropping season figure.</p> <p>- The detail of the above mentioned results are shown in Annex 12~14.</p> <p>- From these data, indicator 2-1 on output 2 could be considered as achieved.</p>

⁵ Cited from Evaluation Report in June, 2013

Annex 3 The summary of achievements on activities and outputs

	<p>2-2. Rate of utilization of common hydrants is increased in pilot sites.</p>	<p>- Actions for organizing farmers per water bulb unit is suspended due to absolute shortage of water supply, as mentioned. It is not expected that this indicators will be achieved by the Project completion.</p>	<p>- Although activities on organizing farmers per hydrant had been planned under the premises that it would raise the ratio of hydrant use, this activity was not carried out because the problem on scarcity of water was not solved and it was difficult to promote further usage of common hydrants during the project period. However, according to the result of monitoring the number of irrigation farmers during the Project (See Table 2-27), it has been increased; hence, ratio of hydrant use are also expected to increase in proportion to the increase of irrigation farmers.</p> <p>- In addition, some CRDA revealed their intention to coordinate with SECADENORD and GDA to solve water issues before irrigation season in 2015. It can be expected that rate of hydrant use is further increased through group forming actions and introduction of rotation under the initiative of Tunisian side.</p>
<p>2-3. Group activities of farmers concerning marketing are initiated in the 3 irrigated areas.</p>		<p>- As a part of planned activities (<i>to advice on improvement of market access</i>), social survey for establishing SMSA was conducted. In order to achieve this indicator for Output2, further activities are required.</p> <p>- Further necessary procedures (technical & economic F/S, sensitization of farmers, establishment/registration, etc.) are required for starting activities of SMSA which usually takes 1~2 years. Thus, this indicator will not be achieved by the Project completion.</p>	<p>- SMSA at Fernana was established through the assistance of CRDA Jendouba in December 2013.</p> <p>- At Sedjnane and Nefza, technical and economical feasibility study was conducted from April to June 2014 and, followed by sensitization programs to farmers.</p> <p>- Concerning Nefza, funds for establishment of SMSA were collected from farmers and official procedure followed. As a result, SMSA of Nefza was established in October 2014.</p> <p>- Concerning Sedjnane, collected funds for establishment of SMSA were not enough and consequently SMSA was not established during the project period. However, CRDA is following this issue to realize the establishment of SMSA in future.</p> <p>- In Nefza, CRDA assists for provision of SMSA office. In addition, farmers group are, with the</p>

Annex 3 The summary of achievements on activities and outputs

<p>Output 3: The farming extension support system by CRDA and GDA is strengthened.</p>	<p>3-1. Educational tools and materials are elaborated.</p>	<p>- Manuals (draft), handbooks (draft), and posters on irrigation and agronomy were prepared. Since they will be finalized with reflecting comments from concerned parties, this indicator is expected to be achieved by the Project completion.</p>	<p>support of Tunisian agencies, now taking actions of preparing for developing marketing strategies such as; target market to sell a lot of agricultural products, solution for maximizing the sales profit in consideration of the past trend of seasonal fluctuation, and so on. - From the above, the indicator 2-2 on output 2 could be considered as achieved.</p>
	<p>3-2. All extension staff of CRDA and GDA in the 3 irrigated areas participate in the technical guidance and trainings conducted by the Project.</p>	<p>- Although trainings for only some staff of CTV and CRA were conducted in the first year, additional trainings covering all extension staff of CRDA, CTV, and GDA will be conducted in the first phase of the second assignment period. Thus, it is expected that this indicator will be achieved by the Project completion.</p>	<p>- Drafts of technical manuals were finalized with comments from Tunisian side. - New technical manuals for farmers such as farming/cultivation and irrigation equipments were elaborated and distributed to CTV in 2014. Handbooks for board members of GDA to strengthen their capacity on management of GDA were elaborated and distributed to each GDA. The handbooks deal with issues on organization, finance and management of GDA. - From the above results, the indicator 3-1 on output 3 could be considered as achieved.</p>
	<p>3-3. The level of understanding of CRDA and GDA staff is improved at the end of seminar.</p>	<p>- It was heard from concerned parties that understanding of CRDA and GDA on irrigation agriculture and its dissemination had been improved through DPINT activities but had not reached sufficient level. Thus, this indicator has been partially achieved. - It will be verified at seminars to be held in Jul. 2013.</p>	<p>- Training was intensively conducted to extension agents including all concerned persons of CRDA and GDA at the three irrigated areas by the second cropping season, thus, the indicator 3-2 on output 3 could be considered as achieved</p>
			<p>- It was confirmed that CRDA and CTV staff could deepen their understandings sufficiently on merits like techniques and profitability of water saving irrigation agriculture and important matters when it would be spread through discussion at the final seminar held in December 2014 and interviews to participants in it. - At the third cropping season, extension activities were implemented by extension staff</p>

