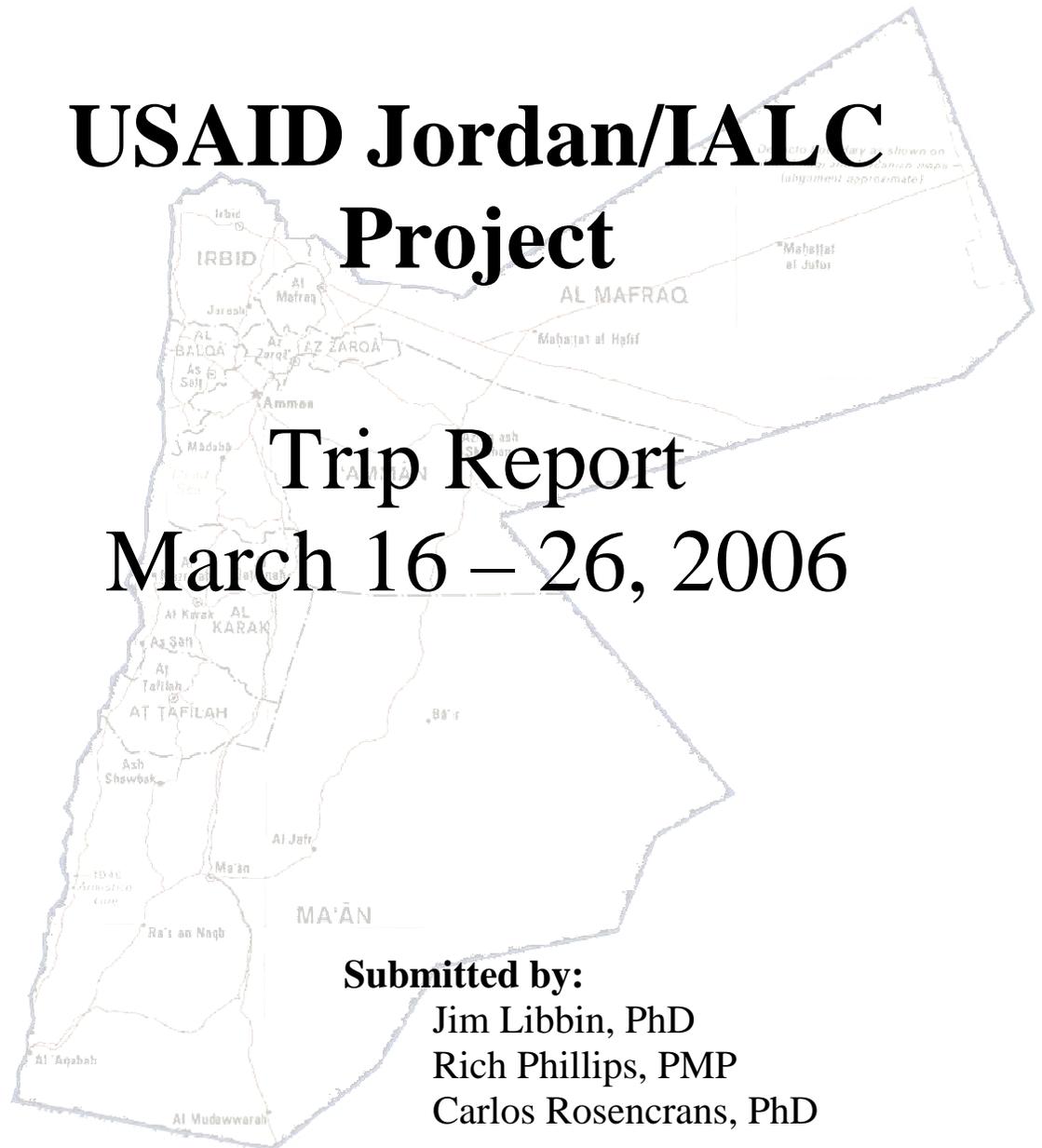


New Mexico State University
Badia Research and Development Centre

USAID Jordan/IALC Project

Trip Report

March 16 – 26, 2006



Submitted by:

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Rich Phillips, PMP

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Timeline

Thursday, March 16. Left Las Cruces at 4:30am for the El Paso airport, arrived in Tel Aviv by way of Dallas and New York (JFK) approximately 2pm, March 17. Took a taxi into Tel Aviv (\$25) to the Hotel de la Mer.

- 1) Friday, March 17. Met Mike Martin at 4pm.
 - i) Mike is still interested in having us do part of the Monitoring and Evaluation work for the USAID in the West Bank and Gaza, but everything at USAID – WB/G is on hold now, at least until after the Israeli elections to replace Ariel Sharon. Mike is quite interested in having a third party evaluator for the M&E portion of the work. Part of that interest stems from having non-contractors' ability to move into and through either the West Bank or Gaza, and partly as an additional set of eyes and ears as they work with the individual projects. Currently there is no trade through (especially out of) Gaza. The PAAR project (managed through CARANA) has about 10 total projects – 7-8 in the West Bank and 2-3 in Gaza, including 3 olive oil (one is a consolidator / marketer) projects and one greenhouse herb project.
 - ii) Mike will check USAID intranet regarding vegetable marketing research reports from Egypt. John Van Sickle from the University of Florida had done some of that work in Egypt a few years ago.
- b) Met Mike Brooks of CARANA for supper in Jaffa at the Aladdin. 054 220 9183
 - i) Mike has only been on the job in Jerusalem for two weeks, so he is still trying to get oriented to all of the projects. He is not allowed to travel into either the West Bank or Gaza yet. Mike is enthusiastic about working with the Palestinians and is very good friends with Melissa.
 - ii) CARANA is very interested in working with us, but Mike had no real idea at this time about whether something could be worked out. Alan Pieper was out of town the weekend we were in Israel. Alan was recently promoted (from within CARANA) to Chief of Party, so he might have a better idea of what our role might be and how likely we are to have a role. Mike Martin is strongly pushing an independent M&E role to determine whether the investment capital is being used as indicated. Most importantly the capital is supposed to be used to buy equipment and hire people. Mike Martin feels oversight is critical to monitor whether the people are actually being hired.
 - iii) Mike Brooks followed up with an email while we were in southern Jordan.
- 2) Saturday, March 18. Nabil drove us from Tel Aviv to Eilat (1,450 shekels). We stopped and toured the David Ben Gurion home in the Negev Desert and saw the winery at the Sede Boker kibbutz. According to the winemaker, the kibbutz had 20 acres of grapes and about 100 olive trees. 15 acres of the grape production is sold to another northern Israel winery; 5 acres are kept for wine production at Sede Boker. He had tried stone fruits, but a combination of weather (heat and winds) issues, labor availability problems, and kibbutz priorities for its capital and labor made agriculture a low priority. The kibbutz's main income sources were manufacturing printed packing tape and the Ben Gurion home gift shops area.
- 3) Sunday, March 19. Amnon Greenberg arranged for a taxi (100 shekels) to pick us up in Eilat and drive us to Yotvata Kibbutz. Amnon, a member of the kibbutz is the Research Director at an agricultural research station just outside the kibbutz. His paycheck was sent directly to

the kibbutz central administration. He then gets a monthly draw from the kibbutz, the same as any other member of the kibbutz.

