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WEST BANK
ACCELERATING ECONOMIC GROWTH
IN THE WEST BANK

USAID Grant PCE-G-00-97-00047-00

FINAL REPORT
AND
QUARTERLY REPORT OCT-NOV 2000

Submitted by

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**ACCELERATING ECONOMIC GROWTH
IN THE WEST BANK
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LAND O'LAKES, INC.

**Final Report
and
Quarterly Report for October-November 2000**

I. Project Summary

Dates of project: June 30, 1997 – November 30, 2000

Total estimated federal funding: \$1,700,000

Total spent: \$1,686,015

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This project, entitled "Accelerating Economic Growth in the West Bank," is a \$1.7 million grant from USAID's Global Bureau. Its goal is to generate increased economic return to the rural sector of the West Bank through high-impact, market-driven and community development assistance in the sheep and goat farm-to-market system. Land O'Lakes, Inc., in cooperation with American Near East Refugee Aid (ANERA) and Mid-East Peace Fleece, works with the sheep and goat producers in the Ramallah, Jericho and Jerusalem Districts. The target group is the rural Palestinian family -- men, women, and children -- who rely on sheep and goat production and marketing for jobs and income.

The project strives to improve the overall profitability of sheep and goat production by increasing the quantity and quality of milk and meat, strengthening community organizations that will further stimulate the sector's economic growth, creating a policy environment conducive to investment and growth, and strengthening domestic marketing activities. By accomplishing this, the project fit in the mission strategy for FY 1996-2000 of "Expanded Economic Opportunities" and contributed directly to the USAID-West Bank Mission's strategic objective (S.O. 1) as stated

in the Congressional Presentation: *“Small and medium producers increase the sustainable and marketable production of goods and services.”*

The project had four main components:

- **Extension Program:** a staff of field agents target 1,000 sheep and goat producers directly and 1,000 indirectly in the target areas with basic production and management information that ultimately increase the market-ability of their products.
- **Improved Genetics:** the project has purchased 50 genetically superior rams from Israel and has established a revolving ram fund at the Arabeh Station in Jenin. Palestinian farmers can purchase the superior rams and breed them with their existing flocks to increase productivity.
- **Cooperative and Community Development:** the project is seeking to work with existing farmer associations and cooperatives to support cooperative and community activities. These activities are anticipated to include self-sustaining services for members such as farm supply stores. As the cooperative and community structures are strengthened, additional, more advanced services will be explored.
- **Innovative Farms:** small capital improvements will be made for farmers who have been identified as “early adopters” of new methods of production. These innovative farms serve as realistic models that other farmers in the area can imitate to produce similar improved production results.

Based on review of the monitoring and evaluation system, the project has generated **increased family income of roughly \$1500 per family over the last year as a result of the Land O’Lakes project.** In many cases, the project has doubled project participants’ income. See the Land O’Lakes Internal Monitoring and Evaluation System section of this report.

II. Report for Period October – November 2000

This section covers the period of October - November 2000. The following is a summary of activities for the last two months of the project:

- The political crisis in October deeply affected the field activities. It was very hard for the in-country staff to reach the farmers due to the closures between the main cities and villages. An emergency plan was created so as to guarantee safety for the staff.
- Richard Boni conducted the final evaluation of the project. He visited the Land O'Lakes office for the first week of October, but his mission was not completed due to the political crisis. He was not able to travel within the West Bank and visit with project clients. He was able to meet with the Land O'Lakes Country Director and teleconference with the field agents. Due to the political problems in West Bank, evaluator Rich Boni returned to the U.S. on October 7 for safety reasons.

III. Land O'Lakes Internal Monitoring and Evaluation System

The monitoring and evaluation system was put into place in July, 1998. The eight field agents have recruited 30 participants each, for a total representative sample of 240 farmers. Field agents collect and record monthly data concerning specific multiple variables. Ongoing analysis of these variables over time (during the life of the project) enhances Land O'Lakes' ability to measure change in *quantifiable* terms and in the context of achieving anticipated project results.

To date, the project has generated results that clearly contribute to USAID-West Bank Mission's strategic goal (S.O. 1) of "*Economic growth through the enhancement of enterprise development.*"

The results are illustrated below and are based on comparisons between July 1998-June 1999 (FY1999) and July 1999 and June 2000 (FY 2000):

1. Additional income of \$509 per family from increased meat production. Meat produced increased 4% between FY1999 and FY2000. This increase represents a \$509,152 increase in income for program participants or approximately \$509 per family.
2. \$376 per family from decreased mortality. Live births decreased 2%. However, even though fewer lambs were born, more lambs actually survived, as mortality rate decreased by 34%. This decrease represents a \$376,380 increase in income for participants or approximately a \$376 increase per family.
3. \$617 per family raised as a result of increased milk sales. Milk production surged 26%. This increase represents additional income of \$617,640 for program participants or \$617 per family.
4. **The above represents an increased family income of roughly \$1500 per family over the last year as a result of the Land O'Lakes project.** In many cases, the project has doubled project participants' income. The farmers are using the additional income to: 1) purchase rams to improve the herd's genetic base and product, 2) add some selected ewes to the flock; 3) purchase health insurance for their families; and 4) institute some improvements in their milk sanitation and cheese processing systems.

Refer to Appendix C for a few of the impact stories gathered over the course of the project.

IV. Outside Evaluation Report by Richard Boni

The text of the evaluation report by Richard Boni, independent outside evaluator, is incorporated here.

I. Executive Summary

This Preliminary Evaluation Report of the Land O'Lakes program, "Accelerating Rural Economic Growth in the West Bank," is the result of a visit to Ramallah, West Bank from 29 September to 7 October 2000. The original schedule of two weeks was curtailed due to the widening crisis throughout the Israel, the West Bank and Gaza. During the visit, the evaluator was not able to meet with direct beneficiaries, Ministry of Agriculture officials, cooperatives and farmer associations, other donors, development organizations or USAID and was confined to Ramallah and visits to the Land O'Lakes office. Personal interviews were held with the Project Director, Dr. Wahib Tarazi; the field agents employed by the Project were interviewed by phone.

The evaluation design included formal interviews with project stakeholders and other development organizations as well as a review of project documents and administrative files. Questionnaires were prepared in advance to focus the evaluation and assure that the requested information was consistent for each interview. Additional questions were to be added as the evaluation developed. Draft samples of the questionnaires are attached in Appendix B.

