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LITANI RIVER BASIN MANAGEMENT SUPPORT PROGRAM

FARMER SATISFACTION FOLLOW-UP SURVEY
(NOVEMBER – DECEMBER 2011)

January 2012

This report was produced for review by the United States Agency for International Development (USAID). It was prepared by International Resources Group (IRG) under Contract EPP-I-00-04-00024-00 order no 7.

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DISCLAIMER

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government

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LIST OF Acronyms

GOL	Government of Lebanon
Ii	Information International
IRG	International Resources Group
IQC	Indefinite Quantity Contract (a contracting mechanism for USAID)
LRA	Litani River Authority
LRBMS	Litani River Basin Management Support Program
NGO	Non-Governmental Organization
PMP	Performance Monitoring Plan
USAID	United States Agency for International Development

FOREWORD

The Farmers Satisfaction Survey for the year 2011 was carried out by Information International sal, a research consultancy firm based in Beirut, Lebanon, under subcontract with International Resources Group (IRG), the main contractor under the Litani River Basin Management Support (LRBMS) Program, a USAID- funded program in Lebanon (Contract EPP-I-00-04-00024-00 Task Order No.7) under the Integrated Water and Coastal Resources Management Indefinite Quantity Contract (IQC) II.

The data analysis and reporting were also conducted by Information International sal.

EXECUTIVE SUMMARY

PROGRAM BACKGROUND

The LRMBS Program is a four-year program to improve water management in the Litani River Basin in the Bekaa. It is undertaken by IRG, in cooperation with LRA, and is funded by USAID. The program began in October 2009 and has four components: Building institutional capacity, Water monitoring, Irrigation management and Risk management.

As part of the implementation of the LRBMS Program, IRG is to monitor progress and achievements through a Performance Monitoring Plan (PMP). The LRBMS PMP uses thirteen indicators, some of them being drawn from the USAID Lebanon Performance Management Plan. One of these indicators (from the USAID PMP) is a customer satisfaction survey. This indicator was defined as focusing on the only water users that are directly served by the counterpart agency, the Litani River Authority (LRA), i.e. farmers who annually subscribe to receive irrigation water from the LRA-managed “Canal 900”.

In order to help monitor and assess LRBMS’s performance, IRG contracted Information International to carry on a follow-up survey (a baseline survey was conducted in December 2010) to increase its understanding of the farmers practices and assess their level of satisfaction with the provided services.

2010 SURVEY BASELINE

Before conducting the baseline statistical survey in 2010, field investigations familiarized the survey team with the characteristics of the area and farmers. Farmer interviews provided insights on farmers’ issues and perception of Canal 900 management by LRA. The findings were:

1. Management inefficiency: Farmers are negatively affected by the poor management of the Canal 900 distribution network.
2. Mistrust in the LRA-farmer relationship: Communications are limited and biased.
3. Short irrigation season: Canal 900 operates only in May-October, while rains sometimes do not occur in April and November (and crops are also grown in winter).
4. Pollution issue: Poor water quality impacts crop quality and equipment.

The survey team then identified five research topics:

1. Identify and prioritize public perception of water-related problems affecting them.
2. Assess interest/willingness to be engaged in solving water-related issues.

3. Assess relationship with LRA and other governmental agencies.
4. Identify farmer decision making regarding irrigation water source (groundwater or surface).
5. Assess farmer satisfaction with irrigation services provided by LRA.

A simple and focused questionnaire was then developed to address these five research themes. The size of the survey sample was set at 50, as a compromise between the need to have a representative sample, which requires a minimum size of 20-30 farmers; and total number of farmers in the area (200 to 300, out of which 100 or so are subscribed).

42 farmers were then randomly selected from the LRA subscription list, while respecting the geographic spread and holding size. A small number (8) of non-subscribed farmers (irrigating from private wells) were also involved as control group. The respondents' age ranged between 20 and 70 years. 92% of the respondents were male and only 8% of them were female. The final sample can be considered as reasonably representative, since sampling errors cannot be completely eliminated. Survey was conducted in December 2010 by enumerators familiar with the survey area.

2011 SURVEY PROCESS

The collection of information for the full scope of the follow-up survey in 2011 study was achieved through conducting face to face interviews with a sample of 50 farmers (out of a total of around 250 farmers, out of whom 172 are subscribed with LRA) in six villages in the Bekaa area in Lebanon: Qaraoun, Baaloul, Lala, Joub Janine, Saghbine and Kamed Loz. The **same questionnaire** developed for last year's survey was adopted, with minor modifications approved by the IRG Team. The **same sample size of farmers**, as per last year's survey, was adopted as follows:

- 42 farmers were selected from the LRA subscription list provided by IRG (172 subscribed farmers, including 6 females), based on a proportionate sample with regards to number of farmers in each of the related villages, holding size and geographic area.
- 8 non subscribed farmers were also included in the sample.

The field work was conducted between November 28, 2011 and December 13, 2011.

MAIN SURVEY FINDINGS

The main findings of the survey can be summarized as follows:

Farmers Perception of Water Issues: Pollution ranks first (36%) on the list of water issues faced by the interviewed farmers, followed by the timing of water delivery. In last year's survey, pollution was also

the most prevalent water issue (56%), followed by water scarcity. Better cooperation between the farmers and LRA may be a way of treating water related problems, but still the wide majority of farmers consider that this issue is LRA's responsibility.

Farmers Willingness to solve water issues: Very similar to last year's results, the majority of farmers are not willing to compromise for the sake of one another (82% in 2011 versus 84% in 2010), but still more than half of the farmers are willing to pay an extra amount of money if LRA was willing to give irrigation out of the regular times when rainfall is scarce (60% in 2011 versus 62% in 2010).

Relationships with and awareness of roles of LRA and other GOL Agencies: 68% of interviewed farmers never or rarely receive advice from LRA in comparison to 60% last year. Farmers usually meet with LRA staff only when they pay their annual fees. A negative view of the role of agricultural cooperatives, agricultural regional centers, Water Users' Associations (WUAs) and other related organizations is also expressed by the surveyed farmers who view the former as extremely inactive. The majority of farmers expect the Ministry of Agriculture and related agencies to handle the extension services, while the handling of the water distribution at the system and plot level should be handled mainly by LRA.

Farmers Choice of Irrigation System: Drip and sprinkler are the most used types of irrigation, yet there is a progressive shift towards drip in 2011. In 2010, 50% of the interviewed farmers were using drip and 65% were using sprinklers. While in 2011, 74% of the interviewed farmers are using drip and 52% are using sprinklers. However, a small percent still use surface irrigation (furrow and basin). The main factor that guides the farmers' choice in irrigation type is its suitability for the type of crops. Those results are close to last year's results.

Farmers' Satisfaction with LRA Services: 69% of the interviewed farmers are satisfied with the overall services provided by LRA, in comparison to 46% in 2010. This increase in the level of satisfaction may be read as improved LRA performance, it is also due to rainfall variations. Spring 2010 was dry (rain stopped in March) and farmers were upset with the late start of Canal 900 operations (end of April). Spring 2011 was very wet with rains until mid-May.

ملخص تنفيذي

الخلفية

ان برنامج دعم ادارة حوض نهر الليطاني المعروف بـ LRBMS يمتد لاربعة اعوام ويهدف إلى تطوير ادارة المياه في حوض نهر الليطاني في البقاع. تنفذ هذا المشروع شركة IRG، بالتعاون مع المصلحة الوطنية لنهر الليطاني، وهو ممول من قبل الوكالة الامريكية للتنمية الدولية الـ USAID . بدأ العمل في هذا البرنامج في العام ٢٠٠٩ ويحتوي على اربعة اجزاء: بناء القدرات، مراقبة المياه، ادارة مشاريع الري وادارة المخاطر.

قامت شركة IRG بمراقبة تقدم وتطور النتائج من خلال خطة مراقبة الاداء المعتمدة وذلك كجزء من البرنامج التنفيذي لـ LRBMS . إن خطة مراقبة الاداء المنفذة من قبل الـ LRBMS اعتمدت على ثلاثة عشر مؤشر، بعض من هذه المؤشرات تعتمد على خطة ادارة الاداء في الـ USAID لبنان، واحد من هذه المؤشرات هو استقصاء مدى رضى الشركاء في العمل. اعتمد برنامج الـ LRBMS هذا المؤشر الذي يركز على مستخدمي المياه ومدى رضاهم عن تقديمات المصلحة الوطنية لنهر الليطاني من خلال مشروع ري البقاع الجنوبي المعروف بمشروع القناة ٩٠٠.

من اجل المساعدة في رصد وتقييم اداء الـ LRBMS، قامت شركة IRG بالتعاقد مع الشركة الدولية للمعلومات من اجل دراسة ممارسات المزارعين وتقييم مستوى الرضى عن الخدمات المقدمة من المصلحة الوطنية لنهر الليطاني. هذه الدراسة هي الثانية بعد الدراسة الاساسية التي نفذت في كانون الاول ٢٠١٠.

المعطيات الاساسية لمسح العام ٢٠١٠

قبل اجراء المسح الاحصائي، قام الفريق المختص بالتعرف إلى المنطقة وعلى المزارعين. قدمت المقابلات مع المزارعين رؤيتهم الواضحة لادارة مشروع ري القناة ٩٠٠ وكانت النتائج على الشكل التالي:

- ١ عدم الكفاءة الادارية: ابدى المزارعون امتعاضهم من الطريقة التي تدار فيها شبكة الري؛
- ٢ عدم الثقة بين المصلحة الوطنية لنهر الليطاني والمزارعين: تقتصر الاتصالات على بعض الاشخاص وهي محدودة جداً؛

- ٣- الفترة الزمنية القصيرة للري: تعمل القناة ٩٠٠ من ايار إلى تشرين الاول، حيث تتوقف الامطار احياناً من شهر نيسان إلى تشرين الثاني ما يؤدي خلل في عملية الري؛
- ٤- قضية التلوث: نوعية المياه السيئة تؤثر على نوعية المحاصيل وعلى المعدات المستخدمة.

قام فريق المسح بتحديد خمس مواضيع بحثية على الشكل التالي:

- ١- وضع اولويات وتحديد مشاكل المياه التي تؤثر على المزارعين؛
- ٢- تقييم الفائدة/الرغبة في المشاركة في حل المسائل المتعلقة بالمياه؛
- ٣- تقييم العلاقة بين المصلحة الوطنية لنهر الليطاني والجهات الحكومية الاخرى؛
- ٤- تحديد المزارعين ذوي القدرة على اخذ القرار لجهة مصدر المياه (مياه جوفية أو سطحية)؛
- ٥- تقييم رضى المزارعين عن خدمات الري التي تقدمها المصلحة الوطنية لنهر الليطاني.

ومن ثم تم تطوير استبيان بسيط ومركز لمعالجة المواضيع البحثية الخمسة اعلاه حيث تم تعيين حجم عينة المسح بـ ٥٠ مزارع كحل وسط فيما بين الحاجة إلى وجود عينة معبرة يمكن الاعتماد عليها، الامر الذي يتطلب ٢٠ إلى ٣٠ مزارع عن كل ١٠٠ مزارع وحيث ان اجمالي المزارعين في المنطقة يتراوح بين ٢٠٠ إلى ٣٠٠ والمشاركين في ري الليطاني ١٠٠، لذلك تم اختيار ٤٢ مزارعاً من المشتركين بطريقة عشوائية و٨ مزارعين من غير المشاركين والذين يعتمدون على الآبار الجوفية الخاصة اما بالنسبة إلى اعمار المشتركين في المسح فتراوحت بين ٢٠ و ٧٠ عاماً، ٩٢٪ منهم من الذكور و٨٪ من الاناث. وبهذه الطريقة يمكن اعتبار هذا المسح يعكس بشكل كبير الواقع.

وقد اجري هذا المسح في كانون الاول ٢٠١٠ من قبل اشخاص على دراية بمنطقة المسح.

عملية المسح للعام ٢٠١١

إن تحقيق جمع المعلومات بشكل كامل ودقيق لمسح العام ٢٠١١ اعتمد على اجراء المقابلات وجهاً لوجه مع خمسين مزارع (من اصل ٢٥٠ مزارع، ١٧٢ منهم مشتركين في خدمات الري للمصلحة الوطنية لنهر الليطاني) وذلك في ٦ قرى من البقاع الجنوبي وهي القرعون، بعلول، لالا، جب جنين، صغبين وكامد اللوز. اعتمد في هذا المسح نفس عدد المزارعين ونفس الاستبيان لمسح العام الماضي، مع ادخال بعض التعديلات بعد موافقة الـ IRG . حيث تم ذلك على النحو التالي:

- تم اختيار ٤٢ مزارعاً مشتركاً من القائمة التي زودت بها مصلحة الليطاني الـ IRG (١٧٢ مزارع مشترك من اصلهم ٦ مزارعين إناث)، وتم الاستناد على حجم العينة بالنسبة الى عدد المشتركين في كل منطقة جغرافية؛

• شارك في هذا المسح ٨ مزارعين غير مشتركين في خدمات الري المقدمة من قبل مصلحة الليطاني.

