



gtz

**Ministry of Water and Irrigation
Jordan Valley Authority
Water Management in Irrigated Agriculture**

**Dissimination of agronomic guidelines in the Jordan Valley
-Farmers' Training campaign-**

-Progress Report -

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Abbreviations

DA	Development Area
DU	Distribution Uniformity
du	Dunum
FU	Farm Unit
FAO	Food Agricultural Organization
FFS	Farmers Field Schools
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit
JV	Jordan Valley
JVA	Jordan Valley Authority
KTR	King Talal Reservoir
MoA	Ministry of Agriculture
MoWI	Ministry of Water and Irrigation
NCARE	National Center for Agricultural Research and Extension
ToT	Training of trainers
WMIA	Water Management in Irrigated Agriculture



1 Background and introduction

Within the component 'Efficient Water Resources Management in Irrigated Agriculture' (WMIA) of the Jordanian-German Water Program, gtz, and JVA have published the 'Guidelines for Reclaimed Water Irrigation in the Jordan Valley'. The main recommendation of the guidelines is that farmers can save an enormous amount of money by adjusting amount and type fertilizer to the real needs of the plants. At the moment almost all farmers use two to four times more fertilizer than needed, as they do not consider the nutrient contents in the irrigation water and the soil. In addition, they usually apply more than the plant would need – to be on the safe side.

A second set of recommendations refer to the safe use and handling of reclaimed water while using and dealing with water (occupational health). Recommendations in the guidelines consider all this. They need to be disseminated to irrigation farmers in order to ensure their application by water users and farmers irrigating with reclaimed water.

These guidelines are the result of previous activities carried out during three cropping seasons in the JV. In the seasons 2003/2004 and 2004/2005, the RWP field staff monitored main crops on about 70 fields on more than 20 farms in the central and southern JV in order to collect data on the agricultural practices of experienced and successful farmers who have applied RW for the past 20 years. The focus was on irrigation and fertigation methods, as well as plant varieties, planting time, tillage and yields. Data were evaluated and analysed and first results, conclusions and recommendations were obtained. The recommendations were introduced to farmers during field days and to agricultural engineers during workshops and training courses. Because the recommendations were often different from traditional practices, the farmers themselves suggested that they should "examine" the findings and recommendations on their fields and compare them with their usual methods. Accordingly, more than 20 demonstration plots were designed and implemented.

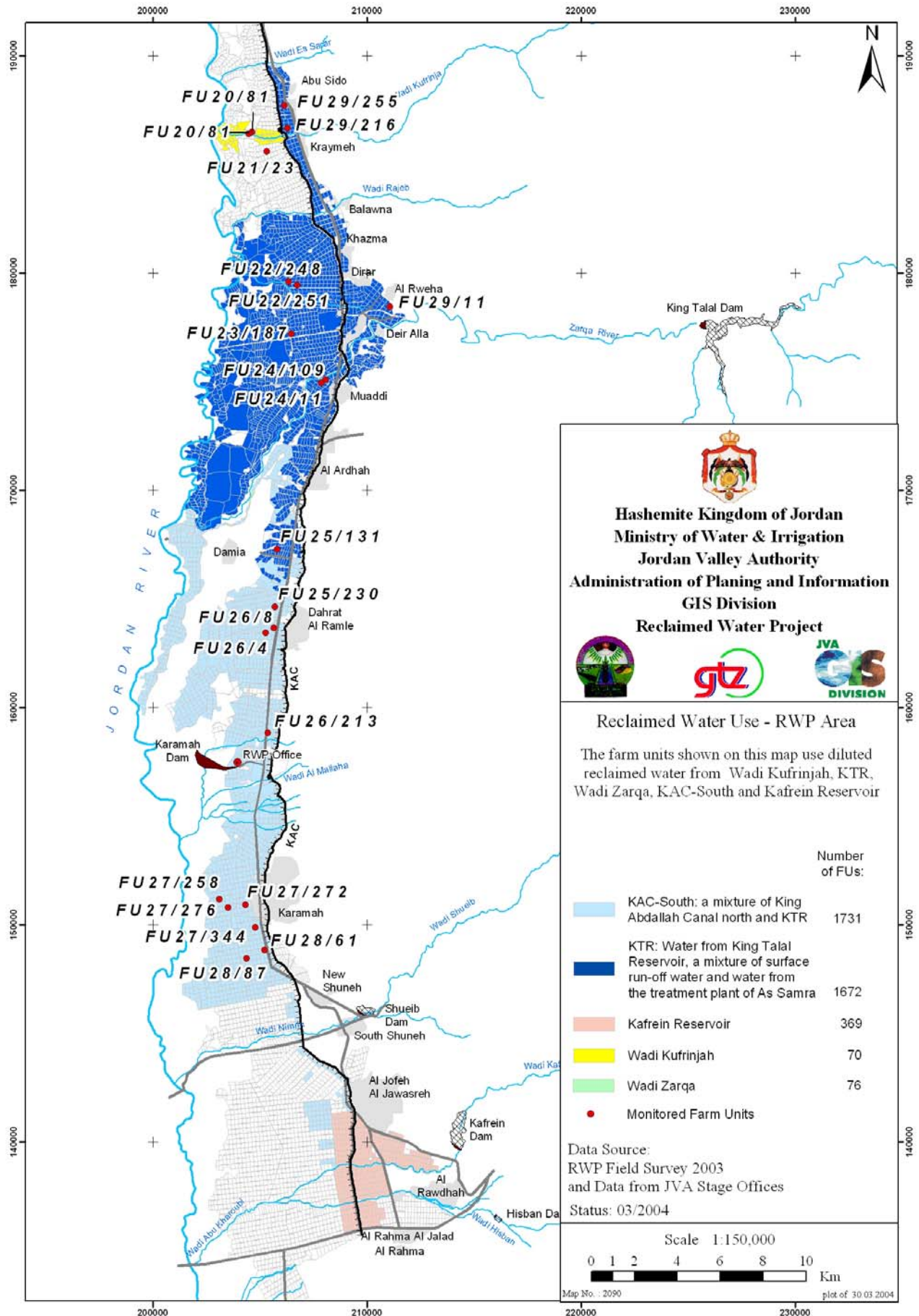
Furthermore, the guidelines have also been introduced to and discussed with Jordanian scientists, agricultural specialists and experienced farmers and their observations and recommendations have been thankfully considered and integrated.

According to the objectives of the water programme and the component, it was inevitable to design farmers' training campaign in the Jordan Valley to insure dissemination and proper on-farm implementation of the developed guidelines. With the assistance of an international extension expert all available extension resources were considered, be it governmental, private-based or even other donor-based extension resources

The campaign aims at training 1000 farmers in the project areas which extend from DA 28 in the south to DA 22 in the north to ensure at least 500 farmers implement the guidelines recommendations on their field by the end of the programme phase. The total number of farm units in the project area is 3064. The total area of these farm units is 11565.6 hectare. The table below list the number of farm units and areas of these farm units in dunums in each DA.

Table 1: Number of development areas, farm units, and total areas for each DA which receive reclaimed water in the middle Jordan Valley

Development Area	Farm Units	Total Area (du)	JVA directorate
22	339	12508.252	Middle
23	683	25622.728	Middle
24	97	3981.23	Middle
25	419	16247.912	Middle
26	322	12778.869	Karama (south)
27	441	17369.392	Karama (south)
28	263	9646.142	Karama (south)
29	337	11454.000	Middle
30	99	3601.808	Karama (south)
53	44	1651	Middle
54	20	795	Middle
Total	3064	115656.333	



2 Justifications

- The efficient and safe use of reclaimed water in Jordan is no longer optional as water sources for irrigation are declining over years. This fact requires involvement of all partners government, private and non-governmental organizations for creating common understanding. To this end, the project team developed the approach in a way that enable and requires the contributions of all stakeholders in dissemination the elaborated guidelines.
- Future of agricultural development in the Jordan Valley is pawned by equally maximizing the benefits of reclaimed water and minimizing the potential associated risks of using this resource. The guidelines promote these concepts and translate them to real agricultural practices. Farmers in the Jordan Valley have no other option but to maximize the benefits and reduce the risks of using reclaimed water.
- In future, agriculture will increasingly depend on marginal water sources such as reclaimed water as drinking water will be diverted for
- Farmers awareness and training are key elements for any development plan in the Valley, raising the on-farm irrigation efficiency and rationalize the use of fertilizers are basics in building the capacities of farmers. The campaign aims at inculcating good agricultural practices with regard to use of reclaimed water.
- MoWI represented by JVA is no longer views reclaimed water as waste water but a precious resource for sustainable agricultural development. Accordingly, concerted efforts have to transfer this attitude to end users, consumers and other involved parties.

3 Objectives of the WMIA Component

The target in the project agreement is '500 farmers using marginal irrigation water according to the elaborated guidelines' (10/2006 to 9/2009).

The assumption is to train at least 1000 farmers in the project area to reach the aforementioned target (500 farmers) and to test the validity of the assumption (hypothesis) it is wise and necessary to conduct in parallel with the on-going training programme surveys to assess the levels of adoption. To this end, the trainings and approach should be reviewed and adjusted if the surveys results showed insufficient adoption rate.

4 Results

Previous surveys in the Jordan Valley aimed at estimating the farmers expenditures on buying major nutrients showed that the irrigated area with reclaimed water, consumes 10.7 US\$ million per season . With the assumption of 60 per cent adoption on farm level, the project expect the following results

- 2.1 US\$ million could be saved yearly if only one third of the farmers applied the project recommendations.
- Improved of On-farm water use efficiency by 10% which is tantamount to saving about 10 MCM a year of the irrigation water.
- Reduce the risks of vegetables contamination and improve the on-farm hygiene practices of farmers and farm labourers.
- Reduce the risks of salinity build-up associated with the use of reclaimed and brackish water.

5 Challenges



- **Lack of any existing extension organisation**

The governmental agricultural extension in Jordan is effective and efficient enough to manage this task. All the previous analysis of the existing extension organization revealed that despite MoA is mandated by all extension work in the Jordan Valley and rest of the country, their role in this regard still weak and ineffective and all efforts exerted to revive it fruited little as viewed by farmers and other donor organisations.

- **Innovate appropriate extension approach**

The approach should assure highest possible dissemination, and adoption rates in a short period.

- **Create adoption in a relatively short time**

It is not easy task to create awareness amongst hundreds of farmers about the benefits of the project recommendations and convince them to adopt these recommendations in light of presence other sources of information working against this approach.

- **Create real partnership with the direct counterpart**

In line with GTZ quality principles, it is necessary to create real partnership with the direct counterpart, JVA and get them assume the ownership of the project in the time that JVA still believe that on-farm activities are beyond its mandates and responsibilities.

- **Sustainability of the work**

Assuring sustainability beyond the project period in terms of creating organization(s) and or entities is a real challenge to ensure updating of the fertigation sheets in line with expected water quality changes.

- **Limited project budget and personnel**

The assigned activates and objective requires ample of resources (financial and personnel)

- **Illiteracy among farmers**

High percentages of farmers are illiterate and got used to decades-old practices which are in favour of over-fertilization.

Bearing all these challenges in mind are enough to visualize the complexity of the task; however, it was necessary from the beginning to face these challenges to come up with effective, fast, viable and target-oriented extension approach.

6 The proposed approach (Training campaign)

The implemented approach was tailored in away to be in line with the quality principles of GTZ with regards to participation, ownership, capacity development, holistic approach and intensifying international cooperation with the existing international projects.

Participation: opinions of different stakeholders were considered in planning and implementing the campaign, some groups were key players in the implementation (JVA, Farmers, MoA).

Ownership: as JVA is the counterpart of the project it was necessary not only to involve them but to get them assuming the overall responsibility, this was a real encountered challenge.

Capacity building: it was necessary to maximize the benefits of using already existing extension organizations namely MoA and JVA (empowering) and at the same time not to rely on one single organization but to involve as much organization as possible.

Holistic Approach: from the beginning, the project aimed at integrating (use synergies) other programme component resources. At the same time the project tried to intervene at different levels

International Cooperation: the approach intensified the cooperation with FAO-financed project for the MoA, the MoA project is aiming at promoting the concept of integrated crop management. The two parties, FAO and WMIA project looked at the common ground between them and intensified the cooperation in this regard. The project also cooperated with EU-IRWA project in terms of streamlining messages.

The organizational situation required a flexible and pro-active which means that it allows project team to change from an organization to another when need arises and to keep an open eye on all possible organizations or entities. The target of the training campaign is to train 1000 farmers in the middle Jordan Valley in the seasons (07/08 and 08/09).

Key elements of the approach

6.1 Training and Extension materials

The already available extension materials by RWP are a sound basis for dissemination; however, more materials are needed to simplify the extension messages and make it more farmers-oriented. Accordingly, the following are needed:

- 1- Posters which address the main messages of the campaign and lead through the training. Used to visualize main messages and help trainers in structuring sessions.
- 2- Fertigation sheets which give detailed program of fertigation for different crops (fertigation leaflets)
- 3- ToT documentation and training manual
- 4- Form of participants lists

6.2 Trainers

The trainers are the bedrock of the approach; therefore, it is necessary to invest time, and efforts in creating a group of competent and qualified trainers from available organizations to assure the success of the campaign and to contribute in capacity building for the designated organizations in terms of human resources. The principle is to involve the trainers directly in the training campaign to achieve the following benefits:

- Acquire experience and confidence in the field of fertigation
- Act as future advisor to farmers, capable of updating and upgrading the fertigation sheets when necessary
- Assist in giving training to achieve the project target

The trainers are group of experienced extension workers in MoA, WMIA project, NCARTT extension agents and others, who have direct contact with farmers in their day to day work. The following are the criteria for choosing the potential trainers

1. The trainer should be conversant in the principles of fertigation
2. The trainer should have enough communication skills to moderate a session
3. The trainer should show interest in delivering 4-5 training sessions per season to farmers

6.3 Trainers qualification process

The potential trainers were **trained by the project staff** on principles of

1. **Fertigation and**
2. **Communication skills**

6.3.1 Training-of-Trainers– Themes and Purposes

The project provides a “Training of Trainers” (ToT) programme to potential trainers who have signalled their interest to support the project. Two ToT were conducted, in the first training which carried out June, 2007 and included communication skills part, 12 persons participated. They were a



group from different organizations, MoA, JVA, NCARE, private sector and staff of WMIA component. Upon the request of the participants, and based on the results of evaluation another training was carried out two months later in August, 2007 in agricultural engineers association, the second ToT programme had the following structure:

1. One-day training on scientific background of fertigation, the calculation of fertigation sheets and communication skills.
2. One-day exercise on how to calculate fertigation sheets. Furthermore, the trainers have the opportunity to rehearse the training in front of other trainers to accustom themselves to the topic, the provided material, and to the atmosphere of training session with farmers.
3. The trainers should be accompanied in their first training session by experienced RWP trainers for assistance or help.