- a) Yotvata was formed in 1957 and now has 300 kibbutz members. They have a 600-cow dairy with a circular milking parlor. Fresh cows produce 35 liters per day; they have a total of 1,050 animals. The kibbutz's main source of income was milk bottled at their processing plant – flavored milk in small bottles was their specialty. They also grew field crops outside the walls of the kibbutz, right next to the research station. They grew onions, sunflower seeds for the flower trade, Australian peas (a potted plant), dates and melons. Melons were grown on plastic trellises in hoop houses. The kibbutz was a member of a multi-kibbutz date processing plant located very near Yotvata's tourist center. Salt cedars were planted in rows as windbreaks. Donkeys cleaned up date groves (biocontrol for insects). The donkeys ate the dates that fell to the ground before insects could invade and reproduce in them. The kibbutz used a mixture of sweet, waste and brackish water (up to 5Ec). They have learned how to use poor water to manage high yields. Radon concentrations were measured.
 - b) This kibbutz was the birthplace of drip irrigation in the 1964; Netafim was formed about 1970.
 - c) Tourist center – restaurant – shop – gas station welcomed 800,000 per year on the only road between Eilat and any part of Israel north.
 - d) Amnon took us to the border crossing at Arvata north of Eilat. We crossed over into Jordan about 5pm. Paid 72 shekels to get out of Israel and changed all of shekels at the border. 6JD taxi from the border crossing into Aqaba. Met Raed, Rida & Mohammed at the hotel in Aqaba after we checked in. We walked along the seashore for a cup of coffee and dinner in Aqaba.
- 4) Monday, March 20. Mohammed drove us north from Aqaba to the Disi Basin. The purpose of this portion of the trip was to gather background information for the Water Basin Study. We stopped by the side of the road near the intersection while we waited for two more BRDC staff members (Nawras and Odeh) to join us. The farmer was growing melons in plastic tunnels under drip irrigation with plastic mulch. We didn't talk to the farmer.
- a) Our first visit, after coffee in the farmer's Bedouin tent, was with a farmer who produced olives, potatoes, fava beans and tomatoes. He also took us behind his home to an earthen dam and showed us a camping spot used by Lawrence of Arabia, including two carvings in the rock of Lawrence and one of the Arabic co-fighters. The community well pumps 400 cubic meters per hour. The King-authorized well was used to supply village water as well as irrigation. Metal pipe irrigation system with in-line emitters on hoses to the olive trees. A scoop of manure was placed on top of the hose near the base of the tree.
 - b) At the second stop, we met with two partners at the side of the house. Two other farmers joined later (one was the sheikh). We spent a great deal of time talking about the water distribution system. A water company supplied the water from a King-authorized well. Only a king, then, was allowed to cut off farmers from the well, but the company did reduce the size of the pipe to a farmer. There was substantial animosity toward the water company. The farmers sold all of their produce to Amman merchants. Those merchants advanced the cash production expenditures and took the entire crop, sold in the market at 'market' prices. 20 JD / ton to ship (80 JD per 4-ton truck). The partners grew fava beans, cantaloupes, watermelons, cucumbers, squash, tomatoes, potatoes, lemons, and olive. An olive press was owned by a local cooperative and most of the oil was sold locally (rather than through Amman). None of the crops looked healthy – weedy, trashy

Timeline

- (garbage – especially black plastic from irrigation mulch and plastic shopping bags), olive trees appeared stressed. Hire 30-40 local women for harvest; pay 3-4 JD / day.
- c) Since 90% of the conversation was not translated, we will need to rely upon Nawras' extensive notes for additional details (Appendix 1).
- d) Our third stop of the day was at the Rum Agricultural Company. Met with Gassan Abu Zahra, general farm manager and about 4 or 5 other employees. They farmed 30,000 dunums (6,000 trees – fruit, grapes, olives (see brochure); 4,500 alfalfa; and 6000 potatoes. The rest was in other vegetables.) 28 wells. All produce was sold through the central market in Amman. The entire orchard was on drip, along with 500 dunums of drip vegetables. The rest was on center pivots. Alfalfa was shipped to Amman for a dairy producer. Rum produces 90-95% of Jordan's alfalfa. They get 8 cuts per year and use 2000 cubic meters of irrigation water per year. Produce about 30% of Jordan's potatoes, using 1000 – 1200 cubic meters of irrigation water per year. 35 T/ha of Class A potatoes plus 55T/ha of class B potatoes. Two cycles of planting – January and August. Expects 0.07 JD per kilogram wholesale (which sells for 0.35 JD retail). Rum Agricultural Company is the largest food producer in Jordan, producing 65% of its early fruit. 500-600 chilling hours. 60-70 women used in onion harvesting. He works with a series of merchants in a brokered auction market for domestically consumed produce. Highest water use is on August-planted potatoes. Rum Ag fits a critical niche in the marketing year between the Jordan Valley and the northern Badia. Jordan as a whole needs proper marketing outlets. Rum harvests 1½ months before any European producer (he did not talk relative to Egypt). 200 km from the Saudi production region of Tabouk. Peaches were harvested in late April; apples and grapes harvested in June. He began his orchards with California varieties. The climate here near Wadi Rum is very similar to that of the Southern California desert. Rum produces the earliest tree fruit in Jordan. Their most important issue / problem is the market. Good soil, good water. Difficulty in changing the Bedouin lifestyle into a farming lifestyle. The sheikh was one example of the change that has been occurring. Therefore, Rum must use Egyptian labor and / or other non-local labor. Use locals to operate machinery, maintain equipment, and serve as guards. But locals don't do well with field and hand labor. There are a few, but very few agricultural male laborers. Jordan as a whole needs new market outlets, especially for export outside Jordan. The government needs to break the control of the Amman merchants. Jordan also needs a well-organized agricultural plan. There is little cooperation among farmers in setting up acreages to benefit everyone.
- e) The company recognized that the right crop must be chosen to efficiently use water. They were aware of the crop-water relationship and the economic relationship. The Company was very sensitive (defensive) about the issue of mining water. The farm manager said he has been pumping from the same aquifer since 1984 and has never had to add any more pipe to his wells. Rum has a sister operation in Saudi Arabia – we think even bigger than this one.
- f) We left Rum Agricultural Company and traveled across the open desert to see a new orchard owned by Sheikh. 1,500 dunums out of 3,000 owned is now cultivated. He has two farms. The first is planted primarily to potatoes. The new farm (the one we saw) has been planted almost exclusively in tree fruits and grapes. Virtually all harvest labor is not local. Locals work as mechanics, etc., but they want health and social insurance and other things. 15 permanent and 70 seasonal employees. For the harvest period (about a month), he uses Egyptians. All fruit moves to Amman. 35% of the whole process is marketing; that is where the greatest problem is.

- g) Ate lunch (mansaf) at the Sheikh's home and spent the afternoon (about 25 of us in total) in the guest room at his house. Competition with Saudi Arabia. Saudis are shipping into the same markets Jordan used to supply (especially the Gulf States and Lebanon), putting more pressure on Jordanian prices. This is particularly true in citrus and potatoes. Like Rum Ag, the sheikh would like to get Jordanian farmers to cooperate to balance production, but he has not been successful. The nearest extension office to the Sheikh is 120 kilometers away, in Ma'an. The sheikh sold some fruit into Britain and Russia last year, receiving a 25% premium for foreign sales. Everything, domestic and export, moves through the same central market merchants in Amman. Part (or much) of the motivation for moving into tree fruits is to find a market with lesser competition from outsiders. He would like to export more – not only would he receive a premium – but other Jordanian farmers would do better without him in the domestic market. Many sheep came in from Iraq after the first Gulf war in 1991, leading to increased overgrazing. Many Jordanians left livestock then and began to farm. The sheikh's first well was allowed by direct intervention by the prince. Bank drafts were commonly used to transfer payments. There is a clear lack of commercial banking; FSA-like farm credit is not considered viable. It is very slow and Islamic law is problematic with respect to credit. Can't charge interest under Islamic law, but the agricultural loan agency of the Jordanian government will buy cows and / or equipment for you; you will buy back over time at a higher price to the bank.
- h) We drove from the sheikh's house into Wadi Mousa and stayed at the Movenpick.
- 5) Tuesday, March 21. We met at BRDC's southern regional office at Ma'an. We reviewed the project and talked about Rich & Octavio's survey and about maps.
- a) Contacts at BRDC's Southern Badia Field Center:
- i) Odeh Almeshan al_meshan@yahoo.com 462 077 776 99343
 - ii) Nawras Al-Jazi nawrasaljazi@yahoo.com 079 580 7716
 - iii) Alqadi2033@yahoo.com 079 549 3312
- b) Shamia. The project is supporting subsistence agriculture, growing mint, alfalfa, olives and vegetables. Sold excess crop to local supermarkets and sometimes the supermarkets came to them. One cooperative well serves 110 farming families plus others in the village. 10 piaster cost to the cooperative per cubic meter pumped; charge farmers 6 piasters. Supplement the deficit with container sales to local village residents off the cooperative. 300-350 JD per month for electricity. The cooperative is non-profit, so costs much equate to income. It employs one operator and one guard. 60 farms now have no irrigation because of a major flood in February,
- c) After lunch at the southern field center, we toured a range / new cropping site. They had a few olives on it now, and were preparing the rest. There was a big hand-dug well 25' across and 100+ feet deep. Alluvial soils. Irrigating trees and forages with untreated city sewage water and were letting some of it go downstream. Too raw to put on any food crop. Grazing along the stream bank. After this stop, we headed on into Amman.
- 6) Wednesday, March 23. We spent the morning at the BRDC headquarters in Amman; Rich Phillips spent most of the day at the hotel from bout of food poisoning. Before our meeting with Mohammad, Raed and I talked through the list of data I had sent him by email in February regarding the range restoration project site and we wrote the budget narrative for submission to NMSU.
- a) Project Contacts