Due to limitations on movement, considerable time was spent in the office reviewing files and discussing the program with Dr. Tarazi. While the phone interviews with the field agents were extremely helpful and designed to save time should the crisis ease and permit travel in the area, such interviews are difficult and inconclusive. A major part of this preliminary report focuses on project strategies and management tools as the interviews and file reviews conducted offered more insight on these evaluation components than on the others.

Section 1, Strategy Assessment, is a preliminary assessment of the overall project strategies. It outlines each strategy and explains how strategies were implemented, adjusted or added to the program. The review indicates that the program was able to effectively implement an extension strategy and to reach significant numbers of sheep and goat producers with technical information. Section 2, Assessment of Management Tools, reviews standard management tools utilized by the project. The Ramallah office utilizes several management tools effectively and maintains the focus on program beneficiaries. Discussions with Dr. Tarazi and the phone interviews with field agents shed light on one of the major issues confronting the program: Did data obtained from the Monitoring System accurately reflect actual improvements and program impact? This is discussed in item 2.6 Monitoring System. Section 3, Assessment of Progress, reviews, to the extent possible, whether or not the goals of increasing production and product output were achieved. Initial investigations indicate that success and impact are evident. Several 'Impact Stories' note that farmers who implement improved husbandry practices realize improvements in the incidence of disease and improved milk and meat production. The initial assessment reveals that measuring improved meat and milk production, the incidence of disease, live births, etc. is

difficult and that, at this stage, the focus should be on whether or not producers changed basic husbandry practices rather than on the collection of hard data. The remaining evaluation components are given less attention due to the lack of factual information and the inability to conduct field visits and interviews or make field observations. To the extent possible, each evaluation component is considered in light of the available information.

Preliminary recommendations are included under each section of the report. These should be considered based on the need to verify statements made during interviews already initiated. A summary of the recommendations is included in Appendix A.

A return visit to the West Bank would allow completion of the evaluation and provide an opportunity to offer a more realistic assessment of project strategies, program impact, sustainability and lessons learned.

II. Evaluation components

1. Strategy Assessment: To assess whether overall project strategy could have been improved to meet or exceed project goals was not possible due to an inability to interview direct beneficiaries, Ministry of Agriculture officials, cooperatives and farmer associations, other donors, development organizations or USAID.

Land O'Lakes and partners have developed a project with the goal of:

- *Generating substantial economic return to the rural sector of the West Bank through high impact, market driven, employment creation, development assistance in the sheep and goat "farm-to-market" system. (Page 3, Accelerating Economic Growth in the West Bank).*

Two major program components identified in the proposal were designed to accomplish the main goal. These were:

- *Sheep and Goat Improvement Extension Service: An intensive, three-year effort to deliver information and training directly to 1000 sheep and goat producers and indirectly to another 1000 producers. This effort would be aimed at increasing the market-ability of their products.*
- *Sheep and Goat Business Association Development: Assistance will be provided for the formation of district and regional sheep and goat producer associations to parallel the extension service. The purpose of these groups is to sustain the effective business and marketing support to the industry beyond the life of the project.*

The proposal states further that:

- *The overall impact to the project will be the development of a strong and sustainable sheep and goat sector that will generate increased economic stability for families in the West Bank's rural areas through expanded employment creation, domestic markets and exports for sheep and goat products.*

The major results anticipated would be:

- *At least 15% increase in profit margins*
- *At least 30% increase in value of overall output of livestock products*

1.1 Sheep and Goat Extension Service: This was designed to remove major constraints to improved quality and quantity of milk and meat products and was to take place in three phases; *Disease prevention, Production improvement and Marketing improvement.*

1.11 Disease prevention: The first phase, disease prevention, has manifested itself as the core of the Sheep and Goat Extension component. On paper, Land O'Lakes Field Agents are responsible for approximately 150 producers located in two administrative areas known as A and B. Each agent is also required to visit thirty (30) farmers monthly who participate in a Monitoring System designed to record the impact of the extension program. The Monitoring System is discussed in detail below. An effective weekly and monthly reporting system records the number of farmers visited, the number sheep and goats involved and the nature of the visit, (i.e., the recommendations given.) Often, agents meet farmers individually at their farms or in groups at Innovative Farms supported by Land O'Lakes.

The ability to affect a reduction in the incidence of disease depends largely on two conditions. First, farmers need to vaccinate against certain diseases, notably brucellosis. The Land O'Lakes program is not designed to provide vaccinations although field agents regularly recommend this course of action to farmers. The Ministry of Agriculture administers vaccinations but the consultant was not able to assess the effectiveness of the program. Field agents note that they regularly interact with Ministry extension agents but this could not be confirmed. Since many of the Land O'Lakes field agents worked previously at the Ministry, it is probable that there is interaction but the level of cooperation and coordination should be reviewed. Secondly, improved management on the farm will reduce the incidence of certain diseases, (e.g., mastitis.) The Land O'Lakes program seems well suited to delivering extension messages about improved farm management.

1.12 Production improvement: Due to the nature of extension and the need to address husbandry issues in a comprehensive manner, the first phase, designed specifically around disease prevention, also incorporated the general messages on basic husbandry practices that were identified as phase two *Production improvement* activities. A review of weekly and monthly reports indicates that the field agents are addressing all issues related to basic animal husbandry. It seems that most of the producers working with Land O'Lakes require continual reinforcement of extension messages revolving around these basic husbandry practices. The experience of the

Land O'Lakes field agents suggests that farmers implement such practices only once they see the benefits of the changes or are able to afford changes. The need for Palestinian farmers to see the benefits of implementing the changes recommended by the Field Agents resulted in the introduction of Innovative Farms described below.

1.13 Revolving ram program: As part of the production strategy, a revolving ram program was initiated with the sale of forty-eight (48) rams and 50 ewes. The Project Director of Land O'Lakes/Ramallah states that each ram sold is tracked and the results are recorded, (i.e., the number of pregnancies and live births.) This was not verified but photographs in the office indicate size differences in offspring. The revolving ram program did not reach the stage wherein proceeds from the sale of rams would be used to purchase more rams. This was due to an apparent breakdown of relations with Israeli ram producers. According to the Project Director, there are 150 improved sheep for sale at the sheep breeding station in Beit Quad. *This could not be confirmed through a site visit and the number probably fluctuates.*

1.14 Mobile Veterinary Units: As part of an effort to improve production and access to vaccinations, four (4) Mobile Veterinarian Units supported by ANERA had operated in four areas before 1996. After ANERA withdrew its support due to a change in USAID's funding priorities, three of the units are not operating. One unit, operated by the Livestock Cooperative in Hebron, is currently functional. The Land O'Lakes field agent operating in Hebron makes routine site visits with the Vet Mobile. Despite repeated and reportedly considerable efforts by Land O'Lakes to assist the Livestock Cooperative in Jericho with operating a mobile unit, the cooperative failed to keep the unit operating. The cooperative leadership apparently lacks a desire to assume responsibility for the unit.