Accordingly, ToT is divided into four major sessions which are further described in the subsequent chapters

- Fertigation excel sheet
- Poster review
- Rehearsal of poster presentation
- Frequently asked questions

6.3.1.1 Fertigation Excel Sheets Session

It is an excel sheets prepared by the project team based on the contents of the guidelines to facilitate fast calculation of water and fertilizers requirements. These sheets take in consideration all different aspects of irrigation and fertilizations like soil nutrients status, nutrients in irrigation water, nutrients in manure and the actual nutrients demands of different crops. Irrigation quantities are calculated on the basis of evapotranspiration (ET) and irrigation efficiencies. The sheets provide the users with information on irrigation scheduling (quantities, duration and frequency) in different soil types in a language easy to comprehend by farmers.

In this session participants were trained on how to use the fertigation excel sheets to understand the basis and the rationale of fertigation programs. This part of training took place in laboratory computers room where trainers had enough time to exercise on the fertigation Excel sheets under the supervision of project team.

Microsoft Excel - Fertigation sheet

File Edit View Insert Format Tools Data Window Help

Type a question for help

Arial 10

D17

Vegetable fertigation spread sheets

Please fill in the green cells , الرجاء تهيئة الخلايا ذات اللون الأخضر فقط

Genral Data معلومات عامة

Region المنطقة N

Name of the region hgdfds

Cultivation نوع الزراعة GH

Crop المحصول Tomato

DA رقم الدونم 28

FU رقم الوحدة 61

Variety الصنف Zodiac

Farmer Name (Arabic) اسم المزارع فلب

Planting method طريقة الزراعة transplant

Data of planting تاريخ الزراعة 10-Nov-07

Expected crop end date 31-May-08

Starvation Period (days) فترة الجوع 30.0

Applied Manure per dunum or plastic house(kg) كمية الأسمدة لكل دونم أو بيت بلاستيكي 500

Mulch المغطى Yes

Type of manure نوع الأسمدة 2

Irrigation Data بيانات الري

Emitter Discharge (lh) معدل تدفق النقاط 3.50

Emitters spacing (m) المسافة بين النقاط 0.30

Number of emitters per plant عدد النقاط لكل نبتة 1.00

Drip line spacing (m) المسافة بين خطوط الري 1.10

Water Source مصدر المياه KTR

EC ملوحة المياه 2

EC at 0% yield معدل الإنتاج الذي يصبح عنده الإنتاج 0% 13

EC at 100% yield ملوحة مياه الري التي لا يوجد عندها إنتاج 100% 2.5

Leaching fraction معامل غسل التربة 0.08

Flow Discharge (m³/h) معدل التصريف 1

Irrigation Efficiency كفاءة نظام الري 75.00

Soil Data بيانات التربة

Soil type نوع التربة Sandy

Total N % النيتروجين الكلي 0.10

P-Olsen (ppm) الفوسفور 40.00

Available K (ppm) البوتاس 250.00

Cultivation data الممارسات الزراعية

Cultivation area (du) مساحة وحدة الزراعة 0.50

Number Cultivated Dunums or Greenhouses عدد الدونمات أو البيوت المغطاة 6

Spacing between rows (m) المسافات بين الصفوف 1.10

بنماذج التدريب بالانجليزية بنماذج التدريب بالفرنسية بنماذج التدريب بالروسية بنماذج التدريب بالاسبانية

Ready

NUM

start Windows E... Internet E... Golden Al-Waf... Interview list... word - Micro... Training repor... Master Volume Microsoft Exce... EN 7:43 PM

Excel sheets for calculation water and fertilizers requirements which consider the nutrients load in the reclaimed water



A group of trainers during the ToT exercising on the use of fertigation excel sheets

6.3.1.2 Poster Session

In this session 9 posters were presented in additions to brief and concise statements for each poster. Participants got written sheet for each poster stating the main themes of each poster which should be addressed in the farmers training sessions. The posters aim at internalizing the concept of optimized fertigation in the farmers' practices and stopping the pervasive erroneous practices.

Plant nutrition sources (Poster1)



Utilize this poster to determine all different sources from which plant gets nutrients, namely:

1. Primary source (soil).
2. Secondary source (irrigation water & manure).
3. Complementary source (fertilizers).

Address all previously mentioned sources, one at a time:

Soil

Catch attention that soil analysis which had already been carried out along the project area. Samples were representative of deferent locations along the area between DA 28 & DA 22. All results confirm two facts:

1. Soil is very rich in nutrients, in particular phosphorus and potassium. It is poor in nitrogen.
2. Recommend farmers to consider huge quantities of nutrients which are already available in soil.

Irrigation water

Mention that reclaimed water used for irrigation contains nutrients in significant quantities.

Draw attention to the regular water test done by JVA lab. Results showed high contents of nutrients in water, enough to meet around 15% -40% of plant nutrition requirements.

Manure



Explain the contribution of manure in providing plant with nutrients through:

Manure contents of nutrients.

Its effect in releasing soil fixed micronutrients in addition to stepping up the absorption efficiency.

Confirm the importance of manure, as a conditioner, in improving soil nature.

Fertilizers

Focus attention on the complementary role fertilizers play.

In light of information you have, discuss possibility of decreasing the usage of fertilizers and absolute dependence on it.

Water analysis (Poster 2)



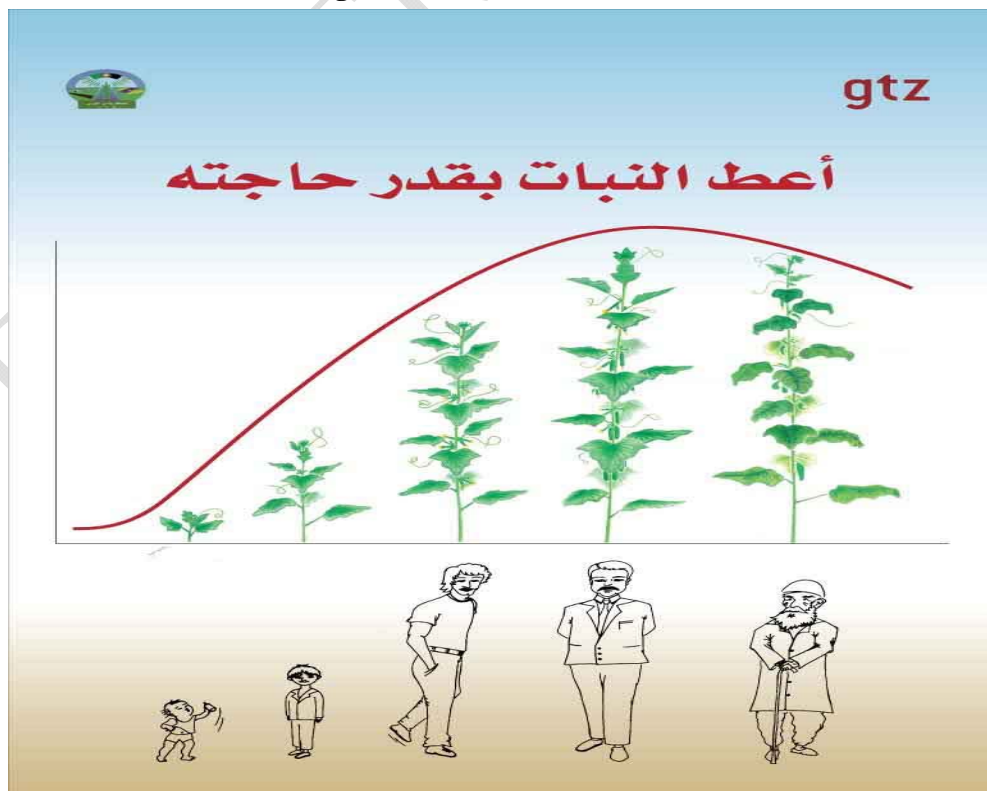
- Remind that water analysis tests are done regularly by JVA Lab.
- Mention that results of water analysis (information sheet) is delivered to different Stage offices in the JV.
- Emphasize that nutrients contents in irrigation water are not constant.

Plants requirements to produce one ton of yield (Poster3)



- Emphasize that fertigation should be related to the expected yield.
- Recommend adoption of the following rule of a thumb “producing one ton of yield, crop requires 10 kg, 2 kg, 4 kg of ammonium sulphate, urea phosphate, potassium nitrate, respectively”.

Distribution of fertilizers along season (Poster 4)



- Emphasize the following facts:
 - Plant is an organism like human being.
 - Plant exhibits a life curve pattern similar to that human dose.
- Draw a comparison between plant and human regarding changing stages of life in line with changing nutrition requirements along curve of life.
- Conclude that plant needs all nutrients along its life regardless of at what stage plant is.
- Distribution of total amount should be proportional to the needs of each stage

Comparison between Optimized & conventional fertigation (Poster 5)



- Draw a comparison between the two methods related to:
 - Yield (qualitatively & quantitatively).
 - Cost of fertigation.

Salinity (Poster 6)





- Mention that losses in global agricultural production due to salinity outstrip those caused by pests.
- Draw attention to the impact of complete dependence on fertilizers and the resulted overuse of it on rising soil salinity.
- Keep in mind, there are two terms related to salinity:
 - Hidden or invisible salinity.
 - Apparent or visible salinity.

Pre-irrigation (Poster 7)



- Recommend and emphasize the necessity of this practice in washing out salts beyond root zone.
- Mention that pre-irrigation could be accomplished by either:
 - Basin flooding.
 - Drip irrigation.

Timing of planting (Poster 8)



- Keep in mind two facts:
 - Plant salt-tolerance is plant age-dependent.
 - Salinity effect is undoubtedly aggravated by hot weather.
- Emphasize the necessity of choosing proper crop and proper time for planting. Don't start planting too early.

Fertigation sheet (Poster 9)



- It is important to mention that these fertigation sheets need to be updated to cope with new changes of water quality. Therefore, it was necessary to train extension officers how to develop these fertigation sheets by themselves to cope with new changes.

In this session one participant was invited to give training to rest of the participants using the 9 posters. The participants were given pre-made questions to pose them on the trainer. The purpose of this exercise is to put the whole plenary in a similar atmosphere to the real farmers' training session and to test the ability of trainer in keeping his composure when confronted with tricky questions. The selected questions covered different types of farmer's characters.



A trainer practice using posters in front of other trainers during a ToT

Feedback of participants

This interactive exercise was good chance for participants to point out strengths and weakness associated with presentation and provides solutions to overcome weaknesses

6.3.1.4 Presentation of Frequently Asked Questions

In this session participants got pre-made questions representing different farmers mindsets, the questions were categorized in different topics, some are formal, others are tricky, and some are irrelevant. The list represents real-case questions stated by farmers during first training sessions. The purpose of this session is to make the participants conversant on the nature and the diversification of the frequently asked questions, and to cope with different types of questions that might derail the discussion from its focal points. These are examples of questions commonly raised by farmers during training sessions; the objective of this part of training is to familiarize the trainers with samples of farmer's questions. The questions were grouped theme wise as follows:

Water

- You mentioned that the water used for irrigation is reclaimed water. Is there any impact for this water on health?
- We are all agreed on the fact that our water resources are limited and we have to utilize the reclaimed water as available resource but isn't there any possibility to improve quality of the reclaimed water in the foreseen future?
- I agree with you that pre-irrigation is a good to combat salinity, but JVA doesn't provide us with adequate amount of water.
- You are promoting the use of reclaimed water but the water delivered to the farms is very bad and dirty enough to clog the emitters.

Manure

- Which is the best type of manure, you may recommend?
- Do you think that manure might be useful in combating salinity despite the fact it contains salts?
- How much manure could we apply? Is it necessary to apply every season?

- We used to place manure in a small pond with water and the resulted extract is connected to irrigation system. What do you think?

Fertilizers

- The extension agents of private companies promote for humic acid. What is your opinion about this product?
- Why are you promoting for ammoniac, Urea phosphate, and Potassium nitrate and not compound fertilizers, why?
- I am tomato grower. I usually harvest high quantities of yield, but with bad quality, fruits look malformed, many have advised me to add a lot of calcium to the soil. My question is “Do you think that adding calcium might improve fruits quality?”
- The rule of a thumb of fertilization relates the amount of fertilizers to the expected yield on weight basis but we aren't used to weigh our yield, Could you make it more understandable?
- Your recommendations is very general and don't take into account farms location differences?
- Do you think it is enough to add only 10 kg ammoniac, 2 kg Urea phosphate, and 4 kg Potassium nitrate every irrigation time?
- When you say “don't fertilize”, you simply contradict yourself and the fact “as much as you add fertilizers, as much as plant gives yield”
- I don't agree with you that the amount of fertilizers mentioned in your rule of a thumb is enough. It seems as if we are spicing our plants.
- Believe me that not all fertilizers give you the same results. The expensive one is the best.
- Some farmers are used to add yeast to the fertilizers. They always get better harvest. Can you tell us what the secret that yeast has?
- Usually, whenever I add sugar with irrigation water, I notice that plant become better. Have you any reason explaining that?