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- i) Raed Al-Tabini Full time Range science
- ii) Saad Alayash ¼ Hydrology
- iii) Ismaiel Abo-Amoud ¼ Cooperatives
 - (1) Ismaiel005@yahoo.com
 - (2) head of local community development division, BRDC
- iv) Rida Al-Adamat ¼ South & north water basins (GIS)
- v) Odeh Al-Meshan ¼ Shamia water harvesting
- vi) Nawras 1/12 enumerator – south
- vii) Consultants
 - (1) University of Jordan range scientist
 - (2) University of Jordan agronomist
 - (3) JUST agronomist
 - (4) Al El-Bayt marketing specialist (Salem)
- b) We met with Mohammad Shahbaz at 10am. Mohammad discussed national issues with respect to resource allocation. If water is used inefficiently in agriculture, should it be moved away from agriculture to M&I uses. However, socio-economic aspects of using water in rural areas are critical to the future of the Badia, to village structure, and to the country. WHO criteria suggest 100 liters of water per day per capita; areas of Jordan now use only 50. The M&I sector is efficient, but agriculture may not be. Marketing issues are key to the financial health of all farmers. We need a global view of the marketing system, not a local view. Many cooperatives have lost vision and focus.
- c) Wednesday evening we met with Amer Jabarin, agricultural economist from the University of Jordan. We talked with Amer in the hotel about a variety of were at times different and at times the same as those we had heard from others.
 - i) Amer was concerned about mining water in southern Jordan for wheat.
 - ii) Disi aquifer is critical to the future of the country. Looking at a pipeline to Amman for drinking water. World Bank is pressuring Jordan to reduce farming in the Disi Basin.
 - iii) Saudis now exploiting the same aquifer.
 - iv) Similar phenomenon over a common aquifer under the Syria-Jordan border in the north.
 - v) ARD socio-economic study of the Mafraq Basin?
 - vi) 2004 water law that limits the amount of water a farmer can use for free.
 - vii) The current drought is the worst in 30 years.
 - viii) Amer involved with a course in environmental degradation. Funded by the World Bank?
 - ix) Medicinal herbs and plants as alternatives; World Bank project. Bedouin cheese.
 - x) Role of the central market and the commission agents. Government agents record and report daily volumes and prices. Should be available in English and may be on the web. He had participated in a World Bank-funded study of the marketing system.
- 7) Thursday, March 23. Ahmed drove us to the central Amman produce market, arriving about 6am and stayed until 7:30. We spoke with several buyers and sellers. We left before the government offices opened. A couple of the merchants confirmed the reports about farmer financing. The agricultural input suppliers were all located around the outer ring. 130 JD to 'buy' a cart; 300 JD / year rent. 50,000 – 100,000 JD to 'buy' a stall, 2,000 JD rent per year. www.merchants_union@hotmail.com ? After breakfast, we traveled north to Mafraq and stopped in at the Mafraq central produce market. Most of the fresh fruits and vegetables had come from Amman that morning. Much of the rest of the day was spent gathering

background information for the Water Basin Study. Ismaiel Abo-Amoud recorded the Arabic discussions for this portion of the trip (Appendix 2).

- a) The first farmer of the day in the Mafraq area (very close to the Syrian border) was Ibrahim Al-Mughribi. Ibrahim began farming activities El Anbat Farms with his father in 1986 and converted to tree fruits in 1992. He decided to go to the forefront of production technology to compete in export markets. He has a good relationship with USAID; has visited Israel to tour high-tech farms. USAID built a training center next to his orchard to train local farmers. Ibrahim has visited fruit farmers in Europe – France, Italy, and Spain. Drip-irrigated trees under the soil surface. May through October peach harvest period. 80 T/hectare peach yield. Typical Syrian yields are 2 T / dunum (20 T/ha) under traditional methods. He had 20 hectares of peaches, 4 hectares of pears, 7 ha apricots, 15 ha nectarines, and 7 ha grapes. Inspection of this EUREP-GAP [www.integra-bvba.be] certified farm was executed by INTEGRA Egypt. Soficom.com.eg Ibrahim had a Campbell scientific climate center installed by USDA, with a satellite uplink. A while back, Ibrahim had been irrigating his trees 2 hours every 48, but now has increased water efficiency by 30% by irrigating 1 hour every 24. Ibrahim had been exporting to Syria, Saudi Arabia, UAE, and Iraq (including the U.S. Army in Iraq). Iraqi trucks come to the farm, but otherwise produce moves to Amman before it moves into the export market. The farm employs 100 women per day for 7 months of the year (some from Syria); 8 full time Jordanians and 25 full time Egyptians. The farm supports a large share of five villages. Ibrahim paid 9,000 JD for sheep manure in 2005, further supporting the local economy. He used one million cardboard boxes in 2005 with his own logo – Star Fruit Company.
- b) The second farm stop of the day was with Ziad Al-Oun, Salem’s uncle. Ziad has three farms with a well for each. He farms olives, fruit, and vegetables and has double-cropped supplemental-irrigated wheat and barley. He also owns 1,000 sheep. Ziad was the first farmer in the Northern Badia in 1982; he began farming after 20 years in the army. He hires 70 people per day for 5 months each year, about 50% male and 50% female. He employs 15 permanent laborers – 4 Jordanians and 11 Egyptians; plus 3 more for livestock. He farms 450 dunums of grapes, nectarines, and apricots. Rootstock came from France and the U.S. through a company in Amman. He uses about 150,000 to 200,000 cubic meters of water per year. His wells are approximately 450 meters deep; they have declined 12 meters over the past 22 years. The revenue is better and water use is less for fruit trees than for vegetables; he is gradually shifting all of his vegetables into fruit trees. He has constructed a water harvesting dam for additional irrigation water; WAJ meters and restricts wells. The first 150,000 cubic meters are free from tax, the next 50,000 cubic meters cost 5 fils per cubic meter and anything over 200,000 cubic meters per year costs an additional 60 fils per cubic meter. He claims a big problem is the Syria is overpumping the aquifer. Ziad is recognized as a leader in the national farmers’ union. He does not depend on a broker / merchant for financing and noted that there is no stable, consistent agricultural policy for Jordan.
- c) The third farm stop was with Sami Al-Rhal. He owns 1,500 olive trees on 54 dunums at a 6m x 6m spacing, with 22% oil yield. 200 kg olives yielded 35 kg of oil. He produced 200 16-kg tanks of olive oil in 2005. He buys plastic packing boxes at 15 piasters each. A commission agent says he charges 5% with a 2% tax (so 7% of the total value of the crop). Syrian agents come to the farm and buy produce to take back to Syria. There, they repack and relabel and export Jordanian fruit to Europe as Syrian-grown.