اجري العمل الميداني بين ٢٨ تشرين الثاني و ١٣ كانون الاول من العام ٢٠١١.

النتائج الرئيسية للمسح

يمكن تلخيص النتائج الرئيسية للمسح على النحو التالي:

إدراك المزارعين لمشاكل المياه: اعتبر (٣٦%) من المستطلعين ان مشكلة التلوث هي المشكلة الاولى التي يواجهونها في قائمة قضايا المياه، يتبعها مشكلة توقيت اعطاء او توصيل المياه اليهم. بالمقارنة مع العام الماضي فإن (٥٦%) من المستطلعين اعتبر مشكلة التلوث هي الاولى مع توقيت توصيل المياه. ان التعاون بين المزارعين ومصلحة الليطاني هي الوسيلة الافضل لمعالجة هذه القضايا مع العلم ان قسم كبير من المزارعين لا يزال يعتبر ان حل هذه الامور من واجبات المصلحة الوطنية لنهر الليطاني.

ارادة المزارعين في حل قضايا المياه: اتت نتائج الاستطلاع في هذا المجال مشابهة لنتائج العام الماضي، حيث عبر غالبية المستطلعين عن عدم استعدادهم لتقديم التنازلات من اجل بعضهم البعض (٨٢% في عام ٢٠١١ مقابل ٨٤% عام ٢٠١٠)، ولكن من ناحية اخرى ما زال اكثر من نصف المستطلعين مستعد لدفع مبلغ اكبر مقابل ان تزودهم مصلحة الليطاني بالمياه اثناء الشحائح ولو خارج التوقيت التقليدي لموسم الري (٦٠% في العام ٢٠١١ و ٦٢% في ٢٠١٠).

العلاقة ما بين المصلحة الوطنية لنهر الليطاني والجهات الحكومية الاخرى: هناك نقص في الوعي لاهمية هذه العلاقة ما ينعكس سلباً على دور المصلحة التوعوي حيث ان معظم المزارعين يلتقون مع عمال المصلحة فقط مع بداية موسم الري اي لدى ذهابهم للتسجيل في مكاتب المصلحة (٦٨% تواصلوا مع مصلحة الليطاني في العام ٢٠١١ مقابل ٦٠% للعام ٢٠١٠)، كما ابدى المستطلعون استياءهم من جمعيات مستخدمي المياه ومراكز الزراعة الاقليمية والدور السلبي للتعاونيات الزراعية، وقد عبر جميع المستطلعون عن رغبتهم في تلقي الارشاد الزراعي من قبل وزارة الزراعة وان ينحصر دور المصلحة الوطنية لنهر الليطاني في تحسين وتنظيم ادارة المياه.

اختيار المزارعين لنظم الري: إن اكثر نظم الري اعتماداً في منطقة الاستطلاع هي الري بالتنقيط او الرش، ولكن من الواضح ان هناك توجه تدريجي إلى اعتماد الري بالتنقيط في العام ٢٠١١ يفوق الـ ٢٠١٠ حيث اعتمد ٥٠% من المستطلعين الري بالتنقيط و ٦٥% منهم الري بالرش في العام ٢٠١٠ مقابل ٧٤% من المستطلعين اعتمد الري بالتنقيط و ٥٢% منهم الري بالرش في العام ٢٠١١ ومع ذلك فإن

نسبة صغيرة لا تزال تعتمد الري بالتطويق. ما يحدد طريقة الري هو ملاءمتها للمحاصيل حيث ان معظم المزارعين يستخدمون الري بالتنقيط للخضار والاشجار المثمرة اوبالرشاشات للبطاطا. هذه النتائج هي قريبة من نتائج العام الماضي.

رضا المزارعين عن الخدمات التي تقدمها المصلحة الوطنية لنهر الليطاني: لقد عبر ٦٩٪ من المستطلعين عن رضاهم عن خدمات المصلحة في العام ٢٠١١ مقابل ٤٦٪ منهم في العام ٢٠١٠ وهذا التحسن يعود إلى نتائج الحوار الذي بدأ مع المصلحة كذلك بسبب عامل المناخ حيث كان ربيع العام ٢٠١٠ جاف وتأخرت المصلحة في بدء موسم الري بينما كان ربيع العام ٢٠١١ رطباً نسبياً.

I. INTRODUCTION

I.1. AUTHORIZATION

International Resources Group (IRG) was contracted by USAID/Lebanon (Contract EPP-I-00-04-00024-00 Task Order No. 7) under the Integrated Water and Coastal Resources Management Indefinite Quantity Contract (IQC) II to implement the Litani River Basin Management Support (LRBMS) Program. The period for performance of the contract is September 29, 2009 to September 30, 2012.

I.2. PROGRAM OBJECTIVES

The purpose of the LRBMS Program is to set the ground for improved, more efficient and sustainable basin management at the Litani river basin through provision of technical support to the Litani River Authority and implementation of limited small scale infrastructure activities.

The LRBMS program is part of USAID's increasing support for the water sector in Lebanon. The Litani River Basin suffers the fate of many river basins around the world: increasing demands compete for limited natural resources. Groundwater over-exploitation, deforestation and overgrazing, unplanned urban sprawl, untreated wastewater effluents, and unsustainable agricultural practices contribute to environmental degradation in the form of declining water and soil quality.

Solutions do exist to reverse these trends and establish sustainable management practices. The key to successfully implement such solutions requires applying the principles of Integrated Water Resources Management (IWRM) through a single river basin authority rather than multiple agencies responsible for different aspects of water management as is the case in many countries. Fortunately, the existence of the Litani River Authority (LRA) provides a unique platform to become such an IWRM river basin authority that will mobilize stakeholders in the river basin and address these challenges in an integrated manner.

Successful implementation of LRBMS will prepare the LRA to assume the role of an integrated river basin authority upon the removal of the present legal constraints.

I.3. PROGRAM COMPONENTS

Under the LRBMS program, LRBMS will work with national and regional institutions and stakeholders to set the ground for improved, more efficient and sustainable basin management at the Litani River

basin. The LRBMS technical assistance team will provide technical services and related resources to LRA in order to improve their planning and operational performance and equip them with the necessary resources for improved river basin management.

Under the LRBMS program, LRBMS will work with national and regional institutions and stakeholders to set the ground for improved, more efficient and sustainable basin management at the Litani River basin. The LRBMS technical assistance team will provide technical services and related resources to LRA in order to improve their planning and operational performance and equip them with the necessary resources for improved river basin management.

To achieve the LRBMS program objectives, the Contractor shall undertake tasks grouped under the following four components:

- 1) Building Capacity of LRA towards Integrated River Basin Management
- 2) Long Term Water Monitoring of the Litani River
- 3) Integrated Irrigation Management which will be implemented under two sub-components:
 - a. Participatory Agriculture Extension Program: implemented under a Pilot Area: West Bekaa Irrigation Management Project
 - b. Machghara Plain Irrigation Plan
- 4) Risk Management which will be implemented under two sub-components:
 - a. Qaraoun Dam Monitoring System
 - b. Litani River Flood Management Model

I.4. PURPOSE OF THE REPORT

As part of the implementation of the LRBMS Program, IRG is to monitor progress and achievements through a Performance Monitoring Plan (PMP). The LRBMS PMP uses thirteen indicators, some of them being drawn from the USAID Lebanon Performance Management Plan. One of these indicators is a customer satisfaction survey to be carried out under LRBMS.

This indicator was defined under LRBMS as focusing on the only water users that are directly served by LRA, the counterpart agency, that is the farmers located next to “Canal 900” and who annually subscribe to receive irrigation water (among other responsibilities, LRA manages an irrigation system based around “Canal 900”, a canal supplied with water pumped from Qaraoun reservoir and which serves about 600 ha around the town of Joub Jenine). In order to assess the level of satisfaction of these farmers, a survey

was thus conducted to investigate farming practices and notably farmers' interactions and satisfaction with the services provided by LRA

This report presents the results of the follow-up survey conducted by Information International sal (a research consultancy firm), upon the request of IRG as part of the implementation of the LRBMS program.

The survey looks mainly into assessing the level of satisfaction of farmers from LRA services as well as investigating their farming practices.

I.5. CONTENT OF THE REPORT

The remainder of the report is divided into two chapters:

- Chapter 2 describes the objectives of the survey, the methodology used as well as the problems faced.
- Chapter 3 presents the results of the survey and related analysis.

2. SURVEY AREA AND PRINCIPLES

2.1. SURVEY AREA

As per last year, the follow up survey was conducted with farmers in the Canal 900 command area of the LRA in Central Bekaa, including the following villages: Qaraoun (257 hectares), Baaloul (68 hectares), Lala (247 hectares), Joub Jenine (900 hectares), Saghbine (120 hectares) and Kamed Loz (320 hectares).

The overall area that is eligible for irrigation in the related six villages is 2,000 hectares. 1,912 hectares are equipped to be irrigated but only 1,620 hectares are currently being irrigated.

Survey Area



2.2. SURVEY APPROACH

The same questionnaire used in last year's survey was adopted for the current follow –up survey as per the Client request (Appendix A).

The list of subscribed farmers in 2011 (172 subscribers) was obtained from IRG. The farmers were stratified by location within the command area, size of holding as well as type of farming and cropping patterns in order to ensure a representative sample.

The number of farmers needed by geographic area and size of holding was calculated. A systematic random sample was then adopted to select the farmers who would constitute potential respondents for the current survey.

As mentioned previously, and as per last year's distribution, the sample consisted of 42 subscribed farmers who pay LRA for water delivery from canal 900 (around 81% of the sample) and another eight (8) non-subscribed farmers who pump from wells (around 19% of the sample).

The subscribed farmers were drawn from the list provided by LRA, stratified by location within the command area, size of holding as well as type of farming and cropping patterns in order to ensure a representative sample.

The non subscribed farmers were drawn from lists obtained from the relevant municipalities and fellow farmers.

Face to face interviews were conducted with the selected farmers, using the same questionnaire that was administered through last year's survey to allow for comparison of results.

2.3. PROBLEMS FACED IN THE FIELD

The data collection was undertaken by eight experienced field workers and two supervisors. As per Ii's policy, the field workers were first trained by a Senior Analyst on the questionnaire before the field survey.

Throughout the data collection period, the following problems were faced by the field work team:

- Difficulties in finding the selected farmers at home, as most of them were in their fields, which necessitated escorting them to their land plots.
- The lack of willingness of farmers to allocate a long time for an interview as most of them were actually working in their agricultural fields. The field workers had to conduct part of the interview; wait for the farmer to finish whatever tasks he had to do and then continue the rest

of the interview. Some had to stop several times in order to be able to conduct one complete interview.

- The weather conditions (heavy rain) that stopped the fieldwork for three consecutive days.

2.4. DATA CHECKING/ENTRY/ANALYSIS

Once the questionnaires were cleared by the supervisors, they were transferred to the coding/entry department where they underwent complete logical checking. The coding officers carried out the following tasks:

- Assign a serial number to each questionnaire
- Review each questionnaire
- Code each complete questionnaire.

In order to ensure the accuracy of information, the data entry function and the data cleaning were carried out independently, using the ACCESS program.

The Assistant Analyst and the database developer, especially trained by the Data Analyst Supervisor for the application, were responsible for structuring the application and checking the work of the data operators.

The Senior Analyst investigated the findings in accordance with the study objectives and management instructions. The SPSS software package was utilized for the data analysis.

3. SURVEY RESULTS

3.1. SAMPLE DESCRIPTION

The sample consists of 50 farmers: 42 subscribed with LRA, and another 8 farmers who are not subscribed, as requested by the Client to keep up to last year's survey distribution.

94% of the interviewed farmers were males and 6% females. Their ages range from 25 to 84 years old, with a mean of 54.12 years.

Table 1: Age distribution of Surveyed Farmers

Age of Farmers	Percent
25-34	6%
35-44	20%
45-54	24%
55-64	20%
65+	30%
Total	100.0%

18% of the farmers are from Qaraoun, 14% from Saghbine, 24% from Lala, 4% from Baaloul, 28% from Joub Janine and 12% from Kamed El Loz.

The majority of the interviewed farmers do not rely on family labor in their agricultural activities as 50% reported not to have family workers.