1.15 Marketing improvement: The third component of the three-phase approach, Marketing improvement, has not yet been addressed to any great length. Despite the stated desire to generate *substantial economic return..... through high impact, market driven, development assistance in the sheep and goat "farm-to-market" system*, Land O'Lakes does not appear to have a well-considered strategy for improving marketing strategies *and market information collection and utilization*. The emphasis on developing business plans and to plan future expansion and joint ventures may not be adequate for the producers with whom Land O'Lakes is working. A simpler effort to assure the provision of market information may be all that is required at this stage.

There is reportedly a ready market for milk and meat. However, these markets are unstable and improved marketing information would help farmers adjust their marketing activities. For instance, a dry season forces farmers to cull herds due to the high cost of feed. This creates a surfeit of meat on the market at lower prices to the producer. Likewise, a wet season will produce the opposite effect. Additionally, imports affect market prices and if these imports are not timed properly, farmers will suffer. The availability of accurate market information could not be determined during the abbreviated visit. However, it seems that Land O'Lakes would do well to consider a strategy that addresses this important issue.

1.16 Key Leaders: The Project Director and field agents consider the concept of Key Leaders as very important to the program. Village leaders provide access to other farmers through their personal influence and ability to organize farmers. The idea to use Key Leaders as important conduits for distributing information was formalized with the strategy to develop Innovative Farms. This provides a venue to demonstrate the benefits of implementing basic changes to husbandry practices. Farmers visit the innovative farms either as part of formal trips or informally. Whether or not Key Leaders continue to train members of groups formed in their villages for this purpose was not discussed during the evaluation visit. It is not clear whether or the groups actually exist.

1.2 Strategic changes: During the course of program implementation, changes were made to the general strategy based upon field experience. This indicates that Land O'Lakes management continually evaluated results and experiences and acted accordingly.

1.21 Cooperative Development: A major change of strategy occurred in the April June 1998 period regarding the sheep and goat producers associations. Land O'Lakes management recognized that the history of introducing farmer-owned cooperative businesses in Palestine was not positive and to create new sheep and goat cooperatives or associations would be unproductive. Instead, the project would work with existing structures to identify opportunities to transform them into more functional, member-oriented cooperatives. The Sheep Breeder's Association of Jericho was assisted and is currently operational. *A field visit to the association's office as well as other cooperatives would shed light on the situation.*

1.22 Women's Component: Another beneficial change was the creation of a Women's Component during the April - June 1998 period. Since women perform a majority of the chores associated with sheep and goat raising, especially milking and milk handling, and the fact that in the Middle East men are not able to meet easily with women, there was an urgent need to create this component. Through the employment of a female extension agent, Land O'Lakes has been better able to access female farmers and to address their needs. All field agents noted that women seem more inclined to change farming practices and that they have strong influences on farm management decisions.

1.23 Innovative Farms: A third change in the strategy, which seems to have been effective, was the introduction of Innovative Farms as part of the Key Leaders strategy. Due to the common belief that demonstrating the benefits of adapting basic husbandry practices is an important method to change husbandry practices, the Innovative Farms strategy was first introduced in the January - March 1999 Quarterly Report. To date, five Innovative Farms have been established, one (1) in Ramallah, two (2) in Jericho and one (1) in Fassayal.

The Project has organized ten (10) or twelve (12) demonstration visits to the Innovative Farms. During these visits, farmers can see the innovations, discuss the results and learn more about farm improvement. Five additional visits were specifically for women. These demonstration visits seem to be an effective way to generate enthusiasm for the program, introduce farmers to improved farming practices, foster interaction and discussion among farmers and generally create an atmosphere of optimism for a better future.

1.24 Preliminary assessment of program strategies: The Land O'Lakes program has effectively implemented the two phases *Disease prevention and Production improvement* as one extension program. Farmers are visited regularly to discuss basic animal husbandry. The information provided is reinforced through repeat visits, distribution of the brochure entitled 'Raising Lambs' and a calendar that depicts basic husbandry practices in a simple and effective manner. There is a record of all farm visits and the recommendations provided.

The field agents, interviewed on the phone, were obviously very enthusiastic about their work and believed strongly that the extension component is effective and changing the practices of the farmers. A few agents noted that sixty percent (60%) of the farmers within their responsibility were making at least one change to their operations based on recommendations. Two field agents reported an astounding eighty percent (80%) rate of change implementation. Based on the simple nature of changes recommended it is possible that many farmers are making the changes. However, the current system does not adequately track the rate of implementation and it is impossible to accurately peg the rate of adaptation. To measure and provide the percentage rate of implementation may in fact elucidate the effectiveness of the program.

Interviewed separately, the field agents generally thought that the program could be improved through introduction of more Innovative Farms and more incentives for farmers, e.g., providing sponges for Artificial Insemination, salt blocks, ear tags, etc. This would presumably entice the farmers to cooperate more with the field agents, to keep more detailed records and to provide more accurate information. This thought could not be investigated but it may be assumed that farmers, if asked, would readily agree.

2. Assessment of Management Tools: The Land O'Lakes office appears to have utilized such basic management tools as annual plans, job descriptions, personnel training and evaluations and a financial control system. Additionally, a Monitoring System designed specifically for this program is in place. There was not enough time to assess each management tool but it appears that a more functional Annual Plan could have facilitated project management and program evaluation.

2.1 Annual Plan and work plans: The project has prepared an Annual Plan for general guidance. The plan lacks details and is not used very often. The reason for this is that the year plan is not functional and does not lend itself to regular utilization. Dr. Wahib Tarazi and each field agent develop weekly plans for site visits. This helps Dr. Tarazi and the field agents maintain and assure that the extension program remains on track.

Recommendation 1: Aside from using a general Annual Plan as a basic guide and the weekly plans currently in place, Land O'Lakes may want to consider a detailed Evaluation and Monitoring System that combines work plans for individual employees with a monitoring system for project management. Such a plan is useful in several ways. First of all, it helps management and employees focus on important aspects of program implementation. Secondly, it provides employees with structure, some of whom need it more than others. Finally, it allows employees

and managers to monitor the pace of implementation and identify problems areas that require additional attention. A Monitoring and Evaluation System would improve the ability of Land O'Lakes management to plan activities, monitor implementation and evaluate results.