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- d) The fourth farm stop was at the farm established in 1992 and owned by Mohammed Rakkad, who farms 3,000 dunums of peaches, plums, apricots, nectarines, and 250 dunums of tomatoes. They have four wells and use drip irrigation on everything they grow, usually irrigating every 4 to 5 days. They sell in Amman primarily, but also take some to Zyrqid and Irbid. They exported some of their crop to Syria, which was then trans-shipped to Saudi Arabia. They hire 20 permanent Egyptian laborers and 250-300 day laborers from April through December. They pay permanent employees 130 JD per month (which is equivalent to 900 Egyptian pounds. Comparable work in Egypt would earn 300 E pounds in Egypt) and day laborers 3 to 4 JD per day depending on the work. Day laborers are Pakistani, Syrian, 25 Jordanian women and some Jordanian men.
 - e) On the way back to Amman, we stopped at the Bedouin shops area in Mafraq.
- 8) Friday, March 24. We visited Jaresh and Umm Qays, both Roman ruin cities among the 10 in a row in this part of Syria and Jordan. The Jaresh area was quite green; farms were producing rain-fed small grains, olives, and backyard figs and almonds. We ate dinner with Emat at the home of his 110-year old father.
- a) After dinner with Emat, we met Ziad Al-Ghazi, an agricultural engineer at JUST at a local restaurant. We discussed, in about an hour, several issues of interest to us both, including his wastewater reuse projects. There are cultural barriers and consumer resistance to buying products produced with reclaimed water. Jordan has a problem with fruit that is viewed as tainted because it was produced with wastewater. Ziad had spoken with Bob Freitas about seed money for extending the water reclamation project that had earlier been funded partially by IALC. Ziad also mentioned a current project, funded by NATO Science, which will involve testing water infiltration through soil and into a series of test wells after application downstream from a water treatment facility in southern Jordan near Wadi Mousa, in the valley in which 10 producers of apples are depleting their aquifer.
 - b) Friday evening we met with Jochen Regner of GTZ. Jochen discussed several issues, including the National Water Master Plan of the Ministry of Water and Irrigation.
 - i) He provided a copy to Rich early the next week in digital form. The plan was completed in collaboration with GTZ over a six-year period in a common GIS format, including source and consumption for all wells and all consumer pipelines.
 - ii) Water is overused in the high lands. In the Mafraq-Zarquaa area, water is being pumped at 2x a safe renewable rate, and in Azraq at 3x the safe renewable rate.
 - iii) A new modeling effort is being undertaken by USAID and GTZ. Old models may no longer be valid; they were dependent upon inflows from Syria and Saudi Arabia, inflows that are no longer coming because that water is being used there. Syrian and Saudi wells and 30-40 dams in Syria are problems for Jordan.
 - iv) The Royal Committee that developed an agricultural strategy wants to reduce irrigated agriculture in groundwater areas within 15 years. The process is to limit wells to 150,000 cubic meters without charge, then begin a progressive charge. Many feel this 150,000 cubic meter free amount must be reduced further to say 50,000 cubic meters to put a dent into the mining of water. 200 dunums of fruit trees can be irrigated from the current free 150,000 cubic meters. A 10-million JD court case is ongoing over this charge policy.
 - v) There is also a concern arising over invasion by saline water into ancient fresh water basins because of overpumping.
 - vi) Fruit and vegetable producers all came into Jordan in the early 1990s (a few in the 1980s). They were all wealthy investors.

- vii) Vegetable producers at breakeven levels now because of diesel prices. Government subsidies on electricity compound the problem. If the subsidies were removed, it would draw electricity into line with diesel. Diesel cost is 22 fils, would double to 50 fils as subsidies were removed. The national fuel subsidy totaled 460 million JD (compare that to a 2.5 billion JD national budget).
 - viii) Jordan has had a history of inconsistent, fluctuating agricultural policy.
 - ix) The government is concerned about the army of women who earn income, many times the major share of family income, from the irrigated farms.
 - x) 80% of Jordan receives less than 80mm of rain; 80% of Syrian receives more than 120mm.
 - xi) Syria is a major producer of Awassi sheep that are preferred by the Saudis. Many flocks move through Jordan, contributing to over-exploitation of the range. (Neither Salem nor Raed confirmed this.)
 - xii) The Ministry of Agriculture recently received a mandate of on-farm irrigation and rural community economic development, including the development of strategies for poor and small farmers, as well as increased tourism and alternative crops (especially medicinal herbs).
 - xiii) Water transfer projects are being planned to transfer water from the Disi Basin to Amman for M&I uses. A second project would transfer water from the Red Sea to the Dead Sea to stabilize the water level and reduce salinity of the Dead Sea. 200 million cubic meters per day would be pumped 50-60 km north from Aqaba, uphill about 200 meters. The downstream flow would be used to generate electricity to desalinate the Red Sea water. Approximately .5 JD per cubic meter to desalinate. The water would then be pumped uphill from the Dead Sea into Amman.
- 9) Saturday, March 24. We left the motel about 9am. We stopped first at the new conservation center east of Mafraq where we met Mohammad Shahbaz for a brief time. We were also joined by Salem Al-Oun. Salem traveled with us to Tal Rimah dairy cooperative. This time it was operating; they are now taking in 700 kg per day of locally produced sheep milk. The plant has the capacity for 2 tons per day and could expand to 4 tons with the addition of yogurt equipment.
- a) Fruit and vegetable exporters are not located at the central market, but are spread out throughout town. A farmer will still use commission agents to negotiate price and other terms. Salem paid a charge of 50 fils per box.
 - b) Government-collected price data reported from the central market group is retail rather than wholesale.
 - c) To-Do List for the cooperative projects
 - i) Modify the numbers included in the worksheets at the ends of the reports.
 - ii) Write a second draft of the reports.
 - iii) Collect and include dairy inputs.
 - iv) Send a community-based development map file.
 - d) To-Do List for Rangeland Restoration project.
 - i) Collect input data.
 - ii) Carrying capacity of the range before and after the restoration project was implemented.
 - iii) We will compare before to after. IFMA conference presentation?
 - e) To-Do List for Water Basin project.
 - i) GPS all farms to determine which ones to include in the sampling frame.
 - ii) Finish the map on Rida's machine.

Timeline

- iii) Translate handwritten notes (Nawras in the south, Ismaiel in the north) (Appendices 1 and 2).
 - iv) List of farmers' names.
 - v) Questionnaire rewrite.
 - f) To-Do List for Ash-Shamia cooperative project.
 - i) Follow-up and coordinate with Odeh.
 - ii) Survey several farms for cost and return information.
 - g) To-Do List – General.
 - i) Need a copy of the annual Ministry of Agriculture annual statistics report.
 - ii) Translate the summary of Ismaiel's thesis
 - iii) Precipitation map.
 - iv) Market information from the central market in Amman.
 - v) Market description – Salem will write.
 - vi) WAJ annual report.
- 10) Sunday, March 25. Jim and Carlos left the hotel early to catch a flight back to the U.S. Rich stayed in Amman to meet with USAID and conduct project management training for BRDC.
- a) Met with Ross Hagan at the US Embassy in Amman.
 - i) We discussed USAID sponsored IACL/NMSU/BRDC Jordan Project. We reviewed what the team had done in-country during this visit. Most of the discussion was on Jordan's water situation and the Water Basin Study component of the project. Ross provided input into the survey process and provided additional sources of in-country resources for water data, including Tawfig El-Zabir (t.elzabir@ifad.org), United Nations Project Jordan, International Fund for Agricultural Development (IFAD, www.ifad.org) in Rome.
 - ii) Ross also told me about interesting legume forage work being done by ICARDA on Grasspea that would be of interest to BRDC. He suggested they look into upcoming workshop on Improving Legume Crops.
 - iii) We also discussed the agricultural market structure in Jordan and public policy decisions that may negatively impact product quality standards. He suggested that we look at the USAID Jordan Market Study that was compiled for 1989-96. He also suggested that we look at the USADI Jordan Economic Growth Department's *Olive Specialty Product Project*. We also discussed the data included in the Jordan Agricultural Market Report (http://www.dos.gov.jo/agr/agr_e/index.htm).
 - iv) We had a good discussion about team and project management training. He suggested that I read "The Wisdom on Small Groups".
 - v) Finally, we discussed the USAID funding situation in Jordan. There will be a reduction in funds available for agriculture but a large increase in the democracy and governance section. We discuss the need to consider how water, market reform, and economic development might fit into this high-priority program.
 - b) Raed, Ahmed, and I met briefly with Raja Hiyari, Training Manager (tel. 962-6 585 7187), Partners-Jordan Center for Civic Collaboration. Partners were conducting a conflict resolution course at the hotel. There is an opportunity for application of their work to the BRDC cooperative projects that have been experiencing some difficulties. BRDC and the Partnership group made plans to meet and discuss areas of collaboration.
 - c) Conducted Project Management Training Workshop for seven BRDC senior staff employees at BRDC headquarters. This training, entitled "The People Side of High-Performance Project Teams" included reviewing the DiSC[®] that staff members had completed prior to the training session. Follow-up training for "Project Team

Development: Team Environment” was re-scheduled until the next visit due to scheduling conflicts with BRDC.

- d) Mohammad Shahbaz, Jochen Regner, Raed Al-Tabini, and Rich Phillips met for dinner to discuss collaborative opportunities for BRDC, GTZ, & NMSU. BRDC and GTZ each provided a brief overview of capacity and in-country activities. The two groups arranged to meet and review with each other on-going projects and to discuss future collaboration.

