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PROJECT MESQA

Perceptions, Attitudes, Habits and Behavior of Egyptian Farmers Regarding Village Canals

Qualitative Audience Research Report

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By:



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Executive Summary

The Academy for Educational Development (AED) commissioned Wafai and Associates, Research and Communication, to conduct a series of focus groups conducted in the village of *Manshat Essam* in the governorate of Menoufia on July 2, 1995. This study also consisted of 22 in-depth interviews with key persons conducted in the same village.

The primary objectives of the study are:

1. To explore attitudes, perceptions and behavior of Egyptian farmers and key informants regarding maintenance of the "mesqas."
2. To determine barriers to maintenance/improvement of the "mesqa" water flow and how these barriers might be overcome.
3. Develop an understanding of the types of community-based approaches to solving community problems and how these approaches can be positively reinforced.

Secondary objectives are:

1. To obtain a general understanding of the irrigation problems currently facing farmers.
2. How they perceive these problems might be solved.
3. What role they can personally play in solving these problems.
4. The role of irrigation officials in the village and extent of their involvement in the problems farmers face.
5. Health problems resulting from the *mesqa*.

Findings of the Study

1. Most important irrigation problems farmers are facing today.

Participants/informants cited a list of irrigation problems they are facing on a day to day basis.

Such problems include:

- Water shortages that have resulted in large areas of fertile land (50 feddans) turning into barren land. This shortage of water is also threatening current crops. Water is available for five days and is cut for 10 days. Of these allotted five days, water is actually available for only three days. Some participants stated they would like the system to be changed to seven days of availability and seven days of absence. Water shortages have also resulted in farmers being forced to grow only corn, alfalfa/*barseem*, and wheat, rather than vegetables or rice which require more water. They claim that the Ministry of Public Works and Water Resources (MPWWR) channels the water to the rice-growing governorates.
- Position of land on the *mesqa* is a significant factor in the amount of water available for irrigation for farmers owning land at the end of the *mesqa*. The farmers claim that there is little water at the end of the *mesqa*. Also, the five days of water are in reality only one or two days for farmers located at the end of the *mesqa*. The irrigation district engineers, however, claim that the amount of water available is the same regardless of position on the *mesqa*, however, it is indeed true that the water takes at least 24 hours to go from the beginning of the *mesqa* until the end so that the *mesqa* is all filled up. As such, farmers have the same amount of water, however, those located at the end of the *mesqa* have fewer days of irrigation. In addition, the agricultural cooperative director also said it takes longer to pump water at the end of the *mesqa* than it does at the beginning. Because *mesqa/bahari* pumps are rented per hour, this means that it is more expensive for farmers located at the end of the *mesqa* to water their land.
- *Mesqa* water is polluted with sewage. Sewage is released into the *mesqas* and there is no other alternative for the disposal of sewage. The lack of a sewage system has led to the rise of the underground water which is causing damage to both the homes and the land.

- The *mesqa* is heavily polluted both because farmers throw waste/sewage into the *mesqa* and are generally negligent, and because of the plants and weeds growing in the *mesqa* (especially the water lilies [*ward el Nile*].) The water lily problem is aggravated by young boys throwing the roots of the plants into the water where they multiply rapidly and soak up the water in the *mesqa*.
- One of the reasons for the pollution of the *mesqa* is the shortage of water. Participants stated that if there was more water in the *mesqa*, the same amount of pollution would not be such a problem because it would not be noticeable in the large amount of moving water in the *mesqa*. However, in a dry *mesqa*, all the garbage sits on the bed of the *mesqa* and is very visible.
- Mechanical cleaning of the *mesqa* is in itself a problem because the plants are not easily removable. Furthermore, the cost of mechanical cleaning using the *karaka* (loader) is high. Other cleaning problems are caused by some farmers who do not want the *karaka* to pass through their lands because it dumps the soil from the bottom of the *mesqa* onto their land which ruins it. The *karaka* is also forced to actually pass through neighboring lands because the road next to the *mesqa* is too narrow. The irrigation engineer blames farmers for taking too much of the public (*karaka*) road into their land. If the *karaka* passes through the land, at a time nearing harvest, the crops will be ruined said the farmers interviewed in-depth. Other problems associated with the *karaka* are the presence of trees bordering the *mesqa* which prevent the *karaka* from reaching some places and roads narrowed because of the presence of infringing buildings. In order to do an effective job, the *karaka* needs clear, wide roads on the banks of the *mesqa*.
- Tiled agricultural drains do not work at all, participants said.
- High cost of "*mu'yan*" (underground water) makes it beyond the means of anyone in the village--L.E.8 per hour to rent the pump. In addition, "*mu'yan*" water is said to be bad for the agricultural land because of its perceived salty content. Furthermore, underground water makes the land dry after only four days, while canal water lasts for at least a week. Participants all averred that they only use underground water "in emergencies to rescue the land from drying out."

2. Types of solutions being proposed to combat these problems.

- Solutions proposed to increase the amount of water available for irrigation, particularly at the end of the *mesqas* include putting in pipes in the ground that would carry water greater distances. One of the local council members suggested that the owners of 20 to 30 feddans at the end of the *mesqa* could join forces and buy an underground watering *mu'yan* pump and thus solve the water shortage problem. However, farmers and key officials are conscious of the problems associated with using underground water--it lacks valuable silt, they believe it has a high salt content, they think it makes the land "thirsty" quicker than *mesqa* water, they claim it makes the soil too fine in texture, and it is expensive.
- Participants claimed that probably the most important solution to the *mesqa's* problems is the creation of a proper sewage drainage system. Such a system, however, is very costly. In the absence of such a system, there is no alternative to sewage disposal than the *mesqa*.
- Suggestions to alleviate the sewage problems consist of using wastewater disposal trucks that belong to the City Council. However, participants claimed that requests to the City Council to send the truck to drain the sewage take weeks before the truck comes and they charge L.E.5 to 10 per visit.
- Additional suggestions that came out in the in-depth interviews to stop people from dumping sewage/garbage into the *mesqa* include the construction of a concrete ceilingless room for people to throw garbage into. The local village council would be responsible for regularly cleaning the garbage from this room. Opponents of this suggestion, however, stated villagers would still dump waste into the *mesqa* out of force of habit and tradition because they learned such behavior from their parents. Garbage dumping into the *mesqa* has become part of their culture.

- An alternative suggestion came from many of the informants interviewed in-depth, both farmers and local officials. They claimed that the only way to stop people throwing waste into the *mesqa* is to appoint a guard whose job would be to impose a hefty (L.E.50-100) fine on violators. Proponents of this idea stated that such a heavy fine would be a great disincentive for people to pollute the *mesqa*. Opponents on the other hand, said that nothing would take place before 2 p.m. while the guard was on duty. However, everyone would start dumping waste under the cover of night, and nobody would be able to impose any fines on anyone. In addition, the district engineer stated that he had tried to impose this system in the past, but the government had interfered and stopped that practice.
- Women, meanwhile, are opposed to the issue, saying that it is unfair to impose a fine on sewage and garbage disposal in the *mesqa* without first providing a solution to the problem--an alternative disposal site. As long as this site remained non-existent, nobody can impose a fine on people who have no other choice. The issue of garbage disposal is particularly relevant to women because they are the cause of the problem and they are the ones at a loss as to where to dispose of the household garbage and sewage.
- The village physician stated that household garbage and dead animals should be converted into much-needed organic fertilizer.
- Solutions to increase the amount of water in the *mesqa* came from both the farmers and the agricultural cooperative director who all said that the large concrete pipes carrying water from one section of the *mesqa* across the road to the other side need to be lowered for low water levels to reach and cross through them to the other side.
- Additional solutions to improved *mesqa* cleaning by the *karaka* are the appointment of an official to supervise the *karaka* driver during the *mesqa* cleaning process. Someone should be at hand to guide the driver and to make sure he removes all the obstruction.

3. Receptiveness of farmers/village residents to community action to solve these problems.
- Participants generally felt that cleaning the *mesqa* is the responsibility of “official institutions” and certainly not their responsibility. They claimed they pay for cleaning the *mesqa* and therefore, they should not have to do it themselves as well. If cleaning the *mesqa* was left to the farmers, several informants are positive that farmers “would never do it.” They claimed that the government sends in the *karaka* to clean by force, and everyone is obliged to pay. Otherwise, people would refuse to pay or say they are unable to pay. Farmers and officials alike agreed that cleaning the *mesqa* needs an “official” touch to be most effective. Meanwhile, several officials interviewed stated that farmers should be responsible for manual *mesqa* cleaning in front of their fields, and should be in charge of making sure the *mesqa* does indeed stay clean for as long as possible.
 - On the other hand focus group participants and farmers interviewed in depth were emphatic in refusing to use their own hands to clean up the *mesqa* saying that even though the women are responsible for disposing of waste and sewage in the *mesqa*, the men are too disgusted to offer any manual assistance in cleaning. They said the only way to clean is using the mechanical cleaner/loader, the “*karaka*”, which is provided by the agricultural cooperative. In addition, they feared the broken glass strewn all over the *mesqa*.
 - Community action, however, is possible only if there is a legal entity that is authorized to collect money and make decisions pertaining to the village. However, participants generally felt helpless because they neither have the money to contribute nor the time for community action. They would rather have some “official” entity solve their problems. Several informants in the in-depth study stated that community action is not possible because nobody would listen to peers. They said that if they suggested a particular action, they feared that others might consider them bossy or full of airs and refuse to participate. Instead, most people would rather not risk embarrassment and remain apathetic, informants said.
 - Community action to solve water-related problems is impossible in the eyes of several of the informants interviewed in the in-depth study. One farmer put it eloquently, “Even if the farmers do unite to solve the problems of the *mesqa*, where can they get the water from? Only the irrigation people can open and close barrages and canals.”

- The most highly respected figures in the village are the village mayor and the mosque *Imam* who is a resident of the village, unlike other officials who leave the village after office hours. Several informants stated that the mayor should be in charge of making sure nobody throws waste or sewage in the *mesqa*. However, others said that the *omda* is getting on in age, and he could not possibly be burdened with doing everything himself.

4. The role of irrigation officials.

- Irrigation Officials are perceived to be rather uncooperative with the farmers to the extent that an entire group did not know the name of *mofatesh al ray*--"the irrigation inspector" and had never heard of him (Men < 40). Others stated that the Ministry of Public Works and Water Resources (MPWWR) district engineer is in control of how much water is released into the *mesqa* and is therefore, the primary person responsible for ensuring that the water reaches the end of the *mesqa*.
- Participants accused the director of the cooperative for preventing the cleaning of the *mesqa* because of an illicit deal with the owner of the underground water pump. They said no one would have to rent the pump if there was enough water in the *mesqa*, and therefore, *mesqa* cleaning is not in the interest of the pump owner [*sheikh el balad*--a pseudo official responsible for knowing who's who in the village, particularly to ensure that all the boys eligible for military service are drafted] who has gone into agreement with the cooperative director.
- More positive comments came from one person in the males-over-40 group who knew the district engineer Mahmoud El Dahshan. He said this man is very cooperative. Other participants claimed that they are constantly in touch with the agricultural supervisors [*moshrefeen el zera'eyeen*] from the cooperative. They said whenever there was a problem they would send for the supervisors who come immediately.
- From the perspective of the irrigation officials themselves, both the district engineer and the irrigation inspector interviewed in this study insist that they are very well known to the farmers on a personal rather than purely administrative level. However, they did say that nothing would ever please the farmers when it comes to water because they want to have water in the *mesqa* all the time, regardless of whether they need to water or not. The engineers claim that the farmers do not really understand the role of the irrigation engineer and would like to involve the irrigation officials in every petty dispute they have.