Table 2: Number of Family Workers

Number of Family Workers	Percent
0	50%
1	28%
2	8%
3	6%

4	6%
12	2%
Total	100.0%

44% state they have 1-2 permanent workers while the number of seasonal workers employed ranged from 0 to 60 workers.

Table 3: Number of Permanent Workers

Number of Permanent Workers	Percent
0	32.0%
1	24.0%
2	20.0%
3	8.0%
4	6.0%
6	4.0%
7	4.0%
10	2.0%
Total	100.0%

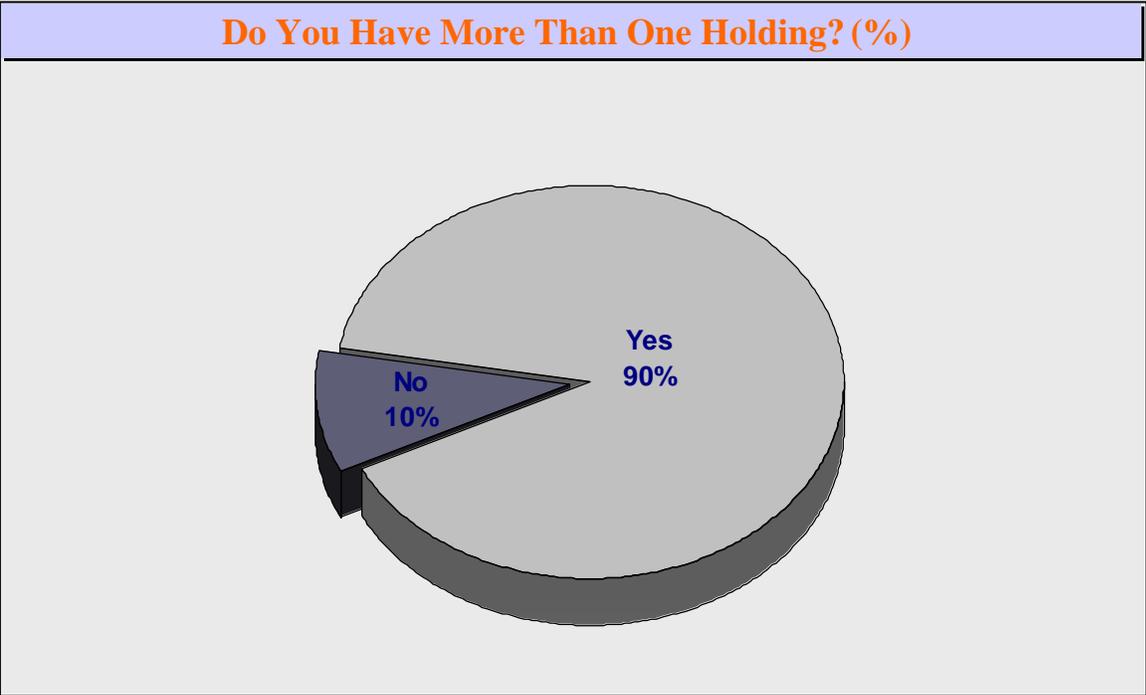
Table 4: Number of Seasonal Workers

Number of Seasonal Workers	Percent
0	2.0
1	2.0
2	2.0
3	4.0
4	10.0
5	6.0
6	2.0

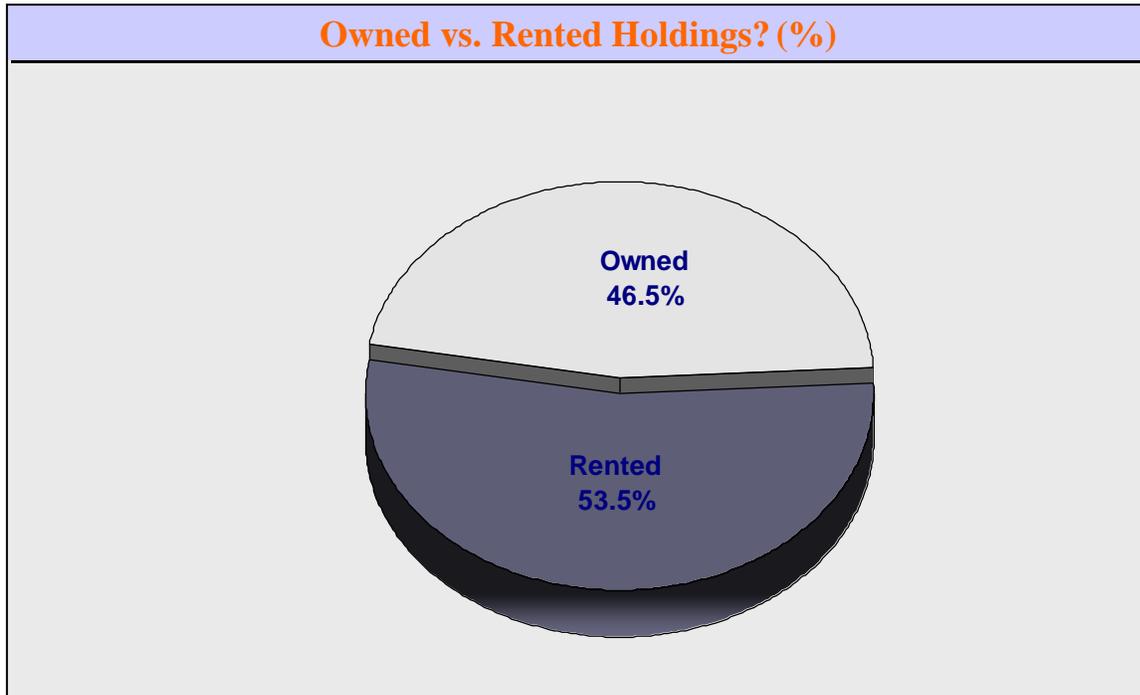
7	2.0
8	2.0
10	16.0
12	4.0
15	4.0
20	6.0
25	8.0
30	2.0
40	4.0
50	8.0
60	8.0
Not Specified	8.0
Total	100.0%

Respondent farmers operate 144 holdings (110 for the subscribed farmers and 34 for the non-subscribed ones); 90% operate more than one holding while only 10% operate a single holding. 53.5% of the holdings are rented, compared to 46.5% that are owned.

Graph 1: Do you Have More than One Holding?



Graph 2: Rented Vs. Owned Holdings



The type of soil of the farmers' holdings- as reported by the farmers in the survey- is mainly sandy (68.8%), followed by red soil (28.5%) and clay (11.8%). No difference in the type of soil was detected between the subscribed farmers and the non-subscribed ones.

Table 5: Type of soil of Holdings as reported by Farmers

Type of Soil	Percent
Sand	68.8%
Silt	11.1%
Clay	11.8%
Red	28.5%
White	7.6%
Gray	2.8%
Total	100.0%

The average size of the holdings was around 45 Dunums, ranging from 0.5 Dunum to 300 Dunums. The majority of the surveyed farmers report to irrigate their holdings 4, 6 or 10 hours per day in accordance with the size of their holdings (16.7%, 16% and 13.9% respectively).

Table 6: Hours of Irrigation per day

	LRA Subscribers	Private Own and Common Wells	Overall
Hours of Irrigation per Day	Percent	Percent	Percent
0.5	0	2.9	.7
1	9.1	.0	6.9
2	1.8	11.8	4.2
3	.0	11.8	2.8
4	14.5	23.5	16.7
5	3.6	.0	2.8
6	18.2	8.8	16.0
7	11.8	.0	9.0
8	10.0	8.8	9.7
9	.9	.0	.7
10	13.6	14.7	13.9
12	8.2	14.7	9.7
24	5.5	.0	4.2
Non-Irrigated	2.7	2.9	2.8
Total	100.0	100.0	100.0

The water pressure variations (in Bars) at the field hydrant are detailed in table 7.

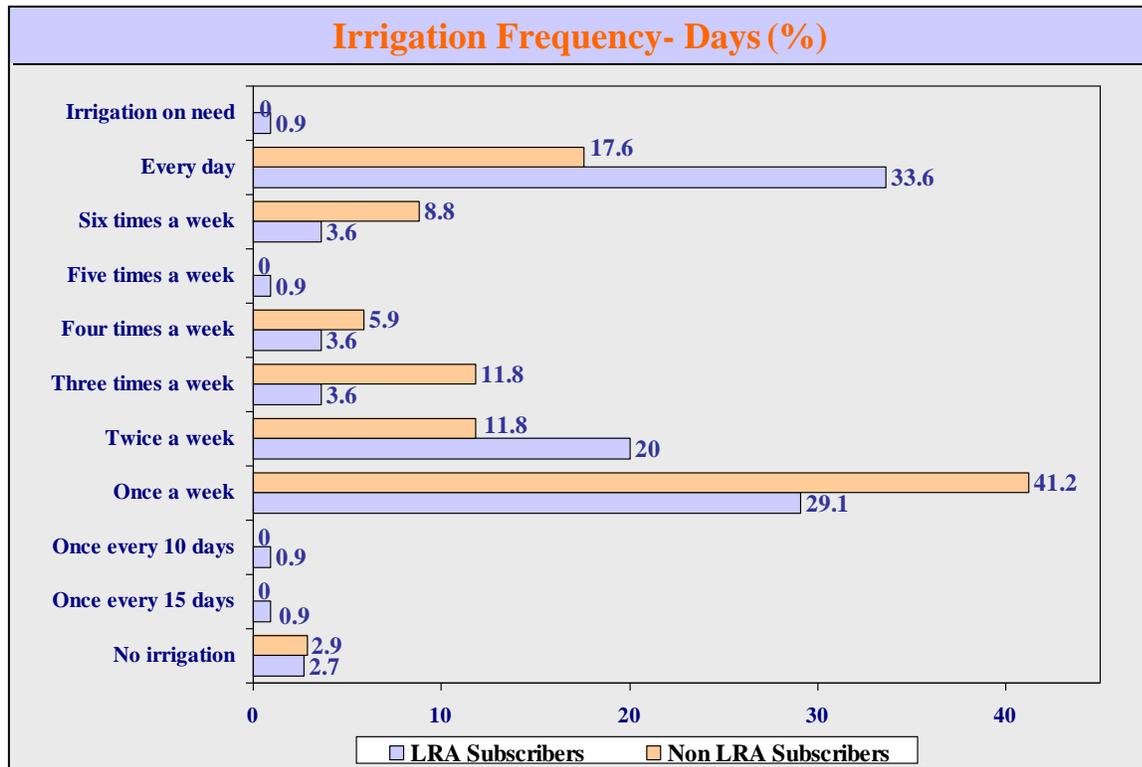
Table 7: Water Pressure

Water Pressure (Bar)	LRA Subscribers	Private Own and Common Wells	Overall
	Percent	Percent	Percent

1	6.4	0	4.9
1.5	4.5	17.6	7.6
2	17.3	0	13.2
2.5	10.9	11.8	11.1
3	4.5	0	3.5
4	19.1	8.8	16.7
4.5	6.4	5.9	6.3
5	8.2	17.6	10.4
6	6.4	2.9	5.6
8	.9	0	.7
Spring	.9	8.8	2.8
Water Tanks	0	14.7	3.5
Private pumps directly from the channel	3.6	0	2.8
Rainfed	2.7	2.9	2.8
Do not Know	8.2	8.8	8.3
Total	100.0	100.0	100.0