2.2 Job Descriptions: Each employee has a job description.

2.3 Personnel training: Dr. Wahib Tarazi trained the field agents when they were hired. He stated that he spends considerable time reinforcing extension approaches with the staff every Friday. Through phone conversations, each agent displayed a better than average knowledge base and demonstrated a marked *Esprit de Corps* and level of enthusiasm for their work.

2.4 Personnel evaluations: Each employee is evaluated according to a general system developed by Land O'Lakes headquarters.

2.5 Financial system: The Land O'Lakes/Ramallah office follows a standard financial system establish by LOL headquarters. The monthly accounts are accrued by an outside firm. Since an audit had recently been completed, little time was spent on financial controls.

2.6 Monitoring system: At first glance, it appears as though Land O'Lakes created a very good system for analyzing the results of the extension efforts. However, closer analysis indicates that the system is inappropriate for the current program. First, in order for the system to be valid, farmers must keep detailed records. This is not the case among a largely traditional base of settled and nomadic Bedu herders. Field agents indicate that between one (1) and four (4) farmers among the thirty (30) each monitors the Monitoring System keeps detailed records, representing approximately 7 – 28 farmers out of a total of 240 tracked by the system. Secondly, there is a common reluctance among rural populations in the Middle East to provide information and this presents an obstacle to measuring program impact. In this case, field agents note that farmers are reluctant to provide accurate data for fear that it may backfire on them, (e.g. the government could use the data for tax purposes.) The reluctance to provide the information may be that the producers don't actually know the answer and don't want the field agents to discover this. While field agents know that the information provided is inaccurate, they try to reconcile this with their own observations and through indirect questions, e.g., asking how much cheese was produced to determine how much milk was produced: They then "guess" the correct figure. The result is invalid data regarding milk and meat production, live births, mortality rates, etc. Moreover, this inaccuracy has been recognized at least since April 2000 and one field agent indicated that it was known before then. It may be that the data are from 50% - 80% correct but the figure cannot be known and shouldn't be estimated. The data are incorrect.

It should be noted that each field agent stated that farmers keep general ledgers recording how much money was spent for feed, vaccinations, etc. and how much was earned through sales of live animals, milk, cheese, etc. The farmers reportedly know whether they are making or loosing money. It was also noted by field agents that many farmers are Bedu who live with their herds and know each and every animal by markings if not name. They reportedly know dates of birth, breeding history and so on. However, such knowledge may be anecdotal and does not lend itself to statistical data collection.

Moreover, the current Monitoring System is not appropriate for sheep and goat farmers who often have herds of over a hundred head and are not inclined to keep records on individual animals. It would be more appropriate to use the current system under the Dairy Directive for dairy farmers with fewer cattle, say 30 to 50 head. It is likely that such farmers are better educated and more willing to discard traditional farming practices, keep records and provide the information requested.

Recommendation 2: An alternative system to assess the impact of assisting the sheep and goat farmers would be to measure the rate at which recommendations for improved management are implemented. This approach relies on field observations and does not lend itself to as much inaccuracy as the current Monitoring System. Since it is universally agreed that the implementation of basic husbandry practices will benefit animal health and result in increased production of meat and milk and may improve profit margins for the producers, the rate of implementation would be an indication of success and indirectly, program impact. It should be noted that one of the standard recommendations is to keep detailed records. Once this message is accepted, the original Monitoring System could be revived or become more reliable. Also, measuring the rate at which farmers accept the recommendations or not would allow Land O'Lakes managers to alter extension approaches as necessary, capitalize on successful implementation and focus on the important issue: changing husbandry practices among producers.

Recommendation 3: Since producers reportedly know whether or not they are earning profits or suffering losses, Land O'Lakes may want to explore ways to obtain these data from farmers that would avoid the problems associated with requesting such information from farmers.

Recommendation 4: The current Monitoring System should be adjusted accordingly and used with dairy farmers participating in the new project. It is much more probable that these farmers keep detailed animal records or could be convinced to do so. Land O'Lakes management should be aware that system results may be flawed and that further adjustments may be necessary.

3. Assessment of Progress

3.1 Attained goals: The proposal states categorically that 1000 producers would be served directly by the project while another 1000 would be indirect beneficiaries. The number of farmers actively receiving extension services fluctuates depending on whether or not they want to continue meeting with the agents. In interviews with the Project Director and individual field agents, it was learned that some producers are not interested in the technical assistance without such incentives as sponges, ear tags, vaccination, salt blocks or financial assistance. It may be assumed that many farmers remain interested in technical assistance regardless of incentives and that field agents try to reach as many as possible. However, answers to the question, How many farmers do you visit in one month? varied wildly among the field agents. Answers ranged from 20 per month to 100 with an average of 48 – 57 per agent or a total average of 290 – 345 for the

group. It could not be determined how many of the visits were repeat visits and how many were new visits. These figures indicate that the number of farmers being served may be lower than expected. *Spending more time with each field agent in the field and in the office reviewing files would enable a better determination of how many beneficiaries are participating in the program.*

The weekly and monthly field reports do not adequately reflect the names of farmers visited and therefore the number of individual farmers being assisted directly could not be determined. The Project Director indicated that each field agent is responsible for roughly 150 producers and that the lists are available. While the lists were not produced indications are that the project has made an attempt to reach at least 1250 farmers directly. It should be noted that production runs of the brochure, 'Raising Lambs' and the Land O'Lakes calendars ran to 1300 and 1500 respectively, the later produced in 1999 and 2000. These are effective means of reaching rural producers. *Field visits, meetings with field agents, and a more thorough review of administrative files with each field agent are required to determine exactly how many farmers have been assisted directly and indirectly.*

Additionally, Land O'Lakes had expected to reduce the incidence of disease, increase milk and meat production, improve herd genetics, develop cooperative associations within the sheep and goat industry, create jobs, expand domestic and export markets and foster relations with the Israeli Sheep and Goat sector. The results would be at least a 15% increase in profit margins and at least a 30% increase in value of overall output of livestock products.

It is likely that many of the farmers assisted have changed certain aspects of their operations. However, there are several factors that affect production outcomes and it is difficult to attribute results to one change or another. The important point is that wholesale adaptation of the recommendations will eventually produce positive results.