Annex 3 The summary of achievements on activities and outputs

<p>Output 4: The results of activities of the Project are shared among the persons/organizations related in 4 irrigated areas (Nefza, Sejnane, Fernana and Hammam Bourguiba).</p>	<p>4-1. Seminars concerning results of the project activities are carried out with more than 100 participants.</p>	<p>Technical seminars and JCC were held in 2012 (participants of Tunisian side are 33 in total) to share progress of the Project activities. Seminars and JCC (also inviting concerned parties of Hammam Bourguiba) will be held in coming Jul. and Sep. 2013 to confirm the results of Project activities. Thus, it is expected that this indicators will be achieved with a certain level.</p>	<p>themselves in Nefza and Sedjnane. Farmers outside of pilot sites and extension staff of other irrigated areas were invited to the activities held at demonstration farms. Thus, this exemplifies that understanding for extension activities is improved by extension staff. From the above result, the output was achieved.</p>																														
	<p>4-2. More than two thirds (2/3) of participants in the seminars recognize its effectiveness.</p>	<p>It will be verified at coming seminars and JCC. However, judging from that many of the C/Ps interviewed recognized the effects of the DPINT activities although the latter were not sufficient, it is expected that this indicator will be achieved with a certain level.</p>	<p>The total number of participants for seminars and JCCs to share the results of the project outcome was more than 100.</p> <table border="1" data-bbox="598 244 967 745"> <thead> <tr> <th>Seminar/ JCC</th> <th>Date</th> <th>No. of participated C/P</th> </tr> </thead> <tbody> <tr> <td>Seminar</td> <td>18. Oct 2012</td> <td>11</td> </tr> <tr> <td>JCC</td> <td>05. Dec 2012</td> <td>33</td> </tr> <tr> <td>Seminar</td> <td>24. Sep 2013</td> <td>15</td> </tr> <tr> <td>JCC</td> <td>04. Nov 2013</td> <td>15</td> </tr> <tr> <td>Seminar</td> <td>12. Nov 2013</td> <td>10</td> </tr> <tr> <td>JCC</td> <td>28. Feb 2014</td> <td>12</td> </tr> <tr> <td>Seminar</td> <td>11. Dec 2014</td> <td>17</td> </tr> <tr> <td>JCC</td> <td>16. Feb 2015</td> <td>18</td> </tr> <tr> <td>Total</td> <td></td> <td>131</td> </tr> </tbody> </table>	Seminar/ JCC	Date	No. of participated C/P	Seminar	18. Oct 2012	11	JCC	05. Dec 2012	33	Seminar	24. Sep 2013	15	JCC	04. Nov 2013	15	Seminar	12. Nov 2013	10	JCC	28. Feb 2014	12	Seminar	11. Dec 2014	17	JCC	16. Feb 2015	18	Total		131
Seminar/ JCC	Date	No. of participated C/P																															
Seminar	18. Oct 2012	11																															
JCC	05. Dec 2012	33																															
Seminar	24. Sep 2013	15																															
JCC	04. Nov 2013	15																															
Seminar	12. Nov 2013	10																															
JCC	28. Feb 2014	12																															
Seminar	11. Dec 2014	17																															
JCC	16. Feb 2015	18																															
Total		131																															
		<p>From the above result, indicator 4-1 on output 4 could be said as achieved.</p>	<p>At the seminars and JCC held during the project period, C/Ps gave out lots of questions and opinions on project progress and achievements. Through this interactive process, the achievements of the Project were recognized by most participants. Among all the achievements, the followings were specially remarked: 1) Achievement on dissemination of irrigation agriculture technology to farmers at Demonstration farms, 2) Extension of methodology of irrigation</p>																														

Annex 3 The summary of achievements on activities and outputs

			<p>agriculture through Field Days for farmers in the pilot sites,</p> <p>3) Improvement of market access through establishment of SMSA, and</p> <p>4) Improvement of water billing system</p> <ul style="list-style-type: none"> - Tunisian side declared that it is necessary that DGGREE, CRDA, CTV, and GDA need to continue cooperation and take over the project activities to maximize project outputs at the final seminar in December 2014. - From the above results, indicator 4-2 on output 4 could be said as achieved.
--	--	--	--














Projet de Développement des Périmètres Irrigués au Nord de la Tunisie
(The Project for the Development of Irrigated Areas Northern Tunisia - DPINT)