Soil

- We have heard a lot in many occasions about the risks that salinity may result in. Would you brief us the status of JV' soils in related to salinity?
- Can you help us in soil sampling taking and analysis?

Plant

- What reasons could be behind the pale-colored eggplant fruits?
- Do you have fertigation programs for different crops?
- Oftentimes, the crop manifests iron deficiency symptoms. What do you recommend?
- My neighbor and I cultivate tomato. We are the same in date of planting and variety, however, his yield always excel mine. Why?

Marketing

- You are promoting for using reclaimed water for irrigation. Don't you think it might have a negative impact on our products' export?
- Thank you for efforts, but if we implement your programs and recommendations, shall you help us in marketing our yield?
- With all respect for you, our problem isn't the fertilizers itself. The problem is the marketing issue and the low prices. How can you and your German colleges help us?

Extension

- We trust the private companies because they are very active and regularly visit our farms although we know their agenda is to increase their sales.
- In case we encountered a problem in our field how are you going to help us?
- We are ready to try your recommendations in our farms but what if it did not work; will you compensate us for the resulted losses?

Labours

- The government always says that the agriculture has the priority of its policy, if so, why it dose complicate the procedures of the labours' licenses?



- I know personally labourers who swim and wash and even drink KTR water and they are ok, how you explain this?

The project

- Does your company sell pesticides or just fertilizers?
- As you know farmers suffer and are ignored. We are indeed looking for your project support.

The government

- Where is the supervisory role of MoA on the private companies to protect us from exploitation and the greedy traders?
- You recommend adding manure as much as possible but lately the government restricts the use of fresh manure, Could you persuade the MoA to revoke their decision?

Results of training

- Three extension officers of MOA committed to participate in the intended farmers' training campaign. Each extension officer committed himself to conduct 4 training sessions
- JVA staff committed to assume responsibility of updating fertigation sheets and provide farmers who ask for soil analysis with detailed fertigation sheets based on the provided fertigation excel sheets
- NCARE extension officers showed interest in farmers training campaign and offered help if they manage to coordinate their work
- Private sector extension workers showed high interest and offered to disseminate the idea and approach to farmers in their daily work.

6.4 Farmer's invitations

The original approach assumes that Ditch riders of JVA will invite farmers to the agreed upon training dates and venues in different places in the Jordan Valley. These invitation activities will be coordinated by the RWP staff. In addition to this, the project staff will use whatever possible means of farmer's invitations to insure effective and efficient use of available resources.

6.5 Alternative strategies

Due to obstacles and weak JVA contributions in middle directorate, the project team started to look for other strategies.

- Social and sport clubs and societies in the villages were addressed to take part in farmers' invitations and organizing training events. The response of these associations to the idea was good and showed high interest not only in inviting farmers but also to train some of their members on the use of fertigation excel sheets to be able to provide this service to other farmers when needed. It is worth to mention that some of these associations are equipped with computers and printers. In addition to this, they have good relations with farmers and some farmers are already members of these associations.
- Key farmers were also invested in farmers' invitations and some training events were organized and hosted by them.

- The IPM project funded by FAO and implemented by MoA has established many of the so-called farmers field schools (FFS). There are ten of these FFS in the Jordan Valley. The project intensified the cooperation with these FFS and carried out training for 7 FFS.

7 Operational Planning

An operational plan was prepared with the assistance of international expert in the field of extension. The plan included all the activities to be done over the course of two and half years. The project management and staff were aware of expected shortcomings that might arise; therefore, it was envisaged that plan might be adjusted if the need arises.

The key elements of the plan

Activity	Time	Actor
Simplify extension messages; develop farmers-oriented posters, leaflets, and radio spots	2007	Project team , counterpart
Choose and select cooperating partners	2007	Project team ,counterpart
Conduct train-a-trainer	2007	Project team
Conduct farmers training meetings	2007-2009	Project team, JVA, MoA
Conduct individual follow-up meetings	2008-2009	Project team,
Monitor progress, performance and adoption rates	2007-2009	Project team , counterpart
Evaluate approach, lessons and best practices	2009	Project team



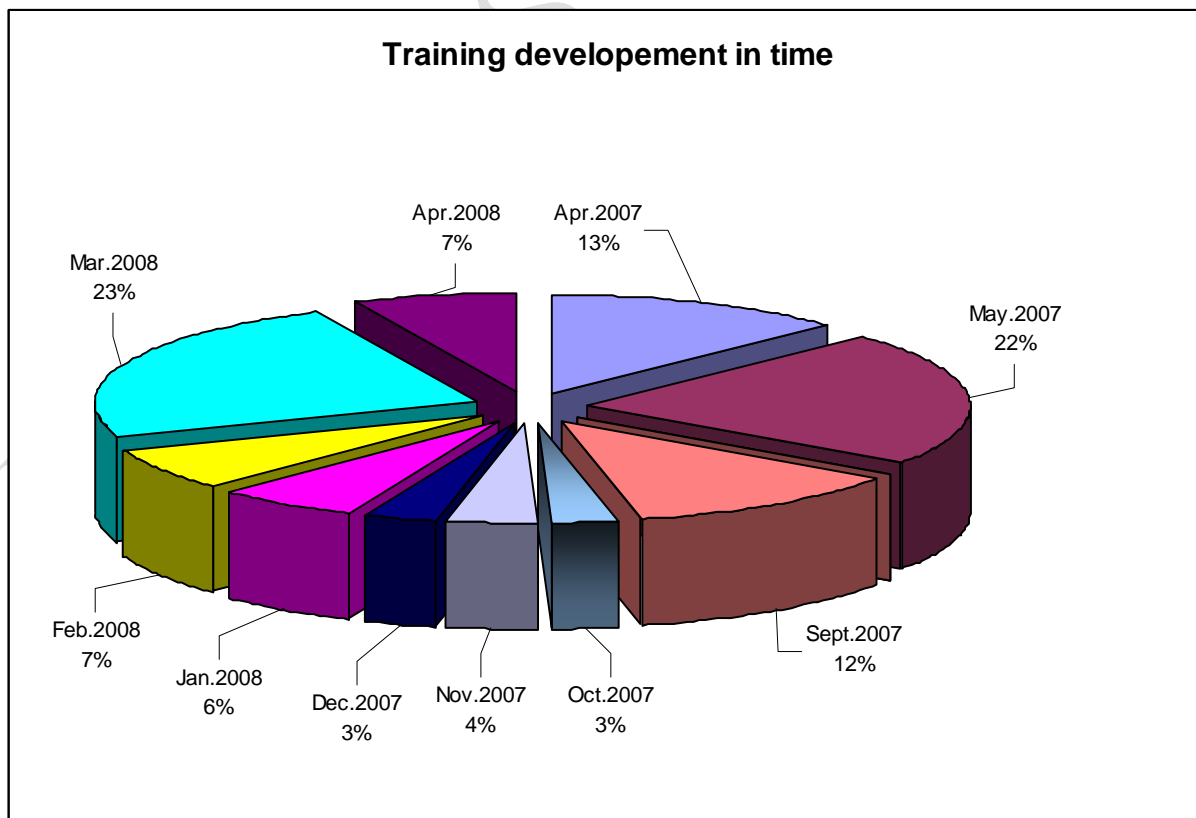
8 Results

8.1 Overall results

In April, 2007, farmers training campaign started in the southern part of the project area, thereafter the trainings sessions covered other development areas along the project region. In every training 15 farmers were invited and attended the sessions. Sometimes more than 20 farmers participated in a single training session. Over the course of 10 months, the project conducted 31 training sessions. During these training sessions 501 farmers working on 697 farm units were trained and this is equivalent to 23% of the total farm units in the middle Jordan Valley. It is worth mentioning that training campaign started as of late April and continued through the year with halt periods during summer and frost spell period. Figure 1 shows the per cent of trained farmers over time. It is clear that more than 60 % of the trainings were conducted in April, 2007, May, 2007 and March, 2008. In April and May 2007, the trainings were done for the southern part of the project area. The cooperation of southern directorate of JVA in terms of assigning ditch riders for farmers' invitation was excellent, which reflected directly on the number of trainings. In addition to this reason the season was approaching its end; therefore, the farmers were not busy in their farms as it is the case in the beginning or the middle of the season. Number of trained farmers during March, 2008 was high compared to other months because alternative strategies used for farmers invitation beside JVA. No trainings held during June, July and August because temperatures are extremely high and these months are not suitable for trainings. From October, 2007 till February, 2008 not more than 25% of training took places in these months, the reasons for low number of trainings over this period are

- Weak JVA cooperation during this period was weak in terms of farmers invitations
- Exceptional frost spell

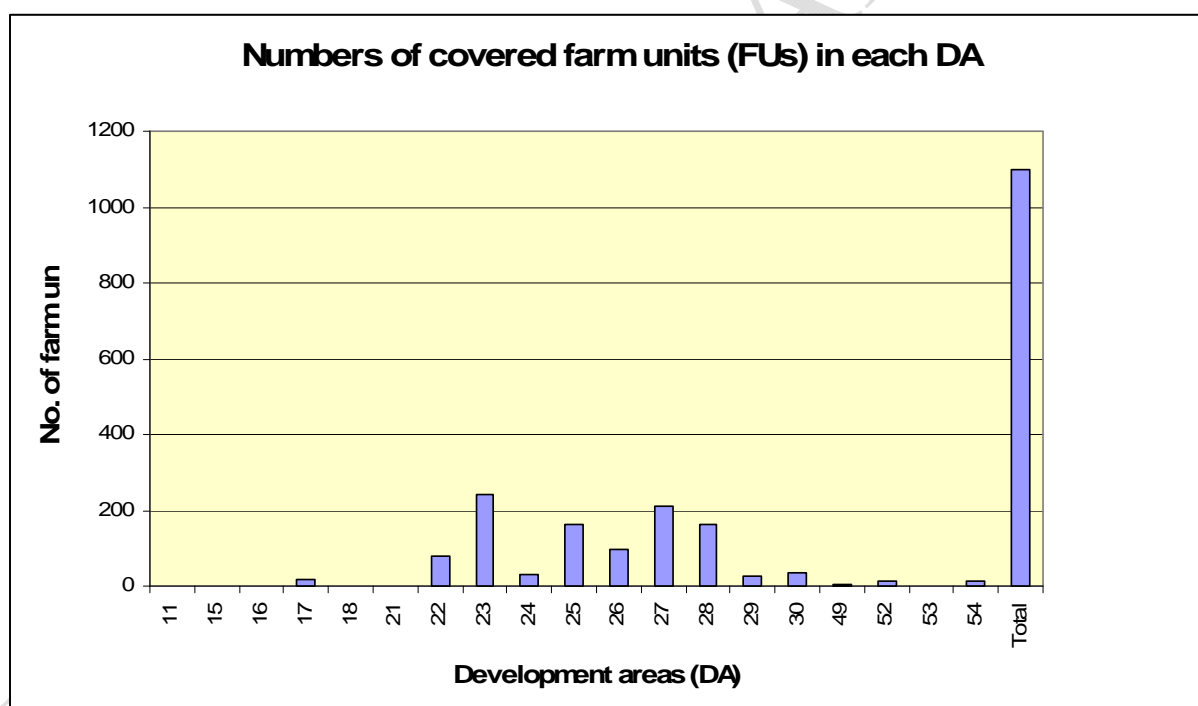
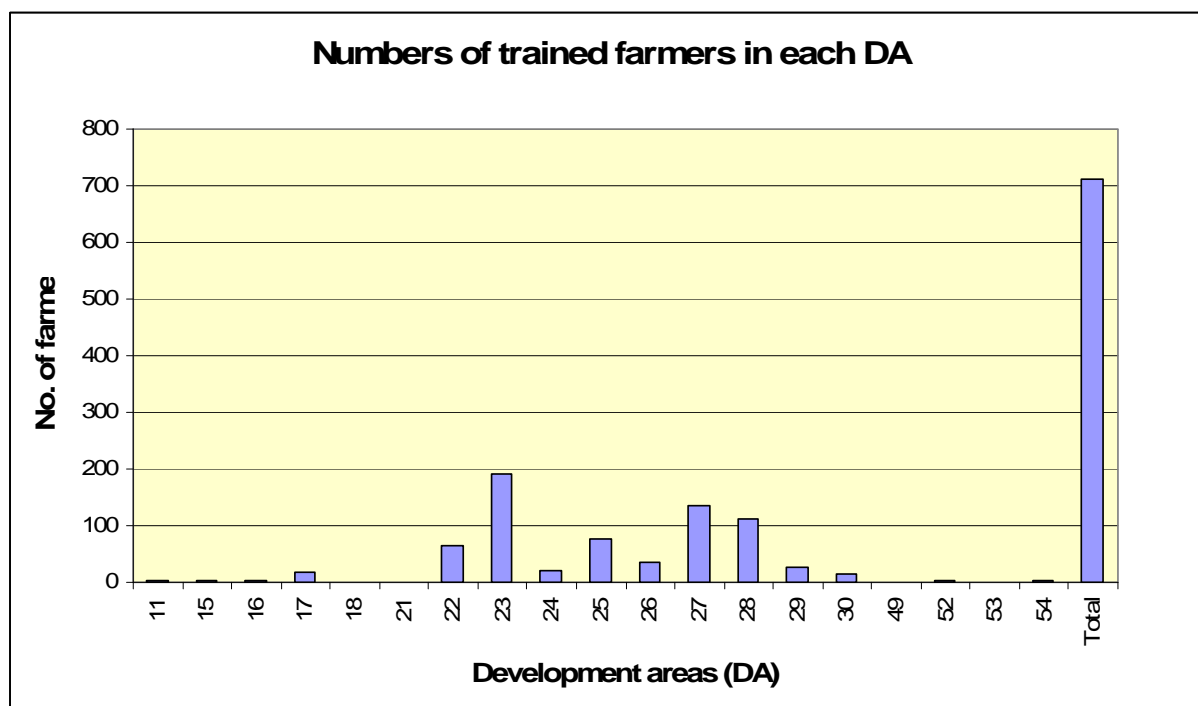
Figure 1: Training development over time



The following are the results of trainings in terms of number of trained farmers and farm units in each DA in the project area. The subsequent chapters present the results of trainings organized by different organizations.

