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**WATER AND LIVELIHOODS
INITIATIVE - WLI**

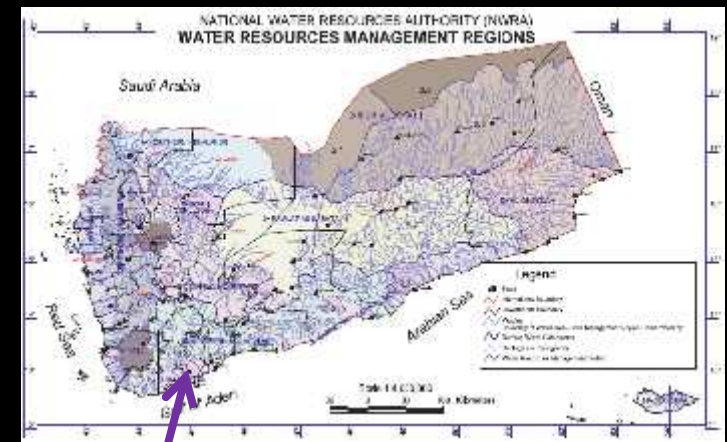


WLI 7th Annual Regional Coordination Meeting
3-4 November, 2015, Amman, Jordan

Water Management Strategies and Impacts on Livelihoods in (Abyan Delta - Yemen)

By:

Dr. Khader Balem Atroosh, WLI Focal Point, Yemen



Names of the team members:

Bio-Physical Team

No.	Name	Responsibilities	Institutions
1	Dr. Khader B. Atroosh	Focal Point	AREA
2	Eng. Ali Ahmed Yahya	Supplemental irrigation of sesame	AREA
3	Eng. Ahmed Hassan Salem	Supplemental irrigation of sesame	AREA
4	Eng. Rayad Mohamed Ahmed	Supplemental irrigation of sesame	
5	Eng. Sina Ali Mahfood	Promoting an integrated production system for clitoria forage with high water use efficiency	AREA
6	Eng. Abdullah Qassem Magram	Promoting an integrated production system for clitoria forage with high water use efficiency	AREA
7	Tech. Anwar Mabrook	Supplemental irrigation of sesame	AREA

Socio-Economic Team

No.	Name	Responsibilities	Institutions
1	Dr. Samir Abdulrahman	Soci-economic activities	AREA

WLI Goal and Intended Outputs

Overall Goal: to improve the livelihoods of rural households and communities in areas where water scarcity, land degradation, and associated problems are prevalent.

Intended Outputs:

Integrated water and land-use strategies for policy-making, tools for sustainable benchmark management and organizational mechanisms for community inclusion at the benchmark site.

Enhanced knowledge, skills and qualifications for key stakeholders in the benchmark sites.

Improved rural livelihoods of farmers in the benchmark sites through the adoption of sustainable land and water management practices and livelihood strategies.

National Policy Objectives in (Yemen):

National agriculture sector strategy 2012-2016: To sustainable agricultural development .

National water sector strategy and investment program, 2012-2016 (NWSSIP), water use efficiency.

National irrigation program, water productivity, more crop per drop.

Activities and work progress:

Activities related to the bio-physical research activities:

Activity 1: Fertigation of papaya, dissemination of clitoria and lipid, supplemental irrigation of spate irrigated sesame:

Dissemination of clitoria forage :

As a dissemination of clitoria forage, there was one new field with an area of 1 ha were planted with clitoria forage in 24 February 2015 at the farm of Shahab Al-Deen Almashoor but due to war on one hand and lack of diesel fuel to run the pumps on the other hand, the farmer could not continues with irrigation which led to wilting and death of the plant .

Technology Transfer of Supplementary Irrigation Technique for Spate Irrigated Sesame in the Abyan Delta of Yemen

Eng. Ahmed Hassan Salem
Eng. Ryad Ahmed Mohamed

Tech. Anwar Mabrook

Eng. Ali Ahmed Yehya
Abdulqader Alkhader

Objective: increase crop production and water productivity as well as improve the income

Material and Methods:

1. Four farms cultivated by spate irrigated sesame were selected.
2. Each field was divided into two parts, one to add supplemental irrigation and the other by using Farm practices (without supplementary irrigation).
3. One irrigation by spate water was added before planting and 100 mm supplemental irrigation by well water was added through the siphon at the beginning of flowering stage with addition 60kg/ ha of fertilizer urea (46% N).
4. For estimation the moisture content and bulk density, soil samples were taken before irrigation and after 24-hour of irrigation and at the harvest from the depths of 140 cm.