Date *Ministry of Agriculture*

Lieu: *16/02/2015*

Objet : *5th JCC*

LISTE DES PRESENTS

Nom	Prénom	Organisme	Fonction	Contact (tel / e-mail)	Signature
<i>Nousse</i>	<i>Salhi</i>	<i>CRDA Beja</i>	<i>chef CTV N. B</i>		
<i>KHEMIRI</i>	<i>Mustapha</i>	<i>CRDA Jendouba</i>	<i>chef CTV Famme</i>	<i>097199106 khemir.mustapha@yaho.com</i>	
<i>Bouzigli</i>	<i>Mohamed</i>	<i>CRDA Jendouba</i>	<i>chef A/MEH</i>	<i>bouzigli.mohamed.55@gmail.com</i>	
<i>Ben Romdhane</i>	<i>Sami</i>	<i>CRDA Jendouba</i>	<i>DHER</i>	<i>sami.br@planet-tn</i>	
<i>AYADI</i>	<i>Rachid</i>	<i>CRDA BEJA</i>	<i>chef A/C/FE</i>	<i>ayad.rachid@yaho.fr</i>	
<i>BEN SAHAH</i>	<i>chefik</i>	<i>CRDA BEJA</i>	<i>chef A/EPI</i>	<i>chefik.ben.salah@yaho.fr</i>	
<i>ehihi</i>	<i>Abderattal</i>	<i>CRDA - Beja</i>	<i>DHER</i>	<i>abderattal@outlook.fr</i>	
<i>Meyri</i>	<i>Morgi</i>	<i>CRDA Jendouba</i>	<i>chef A/FE</i>	<i>mm.meyri@hotmail.fr</i>	
<i>Hamrouni</i>	<i>Sihem</i>	<i>DG/GREE</i>	<i>Subdirecteur</i>	<i>sihem.hamrouni@gmail.com</i>	
<i>Semli</i>	<i>Mohamed</i>	<i>DG/GREE</i>	<i>Directeur</i>	<i>mohamed.jemli@yaho.fr</i>	
<i>GABOUF</i>	<i>fidho</i>	<i>DG/GREE</i>	<i>DG/GREE</i>		
<i>Trabelsi</i>	<i>Imen</i>	<i>DG/GREE</i>	<i>Ingenieur Principal</i>	<i>trabelsi.imen@yaho.fr</i>	
<i>Khaffet</i>	<i>Kaouthar</i>	<i>DG/GREE</i>	<i>Technicien en chef</i>	<i>khaffet.kaouthar@hotmail.com</i>	

dpint

**Projet de Développement des Périmètres Irrigués au Nord de la Tunisie
(The Project for the Development of Irrigated Areas Northern Tunisia - DPINT)**

Date: 16/02/2015
Lieu: Ministry of Agriculture

Objet: 5th JCC

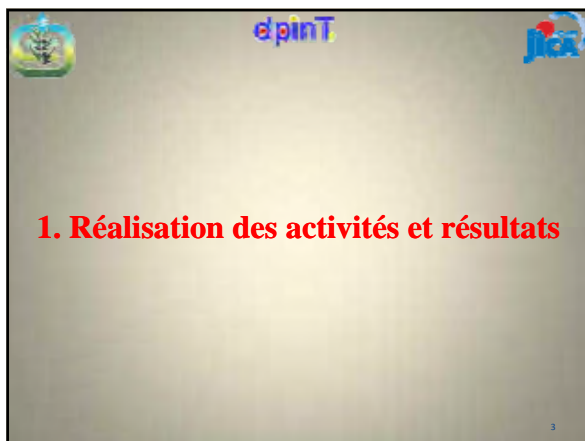
LISTE DES PRESENTS

Nom	Prénom	Organisme	Fonction	Contact (tel / e-mail)	Signature
CHARFI	Abraham	CRDA Bizerte	chef service (A/E)	72 431 438	
NASSI	Slah	CRDA Bizerte	chef A/E PS	72 431 438	
SMTOA	Sana	DGFOP	s/direction	Sana.selma@gmail.com 2354	
MUKATA	HOSHI	DPINT	coordonateur	m.hoshi@ntc-i.co.jp	
HORI	SHINWA	DPINT	leader		
MERDASSI	Tijani	DPINT	ingenieur	merdassi.t@planet.tn	
LIMAM	Menaoud	CRDA - Bizerte	chef D/HER	limamen@yahoo.fr	
HSAINI	Fayçal	CRDA - Béja	chef Am/taint	98919208 HsainiFaycal@yahoo.fr	
CHABIR	KARIM	JICA	Charge de Programmes	37.514.310 Karim-Chabir-Ts@jica.go.jp	
Yoshimoto	Kinoshita	JICA	Deputy Director JICA H2008	Kinoshita.Yoshihiko@jica.go.jp	
Shibuya	Asuka	JICA	Adjointe au Représentant Résident	Shibuya.Asuka@jica.go.jp	
Toshiki	TANAKA	Ambassade de Japon	2 nd secrétaire	tanaka.toshi@mta.gov.jo	
ASANO	Atsushi	JICA Tunisie	Représentant	atsuno.atsushi@jica.go.jp	