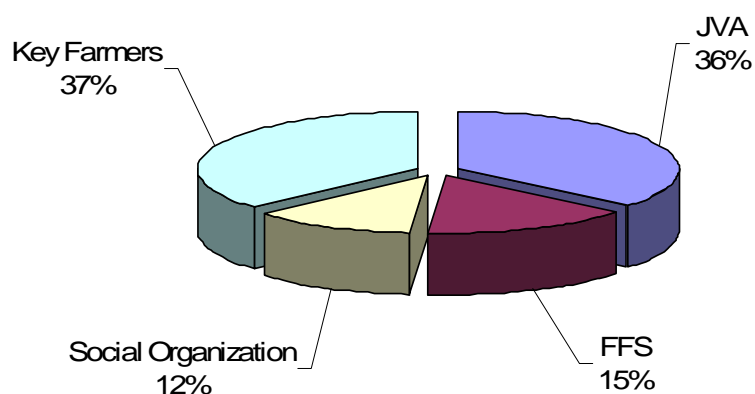
DA	No. of DA's farm units	Covered farm units	% of covered farm units	Trained Farmers
11	201	2	1	2
15	114	2	2	2
16	182	2	1	2
17	52	17	33	18
18	25	1	4	1
21	268	1	0	1
22	339	77	23	65
23	683	241	35	192
24	97	32	33	22
25	419	163	39	75
26	322	97	30	36
27	441	210	48	134
28	263	163	62	113
29	337	27	8	26
30	99	36	36	16
49	233	4	2	1
52	444	11	2	2
53	44	2	5	1
54	20	12	60	3
Total	4583	1100	24	712



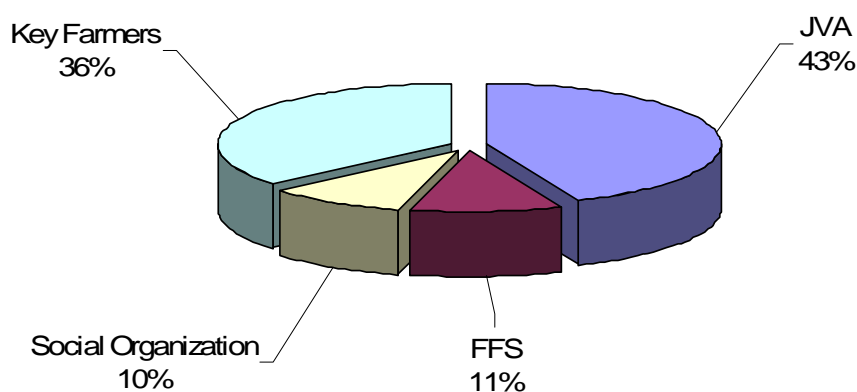


The following are the results of trainings in terms of number of trained farmers and farm units in each DA in the project area. The subsequent chapters present the results of trainings organized by different organizations.

Percentages of contributions of all organizers in farmers' training campaign in terms of farmers' numbers



Percentages of contributions of all organizers in farmers' campaign in terms of covered farm units



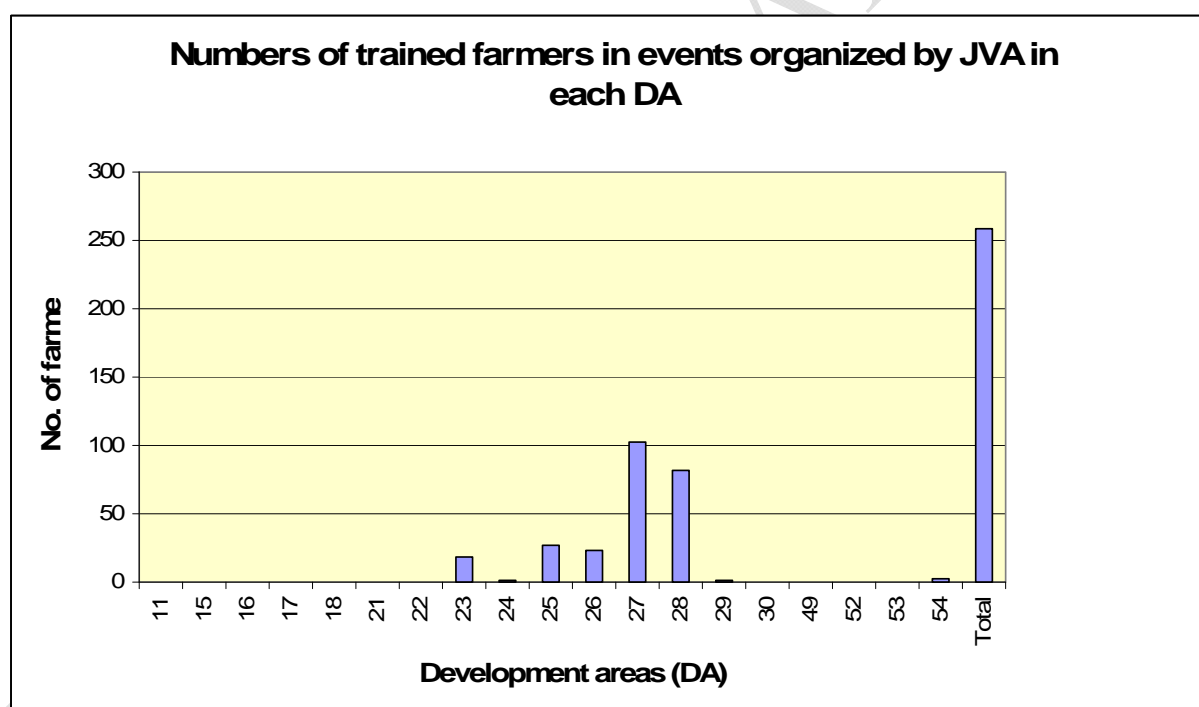
8.2 Trainings organized in collaboration with JVA

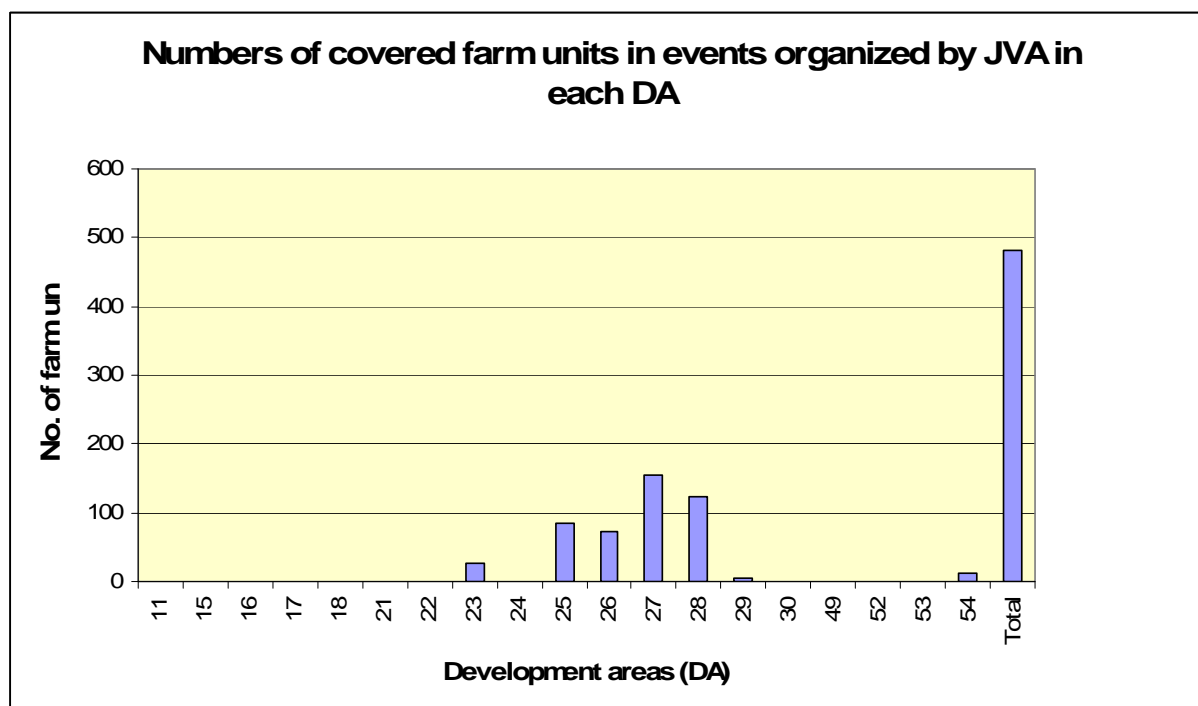
Table 3, Fig. 5, and Fig. 6 indicate that trainings organized by JVA fruited in training 278 farmers and covered about 500 farm units. Almost 99 per cent of the trained farmers were located in DA 23, DA24, DA25, DA26, DA 27 and DA 28. DA 27 got the lion share, where 37 per cent of farmers were trained.

DA	No. of DA's farm units	Covered farm units	% of covered farm units	Trained farmers
11	201	0	0	0



15	114	0	0	0
16	182	0	0	0
17	52	0	0	0
18	25	0	0	0
21	268	0	0	0
22	339	0	0	0
23	683	27	4	18
24	97	1	1	1
25	419	85	20	27
26	322	73	23	23
27	441	156	35	103
28	263	123	47	82
29	337	4	1	1
30	99	0	0	0
49	233	0	0	0
52	444	0	0	0
53	44	0	0	0
54	20	12	60	3
Total	4583	481	10	258



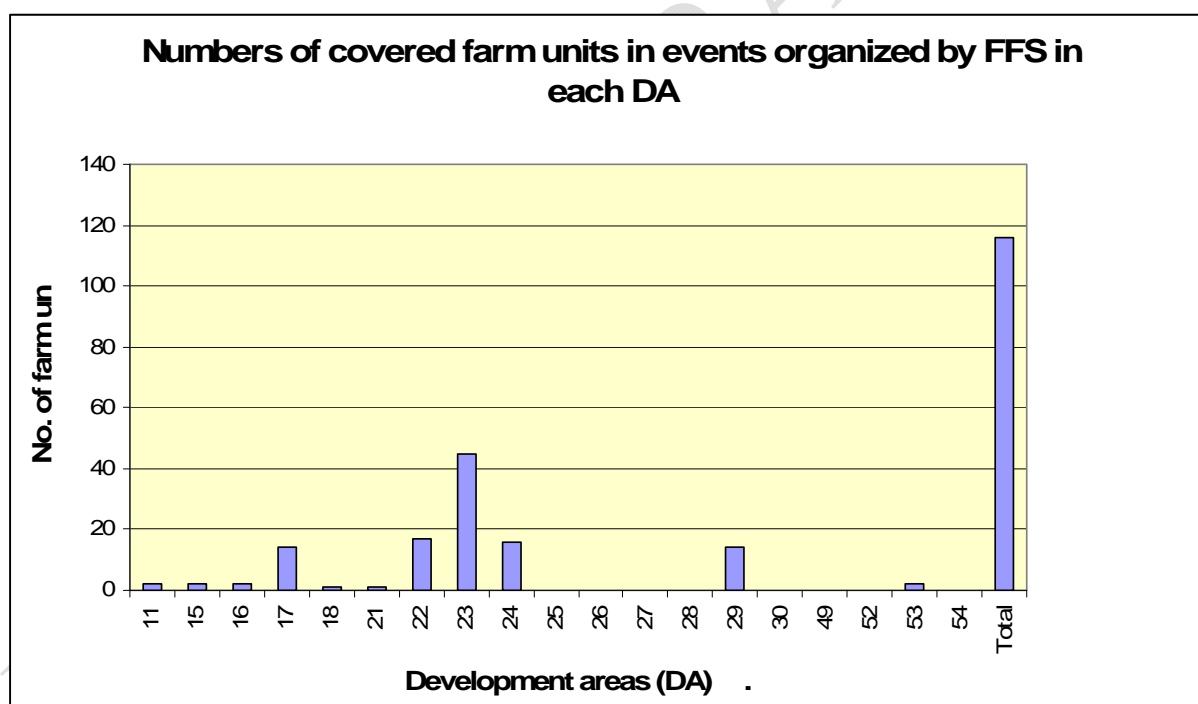
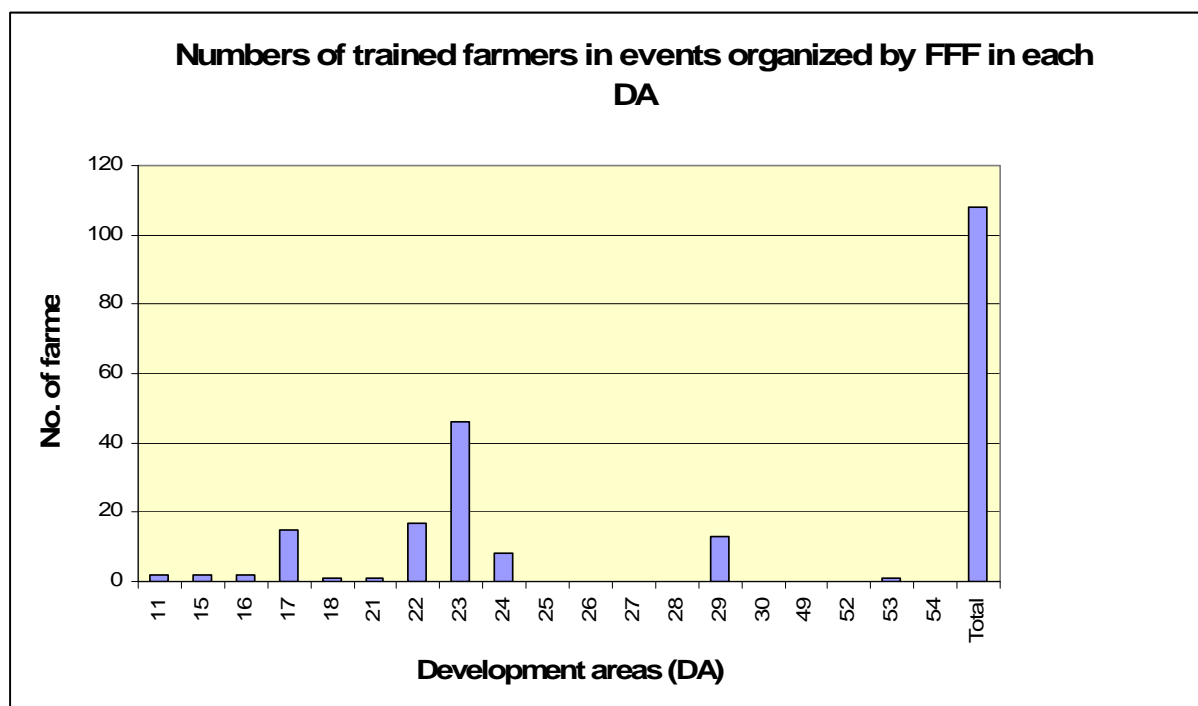


8.3 Training organized in collaboration with MoA/FFS

Table 4, Fig.7, and Fig. 8 indicate that 55 farmers were trained in trainings organized by FFS farmers and covered about 61 farm units. The distribution of trainings over the DA's shows, that training focused on DA22, DA23 and DA29.

