

**From Formal to Participatory Plant Breeding:
Improving Barley Production in the Rainfed Areas of Jordan**

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P.O. Box 5466, Aleppo, Syria

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I. INTRODUCTION

In the last few years two projects, supported by IDRC and by BMZ/GTZ, Germany, have experimented with a novel breeding approach for barley improvement in the low potential, marginal rainfall environments of Morocco, Syria and Tunisia. The current project, located in Jordan, will use the information and the experience gained in those two earlier projects with the aim of transforming an institutional barley breeding program into a decentralized participatory program by introducing farmers' participation in early selection and testing under farmers' conditions.

The main output will be an assessment of the potential for institutionalizing the participatory research approach into a national barley breeding program. Additional outputs include the development of methodologies needed to institutionalize participatory plant breeding, measuring the effect of decentralized participatory breeding on biodiversity, the identification of farmers' selection criteria including women's selection criteria, a more effective targeting of barley varieties to the needs of all possible users, the dissemination of the information generated by the project, an increased adoption of new varieties in low-input agriculture, and higher and more stable barley yields.

The project was approved in January 2000 and commenced on 1 April 2000. This report covers the first year of activities from 1 April 2000 to 31 March 2001.

II. PROJECT STAFF

The project involves four formal institutions and one NGO: the University of Jordan, the National Center for Agricultural Research and Transfer of Technology (NCARTT), Jordan University of Science and Technology (JUST), ICARDA and the Jordanian Hashemite Fund for Human Development.

ICARDA:

Dr. S. Ceccarelli (Barley Breeder and Project Coordinator)
Dr. A. Aw-Hassan (Agricultural Economist)
Dr. S. Grando (Barley Breeder)
Dr. M. Martini (Gender Analysis)
Dr. H. Halila, West Asia Regional Program (WARP) Coordinator

University of Jordan:

Dr. O. Kafawin (Barley Breeder) (National Coordinator)
Dr. H. Saoub (Forage Crops Specialist)
Dr. A. Baq'ain (Agriculture Extension Specialist)

National Center for Agricultural Research and Transfer of Technology NCARTT:

Dr. Mohammad Ababneh (Forage Crops Specialist)
Mr. Ali Nahar Gharaibeh (Barley Researcher)
Mr. Yahya Shakatreh (Barley Researcher)
Mr. Abdel Raheem Bawaleez (Forage Researcher)
Ms. Robi Assad (Extension Specialist)
Ms. Maissa Haddaden (Extension Specialist)
Ms. Ennas Gharaibeh (Extension Specialist)

Jordan University of Science and Technology (JUST)

Dr. Layth Rousan (Socio economist and technology transfer expert)
Dr. Moneer Al-Turk

The Jordanian Hashemite Fund for Human Development (JOHUD)

Eng. Fatma Mahmoud Abou Kaf (Agricultural Engineer)
Dr. Jamil Mohammad

III. ACTIVITIES PROGRAMMED AND EXECUTED

A. RESEARCH

The goal of the project is to improved welfare of small resource-poor farmers by increasing and stabilizing barley and animal production in rainfed areas.

The activities conducted in the period under report, the methodologies and the results obtained will be described according to the specific objectives of the project, namely:

1. Promote participatory plant breeding and assess the potential to institutionalize the approach in the barley breeding program in Jordan.
2. Improved barley varieties that fulfill the needs of poor farmers in the rainfed environments of Jordan.
3. Enhanced rate of adoption of new varieties through farmers' participation in selection and testing.
4. Identification of differences between selection criteria used by men and women farmers and by breeders.
5. Disseminate experimental results through publications, scientific articles, visits of breeders from neighboring countries and traveling workshops.

During the period covered by this report, four types of activities were executed:

- Planning meetings
- Establishment of field trials
- Study to identify constraints and opportunities for Participatory Plant breeding
- Selection of participating farmers

1) RESEARCH METHODOLOGIES

1.1 *Promote participatory plant breeding and assess the potential to institutionalize the approach in the barley breeding program in Jordan.*

Current institutional structure of NCARTT and identification of constraints and opportunities for participatory plant breeding

This study was conducted by Dr. Layth Rousan (JUST) and by Eng. Ennas Gharaibeh (NCARTT) and was intended to be the initial step to achieve this specific objective.