Sommaire

1. Réalisation des activités et Résultats
2. Réalisation des objectifs du projet
3. L'état d'avancement des Etudes
4. Contraintes et Recommandations



- Suivi des activités d'irrigation entreprises dans les parcelles de démonstration
- Activités de vulgarisation au niveau des sites pilotes
- Assistance à la création des SMSA
- Amélioration du système de facturation des redevances en eau d'irrigation
- Suivi des 05 études demandées par la partie tunisienne (réseaux de distribution, système hydraulique et drainage)

- ## Résultats
1. Identification du cadre géographique, des conditions agricoles, du programme d'appui à l'exploitation agricole, du système d'appui des CRDA et GDA aux activités de vulgarisation dans les trois périmètres irrigués (Nefza, Sedjnane, et Fernana)
 2. Installation de modèle d'agriculture irriguée au niveau des sites pilotes
 3. Renforcement des activités de vulgarisation
 4. Partage des résultats des activités du projet avec les personnes ou organisations concernées des 4 PI (Nefza, Sedjnane, Fernana, et Hamam Bourguiba)

Activités du PDM	Activités Exécutés	Réalisation
2. Installation de modèle d'agriculture irriguée au niveau des sites pilotes		
2-1 Sélection des sites pilotes éventuels	Réalisée en 2013	Achevée
2-2 Enquêtes auprès des agriculteurs des sites sélectionnés par activité 2-1	<ul style="list-style-type: none"> • Liste des parcelles (Emplacement et superficie) et les exploitant (agriculteurs propriétaire) • Enquêtes sur les superficies exploitées, les superficies irriguées, et nombre d'agriculteur irrigant 	Achevée
2-3 Sélection des sites pilotes et organisation des groupement d'agriculteurs pour chaque borne commune	<ul style="list-style-type: none"> • Irrégularité de desserte en eau d'irrigation au niveau de tous les sites pilotes du PI Sedjnane et quelques sites pilotes du PI Fernana. • De ce fait, l'activité qui consistait à la formation de groupement d'agriculteur a été annulée 	Annulé
2-4 Assistance pour la formulation du calendrier cultural et du programme de pilotage d'irrigation dans chaque site pilote	<ul style="list-style-type: none"> • Assistance technique aux agriculteurs sur l'importance du calendrier cultural, le pilotage d'irrigation, fertilisation, traitement phytosanitaire, désherbage, et exploitation agricole • Etude de drainage pour PI Sedjnane et Fernana • Etude du système hydraulique du réseau de distribution et borne d'irrigation pour le PI Sedjnane et Nefza. 	Achevée


Activités du PDM	Activités exécutées	Réalisation
2-5 Fournir un appui à l'amélioration de l'accès au marché	<ul style="list-style-type: none"> Etude technico-économique pour la création d'une SMSA à Nefza et Sedjnane SMSA officiellement créé à Nefza SMSA de Sedjnane: a atteint le stade de collecte de fond pour la création (appui du CRDA, AFIOF et CTV encore en cours) 	Achevée
2-6 Développer un système de facturation adéquat	<ul style="list-style-type: none"> Recommandation au CRDA pour planifier et allouer un budget nécessaire à l'acquisition de compteurs d'eau fiables Au niveau du PI Nefza, une zone pilote a été créée pour tester l'efficacité du nouveau système de facturation. Amélioration du système de facturation actuellement utilisé à Nefza et développement d'un système de facturation basé sur la consommation est ainsi adapté par les 3 PI. 	Achevée

Activités du PDM	Activités exécutées	Réalisation
2-7 Montrer des modèles d'agricultures irriguées	<ul style="list-style-type: none"> Poursuite des activités au niveau des 41 parcelles de démonstration Les rendements moyens ont dépassé les rendements moyens des régions en question à l'exception des Les bénéfices des parcelles de démonstration sont acceptables pour la majorité des agriculteurs Pour les cultures fourragères à Sedjnane, les résultats des rendements et des bénéfices ont dépassé les valeurs standards de la région. 	Achevée
2-8 Diffuser un modèle d'agriculture irriguée aux agriculteurs des sites pilotes	<ul style="list-style-type: none"> Visite des agriculteurs des sites pilotes du projet à un périmètre irrigué avancé Organisation de plusieurs formations destinées aux agriculteurs (Journées d'information) Organisation de formation destinée aux agriculteurs sur les techniques d'irrigation goutte à goutte et aspersion, les traitements phytosanitaires des cultures d'été Visites aux parcelles de démonstration 	Achevée