DA	No. of DA's farm units	Covered farm units	% of covered farm units	Trained farmers
11	201	2	1	2
15	114	2	2	2
16	182	2	1	2
17	52	14	27	15
18	25	1	4	1
21	268	1	0	1
22	339	17	5	17
23	683	45	7	46
24	97	16	16	8
25	419	0	0	0
26	322	0	0	0
27	441	0	0	0
28	263	0	0	0
29	337	14	4	13
30	99	0	0	0
49	233	0	0	0
52	444	0	0	0
53	44	2	5	1
54	20	0	0	0
Total	4583	116	3	108





8.4 Trainings organized with collaboration with social organization in the Jordan Valley

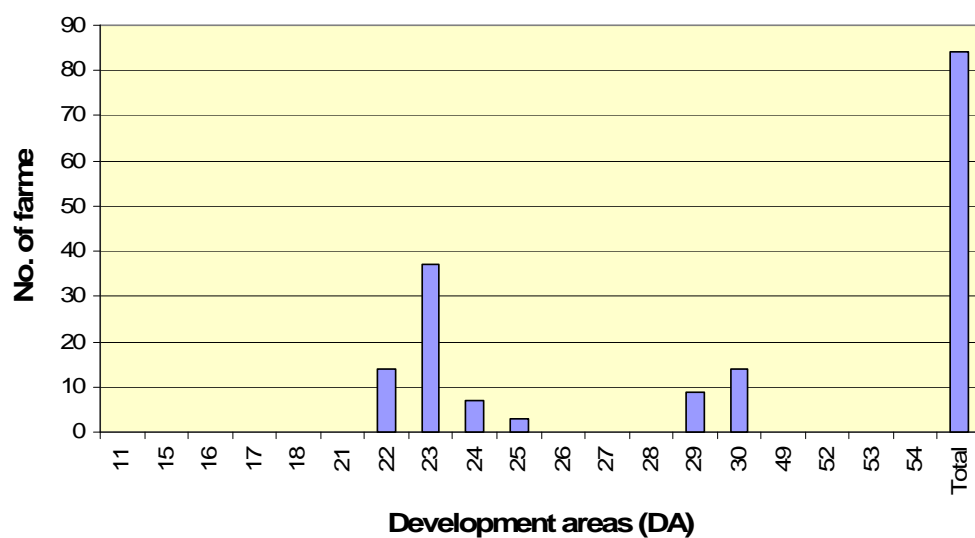
Table 5, Fig.9 and Fig.10 indicate that 83 farmers were trained in trainings organized by social organizations and covered 105 farm units. The distribution of trainings over the DA's, shows that trainings focused on DA23, DA30 and to very lesser extent on DA24, DA25 and DA 29.

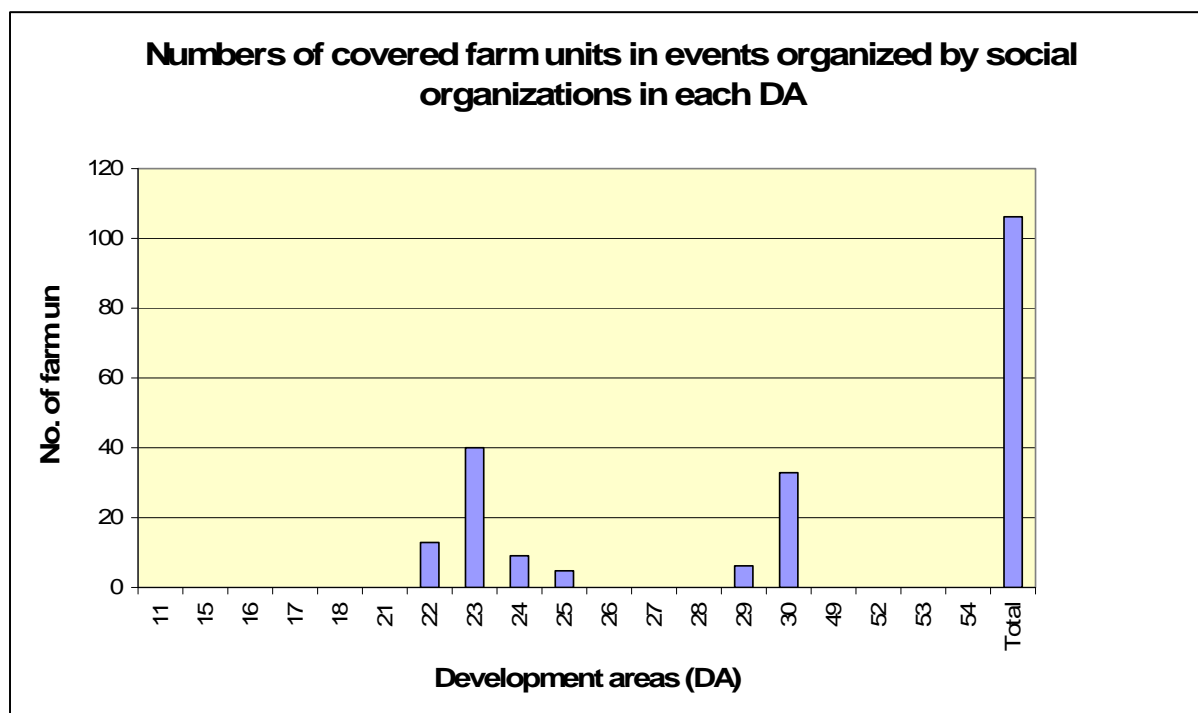
DA	No. of DA's farm units	Covered farm units	% of covered farm units	Trained farmers
11	201	0	0	0
15	114	0	0	0



16	182	0	0	0
17	52	0	0	0
18	25	0	0	0
21	268	0	0	0
22	339	13	4	14
23	683	40	6	37
24	97	9	9	7
25	419	5	1	3
26	322	0	0	0
27	441	0	0	0
28	263	0	0	0
29	337	6	2	9
30	99	33	33	14
49	233	0	0	0
52	444	0	0	0
53	44	0	0	0
54	20	0	0	0
Total	4583	106	2	84

Numbers of trained farmers in events organized by social organizations in each DA



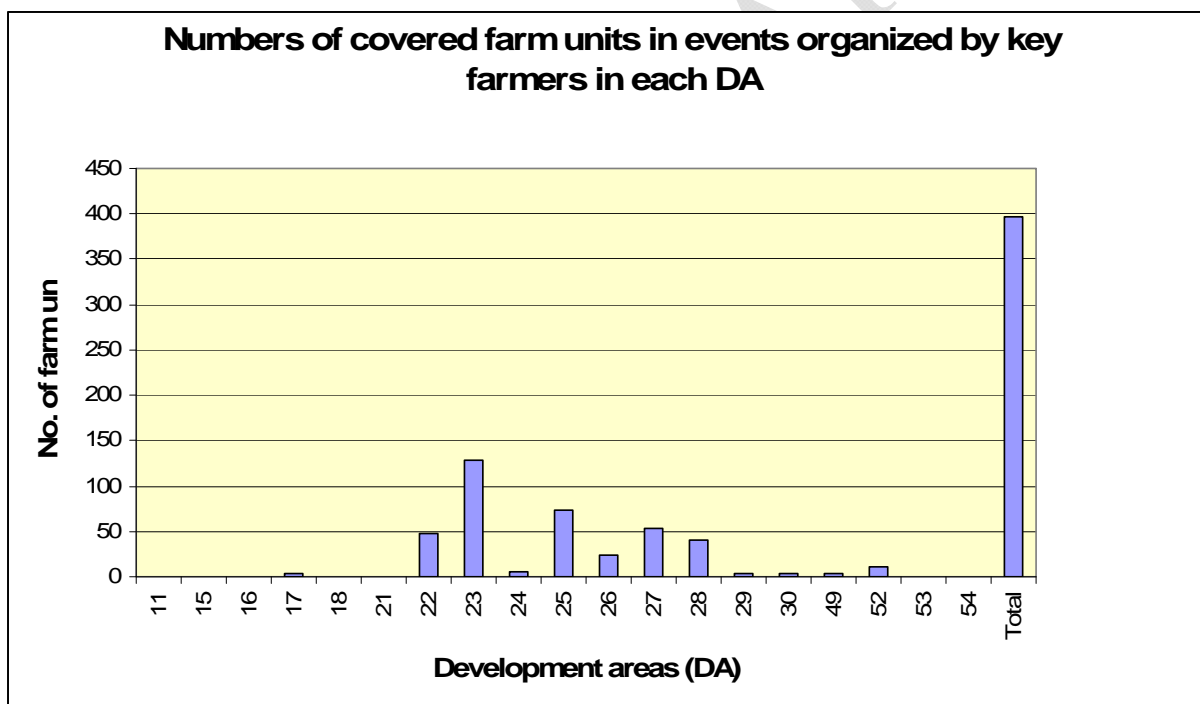
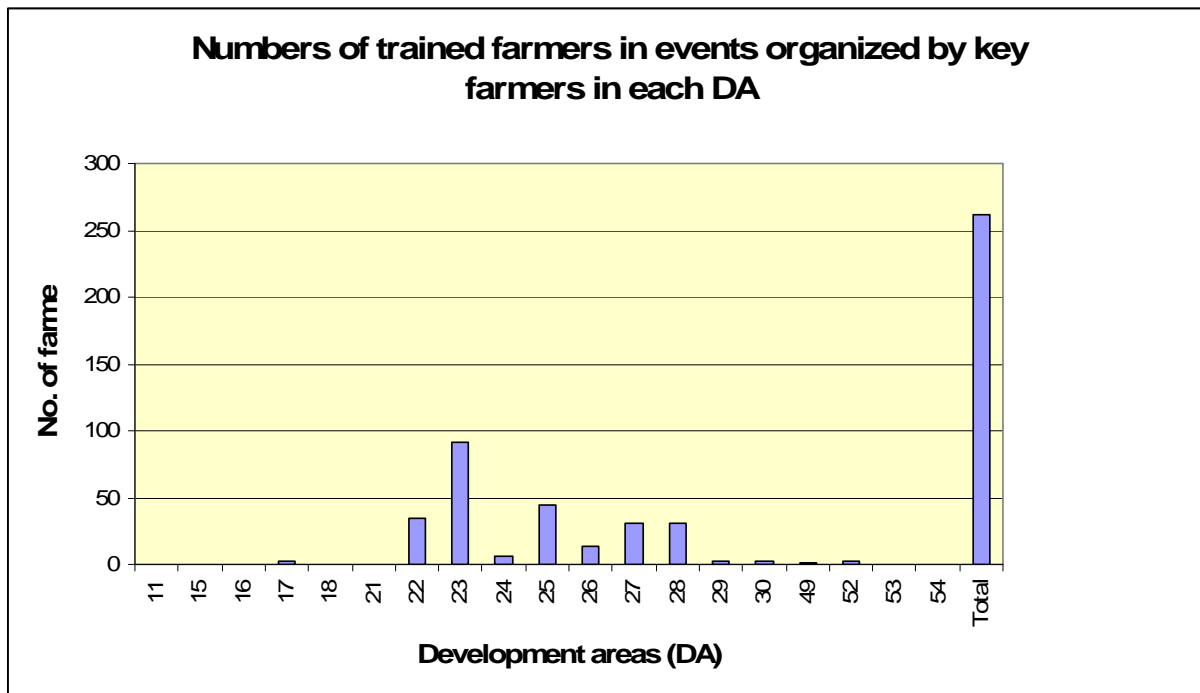


8.5 Training organized in collaboration with key farmers

Table 6, Fig. 11 and Fig. 12 indicate that 82 farmers were trained in trainings organized by key farmers and covered about 135 farm units. The distribution of trainings over the DA's shows, that training focused on DA23, DA22 and to lesser extent on DA24, DA26 and DA 27.