5. Role of the village council, role of the agricultural cooperative, role of the *sheikh el balad*

- The above three are very much a part of the villagers' lives, particularly the agricultural cooperative which is in charge of giving farmers seeds, chemicals, fertilizers, ordering the *karaka* to clean the *mesqa*, solving agricultural disputes and such matters. However, it is apparent in the findings that none of the three entities have any power to solve water-related problems such as water shortages, or waste disposal in the *mesqa*. These bodies neither have the authority to do much related to water, nor the money to finance solutions to water-related problems.

6. Health problems/illnesses resulting from/linked to the *mesqa*

- The polluted *mesqa* is the source of disease, epidemics, bilharzia, and a general reduction in the standard of living.
- The *mesqa* attracts large numbers of mosquitoes and flies which cause many illnesses and fever. Such illnesses include bilharzia, malaria, hepatitis, renal failure, spleen failure and liver failure, intestinal infections, bladder/urinary tract infections, and eye infections. Typhoid is another illness associated with the *mesqa*. The physician spoke at length about how he has been trying to educate the villagers about the dangers of going into the *mesqa* barefoot, and about the health hazards that are caused by people polluting the *mesqa* with human, plant and animal waste.
- The glass and other sharp objects thrown into the *mesqa* often cause severe injuries, making manual cleaning of the *mesqa* a great health hazard.

7. Willingness to participate in collective action

- Cooperation between farmers is not an unheard of thing. In the past, they have cooperated in watering their lands by taking turns and using old fashioned water wheels. However, this cooperation was riddled with problems over who gets to water before whom. In addition, some farmers tried to repair the tiled irrigation system but had no success because of the complexity of a task for which they are totally unqualified. Furthermore, the local council members claim that farmers no longer bother to clear the mesqas themselves as they are relying exclusively on the *karaka*. Not only are they relying on mechanical clearing, they are relying on the government authorities to clean up the mesqa. This is in line with the statements mentioned earlier that farmers believe such matters are not their immediate responsibility but that of the government.
- Given the availability of modern cleaning technology, such as the *karaka* it is not surprising that the farmers have ceased to clear the *mesqas* manually themselves. There is no reason for them to put their health at risk from all the hazards of the *mesqa* when there is a safe, easy alternative.
- The farmers have clearly indicated a willingness to pay for services that they would rather not perform themselves. This is already a fact for the cleaning of the mesqa. They pay the agricultural cooperative to bring in the *karaka*. Similarly, some of the female participants indicated that they are willing to pay for garbage collection, even if it is only a very small amount of money (one tenth of one pound per day-- *garbage collection rates in Cairo cost about the same as villagers indicated they were willing to pay*). However, both these actions involve assistance from official entities, and are not community actions per se. The community is responsible only for payment rather than the actions themselves.

8. Gender-Related Issues

- The role of women in the village has begun to change over time. Young women no longer work in the farms alongside their menfolk. At most, they carry fertilizers or food to the men in the fields and spend their time taking care of children or the house and raising farm animals. Older women still work in the farms and look down on the ways of "modern" women.
- Women are generally excluded from major village events of a pseudo-official nature, such as the opening of the mosque or a new school. If strangers from outside the village are invited, then women are not encouraged to attend such events. Older women also do not attend to set an example for their daughters and daughters-in-law.
- Women are the primary persons responsible for garbage disposal in the village. When faced with the absence of a proper garbage disposal site, women are left with no choice but to dump household waste into the *mesqa*. Any educational campaign to fight poor waste disposal habits **must** be addressed to the women. Although the men might be exposed to such messages in the mosque or other seminars, they believe they cannot pass on the messages to their wives as long as there is no alternative solution to garbage disposal.
- Older women have no time on their hands for leisure or entertainment. They are too busy in their homes and working side by side with their husbands in the fields. Younger educated women, on the other hand, are suffering from high boredom levels. They claim there is nothing for them to do in the village. They spend their entire day doing housework and taking care of their children and at most watching television. These women are hesitant to take part in any community action because they are afraid their peers would think they are putting on airs because they are educated. As such, any community action by these educated women is likely to require an intensive personal communication campaign to encourage them to take positive action in the affairs of the village. As matters stand now, the younger female generation feels isolated from the farming community and caught between two worlds. They are aware of more hygienic practices as indicated by their refusal to wash their vegetables or water their animals with *mesqa* water but have no choice in polluting the *mesqa* with their household garbage.

Conclusion

Much was said in the focus group discussions about the *mesqa*--its problems, its maintenance, factors threatening its proper function, and ways to solve these problems. The ailments of the *mesqa* can be summarized as follows:

- It is suffering from insufficient water flow that is caused by linking pipes that are placed too high for low water levels, and large amounts of garbage, dead animals and sewage obstructing the water flow.
- The *mesqa* will continue to be a breeding ground for all types of insects, mosquitoes and rodents as long as it is used as a sewage and waste disposal channel. A complete wastewater/sewage system is urgently required in this village.
- Responsibility of *mesqa* cleaning is being dumped on the government exclusively. Villagers are content just to pay nominal fees for this mechanical cleaning but refuse any manual involvement out of fear of injury.
- The concept of community action to solve problems did not meet with much enthusiasm. Most people said they neither had the money nor the time to do anything. They wanted the responsibility to fall either on the government or on wealthy citizens of high social standing. They personally felt they had no power to do anything and no means.
- Water in the *mesqa* should be available for all of the five irrigation days that are allotted to this village rather than only three of the five. Most participants called for increasing the original five-water, 10 days no water schedule to 7 days of water and 7 days of no water to permit sufficient irrigation of all the fields.
- Meanwhile, the participation of the member of the MPWWR Communication Unit in this project has exposed them first hand to the technicalities of doing research in their field of interest. Members are now well able to carry out their own in-depth interviews and are well grounded in the techniques of focus group research and how to elicit responses from participants as well as how to keep the discussion on track.

Recommendations:

The following recommendations are based on all the information gathered from informants in the village, and at least three lengthy discussions on the subject with the MPWWR Communication Unit staff, the technical assistance team and the Ministry's officials.

- Farmers are waiting for something to happen. They are tired of promises and of their many problems. They complain bitterly about two major problems which, in turn, are the main cause of the *mesqa's* problems:
 - a. The lack of sewage system; and
 - b. No garbage collection mechanism.

Farmers simply say this, "Solve these two problems, and we will have no reason to get rid of waste in the canal."

- It is true that neither of these two problems fall under the MPWWR, but by helping form a water users (or community) association, the MPWWR would be leading the way and lending a helping hand. Then, the community association will take it upon itself to solve the garbage and sewage problems.
- The irrigation problems are not separate from other problems. We need an integrated approach, coupled with local initiatives and some government help to things moving.
- Farmers are anxious to do something about these problems, but they need someone (e.g. government) to initiate action.
- Irrigation officials should concentrate on creating good relations with the villagers. This could take the form of frequent intensive meetings at which both parties could air their problems. Perhaps the MPWWR's engineer could go in and get the *mesqa'* pipe cleaned. This will be perceived as a sign of good will, which may change some attitudes and build trust between farmers and the engineer. The MPWWR could also encourage farmers to personally clear the small sections of *mesqa* in front of their farms as much as possible perhaps using some form of fishing net or other object to minimize touching the garbage or going into the polluted water.

- The tiled agricultural drainage system should be adjusted to work properly. This will have a positive effect on the quality of the agricultural land and prevent unnecessary damage to it from improper drainage in times of water and drought due to the shortage of water. Getting it fixed could give a good sign of hope to villagers.
- An intensive local media and interpersonal communication campaign is needed to educate villagers about garbage and waste water disposal. Even if they do finally get their much needed sewage system, the villagers will continue to throw dead animals in it which would lead to severe problems. The campaign should teach residents that burning garbage is dangerous and releases poisonous gases and is not a solution for getting rid of trash.
- Additional messages in the campaign could focus on eliminating the practice of building dams on the mesqa, either for fishing, or for increasing the water supply at any particular farm.
- In particular, this local media and interpersonal communication campaign needs to address the women in the village as they are the primary persons responsible for disposing of household garbage.
- An important first step to solve the garbage disposal problem would be that the government authorities provide a garbage dumping site and regular garbage collection from the village for a nominal fee to be collected from the villagers.
- A second step is the regular cleaning of the septic tanks *transhat*. Perhaps the village council could be in charge of making sure that the government sewage trucks come to empty the tanks regularly.

The Study

Introduction

The Academy for Educational Development (AED) through the GreenCOM Project, is undertaking small-scale audience research activities linked to its environmental education and communication activities in Egypt. The following document is a report of the findings of the qualitative research conducted by Wafai & Associates, Research and Communication, in July 1995. This study consisted of a series of focus groups conducted in the village of *Manshat Essam* in the governorate of Menoufia, Egypt. This village was determined by the Ministry of Public Works and Water Resources (MPWWR) as a typical "old land" ¹village in the Delta that is located close to Cairo, but not too close--distance about two hours away. Generalizations can be made from this village to most "old land" villages in the Delta. The study also consisted of 22 in-depth interviews with key persons conducted in the same village.

Specifically, the research is designed to address the following objectives:

Objectives

1. Explore the attitudes, perceptions and behavior of Egyptian farmers and key informants regarding maintenance of *mesqas* (waterways designed specifically for land irrigation purposes).
2. Determine barriers to maintenance/improvement of "*mesqa*" water flow and how these barriers may be overcome.
3. Develop an understanding of the types of community-based approaches to solving community problems and how these approaches can be positively reinforced.
4. Train members of the Ministry of Public Works and Water Resources Communication Unit in the techniques of focus group research and in-depth interviewing by actual field participation in addition to theoretical grounding.

¹"Old Land" refers to agricultural land that is not part of the experimental Irrigation Improvement Project or new land that is reclaimed from the desert.

Primary Research Questions

1. What are the most important irrigation problems farmers are facing today?
2. What types of solutions are being proposed to combat these problems?
3. How receptive are farmers/village residents to community action to solve these problems?
4. What major irrigation problems are specific to the summer season?
5. How can these problems be solved in conjunction with other farmers?
6. What would be the perceived benefits of such solutions?
7. What are the health problems resulting from/linked to the *mesqa* (e.g. malaria, schistosomiasis, etc.).

Methodology

This study is a rapid qualitative research project designed to collect data regarding the target audience's perception, knowledge, attitude, behavior, and suggestions regarding irrigation issues and problems in Manshat Essam village, Markaz Shebin, Menoufia. The research methodology consisted of four focus group discussions, two male and two female and 21 in-depth interviews with key persons. All interviews were conducted on July 2, 1995. The primary criterion for selection of participants was that the person be a farmer and responsible for making farming decisions. Each of the groups consisted of 8-10 participants. The groups were divided among the following age divisions:

Gender	Age
Female	40 and above
Female	Below 40
Male	40 and above
Male	Below 40

Participants were recruited with the assistance of the village Omda and other local officials. Participant received an incentive at the end of the focus group. In addition, wall clocks were given as a gift to the village mosque and the homes at which the groups were conducted. Furthermore, all persons who assisted in recruitment received the wall clock.

Key Person	Number
The Village Deputy Mayor (Sheikh El Balad)	One
Supervisors from the Agricultural Cooperative [moshrefeen]:	Two
Village Doctor	One
Mosque Sheikh (<i>Imam</i>) [not specified in scope of work]*	One
The Irrigation Inspector [mofatesh el ray]**	One
The irrigation district engineer [<i>mohandes el ray</i>]	One
The director of the Agricultural Cooperative [<i>modeer el gameiya</i>]	One
Members of the village council:	Two
Male farmers located at :	
Upper <i>mesqa</i> , large farm (2+ feddans)	One
Upper <i>mesqa</i> , small farm (<2 feddans)	One
Middle <i>mesqa</i> large farm (2+ feddans)	One
Middle <i>mesqa</i> small farm (<2 feddans)	One
Lower <i>mesqa</i> , large farm (2+ feddans)	One
Lower <i>mesqa</i> , small farm (<2 feddans)	One
Female farmers located at:	
Upper <i>mesqa</i> , large farm (2+ feddans)	One
Upper <i>mesqa</i> , small farm (<2 feddans)	One
Middle <i>mesqa</i> large farm (2+ feddans)	One
Middle <i>mesqa</i> small farm (<2 feddans)	One
Lower <i>mesqa</i> , large farm (2+ feddans)	One
Lower <i>mesqa</i> , small farm (<2 feddans)	One
Total in-depth interviews	22

*The village *imam* (mosque sheikh) was added on site because his name came up several times in the focus groups as an important, well-respected figure in the village.