Activités du PDM	Activités exécutées	Réalisation
2-9 Vérifier l'impact de l'irrigation, amélioration des activités d'exploitation agricole, et les groupes d'agriculteurs	<ul style="list-style-type: none"> Les agriculteurs des parcelles de démonstration ont réalisé des rendement et des bénéfices très satisfaisant Les bénéfices de l'agriculture irriguée ont été confirmés Assistance aux activités des SMSA de Nefza et Sedjnane. 	Achevée
3. Renforcement des activités de vulgarisation		
3-1 Fournir une assistance technique et formation du personnel des CRDA et GDA	<ul style="list-style-type: none"> Formation en salle destinée aux vulgarisateurs sur les différentes maladies des cultures irriguées, pédologie, et besoin des cultures en eau d'irrigation Formation du personnel du GDA : <ul style="list-style-type: none"> Gestion administrative et financière Utilisation du GPS et saisie des données Installation des équipements d'irrigation et maintenance des conduites (Aiguadier) Installation et maintenance des compteurs d'eau et les accessoires nécessaires (directeur technique, aiguadier) Utilisation du nouveau système de facturation Visite de périmètres irrigués avancés 	Achevée

Activités du PDM	Activités Exécutées	Réalisation
3-2 Organiser des activités de sensibilisation pour les agriculteurs adhérents des GDA	<ul style="list-style-type: none"> Formation sur le rôle et responsabilités des membres du conseils d'administration des 4 nouveaux conseils des 4 GDA de Nefza Formation sur l'importance de paiement des redevances en eau d'irrigations pour les 4 GDA de Sedjnane Formations des agriculteurs (journées d'information) portant sur les techniques d'exploitation agricoles et l'économie d'eau Formation des agriculteurs sur les techniques d'irrigation à la parcelles (goutte à goutte et aspersion) ainsi que le traitement phytosanitaire des cultures d'été 	Achevée
3-3 Organiser des activités de sensibilisation pour les agriculteurs qui ne sont non-adhérents des GDA	<ul style="list-style-type: none"> Formation sur la nécessité de paiement des redevances en eau d'irrigation Formations des agriculteurs (journées d'information) portant sur les techniques d'exploitation agricoles et l'économie d'eau et les techniques d'irrigation à la parcelles (goutte à goutte et aspersion) ainsi que le traitement phytosanitaire des cultures d'été Journée d'information pour la sensibilisation des agriculteurs non adhérents aux GDA 	Achevée

Activités du PDM	Activités Exécutées	Réalisation
4. Partage des résultats des activités du projet avec les personnes ou organisations concernées des 4 PI (Nefza, Sedjnane, Fernana, et Hamam Bourguiba)		
4-1 Organiser des séminaires pour présenter les résultats des activités du projet aux organisations concernées des 4 Périmètres irrigués	<ul style="list-style-type: none"> Atelier/séminaire pour la confirmation et la diffusion des résultats des activités entreprises dans le cadre du projet Séminaires organisés par les CTV pour partager les résultats et les conseils sur l'agriculture irriguée Séminaires pour partager les résultats des activités entreprises par le projet en 2014 Tenue de la cinquième réunion des JCC en Février 2015 	Achevée
4-2 Confirmer l'impact du projet par les participants à l'activité 4-1	<ul style="list-style-type: none"> Avancement et résultats du projet ont été confirmés lors des séminaires et les différentes réunions des JCC La partie Tunisienne a confirmé la passation des activités du projet et de garantir sa durabilité. Vu que le GDA de Hammam Bourguiba ne s'est pas formé encore, les résultats du projet ne pourront pas être confirmés par les parties concernées de Hammam Bourguiba. 	Pratiqement achevée

2. Réalisation des objectifs du projet

12

Indicateurs objectivement vérifiables de l'objectif du projet

1. L'amélioration du taux d'exploitation en irrigué au niveau des sites pilotes du projet pour atteindre à la fin du projet les valeurs suivantes:
 - 45% à Nefza
 - 55% à Sedjnane
 - 35% à Fernana
2. L'amélioration des rendements par ha des cultures irriguées.