The purpose of this study was to determine the current institutional structure of NCARTT and to identify the constraints and opportunities for participatory plant breeding. The following objectives were developed to guide the study:

1. describe the current institutional structure of NCARTT showing the new managerial organizational structure with special focus on barley researchers.
2. determine the main constraints facing barley researchers at NCARTT.

NCARTT was established in 1985 as an organization responsible for implementing the Jordanian National Project for agricultural development in Jordan. For further information, a detailed brochure containing the main objectives, the mission, board, the institutional structure, human resources, branches, and research stations of NCARTT is attached. However; barley is still the main field crop that NCARTT focus on to improve its productivity and production in the marginal land and rangeland of Jordan. The main broad research activities include new promising cultivars, crop quality, crop management and utilization. However, and according to the barley researchers' point of view, barley research still focuses on and is limited mainly to selecting cultivars suitable to

the local environment in Jordan. Expanding the barley research to include farmers' selections is a necessity.

A descriptive design was used in this study. The population of the study consisted of all NCARTT barley researchers, a total of ten.

The research instrument, which was created by the research team, was a survey questionnaire that consisted of three sections. The first part of the questionnaire consisted of four questions regarding demographic data, including educational level, years of experience, type of work and modes of cooperation. The second part consisted of five questions related to managerial constraints. The third part of the questionnaire consisted of fifteen question statements regarding the research work at NCARTT. Space was also provided for the researchers to write additional comments about their suggested solution for each constraint that they identified.

A panel of four experts specializing in different fields, including socio-economists and barley breeders, established content validity of the instrument. The following points were examined by the panellists: item content and clarity, wording, length of the instrument, format and overall appearance. In addition, the instrument was tested by three cereal researchers currently working at NCARTT) and who were not included in the study. A copy of the questionnaire is attached.

All barley researchers were invited to Ramtha research centre on 15 November 2000. A brief introduction to the study was given, and the researchers completed the questionnaire. Descriptive statistics were used to analyse the data including means, standard deviations, percentages and frequencies. Data were analysed using the Statistical Package for Social Sciences (SPSS/Windows 10).

1.2 *Improved barley varieties that fulfill the needs of poor farmers in the rainfed environments of Jordan.*

Field trials

Two hundred lines were planted at each of seven farmers' fields and in the research station at Ghwer between November 19 and November 26, 2000. The trials are unreplicated with two checks: the improved six-row variety Rum and the local check. In each trial Rum is repeated 11 times and the local check 10 times. However, while Rum is repeated in all locations, the local check varies with the locations. Plot size is 10 m² (2m x 5m). In each location the plots are arranged as incomplete blocks of ten plots each, and the layout is ten rows and twenty columns. This will allow both an incomplete block analysis as well as a bi-dimensional spatial analysis. The locations and the farmers' names are listed below:

<u>Location</u>	<u>Farmer's Name</u>
Khanasri	Barakat Ahmed Al-Rawashdah
West Ramtha	Ibrahim Fadel Al-Azayzah
East Ramtha	Ahmed Salem Al-Smerate
Rabba	Basam Falah Al-Majali
Ghwer	Saleh Al-Dmoor
Al-Mohay	Jade'a Al-rhom Al-hajaya
Muaqqa	Salman Khalaf

The characteristics of the locations are the following:

<i>Al-Mohay</i>	60 km south east of Karak and about 130 km south of Amman, with an average annual rainfall of about 130-150 mm.
<i>Al-Muaqure</i>	55 km east of Amman, in the arid areas, with an average annual rainfall of 150 mm.
<i>Ramtha</i>	160 km north of Amman, with an average annual rainfall of 250mm.
<i>Khanasri</i>	135 km north of Amman, with an average annual rainfall of 200mm.
<i>Rabba</i>	140 km south of Amman, with an average annual rainfall of 340mm.

Ghwer 160 km south of Amman, with an average annual rainfall of 280mm.

Seed increase will be planted at Mushaqqar in a farmer's field.

The actual amount of rainfall received so far at the different locations is shown in Table 1

Table 1. Annual rainfall (mm) and its monthly distribution in Rabba, Ghweer, Mohay, Ramtha and Khanasri, stations during 2000/2001 growing season.