3.2 Expanded markets: The local demand for sheep and goat products, primarily milk and meat appears to be high. This market, however, is small and unstable. Such factors as imports can affect the meat market adversely while wet or dry seasons also have an impact on the supply and demand for products. Additionally, the Palestinian export market is dependent on the Israeli authorities and such a condition does not lend itself to improvement until the market is more open and under less outside control. Furthermore, while Land O'Lakes predicts expanded export markets in its proposal, little was planned to actually affect this expansion.

3.3 Employment creation: Program management fails to address the issue at all except to mention in the proposal that by strengthening the sheep and goat sector and therefore improving profit margins, families may decide to employ more family members in the effort. Again, little effort was spent to assure that employment creation would be a result of the program.

4. Unintended consequences: The abbreviated visit did not provide time to focus on this component. One unintended result of the interaction between female farmers and the female extension agent has been her discussion of not only animal husbandry practices but also considerable attention to child nutrition. While it would seem that this is not necessarily a proper

use of time, in depth meetings with the female field agent and women assisted would elucidate this result.

5. Capture impacts: It would have been natural to use the data from the Monitoring System to claim substantial increases in production and profit margins as major impacts of the program. The Monitoring System developed to track the progress of 240 producers did not produce accurate or reliable data and is therefore an inadequate measure. The field agents are required to develop an 'Impact Statement' every month and these are used to demonstrate the effectiveness of the program. While these are useful, they are anecdotal and do not provide hard data that the monitoring system was designed to do. Therefore, it is not known whether the program was able to increase profits margins or total output as predicted in the proposal

There was not enough time to review the overall impact of the program. It would have been useful had Land O'Lakes measured the rate of adaptation of improved husbandry practices among farmers. As previously mentioned, field agents believe that the rate at which farmers adapted at least one recommendation is between 60 and 80%, a remarkable feat that demands further investigation. Had the agents been assigned the task of recording the levels of implementation, Land O'Lakes could have used the information for overall impact and success rather than relying on inaccurate data obtained from the Monitoring System. Field agents should review their records and adjust their monitoring system as recommended under *2.6 Monitoring System* above. The result would be impact stories depicting successful adaptations of improved animal husbandry practices among direct beneficiaries: There are several examples currently on file. Measuring the rate of implementation among direct beneficiaries would demonstrate widespread adaptation of improved husbandry practices and the overall success of the program.

5.1 Sheep Breeder's Association: The fact that the Sheep Breeder's Association in Jericho is operating and reportedly providing limited vaccinations and extension services without continuing assistance from Land O'Lakes is indicative of a program impact and success. This is especially true considering the history of attempts to build a cooperative sector in Palestine. *A meeting with the Chairman and other board members would facilitate using this story as an impact statement.*

6. Assess perception of Land O'Lakes among Palestinians, other development organizations and USAID: Due to the widening crisis in Palestine and Israel during the week of 9/30 – 7/10, 2000 only one meeting with an outside organization, ANERA, was possible. ANERA may be considered a stakeholder due largely to the initial level of cooperation at the beginning of the project. Land O'Lakes shared office space and personnel and administrative costs. The Director of the ANERA office believes strongly that the LOL program is very important as the only program being implemented in the Animal Production sector. He acknowledges that coordination between the two organizations could be improved especially regarding the loan program ANERA

operates for IFAD. After considerable difficulty in the past, relations between the two organizations are currently excellent.

7. Examine sustainability: There was not enough time to examine the sustainability of the program. It may be assumed that once farmers realize the benefits of implementing improved animal husbandry practices, they will continue to do so because of the improved bottom line.

The program does not effectively address the need to improve the ability of the Ministry of Agriculture or the private sector to provide effective extension services. If there will be a demonstrative improvement within the Animal Production sector in general and the Sheep and Goat sector in particular, the ability of the Ministry and/or the private sector to provide extension services must be acknowledged and improved.

8. Lessons learned: A brief visit does not suffice to comment broadly on *Lessons Learned*.

APPENDIX A

Summary of Final Evaluation Recommendations

APPENDIX A

Summary of Recommendations

Recommendation 1: Aside from using a general Annual Plan as a basic guide and the weekly plans currently in place, Land O'Lakes may want to consider a detailed Evaluation and Monitoring System that combines work plans for individual employees with a monitoring system for project management. Such a plan is useful in several ways. First of all, it helps management and employees focus on important aspects of program implementation. Secondly, it provides employees with structure, some of whom need it more than others. Finally, it allows employees and managers to monitor the pace of implementation and identify problem areas that require additional attention. An improved Monitoring and Evaluation System would improve the ability of Land O'Lakes management to plan activities, monitor implementation and evaluate results.

Recommendation 2: An alternative system to assess the impact of assisting the sheep and goat farmers would be to measure the rate at which recommendations for improved management are implemented. This approach relies on field observations and does not lend itself to as much inaccuracy as the current Monitoring System. Since it is universally agreed that the implementation of basic husbandry practices will benefit animal health and result in increased production of meat and milk and may improve profit margins for the producers, the rate of implementation would be an indication of success and indirectly, program impact. It should be noted that one of the standard recommendations is to keep detailed records. Once this message is accepted, the original Monitoring System could be revived or become more reliable. Also, measuring the rate at which farmers accept the recommendations or not would allow Land O'Lakes managers to alter extension approaches as necessary, capitalize on successful implementation and focus on the important issue: changing husbandry practices among producers.

Recommendation 3: Since producers reportedly know whether or not they are earning profits or suffering losses, Land O'Lakes may want to explore ways to obtain this data that would avoid the problems associated with requesting such information from farmers.

Recommendation 4: The current Monitoring System should be adjusted accordingly and used with dairy farmers participating in the new project. It is much more probable that these farmers keep detailed animal records or could be convinced to do so. Land O'Lakes management should be aware that system results may be flawed due to the record keeping practices of beneficiaries and that further adjustments may be necessary.

APPENDIX B

Questionnaires Used during Final Evaluation



**Questions for Farmers
Draft**

Name:

Location:

Number of animals:

 Sheep:

 Goats:

1. What is the biggest problem you have on your farm?

 Marketing

 Disease

 Mortality

 Milk production

 Breeding/fertility

 Water

2. Have any of these problems been resolved as a result of assistance from the extension agents

3. What changes have you made as a result of LOL extension assistance?

 Separated kids

 Used vaccines

 Built shade sheds

 Use colostrum

4. Have your profits increased? By how much? (Decreased? Stayed the same?)

5. Has your mortality rate decreased? By how much? (Increased? Stayed the same?)

6. Has your milk production increased? By how much? (Increased? Stayed the same?)

7. Has your meat production increased? By how much? (Increased? Stayed the same?)

8. Has your disease rate decreased? By how much? (Increased? Stayed the same?)

9. Did you purchase a ram as part of the program?

10. Do you share your knowledge with other farmers in the village or area?

10a. Have you visited an innovative farm identified by the extension agents?