13

Indicateur objectivement vérifiable 1

- <L'évolution du taux d'exploitation en irrigué>
- Augmente ou reste stable chaque année au S/P du projet, à l'exception des cas de facteurs entravant les activités d'irrigation.

14

<Enquête sur les prévisions culturales >

- Nefza :
Prévu de dépasser 45% (Indicateur cible du PDM)
- Fernana:
Enregistre 25% < 35% (Indicateur cible du PDM)
Toutefois, environ + de 20% sont prévus pour la culture de pomme de terre d'arrière saison, et qui n'ont pas été pris en compte par l'enquête.

15

< Enquête sur les prévisions culturales >

- Sedjnane :
Résultats < à l'indicateur cible du PDM
- les agriculteurs n'ont pas irrigués à cause du retard de la desserte en eau d'irrigation lors de la campagne de 2014.

16

< Enquête sur le nombre d'agriculteur ayant l'intention d'adopter l'agriculture irriguée en 2015 >

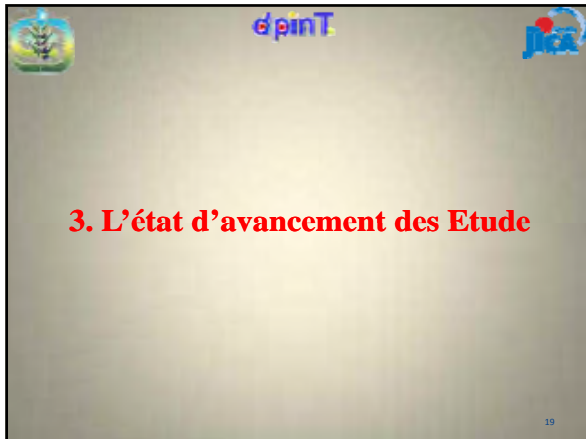
- Une augmentation du nombre d'agriculteur qui vont adopter l'agriculture irriguée en 2015 est prévue par rapport aux campagnes précédentes

17

Indicateur objectivement vérifiable 2

- L'amélioration progressive et annuelle des rendements par ha des cultures irriguées, à l'exception des rendements du PI Sedjnane

18



Contraintes et Recommandations	
CONTRAINTES	RECOMMANDATIONS
<p>< La desserte en eau d'irrigation ></p> <ul style="list-style-type: none"> - Retard de la desserte en eau d'irrigation du périmètre irrigué de Sedjnane - Durée de pompage insuffisante par la SECADENORD au PI Fernana et Sedjnane 	<ul style="list-style-type: none"> - Prendre les mesures nécessaires par la SECADENORD et les GDA a fin que les services d'irrigation seront reconnues comme crédibles auprès des agriculteurs
<p>< Drainage ></p> <ul style="list-style-type: none"> - Contraintes de drainage au niveau des 3 périmètres irrigués 	<ul style="list-style-type: none"> - Améliorer les conditions de drainage par la planification et l'attribution du budget nécessaire, en tenant compte des études effectuées par le projet.

21

Contraintes et Recommandations (Suite)	
CONTRAINTES	RECOMMANDATIONS
<p>< système hydraulique ></p> <ul style="list-style-type: none"> - Problèmes au niveau du réseau de distribution du système hydraulique, - Emplacement inadéquat des bornes d'irrigation 	<ul style="list-style-type: none"> - Prendre les mesures nécessaires pour une utilisation efficace des équipements d'irrigation, y compris les bornes d'irrigation, ceci en tenant compte des résultats des études effectuées dans le cadre du présent projet.
<p>< Promotion des techniques d'économie d'eau ></p> <ul style="list-style-type: none"> - Le problème de l'irrigation de surface 	<ul style="list-style-type: none"> - Promouvoir les techniques d'économie d'eau en adoptant les équipements d'irrigation goutte à goutte et aspersion. - Installer des compteurs d'eau fiables qui seront la base d'un système de facturation fiable, et qui se baseront sur les volumes d'eau enregistrés - Fournir aux agriculteurs une assistance financière (crédit ou subvention) pour pouvoir payer l'autofinancement nécessaire à l'acquisition des équipements d'irrigation à la parcelle

Contraintes et Recommandations (Suite)	
CONTRAINTES	RECOMMANDATIONS
<p><Création des SMSA></p> <ul style="list-style-type: none"> - SMSA de Nefza a été créé avec l'assistance du projet - Le procesus de création de l'SMSA de Sedjnane est en état de stagnation 	<ul style="list-style-type: none"> - Continuer à fournir suivi de l'SMSA de Nefza à fin d'assurer la durabilité de ses services - Fournir une assistance aux agriculteurs de Sedjnane pour pouvoir finir les étapes de création de l'SMSA et démarrer ses activités