11) Monday, March 26. Raed Al-Tabini and Rich Phillips worked at BRDC headquarters to update and revise the Water Basin Field Survey (Appendix 3). Work plans were also up-dated and follow-up activities planned for all the sub-projects (Appendix 4).

12) Tuesday, March 27. Rich Phillips returned to U.S.

Pilot Survey in the southern Badia of Jordan report

(Disi Basin)

20-21 of March, 2006

Reported by:

Engineer: Nawras Al-Jazi,

South Field Officer, NMSU Project

Southern Badia Filed center

SUMMARY

Disi Basin has wide range of the agricultural activities, big farms covers many locations above the basin, the amazing thing when you see the green landscape into the desert between Rum Mountains and Mudawara close to Jordanian and Saudi Borders. Bedouin farmers and big investors have drawing the future of the desert in the southern part of Jordan. The production of Potato, Alfa-Alfa, Apricot, Nectarine, Grapes, Peach, Wheat and Barley mostly covering the Jordanian Agricultural products market of vegetables and fruits, the A-classes of the production have exported abroad for USA, Russia, and many Arab country, due to the high quality of the products which have been gained due to the good reputation to ranking the high scores of competition in the global markets around. The High technology of irrigating such as Central Pivot, fertilizing, packaging are major components of maximizing the economical value to gain more and more of profits, as these farms settled onto the Disi Basin they might be irrigate in highly rates of pumping water which will affect negatively on the level of Disi basin into the next coming years, however, it should be under consideration the efficiency use of water in farming system. The project will focus on the economical impact of water use and how to keep the Map-route in the right track.

In Ash-Shamia Wadi in Ma'an, farmers (110 families) using collective wells in irrigating their orchards, and co-operative has been established to provide farmers of water through digging a well in the Valley.

Pilot Survey Activities:

The item is to test the questionnaire for gathering data about the wadi farming systems in order to apply it in the next coming survey.

(Two days in the southern Badia of Jordan – Disi Basin)

Farm of Sheikh Naif Zawaideh profile, Disi Village:

The project team has met Nawaf Khalil Sudan Al-Zawaideh, the son of Sheikh Khalil

Water story in Disi basin:

In 1960 a well has been dig after the "hunting visit" of the late king Hussein Bin Talal to Disi village, when the king has asked Sheikh Khalil "where do you obtain drinking water from? The Sheikh answered " we get drinking water from Rum village, there was a spring channel – 4 km far away from Disi village- " then the king has encouraged him to dig a well into Disi village, which the first digging well into Disi basin.

Sheikh Khalil has established his own farm in 1968, 700 Dunums (70 ha), One well with a 80 m depth, there are (4) Egyptian-workers working in the farm, the wages are (150) JD per month for each one, there are two reservoirs belong to the well, One tank to irrigate people in Disi village while the other one for agricultural uses in the farm, they pumping water from the well into a pool to hold water and re-pump it again to irrigate plants on scheduled irrigation systems, The water is free of charge,

Fruits and vegetables:

The following crops are in the Sheikh Khalil's farm

Crop	Quantities Dunum (0.1 ha)
Olive trees	2000
Figs	100
Pomegranates	50
Potato	70

Fertilizers (NPK -20:20:20 and Urea) are the main types which added to the soil, the cost of Fertilizers about 2000JD/ year.

The Chickens- Manure (40 Tones) yearly added, the cost of manure is 400 to 450 JD per annual.

The well-depth is 80 m; in the initial stages of pumping water is 100m³/ hour, Nowadays, it pumping 40 m³ / hour.

Ho'amel Al-Meznah Farm's profile:

Ho'amel has a farm in Al-Taweel village in Disi basin area, about 89 dunums out of 150 dunums cultivated by trees and vegetables as follows:

Recently the government has ask them to pay for water, farmers are suffering from this decision,

They are suffering from the Water-bills, there is a reservoir nearby his farm, and usually they pay money for irrigation purposes to the Water Authority, nowadays, they get water pipe within (0.5" in diameter of the main lateral irrigation pipe) which provide no enough water to irrigate the trees and vegetables,

Due to the insufficient irrigation water, farmers have prepared big pools to hold water in order to schedule the irrigation systems to make sure that all trees and vegetables have their needs from the water.

Mr. Ho'amel said "in spite of the truth that we are on the biggest basin in Jordan, but we are suffering from the lack of irrigation water!!).

They are sending the olive fruits to the Olive Press in Disi (this press belongs to the Al-Hussein for Agriculture Co-operative.

labor-hood in the farm: there are (4) Egyptian workers working permanently bases with (120 JD/ month) for each one, they usually hire a local workers mainly in harvesting season, they prefer women rather than men due to the women good and active workers, around (30) local workers working for (2) to (3) months (harvesting season), local worker wages are (4JD/ day).

Farmers are suffering from the Lack of agricultural extension.

Fertilizers and Pesticides: farmers getting the fertilizers (Mainly Urea) from the Providers in Amman.

The transporting wages for bringing the fertilizers, Pesticides, Insecticides, and for transferring production from and to Amman are relay on farmers. So it does make additional production costs.

There is fluctuation of Olive production from year to another year, they do not send the olive production to Amman, and they press the olive in Disi with (10 piaster/ 1 Kg) olive to convert it to olive- oil.

Farmers sending the yield to Amman Vegetables Central Market (AVCM), usually they enforced to send their production to the providers companies in (AVCM), as the Merchants provide farmers with fertilizers, Pesticides, Insecticides, and other agricultural tools, farmers have to give them all the yields to cover the expenses which have been taken during the season, farmers will gain the rest of the money if the production prices covering the costs firstly.

The prices are varying from time to another depending on the demand into the market.

Crop	Quantities Dunums (0.1 ha)
Olive trees	1000
Lemons	10
Grapes	800
Pomegranates	50
Vegetables (such as Tomato, Squash, Bean...etc.)	85

Rum Agricultural Company:

Rum Agricultural Company was established in 1986 in the midst of desert in Disi Basin to be the model of modern agriculture in producing different varieties of fruits, crops and vegetables.

Total area of the farms is 50,000 Dunums (500 ha)

The cultivated and planted area is 30,000 Dunums (300 ha)

About 27,500 Dunums (27,500 ha) planted land

There are 28 wells for irrigation all sectors of the farm

All trees are trickle irrigated system

Water Melon is trickle irrigated system

Olive production is going to Amman Vegetable Central Market

Crop	Planted land (Dunums)
Trees	6,000
Forages (Alfalfa)	4,500
Potato	6,000
other Vegetables and olive	6,000
Water Melon	5,000

**Table of Rum Agricultural Company products
(this figures from the Rum brochure)**

Crop	Quantities (Tonnes)
Grapes	2,000
Peach	350
Plum	300
Apricot	300
Nectarine	300
Fig	100
Bear	100
Apple	3,400
Cherry	20
Calamondin	200
Water Melon	1,500
Melon	1,000
Lemon	200
Vine Leaves	60
Potato	20,000
Onion	5,000
Garlic	500
Beans	300
Peas	150
Bean	100
Turnip	300
Alfa-Alfa	3,000
Corn	1,000
Barley	2,000
Wheat	6,000

Meeting with Eng: Gassan Abu-Zahrah, director of the Rum farms:

The main points coming out of his briefing about his company:

- ✦ The farm has established into a unique place in Jordan (Disi Basin), which is very important area to an agricultural production beside of Jordan River area, and North Part agricultural area, those three areas have integrated relationship between them in agricultural production for whole country
- ✦ Rum Agricultural Company is the biggest agricultural company in Jordan.
- ✦ According to this formula and the distribution of these areas make the vegetables production is available during the season
- ✦ Upon our experience into farming system in Saudi Arabia (Astra Agricultural Company, the owner is Mr. Sabeeh Al-Masri) we were thinking of establishing this farm to be a good example in Mediterranean area for agricultural production adopting the modern methods of farming system, the company has imported from California- USA; a suitable trees to plant in our farms in Saudi Arabia, there was success of that, then we transmitted our experience to Jordan.
- ✦ Most of tree- varieties have been tolerated to the Jordanian atmosphere, mainly Nectarine, Peach, Apricot, and Plum trees.
- ✦ The main obstacle has facing the company is the “Marketing” , he think than the problem is there is no strong coordination between the private and government sectors to create “Marketing Strategy” mainly of the southern agricultural products
- ✦ This area has an excellent soil, and high quality of irrigation water to establish tremendous farms to support the agricultural production in Jordan
- ✦ Labor-hood in the south as you know, it is a Bedouin culture characterized by slowly of accepting the hand- work, it needs time to convince them to be a good agricultural -worker, so that the Bedouin workers in this farms prefer to be as drivers and guards.
- ✦ There is a hope to convert Bedouin people – with the time- to be a good agricultural workers, for instance, we are proud of Sheik Khaled Al-Attnah, as Bedouin model and representing the smart, improved, motivated, and he is on the right track, as you know, Sheikh Kaled has a modern farm in his area (Al-Mudawara)
- ✦ The agricultural agenda should focus on every single water- drop! How to utilize it into proper way by planting the right plants(plants with less consumptive use of irrigation water)
- ✦ About 56% of early planted products in Jordan has been produced by our company here in Disi
- ✦ All the planted fruits and vegetables might be will cost 3 to 4 times if Jordan going to import them from abroad.
- ✦ Rum farms producing 99% of Alfa-Alfa for Dairy farms in Jordan
- ✦ Rum farms producing 30% of Garlic & Onion for whole country
- ✦ Rum farms is trying to coordinate the water uptake in planting many plants amongst the farmers in order to avoid the lack of rainfall periods for whole region mainly for Potato production
- ✦ Most of farmers losing their production due because of mismanagement, misplanning which affecting the expected-outlets or profits.

- ✚ There is a need to plant economical plants in the south of Jordan, even in Wadi Araba area. Farmers should aware of the national income regarding their concern into their incomes only.
- ✚ Without any regulations of utilizing the water the government can not control the production process such as planting Potato.

Questions coming after the Eng. Gassan Presentation:

Dr Odeh has asked the following questions:

1. In spite of your tremendous work of converting this place into green spot, why you still describe it of "Desert"?
2. Does the early production of some fruits relay on the weather or not?
3. Does the water table level steady or not steady in Disi basin?

Answers by Eng. Gassan as follows:

We are – Rum Company – with the nature and not against it any more, we planted the suite trees and vegetables after testing the verities that could tolerate with our regime (ex. the chilling periods (hours) under consideration into our region)

The early- production is due to the hot weather, and planting earlier-varieties of plants, the sun-shine daily which enhancing the photosynthesis process, high evapo-transpiration, which will lead the highly growth rates, however, there is no soil borne diseases (Production of class- A; of Potato yields).

According to our observations about the water table we found the water table is not steady, we think it is renewable, while the officials says the water table in Disi basin is steady.

Dr Rich question: "how can you determine the consumptive use of water for the plant?"

Answer "we use our experience in determining the consumptive use of water for each plant; we do truly monitoring the needs day by day for all plants here, for instance the Potato needs from 1000 to 1100 ml / Dunum

There are 3 types of production:

1. Winter-planting April
2. Summer planting at August
3. Autumn planting at

Dr Raed Tabini question: "what are your labor-hood profiles?"

Eng. Gassan's answer: "Labor-hood profile that most workers are Egyptian, local women more active and good workers, it is to convince them of the work tasks, while men preferring to work as guards and drivers.

Dr. Jim Question: "how can you sell your production in Amman?"

Eng. Gassan's answer: "we can not sell directly to Amman market, porkers have major role of selling the production because they have their own channels to re-sell it and distribute it to smaller markets, and they could sell it abroad for Arab countries or Europe, and America.

Once, Rum Company directly exported to the Europe 1000 tones of Grapes and Peach."

Dr Raed Tabini question: " Does your price differ than other small farmers around?"

Eng. Gassan's answer: " No, same prices, and may be our prices are less than others because the porkers/ Merchants looking to our farms as big company they are trying to gain more from us by reducing our products-prices, however, our company is considered as a big producer, so it is difficult for us to deal with small supermarkets, small merchants can not absorb the whole quantities into there stores directly, we have to go directly to merchants and porkers."

Dr Rida Question: "who is control the price of the products?"

Eng. Gassan's answer: "there is an auction system in Amman-market controlled by porkers and merchants as well.

Israel get high prices for their production in the international markets, while our products within their best quality mainly in trees-production but less prices in the international markets. The Israeli-people had desire to buy our products to re-sell it in high prices, but the problem is...

Our last recommendation is "the Agricultural Agenda should focus on the following:

- Actual Market Demand on Fruits and Vegetables
- Production Comprehensive Plan
- Controlling the Marketing Strategy

(Note: A Production leaflets have been distributed to the NMSU and BRDC teams)

Sheikh Khaled Al-Attneh, Al-Mudawara

Sheikh Kaled is a good example of the Bedouin farmer who has good reputation through his modern farm in his area, Al-Mudawara Village close to Jordanian & Saudi borders, most of the people in Al-Mudawara from one Tripe called "Al-Auttune" with about 2000 people in it, there are 4 big farms in this area as follows: Al-wafa farm, Gramico Agricultural Company, Al-Arabia Agricultural Company and Sheik Kaled Farm.

Sheikh Kaled has two farms:

1. First farm located on the High-way Road, it is 350 Dunums (35 ha) planted in Water-Melon (400 Dunums, 40 ha), Potato (1500 dunums, 150 ha) the rest of the farm planted in Apricot, Peach, Plum, and Grapes trees.
2. Second farm located into amazing zone which is between the mountains in the west part of Al-Mudawar, far away from the High-Way Road about 17 km, it is 400 Dunums (40 ha) planted with Grapes, Peach, Apricot, Potato. There are 2 wells; the pumping rate for all of them is 40 m³/ hour.

The labor-hood consists from the local community such as technicians, drivers; they have been trained into the farm and working permanently. There are 15 permanent local workers during the whole season.

In the harvesting period farm needs more workers to harvest the yields mainly the workers are Egyptian ones.

- **The field director:** Abu Salameh, brother of Sheikh Kaled
- **The marketing director:** Abdullah, the second brother.

Both of his brothers getting permanent salary each month (300- 400 JD/ month), they might get part of their salary while the rest goes as saving money as deposits to invest in the capital of the company (partners with the owner, Sheikh Kaled).

In spite of the lack of agricultural-extension; they gained experience-by practice and some help by agricultural engineers - could help them to rely on themselves to manage the farm, scheduling the irrigation systems, using fertilizers, controlling the insecticides, pesticides, monitoring the workers during the farming activities, and marketing.

There are demonstration production units to test new varieties of trees, testing new fertilizes, insecticides, pesticides in order to make sue the suite products might be adopted into the farm. The passed trees-varieties directly will be planted into the prepared cultivated lands.

Fertilizer- uses: according to Sheikh Kaled's experience that each tree needs 180 units of Nitrogen during the season which equal to 50 Kg of Ammoniac or Urea per dunum.

There was a **Marketing-Agenda** between Arab countries (Saudi Arabia, Syria, Lebanon, and Jordan) which are outlining the limits and lines of the Importing and Exporting of agricultural products and to organizing the exchangeable quantities among them, unfortunately, the marketing agenda has stopped since 2005.

The planting intensive rate; Sheikh Kaled has invited the farmers several times to make agreement to agree on a certain plans to control the quantity of the production; but no one followed the agreed plans.

Production-Export: There is a competition between farmers to produce high-quality of production in order to get access to the international markets such as Europe in order to maximize the profits. He determined the profits of 25% in case of exporting the production abroad.

Dr Rich question: "what will happen to people if the farming system has stopped?"

Sheikh Kaled: "they were Bedouin before farming system, if it is gone, they will return back as Bedouin life-style" which means there is no significant effects on them!"

Internet service not found in Al-Mudawara yet, there was a trail from the youth to get an internet café in the village to serve young people and for farming system to get wide range access to international markets; but there is no infrastructure to gain the internet services, BRDC might in the future could help to establish an internet unit here.