Month	Locations					
	Rabba	Ghweer	Mohay	Ramtha	Khanasri	Muaqqar
Oct.	11.5	6	-	25.8	20.6	0.2
Nov.	-	-	-	-	-	0.2
Dec. until 21st	27.6	26	39.7	17.1	16	14
Total	39.1	32	39.7	42.9	36.6	14.4

1.3 *Enhanced rate of adoption of new varieties through farmers' participation in selection and testing.*

Selection of the participating farmers

The following methodologies were used to select, in each location, a group of farmers who will perform the selections:

1. Meeting with the local community leaders such as the head of Municipality, societies chairmen, host farmers, Department of Agriculture representative, and others.
2. Introduction and promotion of the project activities.
3. The participants were chosen among farmers and interested community members who are already cultivating their own lands, and sharecroppers and families involved in the barley production. The selected farmers represent all the household category sizes in each community. A predominant selection criterion was the interest of the farmer to participate in the project activities. Priority was also given to the farmers who own livestock and use barley as fodder crop.
4. Special attention was given to families in which female members are involved in barley production.

The process of selecting farmers consisted of (1) field visits (twice per site), (2) community meetings (20 farmers per meeting), and (3) direct contact by NCARTT and the Agriculture Directorate in the areas with a JOHUD representative.

1.4 *Identification of differences between selection criteria used by men and women farmers and by breeders.*

No activities conducted to date. This will be done during selection in the current season.

1.5 *Disseminate experimental results through publications, scientific articles, visits of breeders from neighboring countries and traveling workshops.*

Dr. Kafawin presented a paper at the International Symposium on Participatory Plant Breeding in Pokhara, Nepal, 1-5 May 2000.

In February 2001 Dr. Ceccarelli gave a seminar at JUST on farmer participation, which included a description of the activities of this project, attended by several students and some Faculty staff.

2) RESEARCH RESULTS AND FUTURE ACTIVITIES

2.1 Promote participatory plant breeding and assess the potential to institutionalize the approach in the barley breeding program in Jordan.

Results from the study of the current institutional structure of NCARTT described above are presented below.

Educational level of barley researchers:

Three academic degree categories were used to capture the educational degree of the study participants. Data in Table 2 show that 70% of the barley researchers hold a Bachelors degree, and 30% were holders of and M.Sc. or Ph.D. degree.

Table 2. Educational level of barley researchers

Educational level	Frequency	%
Ph. D	1	10
M. Sc	2	20
B.Sc	7	70
Total	10	100

Experience of barley researchers:

As shown in Table 3, 10% of the participants had only one year's experience while the majority of the researchers (90%) had more than seven years research experience.

Table 3. Experience of barley researchers

Years of experience	Frequency	%
1	1	10
7	1	10
9	1	10
10	3	30
12	1	10
13	1	10
15	1	10
25	1	10
Total	10	100

Nature of the researchers' work:

Table 4 shows that 30% of researchers are in purely technical research work, 20% are managers while 50% combine both technical and management responsibilities.

Table 4. Nature of the researchers' work

Nature of the research work	Frequency	%
Technical	3	30
Management	2	20
Technical & Management	5	50
Total	10	100

Cooperation with academic research institutions:

Table 5 shows that 60% of the participants cooperate with academic institutions in their research, while 20% of the researchers reported no cooperation. A further 20% of the participants did not answer this question.

Table 5. Cooperation with academic research institutions

Cooperation	Frequency	%
Yes	6	60
No	2	20
Missing	2	20
Total	10	100

The second part of the questionnaire consisted of five questions related to managerial constraints. The following are a summary of the analysis of these questions:

- Seventy percent (70%) of the participants feel that their managers are not responding to the research needs and demands and see this as a constraint to the research activities.
- The second question was about “the effect of the annual employee work evaluation report and how can it reflect the research implementation”. Thirty percent (30%) of the participants feel that the evaluation report has an effect on the research implementation, while 70% of the participants feel that it has no effect on the research implementation.
- The third question was about “Management routine as a constraint for research” Seventy percent (70%) of the participants consider it as no constraint for research, while (20%) consider it as a constraint for research.
- In response to the fourth question on “Working hours as a constraint for research”, 80% of the participants do not regard working hours as a constraint for research.
- In response to the final question on “Financial constraints on research”, 70% of the participants stated that there are no constraints related to the financial situation.