10b. Have you visited a breeding station?

11. Are you able to sell the amount of milk or meat you want to sell?
12. How is marketing a problem?
13. Has the marketing problem changed recently?
14. How could the extension agents have helped you more?
15. Do you keep records? May I see your records?
16. Do you belong to a farmers association or cooperative?
17. Do you understand how member-owned cooperatives work?
18. How can cooperatives here change to benefit its members?
19. Do you think this is possible?

Questions for Field Agents Draft

1. How many of the farmers keep records?
2. How do they know the extent of their problems?
3. How many farmers do you visit on a typical day?
4. Have you seen direct changes on the farms you've worked with which you worked?
5. Roughly, what percentage of farmers changed their operations?
6. Did the farmers trust you in the beginning?
7. How many business plans have you worked on with farmers?
8. Has the key leaders idea worked?
9. Do farmers visit innovative farms?
10. Are women more likely than men to change their husbandry practices?
11. Is there a ready local market for increased milk and meat production?
12. Have you seen significant changes among the farms you visit regularly?
13. How many farms do you visit during a normal month?
14. How often are you able to visit farms that are not among the 30 farms in your monitoring system?
15. Can the Mobile Veterinary Unit work without NGO assistance?
16. Do you understand how member-owned cooperatives work?
17. How can cooperatives here change to benefit its members?
18. Do you think this is possible?

APPENDIX C

Impact Stories

West Bank Project Land O'Lakes

IMPACT!

Ram from Demonstration Farm Yields Better Lambs

Ahmad Abu Arra'a is a 48-year-old farmer from Aqaba village four kilometers north of Tubas in the north end of West Bank who has 71 head of sheep and goats. Previously, Mr. Abu Arra'a, an old member of the Sheep Breeders Association (SBA) in Nablus-Palestine, had only five (5) head of sheep. After he heard about Land O'Lakes' efforts within the association, he bought 40 head of sheep and contacted the field agents at Land O'Lakes for extension help. The agents began visiting him in Aqaba village, discussing with him the problems farmers usually face, such as high mortality, spontaneous abortions, and old and sick animals (low productivity animals).

After several agent visits to his farm, Abu Arra'a participated in a trip to Arabeh station for demonstrations on rearing and selecting Awassi sheep. On May 20, 1999, Land O'Lakes field agents Salah and Dawwas accompanied Abu Arra'a to buy an Awassi ram from Arabeh station. The ram he bought has the following heredity:

- Mother's productivity: 750-kg milk per year
- Grandmother's productivity: 677-kg milk per year

Before he bought the new Awassi ram, his ewes had already been artificially inseminated. He bought 13 more ewes, which the Awassi ram inseminated. On October 10, the first generation from the Awassi ram was born. There is a great difference between the lambs that belong to the Awassi ram and those produced from artificial insemination. Artificial insemination had been done with the semen from the Balady rams inside the farms. There is great difference in growth rates between the two, with the Awassi-bred lambs growing at a faster rate. See the picture on the next page.

On October 15, he sold the two rams he had because he wants to depend on the Awassi ram; he is also looking to buy another ram from the same breed. Mr. Abu Arra'a has 60 ewes: 39 Awassi sheep (Balady breed) and 21 Assaf sheep (hybrid). He wants to inseminate the Assaf ewes with the Awassi ram to get more profit.

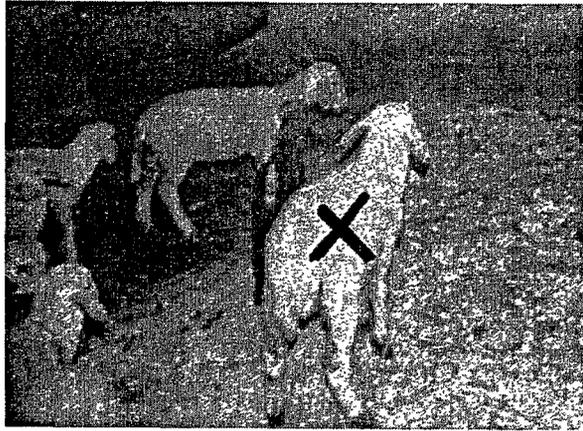
Mr. Arra'a also bought a Shami buck (male goat), which has very good meat and milk production, in order to make improvements in his flock of eleven (11) Balady goats.

✓ Farmer buys 40 sheep.

✓ Land O'Lakes field agents advises farmer.

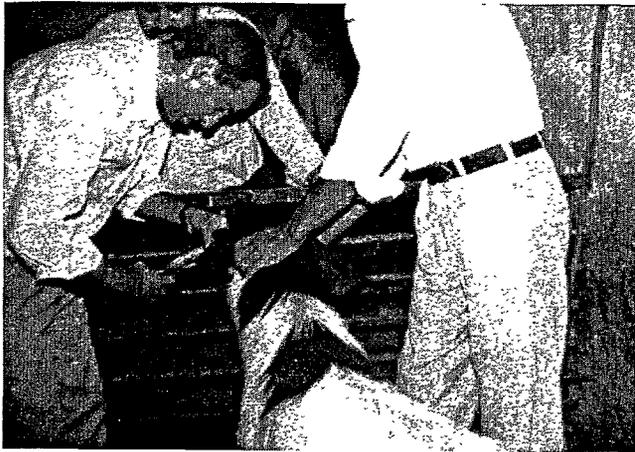
✓ Farmer buys Awassi ram from Arabeh demonstration farm

✓ Lambs from Awassi ram grow faster than others



The picture above shows the difference in size between an Awassi-bred lamb (marked with an "X") and lambs sired by a Balady ram.

In November 1999, Land O'Lakes agents visited the farm and assisted with eartagging and record keeping for his farm, in order to calculate both input and output, including treatment, vaccination, nutrition, selling, and farm needs. As of this writing, he has 25 newly born sheep, with zero mortality and no spontaneous abortions.



Above: Field agents Salah Abu Eisheh (foreground) and Quossay Abu Dawwas (background) assist in eartagging the sheep of Ahmad Abu Arra'a.

Mr. Abu Arra'a is now the chairman of the Sheep Breeders Association (SBA).

✓ **Zero mortality,
no spontaneous
abortions.**

✓ **Abu Arra'a
becomes
chairman of SBA**

West Bank Project Land O'Lakes

IMPACT!