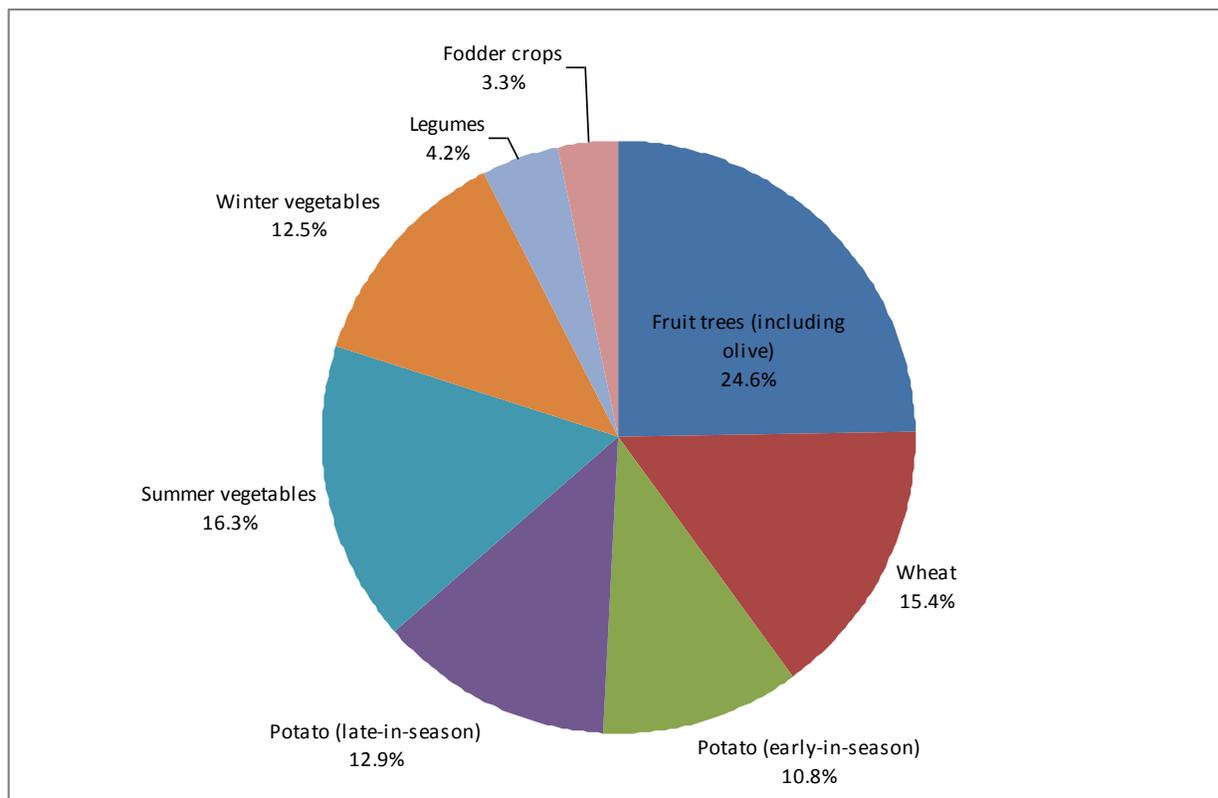
The frequency of irrigation varies between LRA subscribers and non LRA subscribers, where the majority of LRA subscribers tend to irrigate their plots every day (33.6%) compared to a majority of 42% of non subscribers who report to irrigate their land once a week.

Graph 3: Frequency of Irrigation per Week



The types of Crops planted by the surveyed farmers included mainly fruit trees (including olives) (24.6%) summer vegetables (16.3%) and wheat (15.4%).

Graph 4: Types of Crops Planted



The detailed distribution of the various crops planted by the surveyed farmers is detailed in the below table.

Table 8: Crops planted by farmers in each season by total area of subscribed vs. non-subscribed farmers

	% of total Area	% of total Area for Subscribers	% of total Area for non- Subscribers	% of total Area in Joub Jennine Kamed Loz	% of total Area in Qaraoun, Balloul, Saghbine, Lala
Legumes	13.24%	14.59%	0.00%	8.00%	23.49%
Fodder Crops	3.95%	4.35%	0.00%	4.14%	3.59%
Potato (early in season)	27.78%	30.61%	0.00%	29.79%	23.86%
Potato (late in season)	39.38%	43.39%	0.00%	46.01%	26.43%
Fruit Trees	8.53%	6.65%	26.94%	0.47%	24.27%
Winter Vegetables	11.67%	11.13%	16.92%	16.06%	3.08%
Summer Vegetables	29.83%	25.50%	72.39%	29.16%	31.14%
Wheat	37.38%	33.82%	72.39%	45.13%	22.25%
Grand Total	171.76%	170.05%	188.64%	178.75%	158.10%

3.2. FARMERS PERCEPTION OF WATER ISSUES

3.2.1. MAIN WATER ISSUES FACED BY FARMERS

The three main water issues faced by farmers were:

1. Pollution (36%)
2. Water Delivery Timing (30%)
3. Water Quantity Insufficiency (26%)

Pollution ranks first (36%) on the list of water issues faced by the interviewed farmers, followed by water delivery timing in the second place (30%) while water quantity insufficiency ranks third with 26%.

This comes in accordance—despite varying percentages—with the results of last year’s survey where pollution was by far the most prevalent water issue for the farmers, followed by water scarcity.

Noteworthy, is that 16% of the respondent farmers (8 farmers) reported not to face water issues.

Table 9: Major Water-Related Problems Faced by Farmers*

Water-Related Problems	2011 Survey Percent	2010 Survey Percent
Water pollution	36.0%	56%
Water delivery timing	30.0%	4%
Water quantity insufficiency	26.0%	18%
High cost / the cost of diesel and pumps	20.0%	6%
No problems in the water	16.0%	2%
Sediment / obstruction of pipeline	6.0%	2%
Maintenance of pumps	6.0%	2%
Network Problems	6.0%	2%
Scarcity of water in the summer	6.0%	14%
Poor distribution of water	6.0%	2%
Low water pressure	4.0%	6%
Theft of pipes	2.0%	0
Lack of electricity, which increases the cost of pumping water	2.0%	0

Payment of subscription in cash at a time when the farmer is unable to secure the amount	2.0%	0
Others	0%	18%

* *Multiple Response Question*

The water pollution issue was mainly mentioned by Lala and Kamed El Loz farmers (38.9% and 22.2% respectively). In addition it was mainly mentioned by farmers who plant potato (late in season) and those who plant fruit trees.

Table 10: Water Pollution Issue by Village

Village	Percent
Qaroun	5.6
Saghbine	5.6
Lala	38.9
Baaloul	11.1
Joub Janine	16.7
Kamed El Laouz	22.2
Total	100.0%

Table 11: Water Pollution Issue by Type of Crops Planted

Type of Crops	Percent
Fruit Trees (including olives)	21.4%
Wheat	14.3%
Potato (early in season)	14.3%
Potato (late in season)	25.0%
Summer Vegetables	14.3%
Winter Vegetables	7.2%
Legumes	3.6%
Total	100.0%

On the other hand, the insufficiency of water provided is raised mainly in Lala and Joub Janine (23.1% and 38.5% respectively) as well as by farmers who plant fruit trees (26.1%), summer vegetables (21.7%) and potato (late in season) (13%).

Table 12: Insufficiency of Water Provided by Village

Village	Percent
Qaroun	15.4%
Saghbine	15.4%
Lala	23.1%
Joub Janine	38.5%
Kamed El Laouz	7.7%
Total	100.0%

Table 13: Insufficiency of Water Provided by Type of Crops Planted

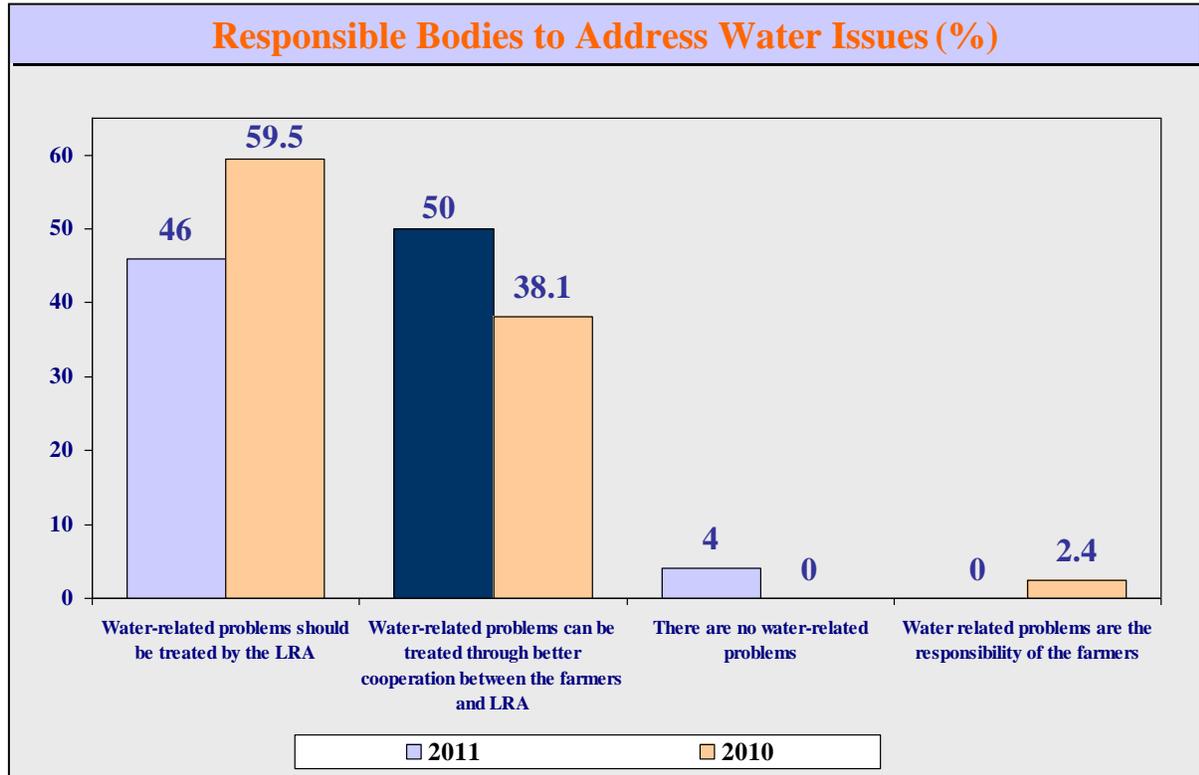
Type of Crops	Percent
Fruit Trees (including olives)	26.1%
Wheat	4.3%
Potato (early in season)	8.7%
Potato (late in season)	13.0%
Summer Vegetables	21.7%
Winter Vegetables	8.7%
Legumes	8.7%
Fodder Crops	8.7%
Total	100.0%

3.2.2. RESPONSIBLE BODY TO ADDRESS WATER ISSUES

50% of the farmers consider that water related problems can be treated through better cooperation between the farmers and LRA, while another 46% insist that solving water related problems should be the responsibility of LRA. Only 4% of the farmers re-insisted that there are no water related problems.

The results of last year's survey were different, where the majority of interviewed farmers stated that LRA is the responsible body for solving water issues.

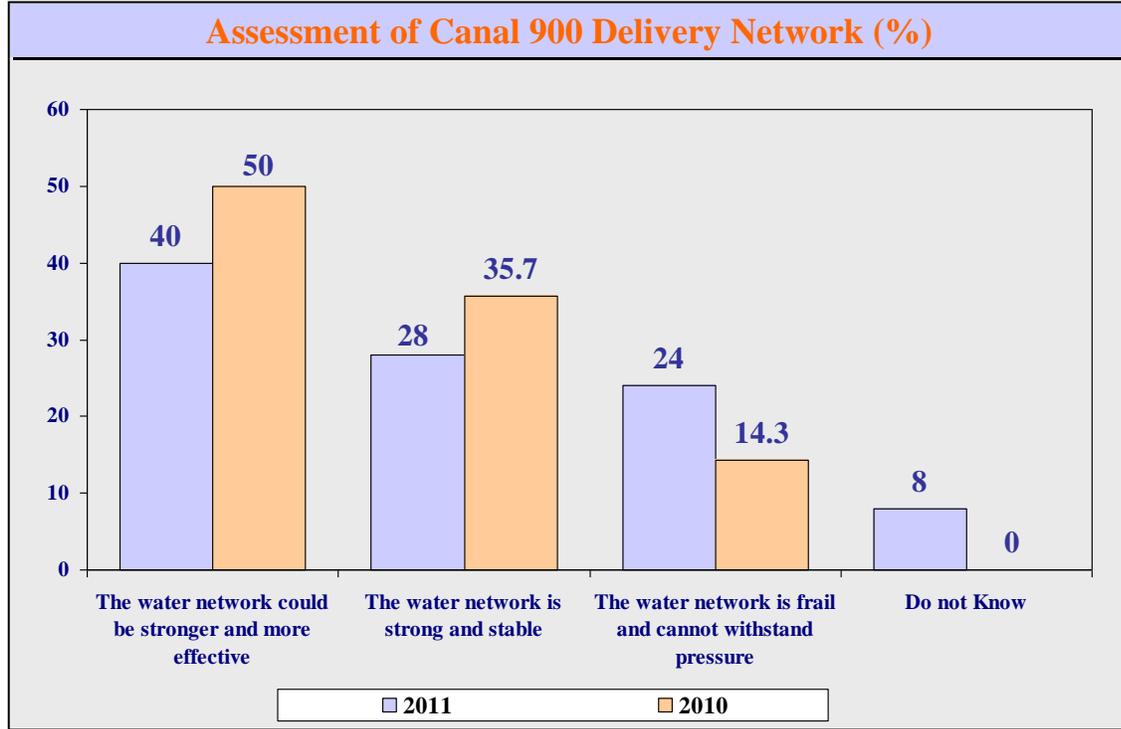
Graph 5: Responsible Bodies to Address Water Issues



3.2.3. FARMERS' ASSESSMENT OF THE CANAL 900 DELIVERY NETWORK

In accordance with the previous reporting of farmers that the water provided for irrigation is not sufficient, their assessment of the Canal 900 delivery network states that the water network could be stronger and more effective (40%). Another 28% of the interviewed farmers described the water network as stable and effective compared to 24% who see the opposite.