**The irrigation inspector at the Menoufia Governorate was interviewed because he is likely to add a different perspective in addition to the district engineer.

Focus Group Sites

All the focus groups were conducted in a quiet, private setting. The group of females over age 40 was conducted in a secluded room on the second floor of the main village mosque. Women were recruited from among those who had just attended a pre-noon prayer illiteracy class at the mosque. For the younger female group, a private home was used to conduct the groups. All females were farmers who helped their husbands on the farm.

The two male groups were conducted in the guest room of an ordinary house in the village. All informants were farmers who made decisions regarding everything related to farming.

All the sessions were audio taped and two persons took notes during the groups as a back up measure. Two sessions were held at one p.m., one women's group was held at 4.30 pm, and the other male group started at 4 pm. Each session lasted approximately two hours.

In addition to Wafai and Associates regular staff, the MPWWR's Communication Unit personnel went along as part of the research team. All of these persons observed a focus group in the morning. They were assigned to a number of tasks. Some worked as assistant moderators, others did some in-depth interviews with farmers, and others functioned as note takers during focus group discussions. In addition, each member accompanied a Wafai and Associates researcher during an in-depth interview before doing their own interviews later in the day. The entire team had received intensive training on qualitative research for the preceding three days. The following members of the MPWWR Communication Unit participated in this study:

Ms Iman Mohamed

Ms. Janet Maurice

Mr. Diyaa Mohamed NourEIDin

Eng. Mohamed Ahmed

Mr. Ahmed Naqed

Ms. Hoda Hassan

Eng. Dina Mamdouh

Mr. Tarek Abdel Ghaffar

Mr. Hammad Ahmed Hammad

Group Composition

The older male and female groups consisted exclusively of uneducated farmers. Some of these owned one or two farm animals, mostly buffaloes and donkeys. Some had homes with indoor bathrooms, others did not. Ownership of motor pumps was very limited. Most of the participants either owned or rented small patches of farm land. Almost all of the participants may be considered very poor. The group participants farmed lands at the lower end, middle and upper ends of the *mesqa*.

The younger male and female groups however, consisted mostly of people who had some form of education. Most men had clerical day jobs and farmed in the afternoon. Many of the young women had also received some amount of education and two of them actually had day jobs in addition to helping on the farm.

Analysis of Findings

To analyze the findings of the study, the report writers listened to the cassette tapes and read the written transcriptions of these tapes. In addition, the report writers read the notes taken by the assistant moderators during the actual groups as a backup measure in case of recording failure or cassette damage. Analysis of the in-depth interviews relied on the written transcripts of the interview tapes.

Part One: The Findings of the Focus Groups

I. Technical Issues

Biggest Problem Facing the Village

Almost before participants introduced themselves, they immediately started to talk about the main problems facing the village. Both male and female focus group participants and in-depth interview informants stated that the two biggest problems are the **shortage of water** and the **lack of a sewage system**. These two problems are the cause of many other problems such as the high cost of farming and irrigation, the large numbers of mosquitoes and insects, and "rats the size of ducks." The mosquito problem is so bad, "nobody can sleep or stay outdoors for five minutes," they said. The lack of a sewage system has forced the village residents to dispose of their solid and liquid waste in the *mesqas* because "we have no alternative" (stated several participants in every group, both male and female).

The Agricultural Officials

Participants differed over their opinion of the irrigation officials. Some said they had never heard of them, others supported the MPWWR district engineer [Mahmoud Dahshan] whose "office is open day and night to the farmers to solve any problems they might have" (men, 40+).

The agricultural supervisors [*moshrefeen el zera'eyeen*] from the cooperative, meanwhile, were said to be always present in the fields with the farmers. Participants said whenever there is a problem they send for the supervisors who come immediately. These supervisors tell the farmers about educational seminars and advise them about the best kind of seeds to plant, participants said (male, 40+ and <40).

In case of serious problems with the land or crops, participants said they consult the director of the agricultural cooperative. They cited the case of the cotton seeds that did not sprout. They went to the director and he told them that these seeds came from the agricultural ministry, and he had to distribute them. There was nothing he could do about the problem.

Additional complaints about agricultural officials of the MPWWR is that they complicate matters to the degree that "you want to give up your money and leave." (males, 40+). This comment came from a participant explaining how difficult it was to solve the water shortage by purchasing a motor pump for underground water which was said to cost L.E.12,000-16,000. "Even if we had the money, the irrigation people require so many permits and maps and regulations that are so complicated to the extent that would make you leave your pump and go." Only one person in the village managed to purchase and pump and overcome the red tape. He is renting the pump at the rate of L.E.10 per hour, participants said.

Young men claimed that the whole issue of cleaning the *mesqa* is linked to an illicit agreement between the director of the cooperative and *sheikh el balad* (deputy mayor) who owns an underground water pump. They said that the MPWWR recently issued a directive stating that all *mesqa* cleaning should be free of charge. The farmers therefore signed a complaint and delivered it to the director who in turn ignored it. They claimed that if the director approved the cleaning of the *mesqa* then water would be readily available and people would not need to rent the pump from *sheikh el balad*, who would lose money. They complained to the governor who in turn took up the issue to the MPWWR. However, there was no further action on the issue, they said (men, <40).

The Waste Disposal Issue

Waste disposal constitutes the biggest problem facing the village residents. They claim they have no place to dispose of sewage--no place to discard dirty water, household garbage in general and dead animals. When asked what they could do to dispose of dead animals, some female participants said either burn them or bury them or throw them in the *mesqa*. When asked what they would really do, one young woman said: "I would throw the dead animal in the *mesqa*, what else can I do, I cannot bury it in the land near the house, how can I do that?" Furthermore, some male participants claim that if they had a proper sewage system they would throw the dead animals and other waste in it, rather than in the *mesqa*.

Other male participants claimed the problem of garbage is very complicated because people have no choice. They said burning garbage is not a solution because the smoke contains poisonous gases, therefore, the government must provide a place to dump garbage. Women on the other hand, felt that burning garbage was no problem. "It would create a little bit of smoke, but then the area would be all cleaned up," (women, 40+). A more practical woman said she collects all the paper trash in her house and uses it to light her cooking fire (clay oven) (women, 40+).

Female participants also stated that the primary problem facing the village is garbage disposal. The garbage in the *mesqa* gives rise to the presence of flies in the morning and mosquitoes at night. They claimed this problem is caused by people throwing the household waste directly into the *mesqa* which is hardly ever cleaned. Female participants said people do this because of ignorance and lack of concern with personal and public hygiene and being used to having insects around them. Not only has the *mesqa* attracted flies and mosquitoes, but also very large rats that are particularly rife in homes that are near the *mesqa*.

Participants cited the case where an official was posted to write the names of all persons disposing of waste in the *mesqas* and then serving them with a monetary fine of L.E.50. Village residents threw their garbage only when the official had gone home, and as such, the problem remained unchanged.

Meanwhile, female participants stated that garbage be collected by a government garbage truck. They are also willing to pay L.E.0.10 daily for a garbage collector to come and remove the garbage. One older woman stated that each house should pay L.E.0.50 per month for garbage removal. "This way everyone will benefit from the removal of garbage" (women, 40+). An alternative solution also contributed by the women was the creation of a specific place where garbage could be dumped and which can later be removed by means of a garbage truck.

Amount of Water In The *Mesqa*

The amount of water in the *mesqa* was perceived to be rather insufficient, which causes the end of the *mesqa* to become dry. One of the most significant causes of dryness especially at the end of the *mesqa* is that the large concrete pipes that carry the *mesqa* water beneath asphalt roads that cut across the *mesqa* are placed too high. When the level of water in the *mesqa* is low, the water does not pass through the pipes to the other side, leaving the rest of the *mesqa* completely dry. Participants claimed that they had lowered two of the three pipes themselves but one pipe remains too high.

Meanwhile, both male and female participants claimed that if the waste in the *mesqa* was cleaned often enough, there would be enough water in the *mesqas* [which is the MPWWR's point of view]. The mechanical cleaner/loader, "the *karaka*" removes the solid waste materials from the *mesqa* leaving it sufficiently deep. [The *karaka* cleans the *mesqa* once or twice a year at the expense of the farmers. The expense is calculated by agricultural cooperative on the basis of land size. The cooperative has a record of land ownership by size and calculates the costs accordingly]. However, in many cases the *mesqa* is too narrow because of the roads. "This is a problem that the MPWWR must solve in conjunction with the institution in charge of public roads" (males, 40+).

Additional problems with cleaning the *mesqa* is that the "*karaka*" removes the soil at the bottom of the *mesqa*. However, this soil is dumped on the lands bordering the *mesqa* which damages this land. As such, the farmers whose land borders the *mesqa* are strongly opposed to the use of the *karaka* and have obstructed its passage. On the other hand, participants knew that there was no other place to dump the soil from the bottom of the *mesqa* (men, <40).

Participants stated that the Ministry of Public Works and Water Resources (MPWWR) must make sure that the water is indeed available in the *mesqas* all of the five days of permitted irrigation. They stated that often, there is no water for a whole month and when the water comes, it lasts for only three of the five allotted days. They said the solution for the water shortage is in the hands of the government which should help them obtain a *Mu'yan*/underground water motor pump like the one located at the entrance to the village. The government is the entity responsible for such purchases because some local residents have bought motor pumps and are using them as investment projects (i.e. renting them out at exorbitant rates).

Because water is not regularly available in the *mesqas*, women stated that it has ceased to matter whether the *mesqa* is full of waste or not "there's no water in the *mesqa* for the waste to obstruct anyway" (women, 40+).

Other issues relating to the amount of water is the choice of crop. Participants claimed that water shortages have forced them to grow only maize, *barseem*/alfalfa, and wheat, rather than vegetables or rice which require more water. They believe that most of the water is being sent to governorates that grow rice (male, 40+).

Meanwhile, when asked whether the water shortage is caused by farmers using too much water, all participants were quick to point out that no farmer over-waters his land because any excess water would destroy the crop. "Each farmer takes only the water that he needs and leaves the rest alone" (women, 40+).

Quality of Water in the *Mesqa*

The quality of water in the *mesqa* was considered to be very polluted and smelly, according to most male and female participants. "We do not even let the animals drink from the *mesqa*, the water is too dirty" (women, <40). Women stated that they wash their dishes and water their animals using tap water.

Summer-Related *Mesqa* Problems

The amount of water in the *mesqa* is reduced even further during the summer months, female participants said. This is aggravated by the shortness of the irrigation time allotted to them. The *mesqa* becomes almost totally dry, which has led to people neglecting it and using it as a rubbish dump.

In addition, the summer is a time of drought and everyone is anxious for a drop of water, female participants said. "In the winter, however, there are no problems and we use *bahari* (canal) water every day."

Likewise, summer crops such as corn are said to require much watering (women 40+). However, the shortage of water for the crops makes corn growing a problem, they added.

Effect of "Position on *Mesqa*" on Watering

Older female participants were the only group who explained the relationship between watering speed and position of land relative to the *mesqa*. They said that while the person whose land is located at the upper end of the *mesqa* gets all he needs in terms of water volume, pumping the water from the *mesqa* takes longer. This is very significant because pumps are rented by the hour, and as such, people who have land that is at the end of the *mesqa* have to pay higher watering costs than those with land at the beginning of the *mesqa* (lower end).