The third part of the questionnaire consisted of fifteen questions regarding the research work at NCARTT. The responses are summarized below:

Question: is the following a constraint for research	<u>% responding Yes</u>
The availability of workers at the right time	30
The availability of computers at the right time	40
The availability of laboratory analysis at the right time	70
Climatic factors	50
The availability of inputs for production	30
Not assigning researchers totally for research work activity	10
Lack of training of researchers	50
The coordination with other academic institutions in Jordan	20
Clear strategic research plans	10
Lack of knowledge of the new agricultural technology	10
Participating in data analysis	10
The knowledge and participation of the extension agent in the research activities	20
The relationship with the farmer	30
Participating in writing final report	20

The final question was an open-ended one for the participants to identify any other constraints not covered by the questionnaire. No responses were obtained to this question.

Conclusions and Recommendations

Concerning managerial constraints, the study showed that the main constraint perceived by the barley researchers is that managers are not responding appropriately to the necessary research needs and demands. Therefore, managers at NCARTT should address this issue by responding to identified research needs and requirements. The study showed that the “annual employee work

evaluation report”, the “management routine”, the “working hours”, and the “financial limitations” are not perceived as constraints on research.

Regarding the constraints related to the research operations at NCARTT, the study showed that the availability of workers, availability of computers, and the availability of laboratory analysis are not perceived as constraints on research. However, 50% of the participants consider climatic factors and lack of training as constraints for research, while only 10% of the participants identified the “clearance of strategic research plans” as a constraint for research at NCARTT. Only 10% of the participants considers “lack of knowledge of the new agricultural technology and participating in data analysis” as a constraint for research.

Only 20% of the participants considered “knowledge and participating of the extension agent in the research activity” as research constraints, while 30% of the participants see “the relationship with farmers” as a constraint for research. These perceived constraints could be of particular relevance to the problem of institutionalizing a participatory plant breeding approach in NCARTT, in addition to the major perceived constraint that managers are not responding adequately to the research needs and requirements.

2.2 Improved barley varieties that fulfill the needs of poor farmers in the rainfed environments of Jordan.

This is the first season of trials. Results will be reported in next annual report.

2.3 Enhanced rate of adoption of new varieties through farmers' participation in selection and testing.

Selection of the participating farmers: In total, 61 farmers were selected to participate in the germplasm selection process. The characteristics of the selected farmers in each site are reported in the Annex.

2.4 Identification of differences between selection criteria used by men and women farmers and by breeders.

This will be done during selection in the current season. Results will be reported in next annual report.

2.5 Disseminate experimental results through publications, scientific articles, visits of breeders from neighboring countries and traveling workshops.

See section IV. Outputs

B. TRAINING AND EXTENSION

There were no training activities in period under review. The proposed PhD thesis research could not start because the candidate who was identified (Eng. Fatma Mahmoud Abou Kaf (Agricultural Engineer) was not able to enroll due to family reasons. We are currently in the process of identifying an alternative candidate.

C. CONSULTANCIES

There were no consultancies specific to the project.

D. ADMINISTRATIVE ACTIVITIES

ICARDA has provided logistic support through the Regional Office in Tunis, has administered the funds, and has transferred funds to the NARS.

IV. OUTPUTS

(a) Outputs:

- Results from a study of the current institutional structure of NCARTT.
- A total of 61 farmers selected to participate in the germplasm selection process and their characteristics recorded.
- Two hundred lines planted in trials in each of seven farmers' fields and in the research station.
- Dr. Kafawin attended the International Symposium on PPB held in Pokhara, Nepal from 1-5 May 2000 and presented a paper which has been published as:
S. Ceccarelli, O. Kafawin, S. Dr.S., H. Saoub, S. Grando, H. Halila, M. Ababneh, Y. Shakatreh, and E. Bailey, 2000. Increasing the Relevance of Breeding to Small Farmers Farmer Participation and Local Knowledge in Breeding Barley for Specific Adaptation to Dry Areas of Jordan. Proceedings of the International Symposium on PPB. Pokhara, Nepal, 1-5 May 2000.
- In February 2001 Dr. Ceccarelli gave a seminar at JUST on farmer participation, which included a description of the activities of this project, attended by several students and some Faculty staff.

(b) Reach: Even though it is too early to measure the acceptance, uptake, and/or utilization of the outputs produced, there is a widespread interest among the scientific and farmer communities in this project which is completely new for the institutions involved.

(c) Impact: The project has generated a wide awareness of the participatory approach among the scientific community.