Farm Move from Isolated Area to City Results in Profit

Fayez Abu Salem is a 65-year-old farmer from Tubas City who has about 96 head of sheep and goats. Tubas stands between Nablus to the south and Jenin to the north, and the Tubas land expands east to the east bank of the Jordan valley. The farm is considered the main source of family income, a good income which has afforded building houses for the family. However, the farm had a high percentage of mortality, low productivity, old and sick animals and other problems, as do most of the farmers in Palestine. He faced another problem: he lived in an isolated area in the Tubas region where there was no agricultural extension, no electricity and, most importantly, no water. The project staff helped him identify the problems he faces in his farm: high mortality, low productivity, and no culling system.

The most difficult problem is the water shortage in that area. Every week the farm required a 15-cubic-meter tank of water that cost 260 NIS (New Israeli Shekels). The cost of water in that area is about 6240 NIS (260 NIS * 4 weeks * 6 months). In the summer season in Tubas city, it costs much less: 960 NIS (40 NIS * 4 weeks * 6 months). There is 5280 NIS difference, which could be a profit for him. Moreover, he needs extra money for travel expenses to buy feed and to sell the cheese.

He lived in that isolated area in order to graze his animals and decrease the feed cost, but there is no infrastructure in that area. There was a difference in feed cost. In Tubas city he would need to provide more feed for the animals instead of grazing.

The Land O'Lakes project agent first convinced the farmer's sons to move to Tubas city, and, after several visits, the farmer himself was convinced to move to Tubas city.

One of his sons participated in a trip to Arabe farm for demonstration rearing and selecting Awassi rams, to see the proper design of a farm building. In February 1999 the farmer traveled to Tubas with sheds and no barracks. In April 1999 he started to build a new farm in Tubas. The project agents visited him again in order to advise him on how the farm should be built.

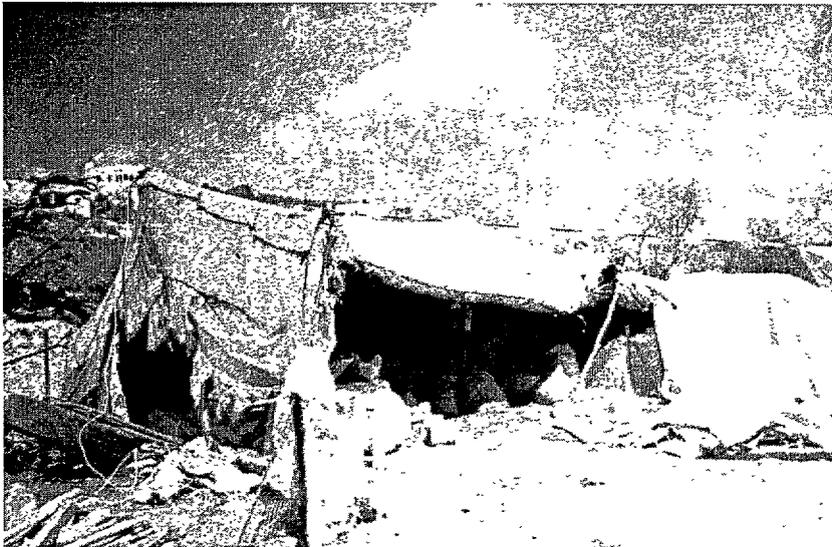
✓ **Farm in isolated area, away from electricity and water**

✓ **Water expensive**

✓ **Travel costs incurred due to remote location**

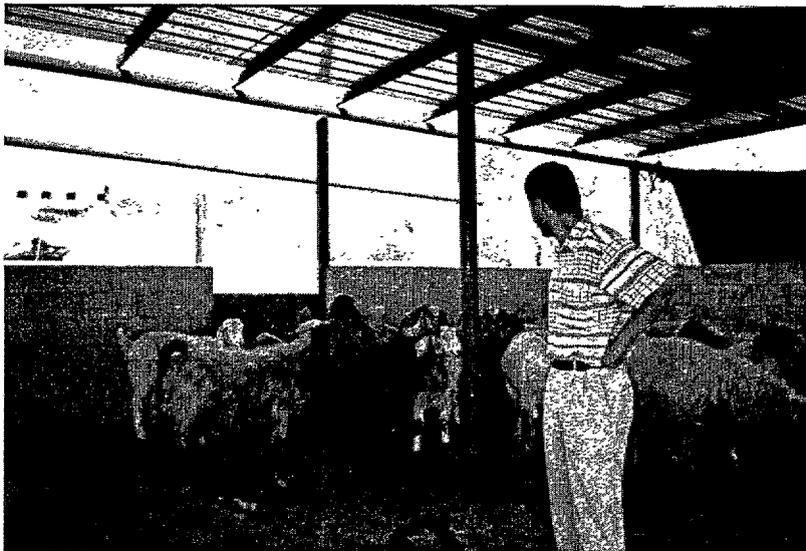
✓ **Farmer convinced to move in to Tubas city**

Below is a picture of housing for the animals in the isolated area – the “before” picture.



- ✓ **Housing for animals leads to low productivity and high mortality for lambs and kids**

Below is a picture of barracks built for the animals -- the “after” picture.



- ✓ **New facility for animals leads to higher productivity and lower mortality rate for newborn animals**

The farmer was persuaded to use the synchronization (spongy and hormone) system for his flock in order to get more profit and to get lambs in warm weather after five (5) months. He used this system in his flock for three times with a 90% success rate.

✓ **Use of synchronization system leads to 90% success rate**

After that he made an extension in the farm to find places for lambs, feed and an open area around the farm. One of his sons visited ArabeH Station and bought a selected Awassi ram from the station (MOA).

✓ **Purchased Awassi ram from ArabeH station**

After the extension work and after his visit to ArabeH farm, the farmer was completely convinced that improved practices would lead to more profit. In the same period, he started to make improvements in his farm so there were more barns on his farm with more ventilation and isolation places for lambs and kids.

In the 1998 season he had 123 sheep and goats, with 150 live births and 25 of them dead, which means about 17% mortality in lambs and kids. After his move to the new buildings, he had 96 sheep and goats, with 120 live births and 10 of them dead, which means about 8% mortality.

Another good result came from instituting a culling system. When the agents started to work with him, he had more than 150 sheep and goats. Now he has 96 healthy and good-producing sheep and goats.

✓ **Culling system results in improved productivity, lower input costs**

After implementing the ideas introduced to him, FayeZ Abu Salem has more profit due to the reduction in mortality and use of the culling system, which decreased the feed, vaccination and treatment costs.