***Mu'yan* (Underground) Water**

Much was said about "*mu'yan* water" (underground water that is drawn to the surface using motor pumps). It was said to be more expensive than the means of most villagers at the rate of L.E.8 per hour (some said it costs L.E.50 per watering). Furthermore, they claim that *mu'yan* water is salty and harmful to crops, and the pump is located too far away for some farms (women, <40). Most participants said Nile water was preferable because it contains silt which is responsible for helping the land flourish, while underground water contains no silt. The one advantage of *mu'yan* water is that it saves the crops from dying in times of drought. However, underground water makes the land more thirsty than canal water, participants said. "If you water using the *mu'yan* pump, you have to water again after four days, while using canal water, it would be at least one week before the land dries up" (men, <40).

Female participants generally rated the cost of irrigation to be high, particularly for those farms located at the end of the *mesqa*. They said the farmer has to pay the rent of the motor at the beginning of the *mesqa* as well as for the smaller machines that move the water all the way to his land. There is also a lot of waste because the canals soak up the water that is on the land and therefore the final volume of water that reaches the crops is small and therefore very expensive.

Tiled Agricultural Drainage

Participants complained that the agricultural land was in poor shape because of seepage of the water from the tiled agricultural drainage canals. Male participants said that the tiled drainage network was completely out of order throughout the entire village which is ruining the agricultural land. They tried to fix its faulty engineering problem, but it still does not work. Some people rescued their land by making their own drainage system but a large area (50 feddans) was ruined (males, 40+). The Ministry (MPWWR) is responsible for fixing this system "because we pay by installments in conjunction with the cooperative," participants said.

Participants claim that the design of the tiled drainage system was faulty to begin with and some people have made their own drainage. When asked whether they would be willing to pay to correct the system, participants said: "We are already paying a tax for 'land improvement' every year. They just collect the money and nothing happens," (men, <40).

II. Social Issues

Most Respected Person In The Village

Both male and female participants were almost unanimous in the respect shown to the village mayor "*omda*." They claimed they seek his advice on public as well as personal matters, although in most cases, they try and solve personal problems within the realm of the extended family. The *omda* represents "family law" and his word goes over everyone (women, <40).

On an individual level of importance after the husbands, are the mothers of the female participants. They claimed they consult their mothers on many issues and listen to their advice. Older women, however, said they sometimes consult the village midwife about issues relating to health or if there was a problem between a woman and her husband (women, 40+). Women also said they talk with their brothers-- "I talk with my brother because he is wise and sensible, he knows all the secrets of my home," (women, 40+). "I consult my older son and my daughter's husband" (women, 40+).

Other respected persons include the mosque *imam* who is a resident of the village and as such is considered "one of them" rather than a stranger such as the irrigation officials.

Popular Village Gatherings

The purpose of this question was to investigate whether there are specific occasions at which the majority of villagers would be present. Such an occasion would provide a suitable forum for disseminating information that would be of relevance to the whole village and as such prove useful for inducing behavior change. However, the responses were rather disappointing, in that the primary events are weddings and deaths, neither of which would be particularly suitable for any information dissemination. According to women, the primary topics of conversation at weddings is what the bride's trousseau consists of, what her house is like, etc. The rest of the discussion centers around the children and general household issues.

The biggest event that took place in the village was the inauguration of the mosque to which a large number of important guests were invited. Women, however, were not permitted to attend because of the large number of people who would be there and it would be very crowded. A similarly large event was the inauguration of the school which was attended by the Prime Minister Dr. Atef Sidqi and former powerful Interior (Police) Minister Zaki Badr, a native of this village, after whom the school was named. Women are not encouraged to attend such events "because people give us a 'bad' look, especially if there are a lot of strangers present" (women, 40+). When asked why people would look at an older woman, participants replied that older women should stay in the house to keep their sons' wives from copying them and leaving the house too. "People would say how come this woman is attending the event, leaving her house and children, so I have to stay in the house for the sake of my daughter or my son's wife," (women, 40+).

When asked whether the Friday prayer would be a suitable time for distributing advice about matters of interest to the village, particularly information about irrigation or *mesqa* upkeep, male participants said there would be no point, because it is the women who are primarily responsible for polluting the *mesqas*. When asked why men could not tell their wives what they heard, participants answered that even if they did, the women would still continue to behave in the same manner. The problem is that the women have no where else to dispose of garbage. Unless an alternative is found, no amount of information or advice will induce behavior change.

Community Action

The participants expressed a great degree of apathy when it comes to personal involvement in any action pertaining to the *mesqas*. They insisted that such matters are the responsibility of the government and other official institutions. How can the farmers be responsible for cleaning the *mesqa* when it is they who are responsible for blocking it in the first place (women, <40). The farmers will not stop polluting the *mesqa* and the government is not showing any concern. As such, "farmers will not be united in solving a problem they caused in the first place" (women, <40). However, a good number of participants and informants said they would take part in a collective action under the following conditions:

1. The government must lead the way
2. The mayor be the leader of the group with a major input from other important figures in the village.

Participants said they felt that the agricultural cooperative's requirement that makes them pay for the mechanical cleaning of the *mesqa* using the "*karaka*" (loader) was already enough "community action". However, they claimed that the *karaka* is not enough by itself because it faces some problems. These problems include not being able to reach all the parts of the *mesqa* because the banks of the *mesqa* are not wide enough. The *karaka* makes a hole in the middle which means that the water does not flow straight. Participants suggested that some manual labor is needed during the mechanical cleaning of the *mesqa*. However, they all insisted that they would never go into the *mesqa* themselves because it is too polluted with sewage as well as dangerously sharp objects such as glass.

Meanwhile, in response to the suggestion that the villagers form a local council that is in charge of all matters related to the *mesqa* and irrigation in general, participants quickly stated that they had no time for such matters. "And where is the water in the *mesqa* for which we would need a board of governors to manage? When the water is readily available, then we should worry about management" (men, 40+).

A different kind of community action was suggested in the female groups. One young woman suggested collecting L.E.0.10 (ten piasters which is equivalent to 3 US cents) from each home to collect the garbage. "With this money, we can get the garbage truck to come and remove the unsightly garbage everyday" (women, <40).

The issue of money is a significant factor in any community action. Participants stated that although the water shortage problem can be alleviated by the purchase of an underground water pump, the cost was too exorbitant for small farmers who own half a feddan or only one feddan. When asked why they did not cooperate together to solve the problem and put up the money jointly, they insisted that "people cannot afford to even eat, how can they cooperate, money is very limited indeed" (males, 40+).

Leisure and Entertainment

As expected, the male and older female villagers claimed they had no time for entertainment except for one or two hours during which they watched some television. They claimed that their children watch television "24 hours a day" (male, 40+).

It is interesting to note that participants claimed there are a large number of television sets in the village. The most popular television program among most male and female participants is "Ser Al Ard" (Secret of the Land), a comic serial that imparts serious agricultural information in a humorous manner. "We like to watch things that teach us about farming" (women, 40+). Other popular programs are religious programs on radio and television, in addition to movies, and television serials.

Reading, meanwhile, is not very popular in the village. Newspapers and magazines are not available and have to be purchased from the nearest town, Shebin El Kom at the price of L.E.0.50 (the official price is only L.E.0.40). As such, there is little opportunity or interest in reading. Male participants stated that instead of spending 40 piasters on a newspaper, they would rather buy bread for their children to eat (men, <40).

Health Care in the Village

Participants claimed there are several physicians in the village. However, the primary health care problem is that there is no health unit anywhere near the village. For major health care, male and female participants said they had to go all the way to the governorate capital city, Shebin El Kom. Female participants, meanwhile, claimed that the physicians located in the village are not well trained, and as such, if they ever needed a capable doctor, they had to go to the nearest town--Shebin El Kom. Other women said they would be too embarrassed to go a male doctor in their own village, because they would meet him the next day; however, they would go to one in Shebin El Kom (women, 40+).

Female participants, meanwhile, complained about the role of the *raida reefeya* (rural health advisor). They said she is only concerned with doing her job--counseling women about family planning. She does her job without really getting involved in the women's lives, "It's like she was doing the census or something" (women, <40). The women added that she just comes and asks your name, your husband's name, and how many children you have. "She comes just once and we feel she really does not want to solve any of our problems," (women, <40).

The *daya* (midwife), meanwhile, was said to have progressed since the days of old. "The *daya* is now educated, and she attends training courses in family planning and she is given books to read," (women, 40+).

Additional Problems

Although the major problem facing the village is the lack of water, an equally significant problem is the price of pesticides and fertilizers. "The two problems are equally important because the land cannot be farmed without water and the crops do not give a good yield without the chemicals" (men, 40+).

Female participants complained about the general high cost of farming relative to the low profit margins and amount of effort needed. They claim that the high costs come from the need to plant the same seeds as many as three times because each time the seeds do not sprout for some unknown reason. In other cases, they claim the seeds do not sprout because they missed the exact planting time for them. The high cost of chemical fertilizers and pesticides also contributes to the low profitability of farming. Labor costs are also very high, averaging L.E.10 per adult day and L.E.5 for a child per day. It is interesting to note that women complained about this problem more than men.

The high cost of farming and the poverty of the villagers has led them to over-farm the land. "My husband does not give the land time to dry out properly in the sun, to clear itself from microbes. He rushes with the second planting because he needs the money" (women, 40+).

Farm Helpers

Participants both male and female complained that they were not getting enough help in the fields. Laborers are very expensive averaging L.E.10 per adult day and L.E.5 for a child per day. In the summer (peak) months, the rates often go up to L.E. 17 per adult day. In most cases, it is only the farmer and his wife and children who work on his patch of land. Most farmers are too poor to hire much help, especially in this particular village.

In addition, the problem of labor shortage is magnified by the increasing numbers of educated persons in the village. "Now everybody wants to wear [Western] pants and a shirt [instead of the *galabiya* usually worn by farmers]" (women, <40). Labor is in great demand, because even though there are farm machines, we still need manual labor, especially during harvesting, young women said.

III. Gender-Specific Issues

Issues Related to Women

The change in the educational levels of rural Egyptian women has led to a number of social changes in village culture. Participants claimed that young women who have had some education are now content just to go to their jobs and take care of their homes using modern household appliances. These women no longer assist their husbands in farming and as such, are no longer concerned with village issues. This has led to a rise in social apathy and lack of interest in any community action that would benefit the majority of residents. Female participants stated that many women are not interested in looking for solutions that would solve community issues such as the *mesqa* or the garbage disposal, they are too wrapped up in their own personal lives.

They also claim that because the *mesqa* is so dirty, they no longer wash their dishes in the *mesqa* water. (Dishwashing and laundry at water ways and canals were major daily social activities where women used to gather to exchange gossip and to socialize. These gatherings are often the cause of many marriages--the mother of a prospective groom sees a young girl at the *mesqa* and is impressed with her looks or her washing abilities, cleverness or cleanliness.)

Women's Work

Female participants stated that there really wasn't much for women to do in the village. There was little employment opportunity, no small businesses, no factories, nothing for the women to do to help their husbands. "They only go to the field with their husbands but it is no use, they are still bored" (women, 40+).

Some older female participants complained that young women today would rather wait for the government jobs than "dirty their hands in the farms," as such, preferring unemployment to productive work. "It is us older women who are real farmers, we bake and cook all day and go and help our men in the fields, but younger women, no, they will not take the buffalo back and forth, they are educated, they have their diplomas. Young women today are not like the women of the old days" (women, 40+). "Education has ruined women these days, they don't want to help their husbands in the field. They barely agree to carry some fertilizer to the fields" (women, 40+).

Younger women, meanwhile, complained that unemployment was a big problem, in that graduates of 1983 have still not found work. The women also neither expressed any interest in, or had any ideas for small business projects with which they could supplement their income or lead more interesting lives.