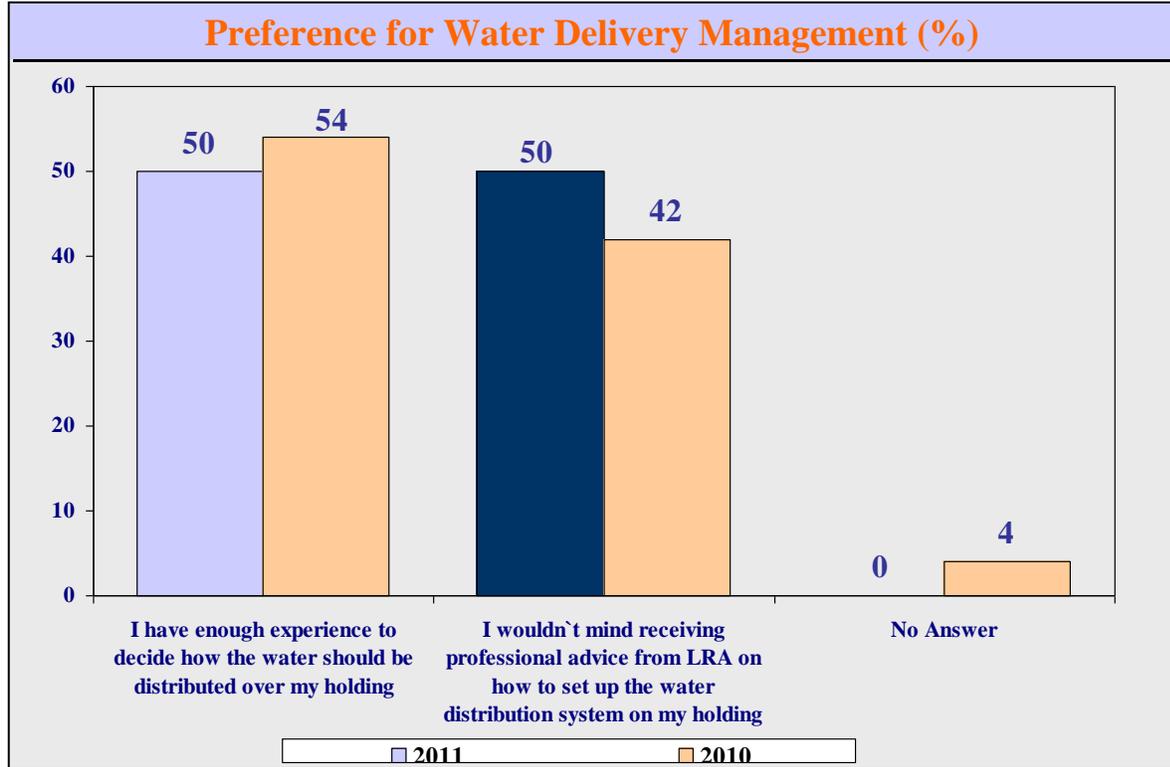
Graph 6: Assessment of Canal 900 Delivery Network



3.2.4. FARMERS PREFERENCE FOR WATER DELIVERY MANAGEMENT

Farmers are equally split between those who consider themselves as experienced enough to master their irrigation schedule and those who do not mind receiving technical advice from LRA (50% each). This goes in accordance with last year's results where the split was 54%-42%.

Graph 7: Preference for Water Delivery Management



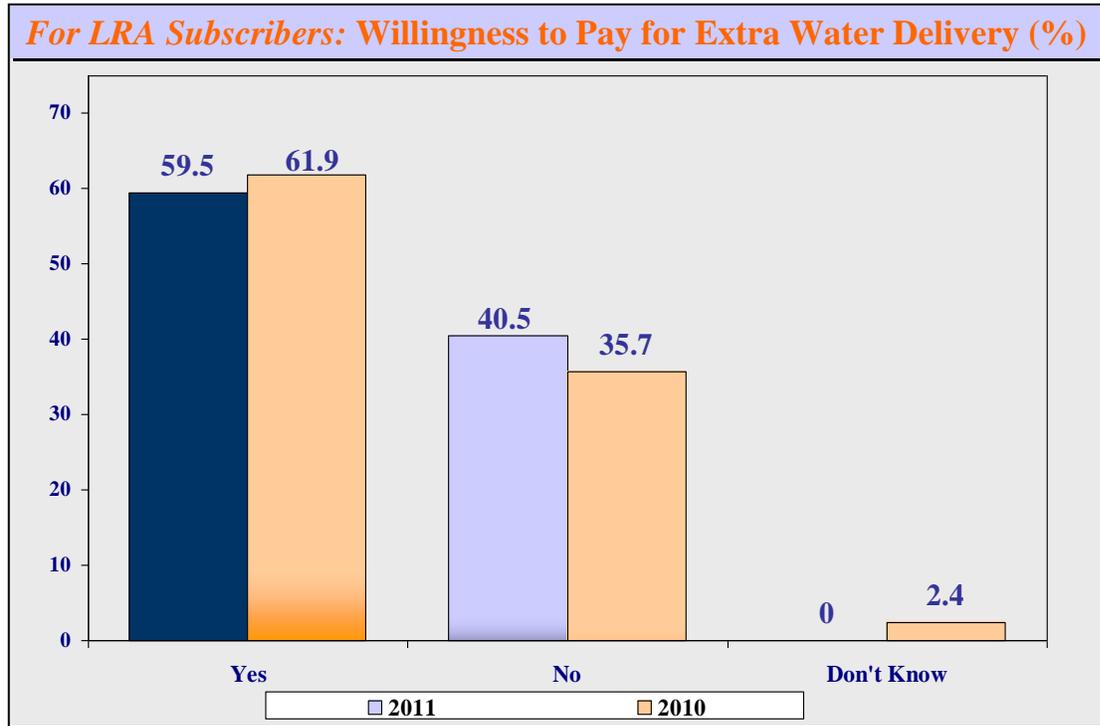
3.3. FARMERS WILLINGNESS TO SOLVE WATER ISSUES

3.3.1. FARMERS' WILLINGNESS TO PAY FOR EXTRA WATER DELIVERY

As the insufficiency of the water provided was reported by the interviewed farmers among the main water related problems they were facing, these were asked whether they were willing to pay an extra amount of money if LRA was willing to give irrigation out of the regular times when the rainfall is scarce. More than half of the farmers (59.5%) are willing to do so, compared to 40.5% who rejected the idea.

This trend conforms to last year's one where 62% of interviewed farmers expressed their willingness to pay extra money to receive water outside of the Canal 900 operating period, which extends from May to September.

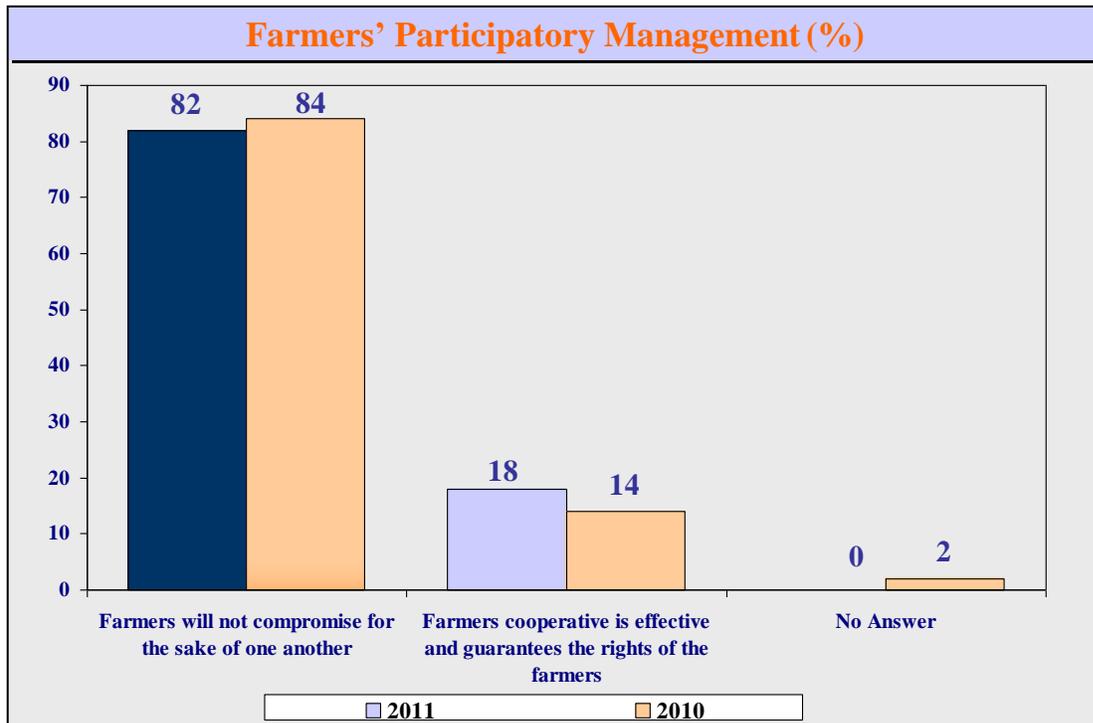
Graph 8: Willingness to Pay for Extra Water Delivery



3.3.2. FARMERS' PARTICIPATORY MANAGEMENT

In an attempt to assess the Farmers' Participatory Management, the survey's expectations were negative as 82% of the interviewed farmers state clearly that farmers will not compromise for the sake of one another. The same trend of individualism was reported last year.

Graph 9: Farmers' Participatory Management



In addition, 52% of surveyed farmers report that they rarely (or never) hold meeting with other farmers to discuss various water management issues and another 48% state that they personally will rarely (or never) compromise and make sacrifices for the sake of the community benefits.

3.4. RELATIONSHIP WITH AND AWARENESS OF ROLES OF LRA AND OTHER GOL AGENCIES

3.4.1. FARMER-LRA INTERACTIONS

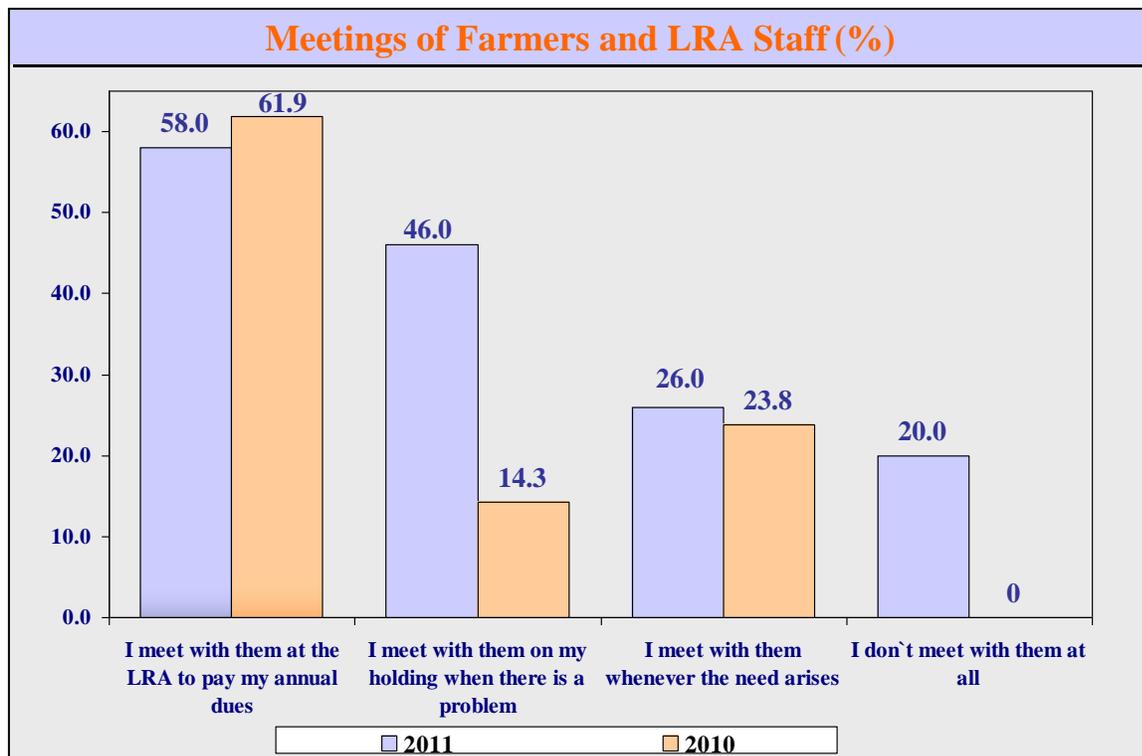
The interaction of the farmers and LRA seems to drift more into negativity. 42% of interviewed farmers never receive advice from LRA and another 26% receive related advice very rarely. In addition, 48% of the farmers are never or very rarely notified of upcoming maintenance activities, reflecting therefore a weak communication between the farmers and LRA.