23



Programme d'exécution des Etudes (2013-2014)

Activités	Etudes				Hydraulique Nefza
【 1 】 Ordre de Service de commencement des études	Drainage Sedjnane	Hydraulique Sedjnane	Bornes Sedjnane	Drainage Fernana	Hydraulique Nefza
Durée du Contrat (jours)	04/02/2014	27/02/2014	14/04/2014	10/03/2014	19/03/2014
【 2 】 Date de remise de rapport en édition définitive (phase 2)	180	210	120	120	150
Bureau d'Etudes	Intégrale Ingénierie	BICHE	BICHE	Intégrale Ingénierie	BICHE

Assainissement agricole, drainage et protection contre les eaux de ruissellement du Périmètre irrigué de Fernana

Description	Composantes du projet	Coût
<p>Le périmètre de Fernana se situe dans une zone dont les eaux pluviales sont drainées par des petits cours d'eau, traversant le périmètre pour rejoindre les d'eux importants oueds: Ghrib et Ghezala.</p> <p>Les pluies importantes qui tombent sur les zones basses, mal drainées, stagnaient durant plusieurs jours causant ainsi la chute de la production et même la perte totale des plantations.</p> <p>D'ou la nécessité du présent projet d'assainissement agricole, drainage et protection contre les eaux de ruissellement</p>	<ul style="list-style-type: none"> - Recalibrage des cours d'eau existants : 4945 ml - Création des nouveaux canaux en terre : 1890 ml - Création des fossés en terre : 992 ml - Remplacement d'ouvrages de traversée : 5 ouvrages - Création d'ouvrage de traversée : 5 ouvrages - Entretien d'ouvrage de traversée : 2 ouvrages 	<p>Soit un total de 1 261 500 DT TTC, soit 5867,44 DT/ha aménagé (sur la base de 215 ha)</p>

Assainissement agricole, drainage et protection contre les eaux de ruissellement du Périmètre irrigué de Sedjnane

Description	Composantes du projet	Coût
<p>Les problèmes d'inondabilité dans le périmètre irrigué de Sedjnane sont constatés au niveau des secteurs 1, 2, 3, 4 et 5. Ces problèmes se manifestent principalement dans les zones basses et résultent des débordements des petits cours d'eau (chaâba), appelés Khlij, de faible à moyenne importance.</p> <p>L'état physique des canaux et des cours d'eau, dans le périmètre, constitue une contrainte majeure pour l'évacuation des eaux de ruissellement. La faible pente, l'envasement et l'existence de la végétation sauvage dans ces axes d'écoulement constituent des obstacles à l'écoulement des eaux vers l'exutoire qui est constitué de l'oued Sedjnane et de ses affluents.</p>	<ul style="list-style-type: none"> - Recalibrage des cours d'eau existants : 29 255 ml - Création des nouveaux canaux en terre : 1984 ml - Nettoyage de cours d'eau : 1500 ml - Création des fossés en terre : 1544 ml - Remplacement d'ouvrages de traversée:14 ouvrages - Création d'ouvrage de traversée : 2 ouvrages - Entretien d'ouvrage de traversée : 2 ouvrages 	<p>Soit un total de 1 956 690, soit 1087,05 DT/ha aménagé (sur la base de 1800 ha)</p>

Etude de renforcement et repartition des bornes d'irrigation Dans le périmètre irrigué de Sedjnane

Description	Composantes du projet	Coût
<p>Le diagnostic a fait dégager que sur les 1122 bornes équipés 956 seulement sont fonctionnelles et 151 sont hors usage pour plusieurs raisons :</p> <ul style="list-style-type: none"> - Bornes mal placées - Bornes hors périmètres irrigué - Deux ou plusieurs bornes pour le même agriculteur - Bornes non exploitées pour des conflits d'usagée 	<ul style="list-style-type: none"> - Réhabilitation du génie civil des bornes d'irrigation - Réorganisation des bornes d'irrigation - Rajout des bornes d'irrigation et suppression d'autres - Raccordement des bornes de densification - Amélioration des équipements des bornes défaillants 	<p>Soit un total de 1 423 940, soit 971 DT/ha aménagé (sur la base de 1800 ha)</p>

Etude Hydraulique des réseaux d'adduction et de distribution du Périmètre irrigué de Sedjnane.