Visiting As-Shamia valley:

There are 110 families participated in As-Shamia Co-operative, they have dogged a well in the year of 2001 into the valley to irrigate their orchards, the well is 150m in depth, its pump rate 37 m³ per hour while in winter is 50 m³ per hour, there are two reservoirs holding water to re-pumping the irrigation water again, two workers managing the well- station as operators and guards- the cooperative paying them 100 JD each, they are selling water to other people into 6 piaster for one cubic meter while the cost of it 10 piaster, they are losing 4 piaster into each one cubic meter! Also they are participating of providing drinking water to the Bedouin, providing water to burden a dead people of the funerals freely as well. The electrical bill is 200-300 JD monthly,

The co-operative have get fund from many companies to re-building the destroyed irrigation channels by the flood which happened in the 3rd of February 2006. There are still 60 farms without irrigation water.

(The detailed information about Ash-Shamia valley into the Ash-Shamia report, prepared by the Southern Badia Field Center)

Visiting Desert Co-operative in Ma'an:

The Desert Co-operative has established in 2004, it consists of a 12 members, the co-op at the moment digging a well; they have Olive-farm, and planting other plants such as Cactus, A triplex trees.

There is a swage sludge collecting pool – UN treated swage- used to irrigate forages there.

Pilot Survey staff:

1. Dr Richard Phillips, Senior Project Manager, NMSU
2. Dr Jim Libbin, Financial Management, NMSU
3. Dr Carlos Rosencrans, NMSU
4. Dr Raed Tabini, Vice-chancellor, BRDC
5. Dr Odeh Meshan, Southern Badia Field Center Manger
6. Dr Rida Al-Adamat, BRDC
7. Eng Nawras Al-Jazi, Southern Badia Center Staff

	<p>Farmer & farm profile: Ibraheem AL-Mogairbi Diploma in mechanical engineer. His father started his agricultural work at 1987 in vegetable farming; at 1992 they start farming fruit only. Trees number 50 000. Farm area 450 dunums = 45 hectare. Tel: ++962 77 7326517 Farm Address: Al-Mafraq – Al-Koum http://www.organic.org.jo/farmers1.asp Year Established: 2003</p>
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Farm development:

To be distinct he decides to develop his work before 15 years when he visited France (the fruit producer co-op), and other agricultural organization in Italy. He develops his work through agricultural technology transfer and by developing some kind of technique related to his farm, like:

- Every year he importing new species and Develop it, then he plants the most productive and suitable for the Badia area.
- Some changes in cultivating ways.(V Shape, thinning...)
- Irrigation system. (2 irrigation line under the tree) one well
- Intensive farming system (better quality and quantity)
- New species start its production from 20th April to 15th October, varying times to guarantee marketing whole production.
- Tree root name JF677.
- Last year the farm gets the EURO GAP certification.



The farm and local community:

- Permanent employees about 25 Egyptian and 7 Jordanian.
- Seasonal workers about 100 women from the local community work for 7-8 months during the year. Workers reward each day = 4 JD = 5.64 \$, work duration from 7 am to 3 pm included 1 rest hour
- The worker from 5 villages around the farm.
- Manure cost 9000 JD paid for sheep farmers from the local communities.

Production and marketing information:

- Each dunums produce 8 tons of fruit, which means 3-4 times more than traditional way of planting.
- Each tree bloom about 2000 flowers, they thinning it to be about 500 flowers.
- Trees age 24 months.
- The farm has its own trade name and packaging boxes.
- They marketing their product in the central market in Amman, to Syria, gulf countries, and this year they looking to marketing in Europe market, Syrian traders re exported it to Europe and gulf markets.(as Ibraheem say Syrian traders buy his product for 3 reasons 1:Jordanian fruit harvesting before Syrian fruit,2: best in quality, 3:they has good relations in these markets)
- They sold some of their products to Iraqi markets.

- He sold some of his product in the local markets in order to keep his name inside Jordan (not to loose his name)
- The farm has its label don by organic farming project in cooperation with the BRDC

Euro Gap

- Last year the farm gets the EURO GAP certification.
- By using new irrigation technique, the irrigation system becomes more efficient by monitoring soil moistures.(the irrigation time decline from 48 hour to 24 hour)
- EURO GAP help him in documentation system for all farm activities
- The data storage capacity about 250000 in each 15 minute.
- More than 3000 meter of cables carrying information from the sensors –in 8 spots- to the main computerized machine.
- Documenting spraying system and monitoring insects before and after spraying.

Other activities:

- Ibraheem run training project for fruit farmers in northeast Badia funded by USAID.
- USAID build very advanced weather station in his farm.



	<p>Farmer & farm profile: Sami Al-Rahal Education: A-level He started his agricultural at the beginning of 90th. Trees number: Peach 2000, Plum: 500, Nectarine 2200, Olives Tree 1400. Farm area 400 dunums = 40 hectare. Tel: ++962 79 972622 Farm Address: Al-Mafraq – Naifah http://www.organic.org.jo/farmers1.asp Year Established: 1999</p>
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Farm development:

According to his limited resources he tries to develop his work depending on himself- step by step-, he takes 50000 JD credit from the Agricultural Credit Corporation in Jordan, he decide to make varieties in farming activities so he plant about five kind of trees such as Peach, Plum, Nectarine, Olives Tree, and grapes, the age of the trees from 2 to 5 years, on the other hand he keep planting about 100 dunums with vegetables.

- Every year he plant new peace of his empty land.
- He doesn't use new kinds of techniques because of limited resources.
- Irrigation system. (drip irrigation system) one well

The farm and local community:

- Permanent employees about 3.
- Seasonal workers between 80 to 100 men and women from the local community (Jordanians) they work for 4-6 months during the year. Workers reward each day = 4 JD = 5.64 \$, work duration from 7 am to 3 pm included 1 rest hour
- The worker from the villages around the farm.
- Manure cost 1500 JD paid for sheep farmers from the local communities.

Production and marketing information:

- No available data about fruit production / dunums/year.
- Olive oil production: last year 1400 olive trees produce (3.4) ton of olive oil, tree production depends on tree size, irrigation...
- Olive tree age 5 years.
- Other trees age from 2 to 5 years.
- They marketing their product in the central market in Amman, to Syria if available.
- He sold most of his product in the local markets.
- The farm has its label don by organic farming project in cooperation with the BRDC



	<p>Farmer & farm profile: Zaed Arab Al Oun He started his agricultural work at 1982 in vegetable farming; at 90th they start farming fruit trees. Trees number: Nectarine 13000 tree, Plum:13000 tree, olive:12000 tree, Peach 40 dunums, grapes 60 dunums, apricot 40 dunums, vegetables 440 dunums . Farm area 450 dunums = 45 hectare. Tel: ++962 2 6272025 Farm Address: Al-Mafraq – Sabha http://www.organic.org.jo/farmers1.asp Year Established: 1982</p> 
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Farm development:

He plant many kind of fruit trees, and vegetables, also he still raising sheep, and other kinds of crops like wheat barley

- he build dam in his land by himself
- Irrigation system. (drip irrigation system) 2 wells

The farm and local community:

- Permanent employees about 3.
- Seasonal workers about 90 men and women from the local community
- They work for 6-7 months during the year. Workers reward each day = 3-4 JD \$, work duration from 7 am to 3 pm included 1 rest hour
- The worker from the villages around the farm.

Production and marketing information:

- No available data about fruit production / dunums/year.
- Olive oil marketing: in the local markets
- Olive tree age more than 10 years.
- Other trees age from 2 to 10 years.
- The farm has its label don by organic farming project in cooperation with the BRDC
- They marketing their product in the central market in Amman, to Syria if available.

He sold his entire product in the local markets



Farmer & farm profile:**Mohammad Rakad Al Shabeeb**

Trees: Nectarine tree, Plum: tree, Peach trees, apricot, vegetables 250 dunums

Farm area 3000 dunums

Tel: ++962 795562900

Farm Address: Al-Mafraq – Rahbat Rakad

Year Established: 1992

Farm development:

- he plant many kind of fruit trees, and vegetables,
- He use new agricultural techniques and agricultural specialist.
- Irrigation system. (drip irrigation system) 4 wells

The farm and local community:

- Permanent employees about 20, monthly salary 130 JD= 183\$.
- Seasonal workers about 250-300 worker from Syria, Pakistan, Egypt and 25 women from the local community
- They work for 5-6 months during the year. Workers reward each day = 3-4 JD \$, work duration from 7 am to 3 pm included 1 rest hour

Production and marketing information:

- No available data about fruit production / dunums/ year.
- Other trees age from 1 to 13 years.
- They marketing their product in the central market in Amman, and Syria.