V. PROJECTIONS

5.1 Promote participatory plant breeding and assess the potential to institutionalize the approach in the barley breeding program in Jordan.

The study conducted in 2000 will be expanded to examine the specific institutional changes (if any) needed to adopt participatory research by NCARTT.

5.2 Improved barley varieties that fulfill the needs of poor farmers in the rainfed environments of Jordan.

The first set of selected lines will be identified through both individual and group selection in the seven farmers' field sites and at the research station.

5.3 Enhanced rate of adoption of new varieties through farmers' participation in selection and testing.

It will not be possible to measure the rate of adoption yet. However, the interest of the farmers to grow the selected entries in their fields, will be an initial indication of the readiness of farmers to change the varieties currently grown.

5.4 Identification of differences between selection criteria used by men and women farmers and by breeders.

During selection, the reasons for selecting and discarding, as well as the rating of the entries and the ranking of the best entries will be compared among participants. After harvesting and data analysis, the selection of the entries to be evaluated in the second year with the

5.5 Disseminate experimental results through publications, scientific articles, visits of breeders from neighboring countries and traveling workshops.

A visit of farmers and scientists to the sites in Syria where a similar project is being conducted, is planned for the next period.

VI. BUDGET

Please refer to the Financial Report submitted separately.

VII. ANNEX: Characteristics of the Selected Participating Farmers

Khanasri

No.	Farmer Name	Area planted with barley (dunum)		Income resources		Livestock Size	Education Level	Telephone no.
		Rented	Owned	Agricultural	Non-agricultural			
1	Mohammad Ahmed Al- Radashda	120	22	Poultry Farm	Retired	-	Primary School	6214515
2	Reziq Unad Al- Kaifi	600	50	Sheep	-	150	High School	6214418
3	Hussein Mefleh Al- Anber	150	13	Sheep	Retired	20	Primary School	6214447
4	Remithan Hassan Al-Deek	100	60	Sheep	-	25	Illiterate	-
5	Humidan Fankher Al-Hammad	70	10	Sheep	Retired	50	Primary School	6214477
6	Abed reziq Al-Khattar	80	50	Sheep	Retired	70	Primary School	6214512
7	Gassab Mejeli Salim	100	30	Sheep	Retired	30	-	-
8	Hammed sliman Al-Amoud	80	40	Sheep	Retired	35	-	-
9	Khalid Salem Al-Horan	150	25	-	Retired	-	Primary School	6214478
10	Ahmed Hamdan Al- Hazemy	100	70	Sheep	Retired	2	Primary School	6214422

East Ramtha

No.	Farmer Name	Area planted with barley (dunum)		Income resources		Livestock Size	Education Level	Telephone no.
		Rented	Owned	Agricultural	Non-agricultural			
1	Ali Salem Smirat	-	-	Farmer	Grain Salesman	-	-	-
2	Mahmood Abed Al-Aziz Smirat	-	-	Farmer	Grain salesman & Cattle farmer	-	-	7381469
3	Mohammad Faleh Bashabsha	-	-	Farmer	Grain Salesman	-	-	7383401
4	Ali Khalid Al-Khaza'la	-	-	Farmer	Sheep Farmer	-	-	-
5	Essa Ali Kiwan	-	-	Farmer	Sheep Farmer	-	-	-
6	Mohammad Ahmed Diabat	-	-	Farmer	Sheep Farmer	-	-	-

West Ramtha

No.	Farmer Name	Area planted with barley (dunum)		Income resources		Livestock Size	Education Level	Telephone no.
		Rented	Owned	Agricultural	Non-agricultural			
1	Mohammad Hassan Al- Ayed	-	-	Farmer	Livestock farmer	-	-	-
2	Ahmed Mahmood Al -Hamedi	-	-	Farmer	Salesman	-	-	7383253
3	Mohammad Ahmed Abu Deiah	-	-	Farmer	Salesman	-	-	-
4	Falah Mohammad Abu Anjan	-	-	Farmer	Salesman	-	-	-
5	Mohammad Taiseer Al-Zouby	-	-	Farmer	Salesman	-	-	7383549
6	Mahmood Saleem Diabat	-	-	Farmer	Livestock farmer	-	-	-
7	Hassan Saleem al-Zouby	-	-	Farmer	Salesman	-	-	-