Younger women spend most of their days cooking and cleaning their homes, taking care of their children or the animals in the home. Men, on the other hand, mostly have a job in the morning and farm their lands at night (or vice versa) just to be able to put food on the table for their families (women, 40+). "The men work until they are ready to drop, and all that for a measly L.E.70 per month for those with a secondary school diploma" (women, 40+).

Younger women, meanwhile, said that village women feel isolated from the rest of the world. "All we do is wake up, cook, clean, and do laundry. We repeat the same thing over and over again, day after day. We spend hours not knowing what to do with our time--unlike purely peasant women of the past who used to work in the fields all day" (women, <40). These young women take care of their children, take them to school and carry things to the farmers in the field (e.g. fertilizer). Their husbands do not want them to join them in the fields to do manual farm work.

Female farmers are rapidly becoming a thing of the past among the younger generations. Most of the young husbands and many of their wives have received some form of education and often hold jobs in the day time. While the man is at work, he certainly would not like his wife to be alone in the fields. Young women do know something about farming, however, many female farmers are ceasing to participate in farming activities.

Young women, meanwhile, are still responsible for raising fowl at home. "We raise pigeons, ducks, geese, and rabbits, and we sell them in the market in addition to eggs," (women, <40).

Part Two
The Findings of the In-depth Interviews

A total of 12 farmers were interviewed in depth. Six of these farmers were male and six were female. Other key informants interviewed included the village physician, *sheikh el balad* [deputy mayor], members of the village council, the mosque *imam*, two district engineers from the MPWWR, the cooperative director, and agricultural supervisors from the cooperative.

Generally speaking, the farmers pointed out the same problems that were already discussed by their counterparts during the focus group sessions. The same issues came up: Sewage in the *mesqa*, lack of water in the *mesqa*, short irrigation schedule, lack of familiarity/rapport with the irrigation officials, need for garbage disposal, dissatisfaction with the quality of water in the *mesqa* that is bringing about a number of illnesses carried by mosquitoes and flies, and so on.

This section of the report presents additional information that was not discussed in the focus group findings.

I. Technical Issues

Main Agricultural/Irrigation Problem Facing the Village

Farmers throughout both the in-depth interviews and the focus groups complained about the shortage of water and the high prices and poor quality of pesticides, chemicals, fertilizers, and even seeds that fail to sprout.

Other opinions came from the non-farmer key informants. One of the village council members, who is also a school headmaster, explained that it was the unavailability of underground drainage in some lands that ruined the land after a few years.

The mosque *imam*, on the other hand, thought it was the fact that some lands did not receive any water. He added that people resorted to hiring the *mu'yan*/underground water pumps to water their lands. He suggested that the government provide more underground water pumps. He also added that underground water pipes would be a very good idea because nobody would be able to throw waste in it that would block the flow of water.

The *sheikh el balad* also said the main problem was the shortage of water which led to withering of the produce. He said the crops were 'thirsty' for water. He explained that when little produce survived, its price would soar in the market. The villagers also suffered from the high cost of chemical fertilizers and from the lack of labor because of their flight to Arab/Gulf countries in search of more income, *sheikh el balad* said.

The irrigation inspector, meanwhile, said that a major problem facing the village was the high population density around the *mesqa*. This dense population lacked awareness and threw their waste in the *mesqa*. The engineer worked in many other villages and said they all had the same problem.

Biggest Problem Facing the Village Today--Female Point of View

One of the in-depth interviewees stated that the biggest problem in the village was lack of family planning. "People have too many children to begin with, then they leave them in the streets to be attacked by flies" (female farmer, small farm, lower *mesqa*).

Waste Disposal in the *Mesqa*

One of the primary problems associated with the *mesqa* is the issue of waste disposal, household garbage, sewage, and dead animals. Contrary to the focus group findings about what to do with dead animals, one young male farmer stated that the best thing to do with a dead animal is to dig a hole in the land to a depth of one meter and bury it. "The land will eat it, it will not smell or attract dogs or cause any problems. Unfortunately, however, nobody does this" (male farmer, large land, mid-*mesqa*). A female farmer agreed that burial in the fields is the best way to dispose of dead animals. "People say that animals that are edible should not be burned--e.g. buffalo" (female farmer, large land). When the *imam* was asked whether it is religiously forbidden [*haram*] to burn dead animals as some villagers claim, he stated that this is completely untrue.

"People should not throw dead animals in the *mesqa* because I drink from it, you drink from it, I wash my dishes in it, I wash my grain in it" (female farmer, large land).

The village doctor and one of the agricultural supervisors said a good idea would be to make natural fertilizers out of all dead animals, garbage or sewage. The doctor explained that not only dead animals could be turned into organic fertilizer, but also potatoes and rice husks.

Strangely enough, *sheikh el balad* thought there was no problem of dead animals and garbage to begin with. He explained that if a buffalo or cow died, the farmer took the carcass to a deserted area where dogs ate it. The mosque *imam* also said dogs ate dead animals.

The village council member/headmaster suggested that people bury animals instead of leaving them in open air. He and the council member also mentioned using them as natural fertilizer.

Meanwhile, farmers located at the middle and end of the *mesqa* claim that there is little garbage disposal from their end, they burn their garbage, and as such, the water is clean. All the garbage is thrown by the people at the beginning of the *mesqa* and the people who live in the center of the village (female farmer, large farm, mid-*mesqa*).

Officials interviewed, meanwhile, blamed the villagers for throwing their waste and dirty water in the *mesqa*, sympathizing, however, that there was nowhere else to throw such things. Previously, farmers used to clean their *mesqa* biweekly, so they did not face such problems. "Now, farmers no longer bother" (local council member). One of the local council members explained that people build their own sewage system for their houses. However, no trucks come to remove the sewage water from those sanitation systems [*transhaf*], he said.

The council member said the only--but rather expensive solution--was a good sewage system. He suggested that for the time being all sewage water should be gathered somewhere for a government wastewater truck to pick it up.

Furthermore, the doctor stated that he thought people had to be stopped from throwing waste in the *mesqa*. Farmers should know how to make the best use of the water in watering their lands. They should use water in a way that increased the productivity of the *feddan*. They should not use *bahari* water in drinking, washing or in ablution by any means.

The *sheikh el balad* (mayor's deputy) said the reason for the pollution of the *mesqa* was that people got rid of their sewage in the *mesqa* and blocked it. He explained that the government did not help him get rid of the sewage, so women filled it in buckets, claimed that they were going to fill pure water from water pumps, and dumped sewage water in *mesqa*. He added that the villagers submitted several petitions, but no one came to their help. He also said the *mesqa* was unclean because people threw their garbage in it at night when no one could see them. He suggested the assigning of a guard to watch the *mesqa*. The guard would catch anyone throwing anything.

The irrigation inspector said the major problem in the village was culture and tradition. Women were used to throwing garbage and waste in the *mesqa* because they learned this behavior from their parents. He cited the example of a nearby village at which the local council decided to build concrete, ceilingless rooms on the banks of the *mesqa* for garbage disposal that was cleaned periodically by the local council. However, the women still threw waste in *mesqa* and not in the rooms specifically built for that purpose. They were just too used to dumping in the *mesqa*, the district engineer said.

The Water Lily/Weeds Problem In the *Mesqa*

Several officials interviewed in this study blamed the water lilies (*ward el nil*) as a primary cause of water shortage and pollution in the *mesqa*. The cooperative director claimed that the *karaka* had cleared away the plants last month, but they grow rapidly and multiply even if very few touch the water. Likewise, one of the agricultural supervisors agreed with the cooperative director adding that it was the children who threw the roots of the lilies in the water and thus they multiplied rapidly. He added that another problem was that the farmers threw hay and other dry agricultural refuse in the water .

The doctor, meanwhile, stated that the water lilies are found in all parts of the *mesqa*. He said these weeds absorbed *mesqa* water. He wished farmers or the MPWWR would remove them, but no one did anything about it.

According to the district engineer, the MPWWR used to remove the water lilies using chemicals. However, members of the People's Council objected and made the MPWWR stop, because chemicals killed fish in the *mesqa*. The ministry resorted to the removal of such plants manually, but they grow again after only 15 days, he said.

Amount of Water in the *Mesqa*

The amount of water in the *mesqa* is further affected by young boys who go fishing in the *mesqa* by making small dams that catch the fish. When they finish fishing, they do not remove the dams. "At times of low water, farmers have to go into the *mesqa* to remove these dams because they are obstructing the flow of water." (female farmer, small farm, lower *mesqa*).

According to almost all the farmers interviewed, the lack of water in the *mesqa* is also having a serious effect on the corn fields. "Corn is like a child, we are raising it and it needs water. It desperately needs water at this stage of growth" (female farmer, large farm, mid-*mesqa*). "We have not watered the corn for 33 days, some of it is falling out" (male farmer, small farm, end of *mesqa*). "I have not watered my corn for 35 days" (male farmer, large farm, end of *mesqa*).

In the summer, the watering schedule is five days of water, ten days of dryness, while in the winter there is plenty of water that nobody needs. "It should be changed to seven water and seven no water in the summer from May to September" (male farmer, large farm, beginning of *mesqa*).

The amount of water in the *mesqa* is also affected by a leaky pipe that carries *mesqa* water across a road. "By the time the water reaches the second part of the *mesqa*, half of it has already leaked into the tiled drainage" (female farmer, small farm, end of *mesqa*).

The doctor said that the *mesqa* suffered from an incredible decline in its water levels. *Sheikh el balad* agreed that there was no water at all, which had an adverse effect on the crops. He added that they had no *mu'yan* pipes, and that the main canal supplying the *mesqa*, the "sea" as farmers call it, was also dry. The reason for this dryness was that each village received water in turn, that is, from five to ten days. Those few days were considered very insufficient by the *sheikh el balad*. He explained how the authorities controlled the water supply. They detached the pipes connecting the *mesqa* to the water source and turned them into a dam which they open and close. The engineer or the guard had the key, and when it was not the village's turn, they shut the dam and stopped the water flow. He added that in the old days, the water supply was much better as they had water wheels which served the village's lands only. It was true the lands were watered in order, but after all, it was only the lands of that particular village, not everybody else's land.

One of the local council members said that the low volume of water in the *mesqas* made all the farmers rush to irrigate their fields at the same time. This causes an endless amount of problems. To solve this problem, he said he tells farmers to use both *bahari* (*mesqa*) water pumps and old-fashioned water wheels at the same time and that it was alright if the two waters were mixed.

Meanwhile, the amount of water in the *mesqa* is not related to location of village or village size. The irrigation inspector said they do not water by village, they water by area surrounding the *mesqa*.

Additional Factors Affecting Water Level In The *Mesqa*

One of the agricultural supervisors said that the water pumps (*bahari*) affected water levels, in that when water arrived in the *mesqa*, everyone turned on their pumps thereby taking whatever water quantities they want and decreasing the water level. He explained that there was no organization. Previously, each group of farmers shared a water wheel and each farmer received his share of water in order.

The *sheikh el balad* said that although the water's arrival is now delayed from three to four days, using pumps was much better than water wheels. The latter caused many problems among farmers over whose turn it was and who should irrigate before whom. With the usage of water pumps, those problems ceased to exist.

A solution to low water levels in the *mesqa* was suggested by the agricultural cooperative director. He said that the pipes carrying water from the feeding canal to the *mesqa* should be lowered down so that low levels of water in the main canal can pass through to the *mesqa*.

Amount of Water in the *Mesqa* Relative to Position of Farmland

While the focus group participants discussed the lack of water in the *mesqa* at length saying that it lasted for only three days instead of five, farmlands located at the end of the *mesqa* receive water for only one or one and a half days, which is certainly insufficient for proper watering (female farmer, small farm, beginning of *mesqa*). "If farmers operate one or two pumps are beginning of the *mesqa*, we do not get water and have to wait until they finish," (female farmer, small farm, end of *mesqa*)(male farmer, large farm, end of *mesqa*). The reverse is also true. While farmers at the beginning of the *mesqa* water their lands on the first day of the five day watering schedule, their plants need more water on the seventh or eighth day. Of course there is no water at that time so the plants end up going without water for 14 days (male farmer, large farm, beginning of *mesqa*).