DA	No. of DA's farm units	Covered farm units	% of covered farm units	Trained farmers
11	201	0	0	0
15	114	0	0	0
16	182	0	0	0
17	52	3	6	3
18	25	0	0	0
21	268	0	0	0
22	339	47	14	34
23	683	129	19	91
24	97	6	6	6
25	419	73	17	45
26	322	24	7	13
27	441	54	12	31
28	263	40	15	31
29	337	3	1	3
30	99	3	3	2
49	233	4	2	1
52	444	11	2	2
53	44	0	0	0
54	20	0	0	0
Total	4583	397	9	262





9 Obstacles

The good response of both partners and target groups (farmers) was higher than expected and boosted the morale of the project team as well as the trainers. Having said so does not mean not in the least that some shortcomings and problems happened from time to time

Obstacles are categorized into two types

Weak of counterpart commitment

- The performance of the middle directorate in JV in terms of farmers' invitation was not up to aspiration at the beginning and it took the project staff relatively quite long time until this



problem was fixed. Ditch riders of middle directorate failed in more than 8 events to invite farmers to training sessions and the reasons of this failure according to them were

1. lack of enough vehicles
2. lack of farmers interest in the topic
3. Improper timing of the trainings sessions and some other excuses.

The staff responded positively to all these excuses and tried their maximum efforts to overcome them through continuous changing of training times, provide means of transport for ditch riders if necessary and provide printed invitations explaining the topic of trainings. It is worth to mention that the project did not face these problems in the southern directorate of the Jordan Valley.

- Only three trainers out four in MoA committed to actively contribute in the training campaign and none from JVA and NCARTT contributed in the training campaign. Despite one might look at this as problem, however, it showed some successes with MoA where 3 out 4 extension agents are well trained and contributed in the training campaign

Weather conditions

Despite frost is not uncommon in the Jordan Valley but it happens sometimes for one or two days, this year the frost spell was pervasive and prevailed for more than two weeks and caused a sever losses for most cultivated plants. This exceptional situation halted the training campaign for almost one month.

10 Learned lessons

Over the course of one year, many lessons were learned; they are categorized according to subjects.

10.1 Trainers

One of the most important lessons learned is that trainers' performance is proportional to the number of trainings they conduct. In general after three training sessions trainers' performance is excellent and they can work independently without need for support. Currently there are three competent trainers in the MoA who are capable of conducting training course in the future

10.2 Training times

Training times are very crucial for the success of the campaign. By timing we mean both dates of trainings and time during the day. From the experience of last season one can conclude the following

- Trainings times during low-season activity was the best, most farmers have no other obligations during these times and can attend the trainings ,however, the disadvantage of training during low-season is farmers might forget what they have been learned because the relatively long time span between training dates and the beginning of the season .
- Training during the season worked best during Thursdays and to a very lesser extent in the middle of the week.
- Some farmers prefer to have the training after finishing their daily affairs, in other words to conduct training late afternoon or in the evenings

10.3 Farmers' invitation process

- Ditch riders were the channel of framers' invitation; they fit this purpose because they are in daily contact with farmers. Ditch riders don't prefer to be shouldered with extra tasks unless they can see personal benefits in return. The idea of giving them meager cash incentives was utterly refused from their superiors. In return for this, the managers of directorates showed full commitments to mobilize them and motivate them to do this task. Practically speaking this



commitment succeeded in one case fully and to a very lesser extent in the other case. This obstacle hindered work progress for more than two months.

- The encountered predicament with ditch rider in the middle directorate pushed the project team to come up with new ideas. The approach of involving non-agricultural organizations and use of key farmers in farmers' invitation gave the work additional boost and revived the training campaign process after long period of sluggish progress.

10.4 Make use of existing non-agricultural NGO's

The social non-agricultural organization played important role in the training campaign. The Jordan Valley has scores of these non-agricultural organizations like social and sport and other non-profitable societies. The advantages of making use of these organizations are that in each village there is one or two of these organizations. Therefore, distribution-wise, trainings will be distributed fairly along the Jordan Valley.

11 Conclusion

- Training campaign succeeded in training more than 500 farmers in the first year.
- Despite the initial obstacles, JVA and MoA play significant role in the training campaign.
- JVA lab is still questionable because up till this moment we could not assess their role.
- Key farmers and non-agricultural organization are an additional source for farmers invitations and their contributions in the campaign was significant not as a mere recipients and target of the whole campaign but as actors and organizers for the trainings.
- There are three MoA extension staff who are trained and competent to conduct training in the future.
- The survey showed that the adoption rate is 50% , this means out of the trained 500 farmers 250 started immediately adopting the project recommendation in their farms



Next Steps and Plan for season 2008/209

1. Monitor the adoption by farmers
2. Use additional communication channels like radio, field days
3. Integration of fertigation extension service in local societies
4. Discuss and agree on the JVA role

12 Annexes

List of all farmers participated in Training Campaign

The Number	Name of farmer	D.A	F.U	Telephone No.
1	Ali Ameen Gharaibeh	11	17	077- 7266581
2	Barham Ahmad Eqab	11	41	079- 5027247
3	Mahmoud Ali Assaqer	15	5	
4	Mohammad Yousef Al Khateeb	15	98	6570062
5	Ahmad Yousef Al Khateeb	16	15	6570225
6	Mohammad Zayed Mohammad	16	127	079- 6082242
7	Ahmad Ali Fayyad Assaqer	17	24	079- 5114586
8	Ahmad Mahmoud Abdalla	17	26	077- 7418384
9	Ahmad Salem Gharaibeh	17	21	077- 7970765
10	Ali Kamel Al Rabaia'	17	46	077- 6579265
11	Ali Mahmoud Bani Atta	17	31	077- 7883192
12	Eqab Mohammad Hendi	17	18	077- 7882739
13	Haroun Ali Ahmad Al Rabaia'	17	16	077- 7669053
14	Husein Mahmoud Bani Atta	17	34	077- 7510227
15	Ibrahim Salem Al Gharaibeh	17	17	077- 7882063
16	Mansour Naser Bani Atta	17	18	077- 7891924
17	Meshref Ahmad Mustafa Gharaibeh	17	19	
18	Mohammad Isma'eel Rababa'	17	33	077- 7407674
19	Mohammad Rushdi Rasheed	17	35	079- 9245410
20	Rabba' Mustafa Arba'e	17	36	077- 6213452
21	Shaher Gharaibeh	17	30	077- 7921299
22	Sa'oud Khader Murad	18	29	079- 5377641
23	Rasem Ali Salem Assbaih	21	147	077- 7697041
24	Abdalla Mesleh Ashatti	22	118	
25	Ahmad Hassan	22	115	
26	Ahmad Mahmoud Abu Slayyeh	22	259	
27	Ahmad Sulaiman Al Ghanem	22	135	079- 6869760
28	Attef Hussein Abu Naja	22	111	
29	Ibraheem Hassan Sulaiman	22	91	079- 5695840
30	Khadra Ahmad Juma'	22	117	
31	Khaled Assattari	22	203	
32	Mahmoud Hassan	22	144,134	
33	Mariam Hussein Abu Seiam	22	65	
34	Mohammad Hassan Assattari	22	144	
35	Mohammad Saleh Ashatti	22	118	
36	Salwa Mohammad Slaieh	22	88	
37	Sara Musa Hussein	22	260	
38	Sulaiman Hassan	22	202,132	



39	Zoa'ila Saleem Abu Seiam	22	64	
40	Aamneh Abdel Rahman Assawalha	23	308	
41	Abdalla Khalaf Abdalla Addayyat	23	389,390	079- 5120875
42	Abdalla Salem Shahadat	23	360	
43	Abdel Majeed Salem Addayyat	23	417	077- 6236704
44	Abdel Qaddos Ghulam	23	365	079- 5884226
45	Abdel Rahim Mohammad Ali	23	496,497	079- 5825869
46	Abdel Salam Mohammad Shahadat	23	535	
47	Abdullah Addayat	23	389,390	079- 5120875
48	Ahmad Aayed Assker	23	606	05- 5357986
49	Ahmad Ali AbdMohsn AbuDayeh	23	430	079- 5569744
50	Ahmad Assamour	23	315	079- 5787071
51	Ahmad Assawalha	23	293	
52	Ahmad Faleh Musa Allawi	23	73,115	
53	Ahmad Hudair	23	441	077- 7759683
54	Ahmad Husein Salahat	23	520	079- 5131712
55	Ahmad Mahmoud Hussein	23	393	077- 7215204
56	Ahmad Mahmoud Odeh	23	160,161,176	078- 8571216
57	Ahmad Mefleh Abu Doleh	23	293	077- 7082573
58	Ahmad Mohammad AbuDayyeh	23	472	078- 5497699
59	Ahmad Mohammad Arrabee'	23	24,37,53	
60	Ahmad Saleh Ashahadat	23	823	079- 5637281
61	Ahmad Saleh Ashahadat	23	One Unit	
62	Ahmad Salem Mesleh Abu Khedair	23	475	079- 5163346
63	Ahmad Sulaiman Shahadat	23	536	077- 7324962
64	Ali Ibrahim Daifalla AbuDayyeh	23	324	079- 9235155
65	Ali Ibrahim Shahadat	23	536	
66	Ali Khlaif Assawalha	23	308	077- 7468987
67	Ali Mahmoud Abu Doleh	23	285	077- 6086775
68	Ali Mohammad Sallam Addayyat	23	480	079- 5582776
69	Ali Musa AbdMohsen AbuDayyeh	23	491	079- 5791439
70	Ali Musa AbuDayyeh	23	149	079- 5553870
71	Ali Sulaiman Alagmeh	23	527	
72	Ali Yousef Suliaman Addayyat	23	417	079- 5907613
73	Amein Abdullah	23	One Unit	079- 6164639
74	Atef Attaleb	23	252	077- 7551554
75	Attef Mefleh Attaleb	23	252	077- 7551554
76	Awadh Mahmoud Assawalha	23	309,307,306	079- 5146476
77	Eisa Ali AbuDayyeh	23	151,152	078- 8862940
78	Emad Abdel Fatah Al A'raj	23	347	079- 5516877
79	Fadha Ibrahim Addayyat	23	226	
80	Fadi Khalil Ghanem	23	372,373,384,385	079- 5154015
81	Fares Sari Hamdan	23	463	079- 9112422
82	Fawzi Salman Al Gharagheer	23	224	077- 7772558
83	Fayez Mohammad Attwa	23	200	079- 5561877
84	Gholam Ahmad Khan	23	467	079- 9112422
85	Gholam khaan	23	467	079- 9112422
86	Hamdan Khalaf AboDayeh	23	292,279,607	079- 5979101
87	Hamdan Khalaf AbuDayyeh	23	292,279,607	079- 5979101
88	Hana Reda Ahmad Al Gharagheer	23	One Unit	077- 9283069
89	Harbi Assawalha	23	310	079- 9873378
90	Hashem Al Marzouq	23	336,337	079- 5154221
91	Hassan Mahmoud AbuDayyeh	23	424	079- 6627479



92	Hjazi Younos	23	489,521,(674 - 679)	079- 5546257
93	Husni Yaseen Addayyat	23	481	079- 6009968
94	Hussein Abdullah Assalahat	23	374,375,392,395, 582	079- 5047806
95	Hussein Assalahat	23		079- 5047806
96	Ibrahim Ahmad AbuDayyeh	23	531	078- 5279271
97	Ibrahim Daifalla AbuDayyeh	23	322	079- 6686225
98	Ibrahim Mohammad Arrabee'	23	129	
99	Ibrahim Musa AbuDayyeh	23	149	079- 5002011
100	Ibrahim Sulaiman Ashahadat	23	536,537	077- 7413049
101	Ibrahim Sulaiman Shahadat	23	536	077- 7413049
102	Ibrahim Yousef Salahat	23	524,531,532	079- 5207188
103	Iso'ad Saleh Ane'aim	23	356,345,355,521	079- 5687934
104	Jamal Mustafa Hemoud	23	516	
105	Juma' Mohammad Ashehadat	23	395	079- 5564782
106	Kayed Mahmoud Abu Khedair	23	80	077- 6979346
107	Khader Abdalla Ahmad Ibrahim	23	10	077- 7226945
108	Khaled Abdel Hadi Assa'uod	23	665	077- 7276054
109	Khaled Ahmad Al Marazeeq	23	343	079- 5430350
110	Khaled Ashawaf Arrabee'	23	53,126	079- 9344591
111	Khaled Barakat Arrabee'	23	206,215	079- 6868201
112	Khalid Al Marzouq	23	343	079- 5430350
113	Khalid Sulaiman	23	416	079- 5392585
114	Khalifa Suliman	23	417	079- 9929305
115	Khalil Musa AbuDayyeh	23	449,457,458	079- 5840263
116	Khamees Hamdan Dager Al Khatib	23	575	079- 6428070
117	Khamis Abdel Jalil Al Khottaba	23	193	077- 6247179
118	Mahmoud Ahmad Abu Esba'	23	218	
119	Mahmoud Ali Addayyat	23	396	079- 9985207
120	Mahmoud Hussein	23	110	079- 5440654
121	Mahmoud Kareem Isma'eel	23	305	077- 9159794
122	Mahmoud Khalaf	23	280	078- 8776018
123	Mahmoud Musa	23	522	079- 9914020
124	Mahmoud Musa AbuDayyeh	23	522	079- 9914020
125	Mahmoud Yusef Annoa'em	23	468	077- 7436489
126	Majed Ahmad Alagmeh	23	395	079- 6690712
127	Mamdouh Marzouq Alagmeh	23	382	079- 6137978
128	Marwan Hassan Assa'di	23	202	079- 5373375
129	Mas'oad Sewailem Alagmeh	23	386	079- 5492643
130	Mattar Khalaf Allan AbuDayyeh	23	253,341,451	079- 6569062
131	Mefleh Ahmad Assawalha	23	229	078- 8039212
132	Mefleh Hamdan Addayyat	23	One Unit	077- 7558705
133	Mekhled Mohammad Addayyat	23	479	078- 5197020
134	Mekhlid Addayat	23	479,480	079- 9791045
135	Mohammad Abdel Kareem Addayat	23	395	079- 5279118
136	Mohammad Abo Bari	23	287	079- 6694945
137	Mohammad Ahmad Ali	23	95	
138	Mohammad Assamour	23	315	079- 9251231
139	Mohammad Attyah Alagmeh	23	379	077- 6581570
140	Mohammad Daifalla AbuDayyeh	23	325	079- 5921456
141	Mohammad Khalil AbuDayyeh	23	108,112,163	079- 5840263
142	Mohammad Musa	23	491	079- 5791439
143	Mohammad Musa Al Khaddam	23	164,165	077- 7498904