Description	Composantes du projet	Coûts (DT)
<p>Le périmètre de Sejnane qui couvre une superficie nette de 3749 ha est constitué de 8 secteurs d'irrigation indépendants (S1 à S8) s'étalant de part et d'autre de l'oued Sejnane et ayant des superficies très variables. Le système hydraulique est similaire d'un secteur à un autre et il comprend en particulier pour chaque secteur : Une station d'exhaure, une station de reprise juxtaposée, une conduite de refoulement – distribution, un réservoir de régulation de 300 m3 et un réseau d'adduction et de distribution (béton/PET).</p> <p>le périmètre irrigué de Sejnane souffre d'un déficit en eau pour plusieurs raisons:</p> <ul style="list-style-type: none"> ➤ Systèmes hydrauliques sous-dimensionnés ➤ Réservoirs d'eau très petits par rapport aux besoins de pointe ➤ Bornes d'irrigation mal réparties ➤ Durée journalière d'irrigation courte ➤ la plupart des ouvrages de contrôles sont défectueux ➤ Manque des compteurs d'eau pour la relève des consommations. 	<ul style="list-style-type: none"> ➤ Renforcement des différents complexes de pompage par 1 groupe d'exhaure et 1 groupe de reprise pour chaque secteur ➤ Remplacement des transformateurs sous dimensionnés par rapport aux nouvelles conditions de fonctionnement ➤ Renforcement des conduites de refoulement par dédoublement dans les 8 secteurs et séparation du refoulement de la distribution ➤ Renforcement du réseau de distribution de chaque secteur ➤ Création d'un réservoir de stockage pour chaque secteur (5.000 m3 pour S1 et S8 et 10.000 m3 pour les 6 autres secteurs) ➤ densification et amélioration de la répartition des bornes d'irrigation ➤ Réhabilitation des ouvrages courants et création d'autres pour renforcement. 	<p style="text-align: center;">Secteurs S1 et S2 = 5568205</p> <p style="text-align: center;">S3, S4 et S8 = 6389948</p> <p style="text-align: center;">S5 et S7 = 5996072</p> <p style="text-align: center;">S6 = 2071948</p> <p style="text-align: center;"><u>Total = 20026173</u></p>

**Etude d'Evaluation de la performance des systèmes hydrauliques au niveau
des secteurs de Touila et Ouechtata – Périmètre irrigué de Nefza.**

Description	Composantes du projet	Coûts (DT)
<p>Le périmètre de Nefza qui couvre une superficie nette de 2548 ha est constitué de 5 secteurs d'irrigation (S1 à S5) ayant des superficies variables. L'étude concerne seulement les deux secteurs de Touila et Ouechtata avec une superficie nette de 895 ha. Ces deux secteurs sont desservis par un seul système hydraulique comprenant :</p> <ul style="list-style-type: none"> ➤ une station d'exhaure flottante ➤ une station de reprise; ➤ La conduite de refoulement – distribution ; ➤ Le réservoir de régulation d'une capacité de 500 m3 ; ➤ Un réseau d'adduction et de distribution (béton/PET) ; ➤ Les ouvrages de sectionnement, de ventouses, de vidange et les bornes d'irrigation 	<ul style="list-style-type: none"> ✓ réparation et l'entretien des groupes de pompage non fonctionnels ✓ Renforcement de chacune des 2 stations d'exhaure et de reprise par une pompe de secours, ✓ Mise en service avec reprogrammation de l'automate du fonctionnement automatique de la station de reprise ✓ Entretien du poste de transformations MT/BT du complexe de pompage ✓ Séparation du refoulement de la distribution par l'ajout d'un tronçon de conduite entre le réservoir et le raccordement de la conduite d'adduction: L= 254 m ; DN = 800 mm ✓ Création d'un réservoir de stockage de 10 000 m3 ✓ Renforcement du réseau de distribution existant (4800 ml de conduite en PEhd DE 90 à 400) ✓ Remplacement des tronçons de conduites défectueux (appareilles, casses, fuites) ✓ Réhabilitation et création des ouvrages courants 	<p align="center">1.437.613</p>
<p>Les secteurs de Touila – Ouechtata souffre de plusieurs contraintes dont les principales</p> <ul style="list-style-type: none"> ✓ Pertes d'eau importantes dans le réseau (casses courantes de la conduite d'adduction), ✓ Vidange du réseau après l'arrêt de la station de pompage ✓ Chute de pression au niveau des zones hautes du secteur de Touila, ✓ Faible capacité du réservoir (manque d'une réserve d'eau) ; ✓ Durée d'irrigation limitée ; ✓ la plupart des ouvrages de contrôles sont défectueux ✓ Manque de matériel d'économie d'eau dans le périmètre, ✓ Manque des compteurs d'eau pour la relève des consommations au niveau de la majorité des bornes. 		