Jordan Water Use Patterns by Socioeconomic Status of Jordanian Farmers in Mafraq and Disi Basins

**Jordan Water Use Patterns by Socioeconomic Status of
Jordanian Farmers in Mafraq and Disi Basins**

1 **Basin:**

2 **Farmer Name:**

3 **Company Name:**

4 **Address/Telephone:**

5 **Area Farmed (DN) in 2005:** **Owned:** **Rented:**

6 **Marketing Information for 2005 Crop**

Crop	Harvest Date	Vol. Sold (T)	Avg. Price (JD)	Market	Broker Financed (Y/N)	Transported (Owner/Contract)

7 **Non-Well Sources of Irrigation Water**

<i>Source</i>	Water Used (m ³)	Area Irrigated (DN)	Crops Irrigated (List)
Water Harvesting			
Waste-water			

Source of waste-water _____

How much rainfall during 2005 (mm)? _____ **How was it measured?** _____

8 **Has the water table dropped in the past five years?**

If so, by how much (meters)? _____

How do you know? _____

Wells Used for Farming in 2005

Well ID #	Ownership (Own/Rent)	GPS Coordinates		Capacity			Specifications						Well Costs				
		Latitude	Longitude	Area Irrigated (DN)	Water Pumped (m ³ /year)	Discharge (m ³ /hr)	Water Meter (Y/N)	Depth (m)	Casing Size (in)	Water Table (m)	Motor Size (hp)	Energy Source (E,D,S,1)	Energy Cost (JD/year)	Gov. Bill (JD/year)	Rent (JD/year)	Maintenance (JD/year)	
1.																	
2.																	
3.																	
4.																	
5.																	
6.																	
7.																	
8.																	
9.																	
10.																	

10

Vegetable Crops - 2005

Vegetable Crop	Planting Date	Harvest Date	Area (DN)	Plant Spacing (cm x m)	Irrigation System Type (D,S,F)	GPS Coordinates		Do You Use These? (Y/N)							Avg Yield (T/DN)	Water Used (m ³)	Water Cost (JD/Crop)	
						Latitude	Longitude	Tractor	Tunnel	Mulch	Fertilizer	Herbicide	Insecticide	Fungicide				
1.																		
2.																		
3.																		
4.																		
5.																		
6.																		
7.																		
8.																		
9.																		
10.																		
11.																		
12.																		

10

Vegetable Crops - 2005

Vegetable Crop	Planting Date	Harvest Date	Area (DN)	Plant Spacing (cm x m)	Irrigation System Type (D,S,F) ¹	GPS Coordinates		Do You Use These? (Y/N)							Avg Yield (T/DN)	Water Used (m ³)	Water Cost (JD/Crop)
						Latitude	Longitude	Tractor	Tunnel	Mulch	Fertilizer	Herbicide	Insecticide	Fungicide			
1.																	
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7.																	
8.																	
9.																	
10.																	
11.																	
12.																	

11

Tree or Grape Crops - 2005

Tree or Grape Crop	Planting Date	Harvest Date	Area (DN)	Number (Trees or Vines)	Plant Spacing (m x m)	Irrigation System Type (D,S,F)	GPS Coordinates		Do you use these? (Y/N)						Avg Yield (T/DN)	Water Used (M ³)	Water Cost (JD/Crop)
							Latitude	Longitude	Tractor	Mulch	Fertilizer	Herbicide	Insecticide	Fungicide			
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11.																	
12.																	

Jordan Water Use Patterns by Socioeconomic Status of Jordanian Farmers in Mafraq and Disi Basins

15

Number of Employees per Education Level

<i>Employment Status</i>	No Education	Elementary	Secondary	Technical School	University
	Permanent				
Seasonal					

16

Socio-Economics of Self-Employed Farmers

_____ **Farmer's Age**

_____ **Do you live on-farm? (Yes/No)**

_____ **Level of Education** (No Education, Elementary, Secondary, Technical School, University)

_____ **Primary Profession**

_____ **Number of family members supported by farm income**

Yes _____ No _____ **Is farming your main source of income?**

25% _____ 50% _____ 75% _____ 100% _____ **Percent of family income from farm**

_____ **Other sources of income**

25% _____ 50% _____ 75% _____ 100% _____ **Percent of family income from other sources**

Yes _____ No _____ **Do you manage daily farming activities (Y/N)**

_____ **If No, who does?**

Yes _____ No _____ **Do you have access to farm credit (Y/N)**

_____ **If yes, from where?**

Yes _____ No _____ **Did you finance your farm in 2005 (Y/N)**

_____ **Amount of loan (JD)**

17

Who do you rely on for advice on:

_____ **Crop Selection**

_____ **Business/Marketing Decisions**

_____ **Irrigation**

_____ **Fertilizer/Pest Management**

18

Have you attended training on irrigation and water use? Yes _____ No _____

19

If yes: **When** _____

Where _____

Who provided the course _____

20

Have you ever used the internet? Yes _____ No _____

21

If Yes, did you use it for information on:

Farming Practices Yes _____ No _____

Business Information Yes _____ No _____

Marketing Information Yes _____ No _____

Project	Activity	Due By	Responsibility	Sent to
Cooperative	Modify the Anaheed reports numbers and suggestions	12/4/2006	Ismaiel	Dr. Bill & Jim
	Prepare draft 2 of the report	12/4/2006	Ismaiel & Dr. Salem	Dr. Bill & Jim
	Modify the Dairy project inputs	12/4/2006	Ismaiel & Dr. Salem	Dr. Bill & Jim
	Community Development Map	12/4/2006	Dr. Rida	Richard & Dr. Bill
Rangeland Rehabilitation	Input Data : Sheep owner Flock ,Dier kahaf Flock as New Mexico format	16/4/2006	Dr. Raed & Dr. Hani	Dr. Jim
	Compare the data of the Range project with sheep cost	16/4/2006	Dr. Raed & Dr. Hani	Dr. Jim
	Carrying Capacity	16/4/2006	Dr. Raed & Dr. Hani	Dr. Jim
Water Basin	Take GPS for all farms in the South	16/4/2006	Nawras	
	BRDC + NMSU trip /March 2006 : Finish the Map : Farms in south, Range site, Dairy	12/4/2006	Dr. Rida	Dr. Raed & Richard
	Prepare the farmers visit report: south & north	3/4/2006	Ismaiel & Nawras	Dr. Raed & Richard
	Prepare farmers list having: farmer name, farm area, coordinates, farm type	20/4/2006	Dr. Rida & Ismaiel & Nawras	Dr. Raed & Richard
	Ismaiel Thesis – Translate to English	20/4/2006	Ismaiel	Richard
	Rida Thesis Abstract and summary if possible	20/4/2006	Dr. Rida	Richard
	6- Prepare final draft of the questionnaire – BRDC – NMSU	1/5/2006	Dr. Rida & Raed & Richard	Whole team
	7- Test the questionnaire - BRDC – 1 month	1/5/2006	Water Basin Team in Jordan	NMSU Team
	8- questionnaire coding – NMSU	1/5/2006	Water Basin Team in New Mexico	BRDC Team
	Final version of the questionnaire: to start survey	1/6/2006	Water Basin Team in Jordan & New Mexico	Whole team
	Exact Coordinates of the South Basin & North	9/4/2006	Dr. Rida	Richard
	Email to Rich about GIS Center of NMSU	9/4/2006	Dr. Rida	Richard

Project	Activity	Due By	Responsibility	Sent to
Shamia	Prepare a report as the Anaqeed: see Ismaiel	1/5/2006	Dr. Odeh & Nawras	Dr. Jim
	Survey 10-20 farmers	1/6/2006	Dr. Odeh & Nawras	Dr. Jim
General Issues	Annual reports of MoA in English-current years	1/6/2006	Ismaiel	Richard
	Central market information –daily prices	8/5/2006	Ahmad Rawajfeh & Ismaiel	
	Precipitation Map	6/4/2006	Dr. Raed	Jim & Richard
	Annual reports of WAJ in English-current years		Dr. Odeh	Jim & Richard
	Alfalfa varieties adapted to the Badia environment	16/4/2006	Richard	Mohammad Shahbaz & Raed
	Waste water application in Ma'an inform Bob	9/4/2006	Richard & Raed	Bob & Saad
	Follow up visit with GTZ	1/5/2006	Raed	Tochen
	Follow up visit with Partnership	1/5/2006	Raed	Raja