Table 14: Relationship of Farmers and LRA

	Always (Daily)	Often (Once a week)	Sometimes (Once a month)	Rarely (Once a year)	Never	Do not Know	Total
How often do you: Receive Advice from LRA	6.0%	6.0%	12.0%	26.0%	42.0%	8.0%	100.0%
How often do you: Receive explanations for sudden water shortage	20.0%	18.0%	12.0%	18.0%	22.0%	10.0%	100.0%
How often do you: Get notified of prospective maintenance works	20.0%	12.0%	12.0%	24.0%	24.0%	8.0%	100.0%

The majority of the farmers meet with LRA staff only when they pay their annual fees (38.7%) or when there is a problem (30.7%). This also was the case of the last year, but with varying percentages.

Graph 10: Meetings of Farmers and LRA Staff*



** Multiple Response Question*

On the problem of water pollution, around half of the farmers (48%) consider that LRA should be more effective in controlling and solving the problem, compared to 28% who consider that LRA is not dealing with this problem whatsoever. Only 16% see that LRA is actively involved and controlling the pollution problem. This indicates a negative assessment of the role of LRA in treating this major water related issue.

The same trend of dissatisfaction of farmers from LRA on this specific pollution issue was reported last year, where 60% of the farmers considered that LRA could do more, 30% for LRA not addressing this issue and 10% for it being actively involved in it.

Table 15: Role of LRA on the Water Pollution Problem

Role of LRA on the Water Pollution Problem	2011	2010
The LRA is actively involved in limiting and controlling this problem	16.0	10
The LRA should be more active in controlling and solving the problem	48.0	60
The LRA is not dealing with the problem of pollution whatsoever	28.0	30
There is no pollution problem	6.0	0
Do not Know	2.0	0
Total	100.0	100.0

On a separate note, farmers also hold LRA responsible for some non-water related issues such as finding a market for agricultural production (24%), providing medicine for various plant diseases in the area (12%) as well as showing the borders of the Litani river/lake and Canal (10%).

Table 16: Non-Water Related Problems that LRA Should Address*

Non-Water Related Problems that LRA Should Address	2011	2010
Finding markets for agricultural production	24.0%	0
Provide medicine for plant diseases	12.0%	2.4%
Show the borders of the Litani River/lake/Canal	10.0%	0
No problems	8.0%	11.9%
Support farmers (provision of seeds - chemical - engineering and consultancy)	8.0%	9.5%
Increase dates of water delivery	6.0%	2.4%
Find a solution to the Real Estate which is located above the level of the Canal	6.0%	0
Maintaining the cleanliness of the water from sediments	6.0%	2.4%
Investment in agricultural land by the Department of the Litani	6.0%	0
The establishment of retaining walls along the canal	6.0%	0

Solve the issue of insects and odors caused by the Canal	6.0%	0
Water pollution control	6.0%	0
Provide Laboratories for the soil	6.0%	2.4%
Provide electricity	6.0%	0
Secure agricultural roads	4.0%	0
Favoritism	4.0%	2.4%
Stop demanding the full subscription amount before sending the water (Payment issue)	4.0%	0
Treatment of olive trees diseases	2.0%	0
Secure the pipes to pump larger quantities of water	2.0%	0
The problem of theft of pipes	2.0%	0
Address the issue of Herders that are causing damage in plants	2.0%	0

Non-Water Related Problems that LRA Should Address (Ct'd)	2011	2010
Restoration of semi-destroyed bridges	2.0%	0
Allow owners of small properties in conjunction to irrigate from the Canal	2.0%	0
Strengthening and upgrading the pumps	2.0%	0
The establishment of lakes and ponds to store water out of the Litani	2.0%	0
Drilling new artesian wells	2.0%	0
Increase the amount of water for irrigation properties	2.0%	0
Distribution of water (it is unfair)	2.0%	0
Should be responsible for damages resulting from the malfunction of pumps	2.0%	2.4%
Do not Know	8.0%	21.4%

** Multiple Response Question*

3.4.2. FARMERS' KNOWLEDGE AND VIEWS OF THE ROLES OF OTHER GOL AGENCIES

The majority of interviewed farmers consider the agricultural cooperatives, agricultural regional centers as well as related local and international organizations to be extremely inactive (84%, 72% and 80% respectively), and therefore do not provide the former with the desired level of assistance.

Table 17: Farmers' Views of Specific Agricultural Agencies

How active are each of the following:	Extremely Active		Somewhat Active		Somewhat Inactive		Extremely Inactive		Total
	2011	2010	2011	2010	2011	2010	2011	2010	
Farmer Coop	2.0%	0%	10.0%	14%	4.0%	2%	84.0%	84%	100.0%
Government Agricultural Regional Centers	4.0%	0%	14.0%	22%	10.0%	8%	72.0%	70%	100.0%
Local / International Organizations	6.0%	2%	8.0%	12%	6.0%	4%	80.0%	82%	100.0%

But when asked who should be handling the extension services (advice on seeds, fertilizers, pesticides and cropping patterns), the majority of farmers (74%) expect these services to be handled by the Ministry of Agriculture and related agencies, while the water distribution at system level and plot level should be handled mainly by LRA (84% and 68% respectively).

The above results conform in a way with those of last year, where the same trend of answers was reported for the relevant questions. For example, 97.6% of farmers in the 2010 survey expected the Ministry of Agriculture to be responsible for the extension services and around 75% considered that water management is LRA's role.

Table 18: Farmers' Views of the Role of Other GOL Agencies

		LRA	Ministry of Agriculture & Extensions	Farmers	Ag. Assistants at shops	Farmer Associations	No One	NGOs	Do not Know	Total
Extension Services (Advice on seeds, fertilizers, pesticides, cropping patterns):	Who handles this now?	8.0%	12.0%	54.0%	6.0%	8.0%	10.0%	2.0%	0%	100%
	Who should handle it?	12.0%	74.0%	8.0%	6.0%	0%	0%	0%	0%	100%
Water distribution at	Who	82.0%	0%	8.0%	4.0%	0%	2.0%	0%	4.0%	100%

system level (canal 900 and Pump stations):	handles this now?										
	Who should handle it?	84.0%	4.0%	6.0%	0%	2.0%	0%	0%	4.0%	100%	
Water distribution at plot level (rotation among farmers):	Who handles this now?	68.0%	2.0%	22.0%	0%	0%	4.0%	0%	4.0%	100%	
	Who should handle it?	68.0%	2.0%	14.0%	2.0%	8.0%	0%	0%	6.0%	100%	

3.4.3. FARMERS' NEEDS FOR TECHNICAL ASSISTANCE

All interviewed farmers express the extreme necessity to receive technical assistance, mainly for regular testing of the water in professional laboratories (98%), as well as seeds and soil (94% and 92% respectively). The need for testing crops for quality and residues is also reported as an urgent necessity (90%), while setting up a model parcel under LRA control where specialized experts would work and irrigation practices, fertilizer application and various agricultural practices scored lowest with 82%.

The latter result comes in accordance with the previous finding that extension services should be handled by the Ministry of Agriculture and its related agencies and not LRA.

Table 19: Farmers' Needs for Technical Assistance

	Extremely unnecessary		Somewhat unnecessary		In between		Somewhat Necessary		Extremely Necessary		Total
	2011	2010	2011	2010	2011	2010	2011	2010	2011	2010	
Regular Testing of seeds in Professional Labs	0%	100%	2.0%	0%	2.0%	0%	2.0%	0%	94.0%	0%	100.0%
Regular testing of the water in Professional Labs	2.0%	100%	0 %	0%	0 %	0%	0%	0%	98.0%	0%	100.0%
Regular testing of the soil in Professional Labs	0%	100%	2.0%	0%	0 %	0%	6.0%	0%	92.0%	0%	100.0%
Testing the crop for quality and residues	4.0%	100%	0%	0%	2.0%	0%	4.0%	0%	90.0%	0%	100.0%

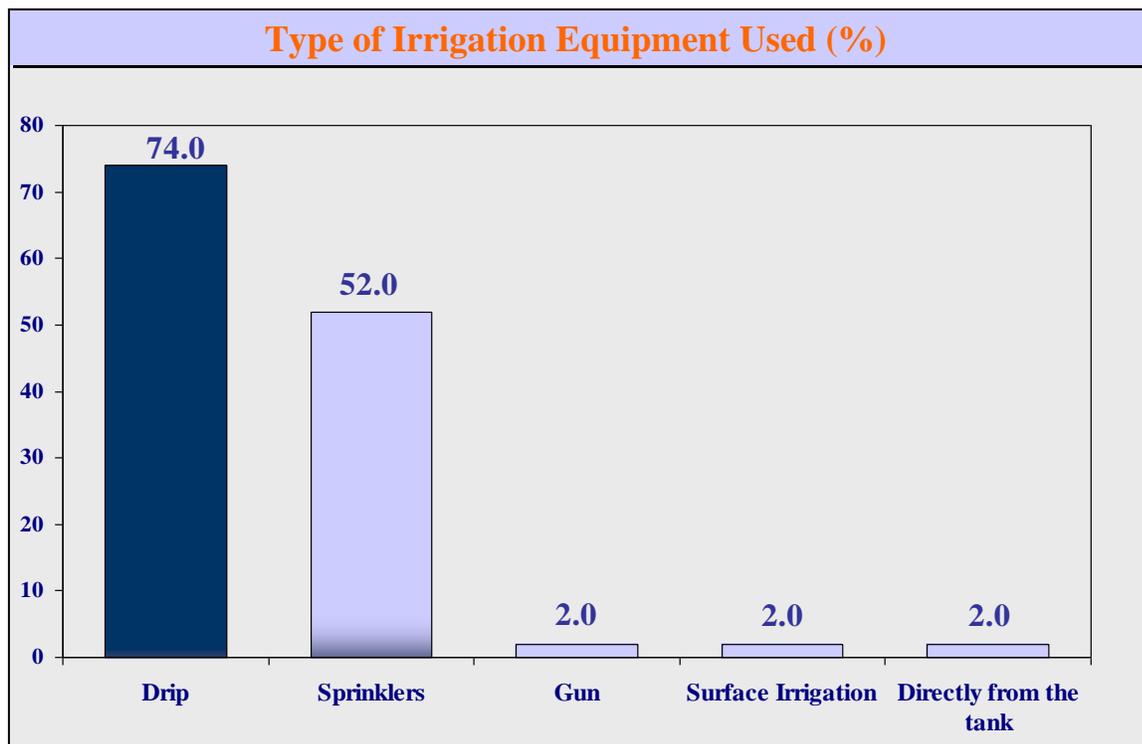
Setting up a model parcel under LRA control where specialized experts would work and show farmers effective irrigation practices, fertilizer application, and various agricultural practices.	4.0%	98%	0%	2%	4.0%	0%	10.0%	0%	82.0%	0%	100.0%
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3.5. FARMERS' CHOICE OF IRRIGATION WATER SOURCE

3.5.1. TYPE OF IRRIGATION EQUIPMENT USED

As it is evident from the survey results, Drip (74%) and Sprinklers (52%) are by far the most used types of irrigation. They are used almost equally by both subscribers and non-subscribers to LRA (73.8% and 75% respectively). Only 2% still use surface irrigation such as furrow or basin flooding, or gun irrigation or directly from the tank (2%).