144	Mohammad Rashad Salim	23	126	079- 6294964
145	Mohammad Sanad Abu Nejaira	23	16	079- 6489221
146	Mohammad Suliaman Ashahadat	23	379,423	077- 7472975
147	Mohammad Yusef Annoa'em	23	468	077- 7436489
148	Musa Ahmad Al Marazeeq	23	(359-363)	079- 5978148
149	Musa Ibrahim Al Gharagheer	23	225	077- 9293808
150	Musa Marzouq	23	(359-363)	079- 5978148
151	Mustafa Darweesh Khaleefa	23	294	079- 5577224
152	Nabeil Ataji	23	213,214,(233-235), 237,296,298	079- 5403254
153	Nahar Ali Abdalla	23		077- 6359114
154	Naif Mohammad Assawalha	23	297	
155	Najah Mohammad Ahmad Addayyat	23	342	077- 6292942
156	Namer Musa AbuDayyeh	23	189	077- 7556029
157	Neyaz Rustom	23	471	079- 6989088
158	Omar Ali Shahadat	23	536	077- 6902127
159	Omar Taleb AbuDayyeh	23	532	078- 8841992
160	Oqla Jalil Aqeel Al Khatib	23	120,125	077- 7834509
161	Osama Mahmoud Odeh	23	160,161, 76	078- 8639396
162	Othman Ibrahim Arrabee'	23	129	079- 6710684
163	Ramadan Mohammad Ali	23	496	077- 9131783
164	Sabreen Mohammad Al Gharagheer	23	One Unit	079- 5645999
165	Safwan Nu'mat	23	586,588,589 598,600	079- 6117224
166	Saleem Khalaf	23	301	079- 9518707
167	Saleh Mahmoud Drobi Al Khatib	23	122	077- 7051478
168	Saleh Mohammad Musa Shahadat	23	544,545	077- 7842180
169	Saleh Sa'eed Ana'eem	23	One Unit	077- 6680305
170	Salem Mohammad Al Manaseer	23	621	077- 6712767
171	Salem Mohammad Shahadat	23	547,548	
172	Sulaiman Qasem Al Gharagheer	23	226	079- 6707214
173	Taha Musa AboDayeh	23	466	079- 5264171
174	Taha Musa AbuDayyeh	23	466,691	079- 5264171
175	Tahseen Hamed Abu Khedair	23	543	077- 7071548
176	Taleb Hussein Juma' AbuDayyeh	23	169	078- 6126855
177	Yousef Khalaf AbuDayyeh	23	132,133,247,453, 454	079- 5100937
178	Yousef Khaled Arrabee'	23	206,215	079- 6868201
179	Zaha Ahmad Mohammad Al Fa'our	23	One Unit	077- 6477670
180	Abdel Rahman Al Kayed	24	7,46	077- 6946248
181	Ahmad Ali AbdMohsn AbuDayeh	24	153	079- 5569744
182	Ahmad Ali Salameh AbuDayyeh	24	20	079- 5723173
183	Ahmad Hudair	24	22	077- 7759683
184	Attalla Abdessalam Isma'eel	24	32	079- 6342654
185	Awad Salem Attaleb	24	55,111	077- 7973788
186	Bassam Salem Attaleb	24	26,52,61,71	077- 7748636
187	Faisal Ahmad Ann'emat	24	31	079- 5260023
188	Ghassan Bassam Attaleb	24	75	077- 7217348
189	Hedairis Abdel Hafedh Addawahik	24	22	078- 8703600
190	Hjazi Younos	24	60,97	079- 5546257
191	Kamel Yousef AbuDayyeh	24	24	079- 5279580
192	Khaled Abdessalam Abderahman	24	30	077- 7998448
193	Khamis Berouhi Mohammad	24	34	079- 9323421



194	Mohammad Musa Alafandi	24	1	079- 6985558
195	Nawash Aayed Al Falah	24	70	077- 7787717
196	Sa'd Abdel Hafedh Anna'emat	24	16,41,43	077- 7323278
197	Sa'd Mohammad Anna'emat	24	35,107	077- 7348488
198	Sa'd Mohammad Anna'emat	24	27,28,34,107	077- 7348488
199	Saleh Hassan Salem Annawaji	24	30	077- 7741798
200	Yousef Annawaji	24	89	
201	Aadel Abdel Hadi Al Ghananeem	25	325,326	077- 7277231
202	A'adel Mahmoud Abdel Mahdi	25	324,325	077- 7277213
203	A'ahed Abdel Fattah Al Mersal	25	308	077- 7416725
204	Abdalla Hasan Saleh Abu Eid	25	34,59,78,360	
205	Abdalla Zamel Al Yazjeen	25	249,(254-259),321	077- 7481029
206	Ahmad Al Balawneh	25	55	079- 5734667
207	Ali Abdel Hadi Assa'uod	25	338	077- 7719012
208	Ali Akber Kouso	25	361,477	077- 6201069
209	Ali Hasan Saleh Abu Eid	25	34,59,78,360	079- 5542015
210	Ali Juher Koreh Khaan	25	328, 353, 355	079- 5111773
211	Ali Musa AbuDayyeh	25	236-238,289,293,310	079- 5553870
212	Ameer Jaan Mohammad	25	91	079- 6559522
213	Arbab Mohammad Saleh	25	366	079- 6377915
214	Eid Salameh Salman Al Azzami	25	313, 329	078- 8643711
215	Fadi Musa AbuDayyeh	25	416	
216	Fayez Musa AbuDayyeh	25	284	079- 5537122
217	Ghaith Hassan Al Mersal	25	3,10,(233-235),312	077- 7529878
218	Gholam Srour Khaan	25	(242-244),272,273,275,(280-282),290,292	079- 9272444
219	Hakem Ali Bakhsh	25	186,250,251	078- 5109964
220	Hasan Ramadhan Juma'	25	362	078- 5392041
221	Hashem Ahmmad AbuDayyeh	25	103,210	079- 5103404
222	Hedairis Abdel Hafedh Addawahik	25	363,368	078- 8703600
223	Helmi Jarrar	25	57,78	079- 552661
224	Hjazi Younos	25	1,2,50	079- 5546257
225	Hussein Mahmoud AbuDayyeh	25	110	079- 5935751
226	Ibrahim Ahmad Mohammad	25	72	078- 8536957
227	Ibrahim Musa AbuDayyeh	25	236-238,289,293,310	079- 5002011
228	Jamil Mohammad AbuDayyeh	25	107	079- 6707213
229	Jan Mohammad Karakhaan	25	322,344	079- 5133211
230	Jan Mohammad Karakhaan	25	322,344	079- 5133211
231	Juma' Musa AbuDayyeh	25	283	079- 5177503
232	Khaled Meslem Musa Khalaf	25	314	079- 6704069
233	Mahmoud Al Farhan	25	48	079- 5352735
234	Mahmoud Harb Ashawabkeh	25	(222-225)	079- 5828493
235	Mahmoud Harb Ashawabkeh	25	187,188,204,205,207,(222-225),245,246	079- 5848293
236	Mahmoud Hussein	25	424	079- 5440654
237	Mahmoud Hussein AbuDayyeh	25	109	079- 5440654
238	Majed Ahmad AbuDayyeh	25	98	078- 6493103



239	Mansour Abdalla Meer Mohammad	25	331,332,476	078- 8685763
240	Mohammad Abdel Kareem Ghanem	25	348,368	079- 5265537
241	Mohammad AboDayeh	25	107	079- 5193072
242	Mohammad Attyeh Fayyad	25	(23-25)	079- 5193216
243	Mohammad Hussien Ali Anna'emat	25	239,285	079- 5943762
244	Mohammad Musa AbuDayyeh	25	416	079- 5459211
245	Mohammad Otter Khaan Meer	25	333	078- 8042611
246	Mohammad Shehdeh Addaraweesh	25	206,(209-211),252,253,300,301,315,316,339	079- 5524042
247	Musa Ali AbuDayyeh	25	372,429	078- 8862940
248	Namer Musa AbuDayyeh	25	416	077- 7556029
249	Naser Faraj	25	358	079- 5615981
250	Nezar Mohammad Nour	25	161,162,198,392	078- 8902836
251	Suleiman Musa khalaf	25	56,55	05- 3584035
252	Talal Al Hanahneh	25	92	079- 5109245
253	Taleb Hussein Juma' AbuDayyeh	25	240,241	078- 6126855
254	Wafi Abu Hamad	25	157,158	079- 6622504
255	Yousef Al Balawneh	25	43	05- 358435011
256	Abdoh Aziz	26	280,281	077- 7813675
257	Ahmad Hamdan Al- Ghoul	26	201	077- 7537731
258	Ahmad Ibraheem Abu Helweh	26	208,209	079- 9275885
259	Ahmad Mohammad Al-Araysheh	26	30,32,48	079- 5487089
260	Ahmad Saleh Abu Salem	26	205	078- 5243880
261	Ali Akber Kouso	26	256,257	077- 6201069
262	Ali Jawhar Khaan	26	(44-47)	079- 5111773
263	Ali Musa AbuDayyeh	26	263,294	079- 5553870
264	Deifallah Mohammad Al-Boshi	26	312,311	079- 5489099
265	Eisa Khaan Kool Mohammad	26	22,33	079- 5131144
266	Eisa Khaan Mohammad	26	22,33	079- 5131144
267	Fayez Musa AbuDayyeh	26	64	079- 5537122
268	Ghaleb Mustafa Ali	26	207,223,225,228,230	079- 5528145
269	Hamed Abu Touq	26	229	079- 5020861
270	Hamed Husni Abu Touq	26	229	079- 5020861
271	Hasan Salem Al-Ekir	26	294,293,298,300,291,290,285	079- 6874698
272	Hussien Hamdan Fayyad	26	151,152	077- 6179778
273	Ibraheem Nour Mohammad	26	275,283	079- 6242548
274	Ibrahim Mahmoud Hamdan	26	328,206	079- 5571645
275	Ibrahim Musa AbuDayyeh	26	263, 294	079- 5002011
276	Juma' Musa AbuDayyeh	26	451	079- 5177503
277	Labeeb Yusef Kamel	26	292	077- 7813675
278	Mahmoud Husni Abu Touq	26	23,36,43,325	079- 5252429
279	Maso'uod Hasan Qasem	26	221,222	077- 6730945
280	Mohammad Bakhsh	26	282	
281	Mohammad Khaled Abdel Fattah	26	75,76,77	079- 5953065
282	Mohammad Musa AbuDayyeh	26	2,6,78,99	079- 5459211
283	Mohammad Salameh Al-Boshi	26	302	079- 5489099
284	Omar Yehya Abdel-Mutti	26	304,305	079- 5539718



			24,(26-28),31,50,51,69,70,171,175,177,(183-185),187,188,196,199,200	
285	Tawfiq Al-Sattari	26		
286	Abdel Kareem Khalil	27	124	079- 6595933
287	Abdel Raheem Deen Mohammad	27	73,347,378	079- 6812961
			11,18,227,444,445,	
288	Abdel Wahab Bakhshan	27	526	079- 5125144
289	AbdelGhani Skander	27	186	
290	Abdelmon'em Mohammad	27	376	079- 9682152
291	Abdelraheem Mohammad	27	378,347	079- 6812961
292	AbdelRahman Khalil	27	170	077- 7405108
293	Abdelrasoul Ameer Hasan	27	487	079- 5066936
294	Abdoh Ali Hasan	27	150,486	078- 8735614
295	Abdullah Ali	27	(332-334)	079- 5966805
296	Ahmad Abdelshafi	27	195	078- 8184125
297	Ahmad Ali Marsouq	27	169	078- 5584198
298	Ahmad Khalil	27	107	
299	Ahmad Odeh Arashaydeh	27	172	077- 7728322
300	Ahmad Odeh Arrashaydeh	27	172	077- 7646290
301	AlBadri Shafeeq	27	123	079- 6595933
302	Ali Abdallah Almersal	27	395,149,150	079- 5008295
303	Ali Haddad	27	381,355	079- 6693204
304	Ali Hamdan	27	71,73	079- 9157913
305	Ali Musa AbuDayyeh	27	92	079- 5553870
306	Ali Mustafa	27	127	079- 5103462
307	Ameer Ali Bakhshan	27	488	079- 9649713
308	Ameer Bakhshan	27	488	079- 9649713
309	Ashraf Annseraat	27	299	077- 7772315
310	Ayed Messalam	27	133,134	079- 5675813
311	Ayman Mohammad	27	183	079- 6982846
312	Bader Fayrouz	27	103	079- 9745667
313	Bahjat Ali Saleh	27	289	079- 9222014
314	Bakr Fareed Abdallah	27	83,85,88,89	079- 9670385
315	Deyab Mustafa	27	108,109,114	079- 6445411
316	Emad Sa'd	27	75	077- 6697867
317	Emdad Khair Mohammad	27	384,383	079- 6693204
318	Farouq Harb	27	171	079- 5551980
319	Fawaz Mohammad Hammad	27	180,230	079- 9142617
320	Fayez Hamdan	27	130,134	079- 5734222
321	Fayez Salman Tayem	27	(152-154),163	078- 8528905
322	Ghaleb Mustafa	27	87,(141-143)	079- 5528145
323	HabibAlla Meer	27	105	
324	Hamad Irshidat	27	343,344	078- 8228065
325	Hamad Irshiedat	27	343,344	078- 8228065
326	Hamdi Addasoqi	27	123,341	079- 5452595
327	Hussein Asheq Ali	27	185	079- 5963923
328	Ibrahim Ahmad Eisa	27	52,53	079- 5133316
329	Ibrahim Musa AbuDayyeh	27	92	079- 5002011
330	Isma'eel Saleh	27	98	077- 7240679