The agricultural cooperative director said that position of land on the *mesqa* did not affect the water level, but it would take farmers at the *mesqa*'s end longer hours to irrigate and in turn higher irrigation costs. *Sheikh el balad*, meanwhile, stated that water level was affected. He suggested that farmers located at the end of the *mesqa* or the authorities dig pipes in the ground to carry water to more distant places.

The irrigation inspector added that he was doing his best so that water reached all fields, regardless of location on the *mesqa*. When he was told that the villagers complained about having a few number of days to irrigate, he said they had 5 days. He explained that at the beginning of the village's turn, the *mesqa* is dry. Then water starts flowing through the *mesqa*, thus filling it. However, it takes 24 hours to fill the *mesqa*, that was why the beginning of the *mesqa* received 5 days of water, while the end of the *mesqa* received water for only 3 to 4 days. He explained that the farmers at the end received the same amount of water needed to irrigate the land, but have fewer days to irrigate.

To solve the positioning problem, one of the local council members said the owners of 20 to 30 feddans at the end of the *mesqa* could join forces and buy an underground watering *mu'yan* pump.

Underground Water Pumps

The cost of underground water pumps was said to be so prohibitive that it is only used when the land is absolutely dying. "Six or seven farmers unite and rent the pump. Nobody can afford to rent it by himself" (female farmer, large land). Even at its exorbitant price, underground water makes the crops somewhat yellowish (female farmer, large land). Underground water also contains salt (female farmer, small farm, end of *mesqa*).

The district engineer stated that only people at the end of the *mesqa* use underground water when they are in a hurry to irrigate or to prevent their crops from dying. He added that *mu'yan* water needs treatment however, -- it is not as good as Nile water.

A major disadvantage is that the underground water pumps and their pipes are costly (about L.E. 10,000 - L.E. 12,000), said the *sheikh el balad*.

Meanwhile, the underground water pumps do not bring up any fertile silt, said the agricultural cooperative director and one of the agricultural supervisors.

One of the agricultural supervisors added that he believes underground water increases the saltiness of the land. However, he said the advantage of the *mu'yan* was that it was available all the time. The village council member/headmaster added that *mu'yan* was faster and supplied more water. The *bahari* water pumps bringing up water from the *mesqa*, however, had the advantage of being much cheaper.

Tiled Irrigation Drains

Some people were said to use the water from the tiled drains to water their fields. "When there is no water in the *mesqa*, people use the water from the drains, what else can they do?" (male farmer, small farm, end of *mesqa*).

Cleaning of the *mesqa*

Several farmers interviewed claimed that they cleaned the part of the *mesqa* that is near their land by hand, (male farmer, small farm, mid-*mesqa*). "We clean in front of our land, but if it is blocked at the beginning of the *mesqa*, there is nothing we can do" (female farmer, small land, end of *mesqa*). While some people clean in front of their homes manually, others wait for the *karaka/loader* to clean the *mesqa* once every year or two. Most people interviewed mentioned the problem of broken glass in the *mesqa*. "The *omda* said he would even hire people at his own expense to clean the *mesqa*--he would buy them leather boots so as not to cut their feet. I wish people would not throw glass in the *mesqa*, we do not want to hurt anybody" (female farmer, large farm).

"Even then, the *karaka* is highly irregular, sometimes coming once a year, sometimes every 18 months. This is a big problem because after the *karaka* comes, the *mesqa* stays clean for only one or two months and it becomes filled with garbage again. We need a solution that will ensure that the *mesqa* stays clean all the time" (female farmer, large farm, lower *mesqa*).

The agricultural cooperative director, meanwhile said that *mesqa* cleaning was irregular because it only took place when the *mesqa* needs cleaning. Every now and then, agricultural cooperative members pass by the *mesqa*. If it needed cleaning, they convened the cooperative board of directors and presented a request for a *karaka/loader*. He said it takes about 5 to 6 days to get one. The farmers have to clean the *mesqa* in the places the *karaka* cannot not reach, he said.

The irrigation inspector, Ibrahim Hamlas, however, said they send *karakas* in order to be able to supply all the fields with water. He said the *karaka* comes to clean the *mesqa* twice a month. When asked whether they cleaned *mesqa* based on complaints, he denied this and said cleaning was based on water levels. The water had to reach the end of the *mesqa*. If the *mesqa* did not receive water for 2 days, then they assumed it was blocked. The person in charge checked the *mesqa* and ordered the *karaka* to remove all garbage, he said. On the other hand, the district engineer interviewed, Mahmoud Dahshan, said the *karaka* comes once a year, at the most, once every two years.

II. Process Issues

Fines For Waste Disposal in the *Mesqa*

Farmers had spoken numerously about the guard who had been appointed by the village mayor/*omda*. Critics of this idea said this guard could not possibly stand at the *mesqa* all day long. He would be on guard until two o'clock in the afternoon and then go home. Villagers would probably come out after he had gone home and throw their garbage at that time. Large objects such as dead animals, however, would be dumped either at dawn or in the middle of the night, informants said. Proponents, on the other hand, felt that this guard would write people's names and a hefty fine--L.E.50-100 would be imposed upon them for throwing garbage in the *mesqa*. After paying such a heavy fine, the farmers would be very hesitant to discard waste in the *mesqa* again.

"People who throw anything in the *mesqa* should be fined. Money is hard to come by, so if I have to pay a fine, I will never do it again" (female farmer, large farm, mid-*mesqa*).

One young farmer put the issue of imposing fines on people dumping sewage and waste into the *mesqa* rather philosophically. "Before you can impose fines or drag people off to jail for polluting the *mesqa*, you must provide them with an alternative solution for waste disposal" (female farmer, large farm, lower *mesqa*).

Meanwhile, the doctor, the agricultural cooperative director and the council member insisted on a monetary fine for people who throw waste in *mesqa*. The doctor said the fine should be imposed by the village mayor. He added that it was the mayor's role to try to raise the cultural and sanitary standards of the village people. More awareness and education programs should be carried out among the village people to inform them of health hazards.

The *sheikh el balad* said those people should be taken to the police and be made to pay a fine. The *imam* said they should be reported to the sanitary unit and then be made to pay a fine. One of the agricultural supervisors also said garbage dumpers should be taken to the police, but said it was very difficult to know the identity of these people. He said the local administration should be in charge of this.

The district engineer--Mahmoud Dahshan, said it was difficult to impose fines as a punishment on *mesqa* polluters. He said he tried before to do this, but the government officials interfered and stopped that punishment. If other bodies interfere, there is no way that any form of punishment would be effective, he said.

An alternative solution for garbage disposal was suggested by the village council member. He said the villagers should buy a tractor that has an attachment. This attachment could be placed out in the morning for everyone to dump their garbage in it.

Disinfecting the *Mesqa*

One female farmer stated that in the past, the officials cleaning the *mesqa* used a large sieve to remove the solid objects from the *mesqa*. Then they added some form of disinfectant to clean the *mesqa*. "They would tell us not to let our animals drink from the *mesqa* because it contains disinfectant" (female farmer, large land). "Please come back and disinfect the *mesqa* because we sometimes have to drink from it".

Another male farmer also called for disinfection of the *mesqa* water. "People used to drink from the *mesqa*. Now we cannot even use it to wash our faces or perform ablution, it is so dirty" (male farmer, small farm, end of *mesqa*).

Problems Associated With *Mesqa* Cleaning:

An additional problem obstructing cleaning of the *mesqa* is the existence of trees bordering its banks. While this is in itself a positive thing, the *karaka* faces considerable problems trying to reach the *mesqa* that is obstructed by the trees. "When the *karaka* comes, it is such a problem that people want to cut down the trees," (female farmer, large farm, lower *mesqa*). The path is also very narrow so the *karaka* has to go down into people's fields, she added.

"We had to cut down the trees on our land because we felt the water was more important than a million trees. I know this is bad because people used to come and rest beneath the trees in the shade." (female farmer, large farm).

Another issue is the timing of *mesqa* cleaning. It is very important that the cleaning come at a time that will not do damage to the crops. "The *karaka* should come when we have harvested the corn, for example, or after harvesting wheat so that the fields are empty" (female farmer, large farm, mid-*mesqa*).

A different perspective on the *karaka* came from a male farmer owning a large farm at the beginning of the *mesqa*. "Sometimes we do not want the *karaka* to come and clean. It comes by force, we are not given any choice in the matter. We always clean the smaller *mesqas* (subsidiaries of the main *mesqa*) manually ourselves during the dry periods and the *karaka* finds them all very clean. Because the path next to the small *mesqas* is very narrow, the *karaka* blocks it for a long time and we want to pass to our fields with our farm animals" (male farmer, large farm, beginning of *mesqa*).

The council member, meanwhile, elaborated on the problems associated with the performance of the *karaka*. When the *karaka* could not reach all the different parts of the *mesqa*, this led to a rise in the ground level of the uncleaned stretch of water. The council member agreed saying that when waste accumulated in the *mesqa*, it raised the ground level under the *mesqa* which he thought was very harmful.

The village council member added that the *karaka* could not reach all the places because the roads by the *mesqa* were narrowed by the presence of buildings. The *karaka* needs wide roads to move freely. The council member recalled that in the past, there was an irrigation guard who used to look after the *mesqas* and lakes. This guard also used to supervise the cleaning process as well.

Furthermore, one of the agricultural supervisors interviewed said it was the wires and the trees on the road that caused a problem in the passage of the *karaka*. Sometimes the *karaka* was also prevented from cleaning by farmers because the latter had planted the land and were about to gather the harvest.

The district engineer--Mahmoud Dahshan, said that one of the major obstacles to *mesqa* cleaning is the presence of unlicensed construction on the banks. People constructed infringing buildings, mosques and animal barns. These edifices prevent *karakas* from extracting all waste from *mesqa*. Also, the ministry of electricity dug poles along the banks hindering *karakas*. When the *karakas* are forced into the fields, they ruin produce, he said.

Additional problems associated with cleaning the *mesqa* were highlighted by the village deputy mayor [*sheikh el balad*]. He said the *karaka* dumped the garbage from the *mesqa* onto the road, which hinders traffic. *Sheikh el balad* added that when the *karaka* cleaned the *mesqa*, it threw whatever garbage it collected onto farmers' lands. When asked whether the *karaka* driver took bribes in order not to dump waste in the lands, he denied it. He added that if bribery really had taken place, why didn't the farmers complain to him about it. He added that it was only one bribery case, and that he would not discontinue the use of the *karaka* that benefited around fifty farmers just for one isolated incident. Any problems associated with the *karaka* driver occur because there is no one to supervise him and tell him where to clean, said the local council member.

Responsibility for *Mesqa* Cleaning

While almost everyone agreed that responsibility for cleaning the *mesqa* falls strictly on government shoulders, farmers said this is because the *mesqa* is too large and needs the mechanical abilities of government entities. "The farmers, meanwhile, are responsible for making sure no one throws anything in the *mesqa* to pollute it. It is therefore a joint responsibility," (female farmer, small farm, lower *mesqa*).

Community action for cleaning of the *mesqa* was termed a bad idea by one of the female farmers because people would disagree about when to clean because of the costs involved. "One person would say I don't have any money today, another would say I don't have any money tomorrow. When the government sends the *karaka*, everyone is forced to pay and the *mesqa* gets cleaned by force" (female farmer, large farm). "If the government does not send the *karaka* and people are asked to clean the *mesqa* themselves, nobody will ever do it" (female farmer, large farm, mid-*mesqa*).