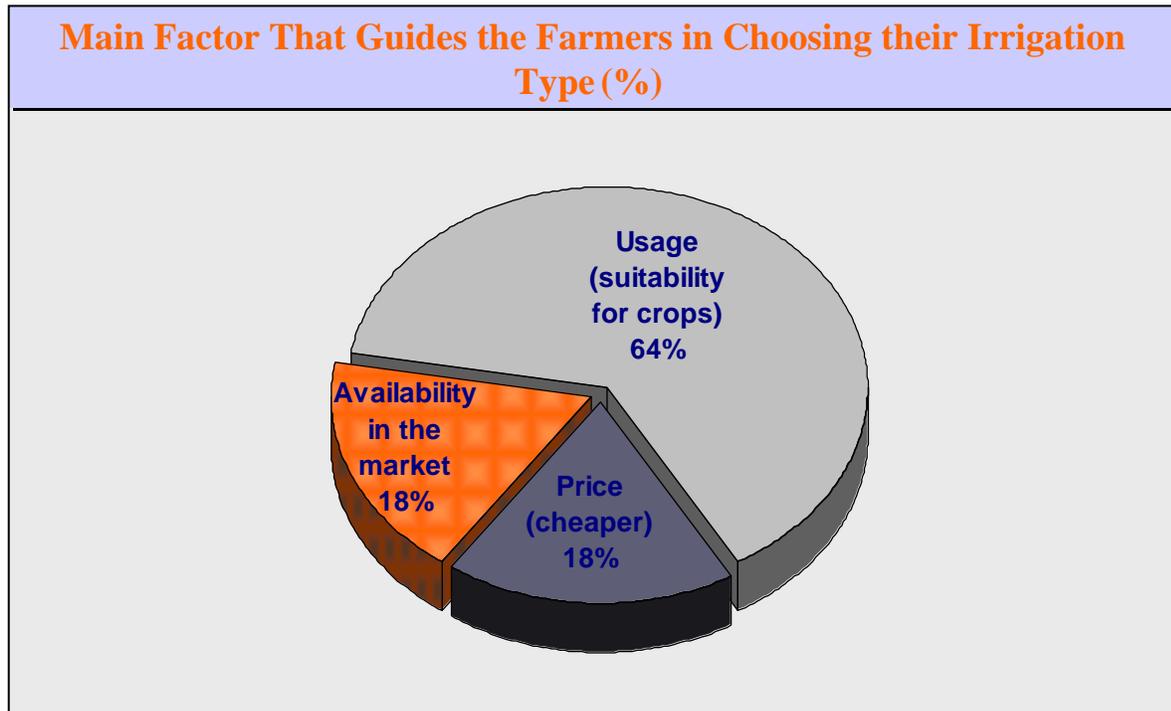
Graph 11: Type of Irrigation Equipment Used*



* Multiple Response

The most important factor that guides the farmers in their choice of irrigation type is its suitability for the various types of crops (64%), and to a much less extent, price and availability in the market (18% each).

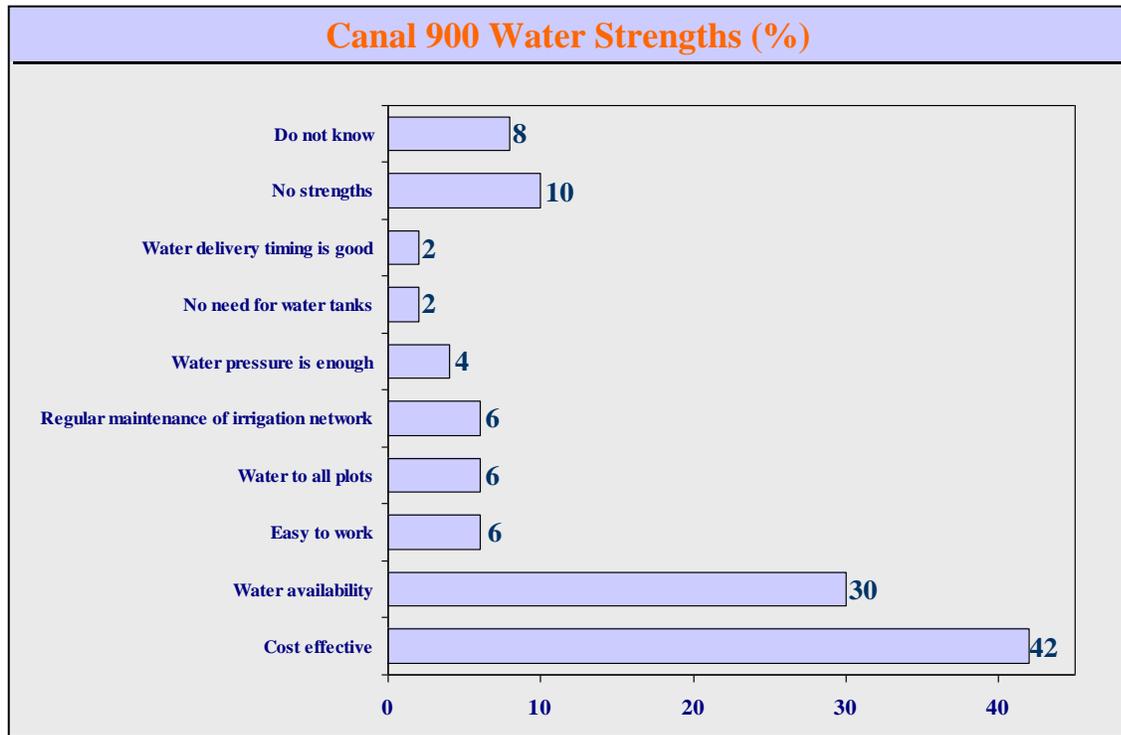
Graph 12: Main Factor That Guides the Farmers in Choosing their Irrigation Type



3.5.2. STRENGTHS AND WEAKNESSES OF DIFFERENT WATER SOURCES

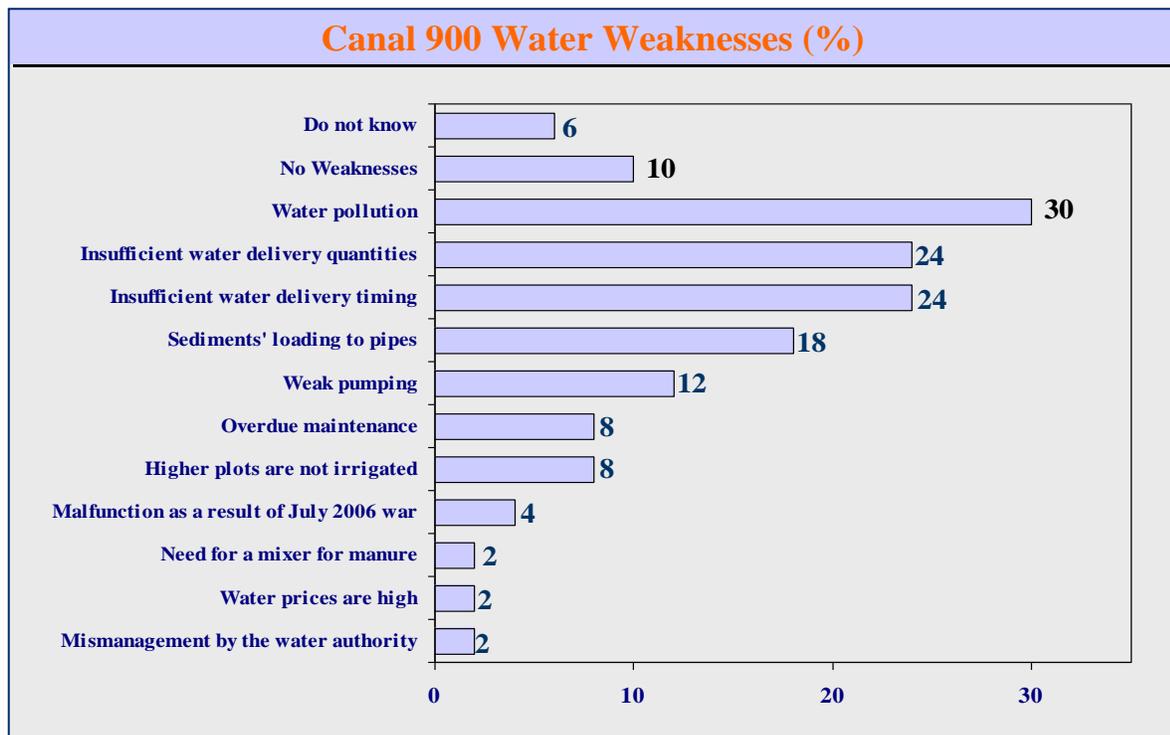
Canal 900 water is reported to be more cost effective (42%) as well as more available to 30% of the surveyed farmers. However, its water is reported to be polluted (30%) and its amount/quantity delivered to be non sufficient (24%). In addition, delay in delivering water in May and early October is also reported as a weakness of LRA (24%), as well as weak pumping (12%).