Ghwer

No.	Farmer Name	Area planted with barley (dunum)		Income resources		Livestock Size	Education Level	Telephone no.
		Rented	Owned	Agricultural	Non-agricultural			
1	Abed Al Hameed Al-Dmoor	-	60	Sheep salesman	-	Non-limited	Primary school	2386659
2	Falah Hammad Al-Dmoor	-	30	Sheep Farmer	-	100	Illiterate	2386346
3	Ibraheem Mahmood Al-Dmoor	-	-	-	-	-	Primary school	2386331
4	Abed Al Raheem Al-Dmoor	-	20	-	-	-	Illiterate	2386071
5	Ahmed Khalil Al-Dmoor	-	20	-	-	-	Illiterate	2386153
6	Abed Al Salam al-Dmoor	-	60	-	-	-	Primary school	2386673
7	Abdullah Al-Dmoor	-	-	-	-	-	Primary school	2386719
8	Yosef Yaseen Al-Dmoor	-	20	Sheep salesman	-	Non-limited	Primary school	2386406
9	Salem Falah Al-Shemat	-	-	-	-	-	Illiterate	2386744
10	Jameel Abed Al Azez Al-Dmoor	-	20	-	-	-	Illiterate	2386072

Mohay

No.	Farmer Name	Area planted with barley (dunum)		Income resources		Livestock Size	Education Level	Telephone no.
		Rented	Ow ned	Agricultural	Non-agricultural			
1	Ali Duhesan Al-Hajaia	-	200	-	clerk	-	High School	079632487
2	Yaseen Hamad Al Qudah	150	-	-	clerk	-	High School	2337212
3	Abed Al Majeed Al Qudah	-	100	-	Retired	-	High School	2337285
4	Dhelan Ghaith Al Hadaiat	-	250	-	clerk	250	High School	2337213
5	Khalaf Al-Saraheen	-	200	-	clerk	200	High School	2337236
6	Khalil Awad Al-Qudah	-	150	-	Retired	100	High School	2337285
7	Fahed Suliman Al hdaiat	-	200	-	Retired	200	Secondary school	2337213
8	Abed Al Hadi Al Hdaiat	-	200	-	Retired	150	Secondary school	079717949
9	Mohammad Al-Bashabsha	-	150	-	Retired	100	Primary School	2337225
10	Abed Al Mahdi Al-Qudah	-	150	-	Retired	100	Primary School	2337212
11	Rateb Hamed Al-Qudah	-	150	-	clerk	150	High School	2337212
12	Ahmed Abdullah Al-Qudah	-	200	Farmer	-	200	Primary School	2337212
13	Salem Al Bashabsha	-	150	-	Retired	150	Secondary school	2337208

Muwaqqar

No.	Farmer Name	Area planted with barley (dunum)		Income resources		Livestock Size	Education Level	Telephone no.
		Rented	Ow ned	Agricultural	Non-agricultural			
1	Ali Nassar	-	120	Agricultural	-	50(goat)	Illiterate	-
2	Falah Farhan Dafnsn	-	200	Agricultural	Retired	200(Sheep)	Secondary school	-
3	Shketer Aref	-	300	Agricultural	-	30(Goat)	Illiterate	-
4	Alyan Farhan	-	30	Agricultural	-	30(Goat)	Secondary school	-
5	Khalaf Shketer	-	110	Agricultural	-	10(Goat)	Secondary school	-
6	Audah Anad	-	160	Agricultural	Retired	200(Goat)	Secondary school	-
7	Saleh Ali	-	20	Agricultural	Retired	25(Goat)	Secondary school	-
8	Musleh Ali	-	10	Agricultural	clerck	30(Goat)	High school	-
9	Mohammad Khalaf	-	15	Agricultural	-	100(Sheep)	High school	-
10	Salman Khalaf	-	25	Agricultural	Retired	25	Secondary school	-
11	Salamah Diab	-	200	Agricultural	-	300	Secondary school	-
12	Atallah Al-Qudah	-	200	Agricultural	Retired	250	Secondary school	-
13	Salem Al-Qudah	-	200	Agricultural	Retired	5	Secondary school	-
14	Mahmood Al-Qudah	200	-	Agricultural	-	15	Secondary school	-
15	Fahad Ali Al-Qudah	120	-	Agricultural	Retired	-	Univ. Gdte	-