The *sheikh el balad* also said that *mesqa* cleaning was purely the role of the government. What the people had to do was to report any problems to the government which in turn should provide the means to solve them. The *imam* and the village council member/headmaster totally disagreed saying that it was the farmer's responsibility in the first place to protect his *mesqa*, as he was the one to benefit from a clean *mesqa*. The government could help, but its role would be secondary. The *imam* said farmers hired people to clean the *mesqa* for them. He considered the *karaka* to be ineffective, as it came only once or twice a year. If the *karaka* came and the *mesqa* became obstructed soon afterward, it was the responsibility of the farmers to clean it manually. However, manual cleaners injured themselves on the broken glass and caught hepatitis, he said. He explained that the *mesqa* needed weekly cleaning. He said no one in particular paid for the weekly cleaning. Whoever could help, paid.

The local council member (who is also a head teacher/education supervisor by profession) suggested that people should have a schedule of when the water would not be available. At that time, each farmer could clean in front of his field. There should be a supervisor, maybe a village senior, who follows up on the cleaning of each farmer. He added that the government could not do it all. It should only clean the main water sources, but leave *mesqas* to farmers.

Likewise, the agricultural cooperative director and the other council member and one of the agricultural supervisors said *mesqa* cleaning was a joint responsibility of both the government and the people. The agricultural supervisor added that people should be made more aware of the hazards of throwing waste in *mesqa*, should clean it thoroughly and should report those who pollute it to the authorities. He added that each farmer should clean the *mesqa* part adjoining his land. This way all the *mesqa* would be clean.

The council member suggested that farmers learn about *mesqa* cleaning and protection during training sessions. He added the agricultural supervisor should have a basic role in increasing farmers' awareness levels of the need for cleaning the *mesqa* and keeping it clean.

The irrigation engineer agreed that the responsibility for *mesqa* cleaning should fall on a government body because if cleaning was left to each individual farmer, the whole thing would be a total mess.

Payment Process for *Mesqa* Cleaning

While almost all the informants stated that the farmers paid for *mesqa* cleaning, the agricultural supervisor (who is also head of an agricultural cooperative) added that last year *mesqa* cleaning was free because the MPWWR funded it. He said they usually prepare a list of the areas that need cleaning and estimate the number of working hours it would take to clean the area. Then they determine the cleaning cost per hour. That cost is put on the credit accounts belonging to each farmer. Each farmer has a credit account at the village bank. Then they take the money from the bank and give it to the cooperative or the agricultural land development unit [*el tanmiya el zera'iya*]. The bank then collects that money from farmers after the sale of their major crops such as cotton.

Suggestions For Better *Mesqa* Cleaning

Sheikh el balad suggested that someone (e.g. an agricultural engineer) should supervise the *karaka* driver in order to prevent him from throwing garbage on the road and in the fields. Also, the driver should be watched in order to ensure he dug deep and cleaned well. He said he had suggested the use of *mesqa* pipes, so that people wouldn't throw anything in the *mesqa*, but no one listened.

When asked whether people would be willing to financially contribute to the pipes installation, *sheikh el balad* said no one would be able to pay that much. He suggested the authorities construct a concrete fence along *mesqa* banks instead. The director of the agricultural cooperative also suggested they cover the *mesqa* (build something around/over it) so that no one could dump anything in it, but he said that would cost a lot of money.

Instead, the *imam* suggested allocating a place for throwing garbage, so that the annual cleaning of the *mesqa* by the *karaka* would be sufficient.

Furthermore, one of the agricultural supervisors said the government should interfere by punishing those who plant the banks of the *mesqa*. He explained that the farmers should not plant within the specified *mesqa* banks (2.5 - 3 meters), which they do. He also added farmers should have more awareness about the negative aspects of throwing waste in *mesqa*. This increased awareness effort should be provided by the village's administration, that is the mayor, the seniors and the *imam* who communicated with and influenced the people.

III. Social Issues

Illnesses Associated With the *Mesqa*

The obvious illness caused by the *mesqa* is of course, bilharzia/schistosomiasis. The reason farmers gave for the spread of this disease is that people dump their sewage in the *mesqa* and women then go and wash their dishes in it and men go inside the *mesqa* (probably to clean it manually or by virtue of standing in *mesqa* water while irrigating their lands) and therefore, everyone gets infected with bilharzia (male farmer, small farm, mid-*mesqa*).

Additional illnesses are eye infections that are carried by the flies attracted to the garbage in the *mesqa* (female farmer, small farm, lower *mesqa*). Furthermore, hepatitis and kidney failure were mentioned as problems associated with the *mesqa* (female farmer, small land, end of *mesqa*)(female farmer, large farm, mid-*mesqa*). On the other hand, the agricultural cooperative director said malaria carried by mosquitoes is a problem associated with the *mesqa*.

It is interesting to note that some farmers believe that they are not susceptible to bilharzia because the skin of their feet is very tough and it would be difficult for germs to penetrate it. "My skin is not like yours, my hands and feet are very tough because I go barefoot everywhere and work with my hands" (female farmer, large farm, mid-*mesqa*). An opposing view came from a man who actually cleans the *mesqa* himself. "My hands and feet burn like they are on fire after I go into the *mesqa* to clean it in the section in front of my fields" (male farmer, large land, beginning of *mesqa*).

Animals, meanwhile, were said to be "more important than human beings. We give them clean water from the water pumps, not the *mesqa*, because they quickly get sick" (female farmer, large farm, mid-*mesqa*).

The district engineer, Mahmoud Dahshan, said that 60 - 70% of irrigation workers have renal and spleen failure, liver cirrhosis in addition to diseases caused by the usual mosquitoes, flies and bad odors.

The village physician spoke at length about the illnesses associated with the *mesqa*, the most important of which is of course bilharzia. He said that some time ago, people used to add blueberries [*el toota el zarka*] to the water which killed the snails carrying bilharzia, but now nobody does this any more. The doctor explained that when children bathed and urinated in the *mesqa*, and they already had bilharzia, the disease was transferred to the water and anyone who went into that water is likely to catch the disease. He added that if we could stop people from urinating, defecating and bathing in water, no one would get harmed.

He added that hepatitis types A and C were very common which weakened the body's immunity. Hepatitis also led to liver and spleen failure. He said that when the youth go swimming in the *mesqa* water, they get bladder infections. He also said that villagers did not wash their vegetables and when they did, they washed it in the fatal *mesqa*! They also ate dirty food, as there was no authority controlling health inspection on foods. As a result, typhoid was very common among the villagers. Typhoid was also caused by using *mesqa* water when a dead animal is thrown in it. The doctor tried to spread awareness among farmers saying that they should wash their vegetables and fruits with soap and permanganate, but farmers just picked produce from the fields and ate it. He also said babies suffered from intestinal infections because the mothers prepared food with dirty hands.

The physician added that farmers did not complain about the *mesqa* water, because they probably did not know that all the symptoms they have are caused by it. The symptoms included itching while urinating, as well as urinating "red" [bloody] urine.

The doctor said he tried to spread health information as much as he could. He tells farmers they should not drink from nor eat vegetables and fruits washed with *mesqa* water. The reason was that all the germs/diseases would be transmitted to that food. Instead, they should use clean water from the pumps. The pumps are very handy and many charitable people have installed several in the village. The farmer could take any container and fill it with the pump water he needed in ablution, washing and shaving. The doctor also tried to minimize bathing among them. However, he said that if they do bathe in the *mesqa*, they should wear boots and dry themselves as soon as they come out of the water. Farmers should have periodic medical check ups. They should have their urine and feces tested. If diseases were detected, they could be treated in their early stages, before they had their fatal effect on liver, bladder, intestines and the prostate gland, the doctor said.

The physician, meanwhile, stated that in his 15 years of experience, all village illness were similar and very different from the illnesses found in urban areas that have no *mesqas*. City people use clean drinking water which protects them from a lot of illnesses that are associated with the polluted water found in rural areas. The physician claimed that in order to reduce illness in the village, people should watch half hour educational programs on any of the TV channels. He added that well educated people and the agricultural cooperative could help by advising people of the dangers of pollution and of using dirty water.

The Awareness Campaign for Water Conservation

The irrigation inspector, Ibrahim Hamlas, said that density of the population along the *mesqa* banks led to the continued presence of waste in the *mesqa*. The solution, he said, is to ask the police to enforce the removal of all waste. People should be more aware that they are contributing to environmental pollution. Should an awareness campaign be created, it should stress the importance of the *mesqa* to villagers, and stress that when they keep it clean everyone will benefit. The campaign message should also include encouraging people to construct rubbish rooms or dumps, the irrigation inspector said.

The district engineer--Mahmoud Dahshan wanted villagers to become more aware of worldwide water problems and of the likelihood that the whole world will go to war over water. "We should stress the high cost of water and encourage its conservation. The message should be addressed to all family members, not a particular member. We should elaborate on the reverence religion awards to water. We should show people how other countries suffered from water scarcity and how it is no longer a free good," Dahshan said.

He added that if television manages to make people aware of different consumer goods, it could make them aware of the water problem. TV was more effective than newspapers and radio in villages because of illiteracy, he said. Dahshan also suggested the use of boards, flyers, stickers in public areas. In the newspapers, meanwhile, the message could consist of more pictures and less words. Furthermore, he suggested that using a religious appeal in the campaign could make a difference.

The other council member said that the agricultural committee in the local council together with the agricultural cooperative and the agricultural supervisor should start an awareness program. This program should increase awareness of the importance of water conservation, so that everyone could benefit from existing water supplies, particularly, those involved in land reclamation, he said.

The Irrigation Officials

From the farmers' point of view, the irrigation district engineer remains an elusive character. Much was said about the number of complaints villagers have already sent to this official to which they have received absolutely no acknowledgment and certainly no solution to their problems. Most people have never even seen this man, do not know his name, and feel he is totally unconcerned with what happens in the village. "We complain and are always ignored, we cannot reach anybody. We get tired of complaining and therefore keep silent," (female farmer, large farm, mid-*mesqa*).

The district engineer, Mahmoud Dahshan, however, stated that he had a very friendly relationship with many of the villagers located in the several villages under his jurisdiction. He said the villagers know him personally through direct interaction. He added that his relationship with the villagers is almost like a family, rather than being of a purely administrative nature. This "family" relationship has led to the success of problem solving which is carried out in conjunction with the *omda*, the village council, village elders, the agricultural cooperative, and *sheikh el balad*.

Likewise, the other district engineer, Ibrahim Hamlas, also claimed he was in direct contact with the farmers. He said that whenever he heard of problems, he would go to the people to solve it. If he could not come up with a solution, he raised the matter to higher authorities.

Some farmers, meanwhile, accused the irrigation and agricultural officials of corruption. "They are doing something to the chemicals--they are not pure. We spray the cotton but it is ruined, which means the chemicals are bad" (female farmer, large farm, mid-*mesqa*). When asked why they did not complain, this particular farmer said: "Complain to whom? The head of irrigation and the junior officials are all corrupt" (female farmer, large farm, mid-*mesqa*). Another farmer said that the cooperative gives them seeds that are bad and do not sprout. Furthermore, the district engineer located in the agricultural directorate (*mudireyet el ray*) completely ignores the village and its problems (male farmer, small farm, end of *mesqa*).

Farmers tell the story of the irrigation district engineer of a few years back who never left the *mesqa*. "He used to come here and eat his lunch by the *mesqa*, making sure people are always cleaning it," (female farmer, small farm, end of *mesqa*). Nowadays, the irrigation people don't do anything (female farmer, small farm, end of *mesqa*).

One interviewee actually goes to visit the district engineer to complain about the water shortage. He says the engineer tells him that the water is originally very little what can he possibly do? (male farmer, small farm, end of *mesqa*).

The irrigation inspector, meanwhile, said the role of the irrigation officials was to solve problems related to irrigation and building infringements. He explained that irrigation problems stemmed from the limited water supply. Infringements involved building on *mesqa* banks. Employees at the irrigation ministry report such actions, as well as the villagers themselves.