Graph 13: Canal 900 Water Strengths*



* Multiple Response Question

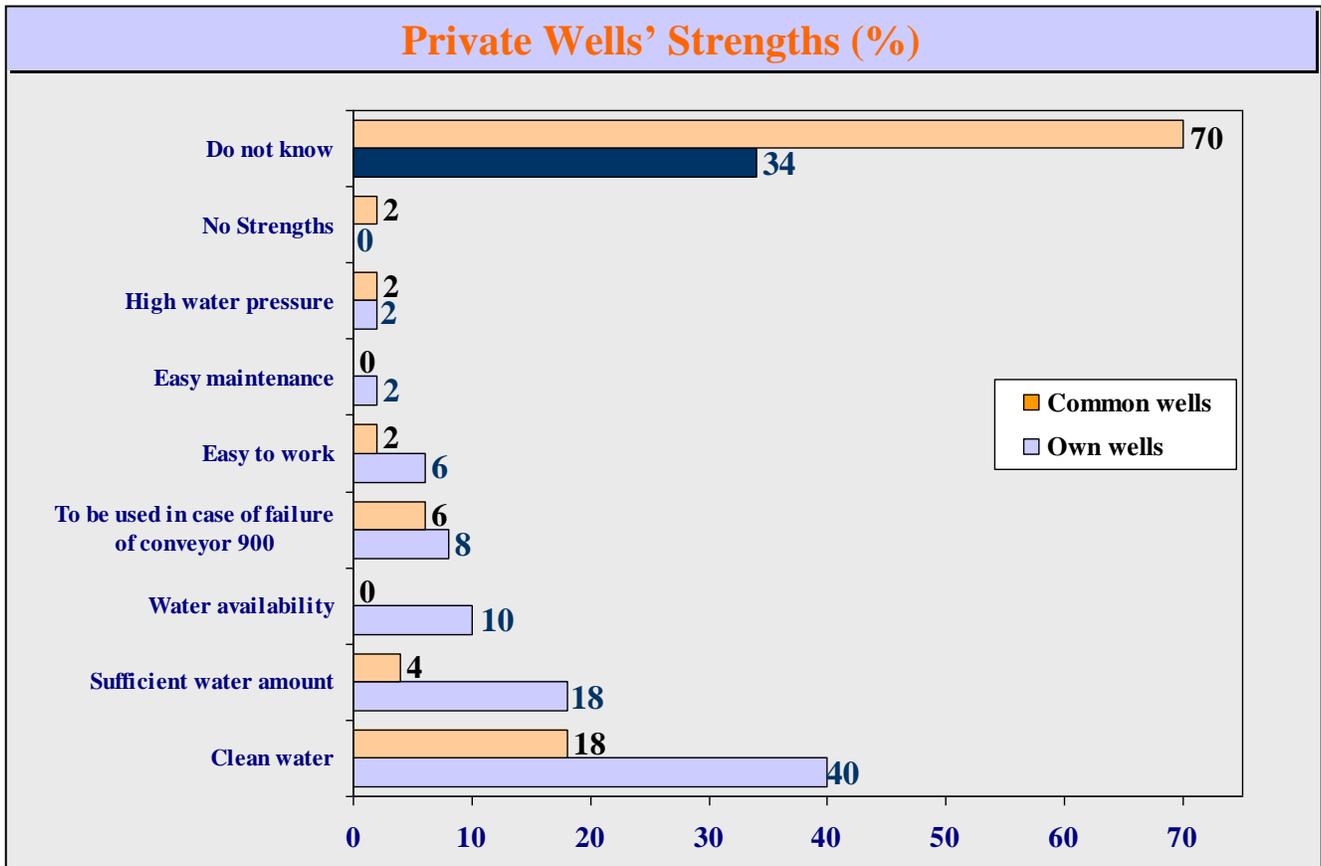
Graph 14: Canal 900 Water Weaknesses*



Multiple Response Question

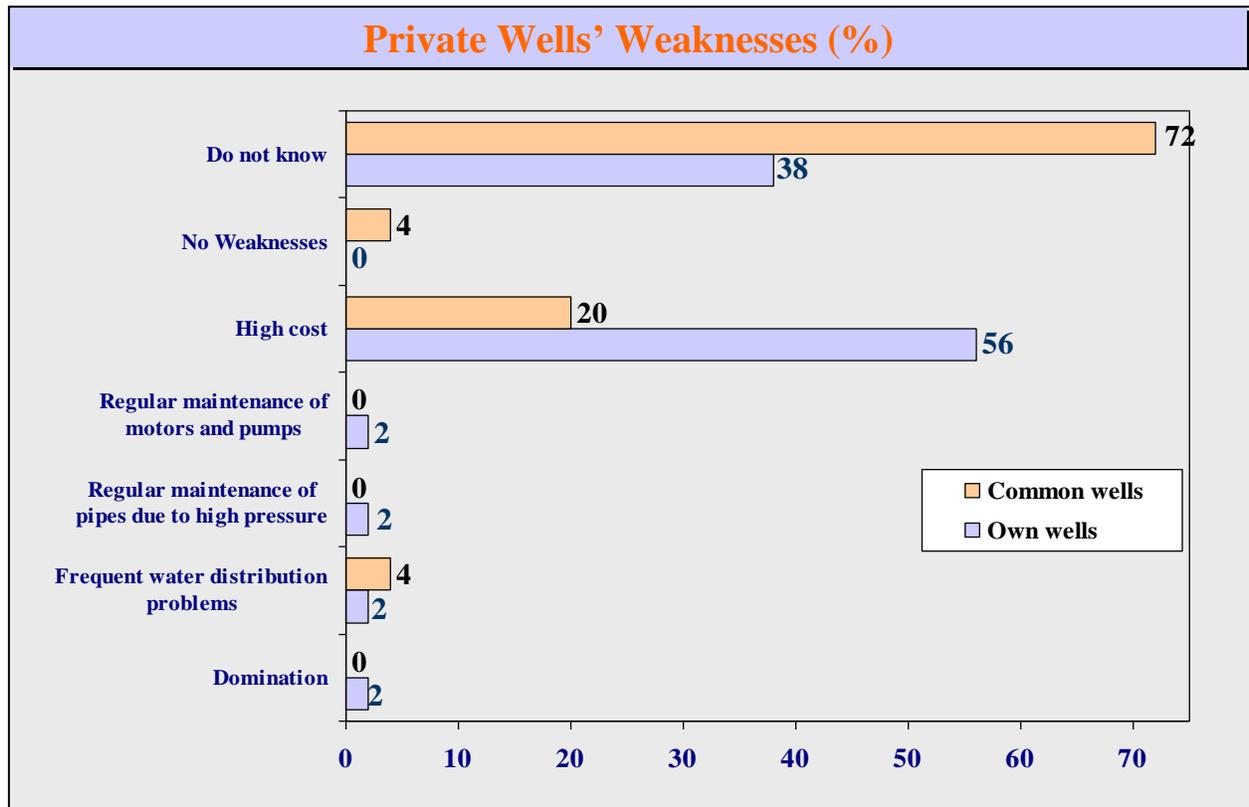
The main strength of private wells, whether own or common wells, is that they provide clean non-polluted water (40% and 18% respectively), as well as they provide sufficient water amount as needed by the farmers (18% and 4% respectively). However, private wells' main negative point is their pumping cost, where the price of fuel and energy needed for pumping from private wells is high (56% and 20% respectively).

Graph 15: Private Wells Strengths*



* Multiple Response Question

Graph 16: Private Wells Weaknesses*



* Multiple Response Question

3.6. FARMERS' SATISFACTION WITH LRA SERVICES

In general, the selected subscribed farmers seem to be satisfied (69%) with the overall services provided by LRA (33.3% somehow satisfied and 35.7% are extremely satisfied). More precisely, 54.8% are satisfied (whether somehow or extremely) with the timing of LRA irrigation water and another 45.2% are satisfied of the quantity of LRA irrigation water. In addition, the majority of farmers (58%) perceive the maintenance carried out by LRA to be properly scheduled and helpful. However, 47.7% of the subscribed farmers are dissatisfied of the quality of LRA irrigation water compared to only 28.5% who report to be satisfied from this aspect.

The rate of satisfaction from LRA services increased from last year. In the 2010 survey, only 46% of subscribed farmers reported to be satisfied with LRA services and another 33% were satisfied of the quantity and timing of LRA irrigation water. The extent of dissatisfaction from the quality of LRA irrigation water is comparable to last year, indicating therefore a consistent problem in the Canal 900 water quality that needs to be addressed urgently.

Table 20: Farmers' Satisfaction with LRA Services

	Extremely Dissatisfied		Somewhat Dissatisfied		Neutral		Somewhat Satisfied		Extremely satisfied		<i>Total</i>
	2011	2010	2011	2010	2011	2010	2011	2010	2011	2010	
Quality of LRA Irrigation Water	31.0%	29%	16.7%	17%	23.8%	38%	19.0%	14%	9.5%	2%	<i>100.0%</i>
Quantity of LRA Irrigation Water	26.2%	33%	14.3%	19%	14.3%	14%	9.5%	12%	35.7%	21%	<i>100.0%</i>
Timing of LRA Irrigation Water	26.2%	40%	11.9%	19%	7.1%	7%	16.7%	19%	38.1%	14%	<i>100.0%</i>
Overall LRA services	7.1%	17%	2.4%	5%	21.4%	33%	33.3%	29%	35.7%	17%	<i>100.0%</i>

4. CONCLUSIONS AND RECOMMENDATIONS

Based on the above, the following conclusions and recommendations are drawn:

- The farmers lack agricultural knowledge and awareness due to the absence of efficient agricultural guidance. For this reason, the LRA must start a guidance program in cooperation with the Ministry of Agriculture or any other non-governmental organization to provide farmers with the knowledge necessary to persuade them to adopt the crops that are most-suited to the nature of their land so as to increase their revenues.
- The Ministry of Agriculture should play an important role where the majority of farmers (74%) expect the extension services (advice on seeds, fertilizers, pesticides and cropping patterns) to be handled by the Ministry of Agriculture and related agencies, while the water distribution at system level and plot level to be handled mainly by LRA (84% and 68% respectively).
- The important role to be played by the Ministry of Agriculture and related organizations is consolidated by the strong wish of farmers to have regular lab soil, water and seeds analysis.
- Water pollution is among the major problems that the farmers are facing and it is of the utmost importance that this problem be solved by fighting the sources causing the pollution.
- Irrigation time and shortage of irrigation water constituted another obstacle for the farmers. Should a guidance program be adopted, this would be a first step towards the formulation of a suitable solution, noting that the LRA can figure out other technical solutions in this respect.
- Boosting communication and promoting ties between the farmers and the LRA is essential at resolving all the current conflicts between the two parties especially that 60% of the farmers asserted that such communication is inexistent, and if any, it happens very rarely. The relation must be treated as one between a service provider and a client, even if this provider was a governmental party and there should be a serious endeavor to gain the trust and satisfaction of the farmers.

5. APPENDICES

5.1. APPENDIX A: QUESTIONNAIRE

Name:

Town:

Age:

Number of family workers: Number of permanent workers: Number of seasonal workers:

1. Do you have more than one holding?

- a. Yes
- b. No

2. Where do you get water for irrigation from?

- a. LRA
- b. Private Wells
- c. Other (please specify)

3. Please tell me where your holding(s) is(are) located, whether you own it or have leased it , how large is it, the number of irrigation hours per day, the quantity of irrigation water and the type of crops you plant:

a. For LRA Subscribers Hours of Irrigation Per day

Holding Number	Owned / Rented	Location (town)	Type of Soil (sandy, silty, clay)	Size	Hours of Irrigation /day	Water Pressure	Frequency of Irrigation per week	Type of crops

--	--	--	--	--	--	--	--	--

b. For Owners of Wells and Subscribers to Wells

Holding Number	Owned / Rented	Location (town)	Type of Soil (sandy, silty, clay)	Size	Hours of Irrigation / day	Water Pressure	Frequency of Irrigation per week	Type of crops

4. Please tell me whether your land yields one or two seasonal crops and what crops you plant in each season.

Holding Number	One season/ two seasons	Winter Crop	Summer Crop	Fall Crop

--	--	--	--	--

5. What type of irrigation do you use?

- a. Sprinklers
- b. Drip
- c. Cannon
- d. Flooding

5.1. What is the most important factor that guides you in choosing your irrigation type?

Price (cheaper)

Availability in the market

Usage (suitability for crops)

6. Please tell me what are the strong points and the weak points for the following water sources:

	LRA	Private Wells	Wells of Others
Strong Points			
Weak Points			

7. Please name the top two water-related problems you are facing today.

8. (For LRA Subscribers) On a scale of 1-5 where 5 is Extremely satisfied, 4 is Somewhat Satisfied, 3 is Neutral, 2 is Somewhat Dissatisfied, 1 is Extremely Dissatisfied, how do you feel about the following:

	5	4	3	2	1
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Quality of LRA Irrigation Water					
Quantity of LRA Irrigation Water					
Timing of LRA Irrigation Water					
Overall LRA services					

9. (For private well owners/subscribers) On a scale of 1-5 where 5 is Extremely satisfied, 4 is Somewhat Satisfied, 3 is Neutral, 2 is Somewhat Dissatisfied, 1 is Extremely Dissatisfied, how do you feel about the following with regards to private well ownership and subscription:

	5	4	3	2	1
Quality of Irrigation water					
Quantity of Irrigation Water					
Timing of Water					
Overall services					

10. Which of the following statements do you agree with the most?

- a. Water-related problems should be treated by the LRA
- b. Water-related problems can be treated through better cooperation between the farmers and LRA
- c. Water-related problems are the responsibility of the farmers
- d. There are no water-related problems

11. How would you describe the fees you pay to LRA?

- a. Over priced
- b. Fair
- c. Under priced

12. How often do you:

	Always (Daily)	Often (Once a week)	Sometimes (Once a month)	Rarely (Once a year)	Never
Receive Advice from LRA					
Receive explanations for sudden water shortage					
Get notified of prospective maintenance works					
Hold meetings with farmers to discuss various issues					
Compromise and make sacrifices for the sake of the general community					

13. Which of the following statements best describes your point of view?

- a. The maintenance carried out by the LRA is inadequate and untimely.
- b. The maintenance carried out by the LRA is properly scheduled and helpful

14. Which of the following statements best describes your point of view?

- a. The water network is strong and stable
- b. The water network is frail and cannot withstand pressure
- c. The water network could be stronger and more effective

15. Name two non water-related problems that in your opinion the LRA should handle.

16. (For LRA subscribers) If the LRA was willing to give irrigation water out of the regular times when rainfall is scarce, would you be willing to pay an extra amount of money for it?

- a. Yes
- b. No

17. With respect to the set-up of the way water is distributed over the holding, which of the following statements do you agree with the most?

- a. I have enough experience to decide how the water should be distributed over my holding
- b. I wouldn't mind receiving professional advice from LRA on how to set up the water distribution system on my holding

18. Which of the following statements do you agree with the most?

- a. Farmers cooperative is effective and guarantees the rights of the farmers.
- b. Farmers will not compromise for the sake of one another

19. When do you usually meet with LRA officials?

I meet with them at the LRA to pay my annual dues

I meet with them on my holding when there is a problem

I meet with them whenever the need arises

I don't meet with them at all

20. Please tell me how active are each of the following:

	Extremely Active	Somewhat Active	Somewhat Inactive	Extremely Inactive
Farmer Coop				
Government Agricultural Regional Centers				
Local / International Organizations				

21. With respect to the problem of water pollution, which of the following statements do you agree with the most?

The LRA is actively involved in limiting and controlling this problem

The LRA should be more active in controlling and solving the problem

The LRA is not dealing with the problem of pollution whatsoever

There is no pollution problem

22. For each activity in the following list, please tell who is currently performing it and who you think should be handling it:

Activity		LRA	Ministry of Agriculture & Extensions	Farmers	Ag. Assistants at shops	Farmer Associations
Extension Services (Advice on seeds, fertilizers, pesticides, cropping patterns)	Who handles this now?					
	Who should handle it?					
Water distribution at system level (canal 900 and Pump stations)	Who handles this now?					
	Who should handle it?					
Water distribution at plot level (rotation among farmers)	Who handles this now?					
	Who should handle it?					

23. On a scale of 1-5 where 5 is Extremely Necessary, 4 is Somewhat Necessary, 3 is In between, 2 is Somewhat unnecessary, 1 is Extremely unnecessary, please rate the need for the following:

	Extremely Necessary	Somewhat Necessary	In Between	Somewhat Unnecessary	Extremely Unnecessary
Regular Testing of seeds in Professional Labs					
Regular testing of the water in Professional Labs					
Regular testing of the soil in Professional Labs					

Testing the crop for quality and residues					
Setting up a model parcel under LRA control where specialized experts would work and show farmers effective irrigation practices, fertilizer application, and various agricultural practices.					

Farmers Comments and Notes:

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