5. The soil water content was followed every months of the season.

The actual crop evapotranspiration of sesame was estimated by using the water balance equation as the following:

$$ETC = S_{Win} - S_{WE} + Irr. + Ref$$

6. Gross margin were calculated by using balance equation.

Results and Discussion:

Impact of Supplemental Irrigation Under Spate Irrigated Sesame

Years	Supplemental Irrigation				Control			Increasing Yield, %
	SI, mm	Etc, mm	Kg/ha	WUE, Kg/m ³	Etc, mm	Kg/ha	WUE, Kg/m ³	
2012/2013	105	346	1018	0.287	264	441	0.164	130.6
2014/2015	123	528	1173	0.32	405	544.8	0.195	115.9
Average	114	437.000	1095.500	0.304	334.500	492.900	0.180	123.250



Picture 1, Sesame field with supplementary irrigation



Picture 2, Sesame field without supplemental irrigation

Results and Discussion:

Source of variation	d.f.	s.s.	m.s.	v.r.	F pr.
Farmers stratum	3	409219	136406	5.08	
Farmers.*Units* stratum					
T	1	1450218	1450218	54.04	<.001
Years	1	67211	67211	2.5	0.148
T.Years	1	2678	2678	0.1	0.759
Residual	9	2415152678	26835		
Total	15	2170840			
Standard errors (se)	T = 57.9 , Years = 57.9 , T.Years = 81.9				
Least significant differences of means (l.s.d.)	T = 185.3 , Years = 185.3 , T.Years = 262				

Results and Discussion:

Average Benefit-cost analysis of supplemental irrigation of spate irrigated sesame using Partial Budget Analysis

Budge Elements	Units	2012/2013		2014/2015		Average	
		F	SI	F	SI	F	SI
Average productivity	Kg/ha	441.25	1017.5	544.75	1173.04	493.000	1095.270
Farm price	USD/Kg	2.326	2.326	2.326	2.326	2.326	2.326
Average revenue	USD/Kg	1026.3475	2366.705	1267.0885	2728.4911	1146.718	2547.598
Average labor costs	USD/ha	141.14	141.14	141.1	166.325	141.120	153.733
Average cost of mechanisms	USD/ha	131.81	131.81	111.8	131.8	121.805	131.805
Average cost of irrigation water	USD/ha	0	77.49	100	198	50.000	137.745
The average cost of manure	USD/ha	0	69.77	0	44.6	0.000	57.185
The average cost of seeds	USD/ha	12.56	12.56	12.6	12.6	12.580	12.580
The average cost of pesticide	USD/ha	18.14	18.14	0	0	9.070	9.070
Average cost of production transporting	USD/ha	9.3	9.3	23.3	23.3	16.300	16.300
Other costs	USD/ha	18.6	18.6	23.3	23.3	20.950	20.950
Total direct costs	USD/ha	331.55	478.81	412.1	599.925	371.825	539.368
Net return (Gross Margin)	USD/ha	694.8	1887.9	854.975	2128.55	774.888	2008.225
The average cost of production unit	USD/Kg	0.8325	0.5625	0.7775	0.5175	0.805	0.540
The average Rial return	USD/USD	2.095	3.9425	2.0725	3.535	2.084	3.739
Level of average cost	%	33.25	22.5	33.25	22.5	33.250	22.500
Benefit-cost Ratio	%	3.095	4.9425	3.0725	4.535	3.084	4.739