331	Jaber Ali	27	116,117	079- 6967652
332	Ja'far Ghoush	27	112,113	079- 9142601
333	Jamal Kareem	27	66,67,238,235	077- 7216260
334	Jameel Awad Anserat	27	1	079- 6249888
335	Kamal Dad Mohammad	27	356	079- 6693204
336	Keelani Abdel Hameed Mohammad	27	397	079- 6796759
337	Mahboub Mahmoud	27	354	079- 6693204
338	Mahboub Mahmoud	27	354	079- 9670392
339	Mahmoud Khalil	27	122	077- 7755305
340	Mahmoud Sa'eed	27	90	077- 7943377
341	Ma'moun Assa'adeh	27	396	077- 6541980
342	Mansour Ali	27	478	079- 61656647
343	Mansour Ali Mohammad	27	478	078- 5412650
344	Marwan Abdel Qader	27	164	079- 9981744
345	Mhaisen Hasan Selmi	27	426	078- 5388796
346	Mofeed Mohammad Hassoneh	27	278	05- 3595392
347	Mohammad Abdel Wahed	27	99,349	077- 3686491
348	Mohammad Ahmad Alharbi	27	519	078- 5388796
349	Mohammad ali Mohammad	27	92	079- 5097895
350	Mohammad Ali Murad	27	167	077- 6316965
351	Mohammad Goul	27	482	079- 5153389
352	Mohammad Ibraheem Hejazi	27	173	077- 6807204
353	Mohammad Ibraheem Hejazi	27	173	077- 6807204
354	Mohammad Sa'eid	27	91	077- 240527
355	Mohammad Saleh Mrazeeq	27	479	079- 6982846
356	Mohammad Saleh Naser	27	131,132,162,178,181	079- 5948155
357	Mohammad Saleim	27	282	
358	Mohammad Tharwat	27	125	079- 6241506
359	Mohammad Yusef Khalil	27	120	078- 5214865
360	Moshtaq Ahmad	27	379	079- 9670392
361	Musa Bakheet	27	130	
362	Nahar Mansour Anssairat	27	309	077- 7320159
363	Nahar Nserat	27	309	0777- 320159
364	Najwa Sha'sha'ah	27	119	079- 9648316
365	Naser Ahmad	27	106	077- 7845914
366	Naser Saleh	27	162	079- 5922504
367	Naser Saleh Naser	27	175	079- 5922504
368	Nawaf Qabel	27	110	079- 5252361
369	Odeh Saleh Salem	27	97	078- 8134362
370	Omar Ahmad	27	100	079- 9671610
371	Omar Musa Hassan	27	80,27,77	077- 7754554
372	Omar Ramadhan Hussein	27	50,51,497	079- 9403048
373	Qorban Ali	27	190	079- 5560718
374	Radhi Ali Nawas	27	70	079- 9670392
375	Radi Ali Nowaz	27	70	079- 6693204
376	Ra'ed Alawneh	27	336	077- 6177463
377	Rmzi Yawageem Ramzi	27	76	077- 6987459
378	Sa'adat Abdel Ra'ouf	27	231	078- 5578306
379	Sabri Ahmad	27	427	079- 6910222
380	Sa'd Mahmoud Sa'eed	27	243	077- 6706504
381	Salameh Meffleh	27	115	
382	Salameh Musallam	27	140	078- 8029492



383	Salameh Sa'd Meffleh	27	115	079- 5867209
384	Saleh Anserat	27	126	077- 6232335
385	Saleh Anssairat	27	126,427	077- 7773215
386	Sha'ban Mohammad	27	165	077- 7172606
387	Shareif Annseraat	27	226	077- 6644687
388	Skander Ali	27	179,182,187,188	079- 5499102
389	Skander Ghoush Bakhsh	27	82	079- 6693204
390	Suleiman Ahmad	27	211,128	079- 6316905
391	Sulttan Hasan Sulttan	27	(156-160)	077- 6042931
392	Tawfiq Al-Sattari	27	471	
393	Wafi Abu Hamad	27	58,59	079- 6622504
394	Waleed Shafiq Al Hayek	27	102	079- 9569743
395	Yahya Mahmoud Sa'eed	27	83,84	077- 9268823
396	Yaseen Dost Ali	27	111	078- 5711050
397	Yasein Musa Abu Eiadeh	27	194,193,138	079- 5497934
398	Yaser Jameil	27	380	079- 5384447
399	Yusef Khrees	27	118	079- 9648316
400	Yusef Musa Hassan	27	198	079- 5185315
401	Zakaria Ali Ibraheem	27	229	078- 5722166
402	Zolf Abu Fayssal	27	46,62	079- 6634670
403	Abdallah Hashem	28	21,22,23	079- 5099619
404	Abdel Hakeem Gahand	28	70,71	079- 5818933
405	Abdel Hakeem Gahno	28	70,71	079- 5818933
406	Abdel Hameed Kareem	28	155,233	079- 6782174
407	Abdel Naser Abdel Razaq	28	88	079- 5319136
408	Abdel Qader Sabri	28	151	077- 6649512
409	Abdellateef Ghoul	28	79	079- 6929421
410	Ahamd Eid	28	77,61	079- 5410856
411	Ahmad Hesham	28	One unit	079- 5413272
412	Ahmad Salman Abu Shama'on	28	148,164	078- 8507158
413	Ahmad Sulayman Shaheen	28	62,87,90,94	079- 5119896
414	Ali Johar	28	73	079- 9142791
415	Allan Odeh Arashaydeh	28	3	077- 7881439
416	Ashraf Mahmoud Sa'eed	28	236	077- 6877955
417	Atteyeh Daifalla Joma'	28	18	079- 5983820
418	Atteyeh Sallam Eid	28	2	077- 6243537
419	Awni Abdel Razaq	28	89	079- 5052499
420	Ayman Habbas	28	171,248	079- 5675329
421	Banhal Bashkal	28	48	079- 6652806
422	Belal Rabah	28	16, 41	079- 6862784
423	Daifalla Hasan Hussein	28	163	079- 6228584
424	Deedar Hussein	28	48	
425	Emad Ismaeel	28	254	079- 6773294
426	Fadhel Abdalla Khalil	28	(54-56),63,64	079- 9446665
427	Faruoq Harb	28	171	079- 5510980
428	Fawzi Hussein Abu Ta'eemeh	28	174,175	079- 9755670
429	Fayez Hamdan	28	7,8,9,72	079- 5734222
430	Habess Mahmoud Sa'eed	28	221	079- 5252497
431	Hamdi Sonokrot	28	57,58,59	079- 5410856
432	Hamed Mahmoud Deyab	28	90,91	05- 53595015
433	Hamed Sonokrot	28	29,30,31	
434	Hasan Rafaea'h	28	213	079- 6160861
435	Hazem Mohammad	28	321	079- 5476035



436	Hazza' Fayez	28	218,238	079- 5301126
437	Hussein Bashkal	28	78	079- 7197639
438	Ibraheem Habbas	28	172,241,242	079- 5288219
439	Ibrahim Eid Msalum	28	243	078- 8259596
440	Ibrahim Habbas	28	172,241,242	079- 6639709
441	Jamal Ali Ala'bbadi	28	192,169,326	077- 7530094
442	Jamal Kareem	28	183,184	077- 7216260
443	Jameel Awad Anserat	28	329	079- 6249888
444	Khadem Bashkal	28	83	079- 5316149
445	Khadem Hussein	28	39	079- 6857399
446	Khadem Hussein Rida	28	39	079- 6857399
447	Khaled Sulaiman	28	244	078- 5744341
448	Lebbad Odeh	28	214,215	079- 5211858
449	Mahmoud Zakaria Abdel Wahab	28	171	077- 7478494
450	Majdi Saber	28	104,123,124,128, 98	078- 8716679
451	Malek Abel-Hameed	28	24	079- 5501787
452	Mansour Shehada Mahmoud	28	105	079- 6463170
453	Marzouq Ahmad Sa'eed	28	328	077- 7632566
454	Mohammad Ahmad Qasem	28	163,164,179,180, 184	079- 6813589
455	Mohammad Ali Arrashaydeh	28	19,20	077- 7554897
456	Mohammad AlOrjjan	28	195	077- 7865446
457	Mohammad Annseerat	28	129	079- 5221732
458	Mohammad Habbas	28	247	079- 5328595
459	Mohammad Morad	28	81	079- 5794096
460	Mohammad Qasem	28	192	079- 6870395
461	Mohammad Redha	28	261	079- 5669085
462	Mohammad Slameh	28	97	077- 7745591
463	Mohammad Sulieman	28	One unit	
464	Mu'ayyad Mahmoud Sa'eed	28	251,252	077- 7437273
465	Musa Ahmad	28	33,352	078- 5530689
466	Musa Farhan Abo Elkhail	28	198	079- 6408236
467	Musa Salameh Salman	28	284	079- 6196798
468	Mustafa Ali Mustafa	28	200,202	079- 5735745
469	Mustafa Ameer Ali	28	75	079- 6418344
470	Nahar Annseerat	28	309,243	077- 7320159
471	Najeh Awad Assa'aydeh	28	109,286	077- 7133061
472	Naser Abu Shmoun	28	217	079- 9931264
473	Nour Eddeen Morad	28	81	079- 7026313
474	Ramadan Haj Ghoulam	28	72	079- 5355897
475	Reyad Hussein	28	40	079- 5632590
476	Riyad Hussein	28	40	079- 5632590
477	Sadeq Abu Al-khair	28	144	
478	Saleem Abdel-Rahman	28	169	
479	Saleem Ali Johar	28	73	
480	Saleh Salameh	28	219,220	079- 6436206
481	Salem Odeh	28	212	078- 5449421
482	Salem Odeh	28	212	078- 5449421
483	Salem Odeh Salem	28	212	078- 5449421
484	Sameer Ali Johar	28	74	079- 9142791
485	Ta'an Nafe' Al Sa'aydeh	28	37, (49-53), 68, 69	079- 6796948
486	Waleed Hashem	28	80	079- 6663153
487	Waleed Sa'd Addasoqi	28	(310-312)	079- 6809193



488	Yaser Ali	28	226	
489	Zakaria Mahmoud Sa'eed	28	222	077- 9268822
490	Zedan Salman AlEmarat	28	214	078- 8830645
491	Abdalla Sulaiman Al Ghanem	29	18	078- 5109142
492	Abed Sulaiman Al Ghanem	29	355	078- 5109142
493	Ahmad Salman Hashem	29	15	079- 6918377
494	Ali Falah	29	36	079- 5498407
495	Ameen Mahmoud Assawalha	29	40,42,43,455	079- 6390791
496	Haleema Ali Sha'ban	29	204	077- 7786394
497	Ibrahim Mahmoud Al Ghanem	29	354	
498	Jehad Al Balawneh	29	131	079- 9771433
499	Khader Abdalla Ahmad Ibrahim	29	86	077- 7226945
500	Khaled Abdel Kareem Abdalla	29	33	079- 6140941
501	Mohammad Hamdi Abu Moor	29	26	079- 5969554
502	Omer Abdel Kareem Abdalla	29	45,47	079- 5386151
503	Sameeh Salman Hashem	29	27	079- 5419352
504	Tayseer Sulaiman Masalha	29	52	
505	Younos Hassan Al Ghanem	29	46	079- 5034046
506	Abdel Fatah Abdel Hadi Assa'uod	30	54,55	077- 7761928
507	Abdel Hakim Ahmad Arramadneh	30	(78 -81),120	079- 6088978
508	Abdel Halim Ahmad Asharaya'	30	(78 -81),120	077- 7408650
509	Abdel Mahdi Arramadneh	30	39,91,477	079- 9537932
510	Ali Abdel Hadi Assa'uod	30	27,52,53,92	077- 7719012
511	Khaled Abdel Hadi Assa'uod	30	93,94,99	077- 7276054
512	Mahmoud Abdel Hadi Assa'uod	30	37,48,123	077- 7746818
513	Mohammad Abdel Karim Nemr	30	89	077- 6092173
514	Mohammad Ali AbuDayyeh	30	30,153	078- 8109240
515	Mohmoud Mohammad Assa'eed	30	95,96	077- 9507340
516	Morad Abdalla	30	41,73,92	077- 6220496
517	Musa Abdel Hadi Assa'uod	30	98	077- 6303769
518	Salman Hassan Saleem	30	21,26,84	077- 7756518
519	Sami Ahmad Arramadneh	30	19,106,107	078- 8489266
520	Yahya Abdel Hadi Assa'uod	30	46	079- 5473261
521	Sa'd Mohammad Anna'emat	53	14,28	077- 7348488
522	Ali Abdalla Al Mersal	54	3,4,78	079- 5008295
523	Haytham Nayef Annaattour	54	(7-9),11,13,(33-35)	077- 6336451
524	Naser Jaber Mohammad Annaattour	54	8,12	078- 8148771
525	Fatema Qaddoura			
526	Hamdeh Abdalla			
527	Khalfa Qaddoura			
528	Mairvat Hussein			
529	Muna Abdalla			
530	Muna Azzghoul			
531	Noora Assalahat			
532	Rasha Hussein Assalahat			
533	Salem Ahmad Mohammad			
534	Seeta Annazzal			



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