Furthermore, some villagers are able to prevent water flow to others. In order for any *bahari* pump to start working, it had to be submerged to a certain level. When water flows through the *mesqa*, its level never reaches the level needed for the pump to work. The farmer then blocks the *mesqa* with mud at the spot right before the following farmer. *Mesqa* water gathers before this "dam" and the level of water rises to reach the water pump, explained the first engineer, Ibrahim Hamlas.

The district engineer, Mahmoud Dahshan, said that when a farmer dug a well, that well should serve a number of people. Each farmer fought about who would use his pump to get the well water. Additional problems are also caused by inheritance whereby the land gets divided into smaller lots owned by more farmers, thereby causing more problems, he said.

One of the local council members said that the irrigation engineers are careless when it came to building infringements. He stated that farmers never see the irrigation engineer who was always unavailable. The engineer must have assistants during the time when water filled *mesqa*, but obviously they too do not show up. The local council member believed that if any of the irrigation officials ever showed up, the farmers would not be suffering from water scarcity.

In order to solve the problem of farmers never seeing the irrigation engineer, the village council member (who is also an educational supervisor (*mowageh*) in social sciences) said the number of engineers should be increased. There should be periodic meetings between both the engineers and the farmers in order to get to really know the problems, he said.

The district engineer, Ibrahim Hamlas, said that the villagers' problems are usually personal in nature and some of them suffered from family feuds. The irrigation problems among farmers are very trivial, but they insist on involving the irrigation authorities in them. When asked about the claim raised by some villagers that the engineer favored his family and friends and gave them more water, the irrigation engineer completely denied this. He said this was illogical, as each village received its water in turn for 5 or 10 days. The other district engineer, Mahmoud Dahshan, said that such incidences took place in other places, not Shebin El Kom. The farmers bribed the water guard, who gave them water as much as and whenever they wanted. That was done at night what no one could see them.

Dahshan added that farmers did not understand the nature of work of the engineer. The farmers believed they could get water illegally. The farmers do not always tell the truth and when they finish irrigating their land, they say there is no water.

All in all, the relationship between the farmers and the irrigation officials will always remain strained, said the irrigation engineer. The only way to satisfy farmers is to make water available in the *mesqa* all year round, even if they did not need to irrigate their fields, he explained.

The Role of the Agricultural Cooperative Members

One of the agricultural supervisors said the most important problem facing farmers today is irrigation. Farmers are constantly bringing water-related problems to the agricultural cooperative officials. One farmer would overwater his land, thereby drowning an already watered neighboring land. The agricultural supervisor added that the cooperative tries to bring about peaceful resolutions to such problems. For example, farmer A drowned farmer B's land accidentally. B told one of the agricultural supervisors that if he did not do anything about it, he would report him to the authorities. The agricultural supervisor examined the land and suggested they apply chemical fertilizers to dry the land. Farmer A agreed and offered to pay for the fertilizers, but strangely enough B refused and said he would pay. The disagreement was resolved peacefully.

The agricultural cooperative director added that the arguments involved the order of watering and the land drowning problem are due to weak land barriers. He also spoke about the lack of chemical fertilizers at the cooperative which has led to a rise in the black market at which fertilizers and other chemicals are sold at very high prices.

The village council member/headmaster indicated that farmers fought because of irrigation problems, land limits and fertilizers left on *mesqa* banks that block the road and are dumped into *mesqa*. In those cases, they resorted to arbitration. If arbitration did not work out, they sought the mayor's help.

One of the agricultural supervisors said that farmers usually seek the help of the cooperative members in solving problems. When faced with farmer problems, the agricultural cooperative director said he wrote a petition to the irrigation engineer. He added that one way of helping farmers is to encourage the government to build watering pipes instead of the *mesqa*, which guarantees no waste disposal and other *mesqa*-related problems.

Role of the Village Council

The village council member/headmaster suggested that the role of the village council should consist of supervising the *mesqa* during cleaning, supervising watering on the days of water availability, and conveying farmers' complaints to the irrigation authorities. He added that water should reach the lands at the end of the *mesqa* and that the council should try to reform the drainage system and should try to solve sewage problems.

A local council member said that the council tries to help farmers solve problems particularly because its members are all farmers, who know the conditions of the village. Specifically, when the council members received a complaint from the farmers, they wrote a report and presented it to the irrigation committee which in turn presented it to the irrigation authorities to solve the problem. The local council member stated that the council should keep track of what was happening and report it to the officials.

Role of *Sheikh El Balad*

The *sheikh el balad* said farmers did not consult him about *mesqa* cleaning, but everyone did everything on his own. However, when any building infringements took place (e.g. someone dug in another's drain, or infringed on the *mesqa* bank [*gisa*], or small canal [*anaya*], he had to interfere to solve the problem.

The *sheikh el balad* said nobody ever tried to create a union to handle *mesqa*-related issues. The mayor was doing his best, but he was overloaded already. The local council members are employees who just get paid without doing anything. The members of the People's Assembly are also useless and do not do anything. He also added that they had no sanitary unit to deal with sanitation problems.

The *sheikh el balad* hoped that the government would start the irrigation pipe project which would be large and bring in lots of water. However, he said this pipe would be expensive, with a small pipe costing around L.E. 12,000.

Most Respected Person In the Village

The focus group findings showed clearly that the village mayor (*omda*) was the most respected person in the village. Women, however, do not have access to the *omda*, nor do they talk to the mosque *Imam*, nor the members of the agricultural cooperative, or any other official. "It is the men who deal with these people. If there is a problem in the land, it is the men who go and seek advice" (female farmer, large farm, lower *mesqa*).

The *omda*, one participant said, is now an old man. There are only a few responsibilities he can take care of. "He tells the farmers you are now adults and you cannot throw the responsibility for everything on me, everyone who needs something should go and do it" (female farmer, large farm, mid-*mesqa*). There are a lot of educated people in the village and farmers who have educated children (female farmer, large farm, mid-*mesqa*).

Others also agreed that in terms of problems with waste disposal in the *mesqa*, the *omda* is helpless. "He keep every single person from throwing waste/sewage in the *mesqa*. The *mesqa* is blocked right next to the *omda*'s house and he can't do anything about it" (male farmer, large farm, end of *mesqa*).

The doctor meanwhile, stated that people should be addressed by key figures, like council members, regarding issue such as keeping the *mesqa* clean.

Community Action

Almost all the interviewees averred that there was no such thing as community action. People are too busy, too poor, too apathetic and too plain lazy to do anything that did not come by force from the government. "No one would listen to me if I asked people to do something, they would say that I think myself a big leader and would say they do not have any time for me. Therefore, I save myself the embarrassment and do whatever I can do by myself" (female farmer, large farm, mid-*mesqa*). "Community action does not work because there are no village elders like there used to be" (female farmer, large farm, mid-*mesqa*).

A different perspective on community action came from one of the older (age 65) male farmers located at the end of the *mesqa*. "Even if the farmers do unite to solve the problems of the *mesqa*, where can they get the water from? Only the irrigation people can open and close barrages and canals" (male farmer, small farm, end of *mesqa*).

On the other hand, one of the agricultural supervisors hoped that farmers would form a union and added that the idea can be implemented through the members of the local council, village *sheikh el balad*, mayor, public figures and *imams*. The doctor added that the role of the educated members of the community is to impart information about health and effective water use to the farmers.

The council member, meanwhile, said the farmers should cooperate and schedule cleaning among them. The oldest of them should take charge of the follow up of the cleaning activity.

The agricultural cooperative director said the farmers already elect five members for the cooperative board, who in turn can act as such a union. The *imam* agreed adding that the cooperative should form a committee in charge of *mesqa* supervision. Whoever threw waste was to be taken to the committee and punished.

Leisure and Entertainment

While television is the primary source of entertainment in the village, many farmers listen to the radio while they work in the field. "We have a small radio which we take to the field with us" (female farmer, small farm, beginning of *mesqa*)(male farmer, large farm, beginning of *mesqa*). Newspapers, meanwhile, are not sold in the village at all, and few people can either afford to read them, or have the reading ability to do so, especially the older farmers, both male and female.

Some men, however, felt that television is only for those who have nothing better to do. "We are better off taking care of our land," (male farmer, large farm, mid-*mesqa*).

Most farmers indicated that they watch channel one on television, especially the agricultural program "*Ser Al Ard*". They also like to watch the news on television, in addition to some television series. The radio, meanwhile, is a prime source of religious information and Quran (male farmer, large farm, beginning of *mesqa*).

IV. Gender-Specific Issues

Educational Seminars-Female Point of View

Male farmers had mentioned in the focus groups that they do attend some seminars that are given by the agricultural officials dealing with farming issues. Women on the other hand, do not attend any of these seminars. "While they might hold seminars for men, they do not have any seminars for women. There was a recent seminar at the youth center but I do not know what it was about because I did not attend," (female farmer, small farm, lower *mesqa*).

However, older women who are widowed and in charge of their own farms do go to the cooperative to discuss issues pertaining to the farm. "My mother who is an elderly woman goes because the land we inherited from my father is in her name" (female farmer, large farm).

Life of Female Farmers

Older female farmers are the most hardworking persons in the village. They still belong to the "old school" of women carrying out all the housework as well as shouldering a large farming burden beside their husbands or alone if they are widowed. Farm work is considered more important and is always given priority because "Work in the fields is what gives us the crops. We do housework at night--baking, grinding grain, laundry, taking care of the animals, grocery shopping. We work day and night, we never rest" (female farmer, large farm). "All my daughters are married and I am left alone to take care of the entire household full of men, I don't have time to do anything else" (female farmer, large farm, mid-*mesqa*).

Conclusion

Summary

Much was said in the focus group discussions about the *mesqa*--its problems, its maintenance, factors threatening its proper function, and ways to solve these problems. The ailments of the *mesqa* can be summarized as follows:

- The *mesqa* is suffering from two main problems: 1) insufficient water flow that is caused by linking pipes that are placed too high for low water levels and 2) large amounts of garbage, dead animals, and sewage obstructing the water flow.
- The *mesqa* will continue to be a breeding ground for all types of insects, mosquitoes and rodents as long as it is used as a sewage and waste disposal channel. A complete waste water/sewage system is urgently required in this village.
- Responsibility of *mesqa* cleaning is being dumped by farmers on the government exclusively although they know that it is their responsibility to clean it, unlike the main canal. Villagers are content just to pay nominal fees for this mechanical clearing but refuse any manual involvement in fear of injury or collective action on their part.
- The concept of community action to solve problems did not meet with much enthusiasm. Most people said they neither had the money nor the time to do anything. Furthermore, they do not trust that "other people will cooperate." They wanted the responsibility to fall either on the government or on wealthy citizens of high social standing. They personally felt they had no power to do anything and no means.
- When asked if a "water users' association" could be formed for the maintenance and the protection of the *mesqa*, some felt it was possible for it to work under the condition that the mayor (*omda*) would head it and other village influentials were members of it.

- Water in the *mesqa* should be available for all of the five irrigation days that are allotted to this village rather than only three of the five. Most participants called for increasing the original five-water, 10 days no water schedule to seven days of water and seven days of no water to permit sufficient irrigation of all the fields. However, the numbering of days is, according to the district engineer, relative depending on where one's farm is on the *mesqa*. Farms at the end of the *mesqa* farms feel they have fewer days than those at the beginning.
- Women in this village live in two different worlds: Older women are non-educated and traditional. They are allowed to go out to their farms and help. They can also go and attend religious classes (and sometimes illiteracy) at the village mosque. Younger women are more likely to have gone to school but less likely to go to the farm. They are the TV style young women. A young male farmer is not interested in having his wife go to the farm to help him as the case in the old days. One could feel it is becoming less socially accepted. Or rather, a male farmer who does not allow his wife to go to the farm is seen as more modern. Things have really changed in the village.
- Finally, there exists a communication gap between the district engineer and farmers in the village. This has led to mutual distrust despite the common good intentions of both parties. The district engineer already believes in making farmers more aware without resorting to old forms of punishment, "It won't work," he says.