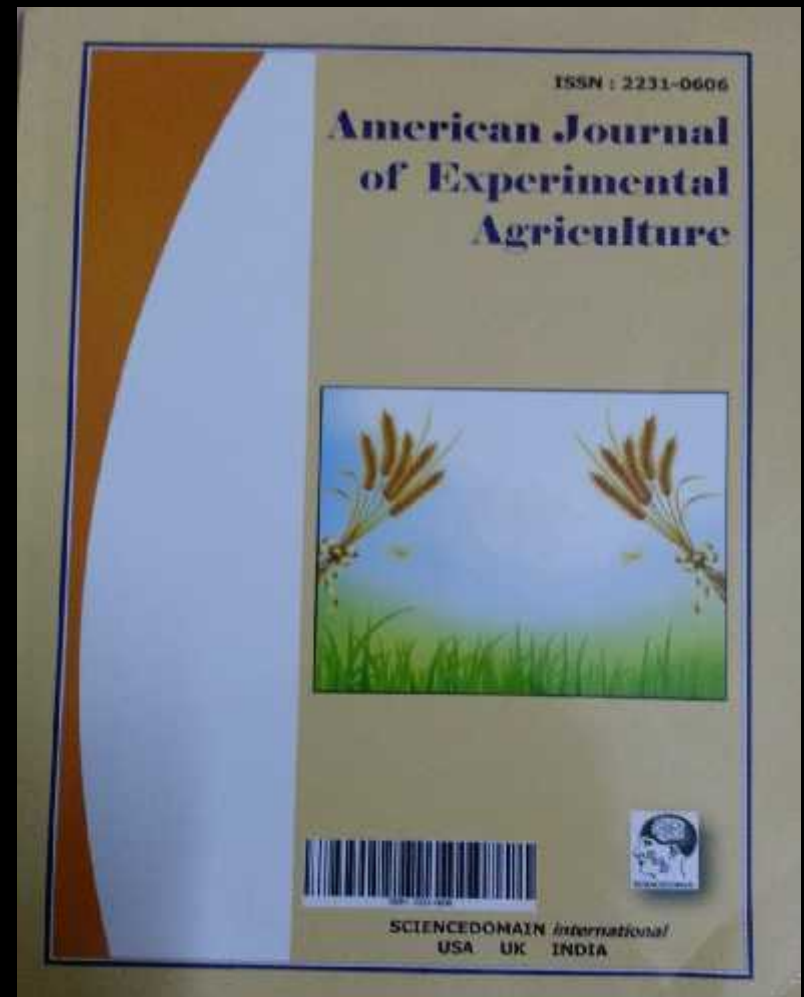
Strategic Activities for Knowledge Exchange and Enhancement

Publication of article:

From the reality of the WLI technical reports over the past years it has been published an article entitled "GIS-Based Assessment of Land Suitability for Industrial Crops (Cotton, Sesame and Groundnut) in the Abyan Delta, Yemen" in the American Journal of Experimental Agriculture, ISSN: 2231-0606, Vol.: 8, Issue.: 6, Page 384-405.

Article website:

<http://dx.doi.org/10.9734/AJEA/2015/16572>



Current status							
IP Data Entry							
Selected Tab Name							
Indicator Data							
Indicator / Disaggregation	Baseline Value	2013		2014		2015	
		Target PPR	Actual Updated	Target PPR	Actual	Target PPR	Actual
4.5.2(2): Number of hectares under improved technologies or management practices as a result of USG assistance							
Technology type							
crop genetics	ha	1	2	1	3	1	1
irrigation	ha	6	6	6	4	6	2
total w/one or more improved technology	ha	7	8	7	7	7	3
New/Continuing							
New	ha	2	2	2	5	2	1
Continuing	ha	5	6	5	2	5	2
Sex							
Male	ha		8		7		
4.5.2(5): Number of farmers and others who have applied new technologies or management practices as a result of USG assistance							
New/Continuing							
New	Num.	5	2		5		1
Continuing	Num.	4	6	8	6	8	2
Disaggregates Not Available							
Sex							
Male	Num.	8	8	7	11	7	3
Female	Num.	1		1		1	
4.5.2(7): Number of individuals who have received USG supported short-term agricultural sector productivity or food security training							
Type of individual							
People in government	Num.				2		
4.5.2(11): Number of food security private enterprises (for profit), producers organizations, water users associations, women's groups, trade and business associations, and community-based organizations (CBOs) receiving USG assistance							
Type of organization							
Producers organizations	Num.	1		1		1	1
Women's groups	Num.	1	2	1	2	1	1
New/Continuing							
New	Num.	2	2				
Continuing	Num.			2	2	2	2
4.5.2(39): Number of new technologies or management practices in one of the following phases of development: (Phase I/II/III)							
Phase 3		4	3	6	2	6	2
Number of new technologies or management practices made available for transfer as a result of USG assistance	Num.						

Difficulties:

1. Outbreak of the war since the late of March to August 2015 prevented the implementation of most of the planned activities
2. Lack of oil derivatives, and thus stop irrigation for reasons of lack of diesel fuel to run the pumps on farms cultivated with clitoria.

Estimated Budget for work Plan, 2016

Activities	Amount, US \$
1. IWLM Strategies	6000
1. Types of agricultural land tenures and its impact on crops returns in Abyan Delta	3000
2. Assess the extent of adoption of water use efficiency techniques by farmers in the Abyan Delta	3000
2. Improved Livelihood	16000
1. Launch on farm activities related to water productivity in close collaboration with the farming community (dissemination of Fertigation of Papaya/ Banana, Lipid/ Clitoria forage, supplemental irrigation of spate irrigated sesame)	16000
3. Enhanced Knowledge	8000
1. Workshop on WLI outputs in the Abyan Delta	6000
2. Publications	2000
Total	30000

Thank You for your attention