Calculating the difference in water costs between two areas, the difference is 2280 NIS:

Isolated area (Ibzeq) :

Water cost: 6,240 NIS

Feed cost: 15,000 NIS

Total: 21,240 NIS

Tubas area:

Water cost: 960 NIS

Feed cost: 18,000 NIS

Total: 18,960 NIS

✓ **Savings in water costs of 2,280 NIS**

Difference in cheese revenues:

Tubas area

12 cans monthly * 6 month * 17 kg/ can * 15 NIS = 18360 NIS

Isolated area

15 cans monthly * 6 month * 17 kg/ can * 15 NIS = 22950 NIS

Difference = 18360 - 22950 = -4950 NIS

In the Tubas area, he reduced the cost of transportation, feed, cheese and other costs.

Reduced mortality: 17 % - 8% = 9%

9% * 120 = 11 lambs

11 lambs * 25 kg * 16 NIS = 4,400 NIS

Difference between the two locations:

Difference in water cost : 5,280 NIS

Difference in feed cost : - 3,000 NIS

Reduced mortality : 3840 NIS

Difference in cheese production: - 4,950 NIS

Total difference = (5,280 + 4,400 - 3,000 - 4,950) = 1,730 NIS

Increased profit by 1,730 NIS

The farmer's move to Tubas city, which has electricity, water, a good house for his family and no transportation costs, has gained him more profit than before.

✓ **Reduced mortality**

✓ **Increased profit by 1,730 NIS**

West Bank Project Land O'Lakes

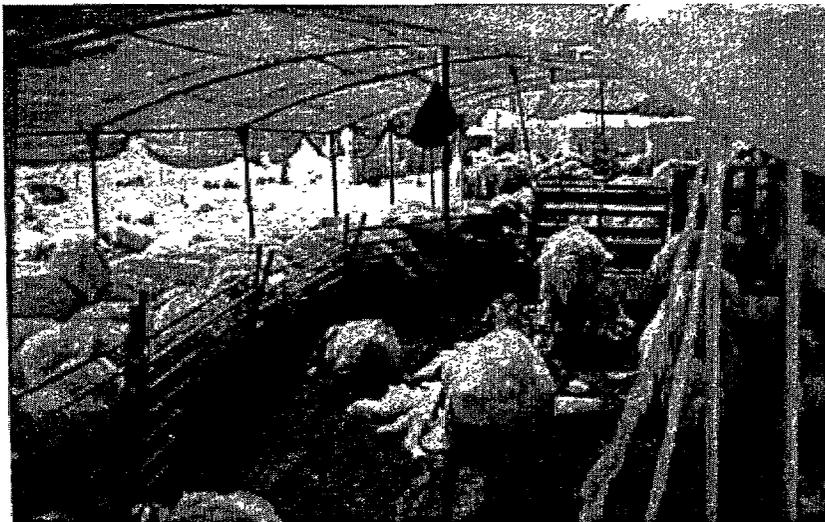
IMPACT!

Make Improvements and Get More Profit

Mohammed Esa Abueid is a 60-year-old Bedouin farmer from Anata village, 12 km east of Jerusalem. Mr. Mohammed had about 100 sheep and 15 goats when a project field agent started visiting him in June 1998. The agent was the first extension agronomist to visit him.

At that time, the Mohammed farm had poor management (no isolation between animals, poor ventilation, bad feeders and drinkers), poor nutrition, old and sick animals, no culling system, and low productivity. The field agent helped Mohammed identify the problems he faced in the farm, and after several visits, the farmer started to improve his management and the flock.

The farmer had no vaccination program. He was not aware of the address of new veterinary services directory established in Jerusalem District. After the field agent explained to him the importance of applying the vaccination program, he was convinced of it, and the agent helped him by taking the veterinary team to his farm to vaccinate the flock.



✓ **Farm of 100 sheep and 15 goats receives first visit from an extension agronomist.**

✓ **Vaccination program instituted**

Mr. Mohammed participated in a trip to the model Arabeh farm organized by the Ramallah and Jerusalem District for demonstrations on rearing and selecting Awassi rams. After the extension work and the visit to Arabeh farm, he was convinced that progressive practices would lead to more profit. He made improvements to his farm: improved ventilation, the vessels of feeders and drinkers, and nutrition; used mineral blocks; isolated animals. The most important issue was that Mohammed made improvements in a simple farm "inside the tent" as the picture above shows.

Also after the trip to Arabeh he was convinced about the importance of genetic improvement in the animals. He bought one of the improved Awassi rams (see below), which has characteristics typical of the Arabeh rams. As a result, the productivity of the farm increased and the losses decreased.



From June 1998 to February 2000 he increased his flock of sheep from 100 to 130 head, which meant an increase of 30% in the sheep flock, and the goat herd from 15 to 25, an increase of 166%.

After implementing the ideas introduced to him, he has more profit due to better management, nutrition improvement, a vaccination program and improved genetics.

✓ **Visit to model Arabeh farm leads to improvements**

✓ **Animal genetics improved**

✓ **Sheep flock increases 30%**

✓ **Goat herd increases 166%**

Women's Cooperative Established

Marda village, located thirty kilometers north of Nablus, is the center of eight other villages: Scaca, Der Balot, Yasof, Broqen, Kofer Aldek, Der Estea, Alzawiah, and Kefl Elhares. About 1400 people live in this village, working on farms or raising livestock or both. The Marda Center for Sustainable Development is located in the center of Marda village. The strategic location of the center and the village itself gives it the advantage of easing communication with all of Marda's women and the women from surrounding villages. The center provides the people of the area with many services such as training courses and workshops.

Land O'Lakes started visiting the Marda center in early May 2000, meeting many times with the director of the center, Mr. Nasfat, and the staff. During a meeting arranged by the center, the women of Marda shared their objectives and goals for the center. In turn, Land O'Lakes talked to them about cooperatives, women institution-building, and financial independency. The idea of establishing a central cooperative in Marda was suggested, one that would accept the membership of all interested women from the villages nearby.

In an important meeting held May 16, women delegates from the villages discussed the idea of establishing a central women's cooperative as the best way to achieve financial independence. The first aim for establishing such a cooperative is to increase women's and families' incomes, in addition to improving women's role in society. Land O'Lakes gave them many examples, such as the experience of Nweimeh cooperative. At the same meeting, they formed a subcommittee to continue the legal procedures for establishing a cooperative. They asked Land O'Lakes to provide them with a feasibility study for raising fifteen (15) sheep.

✓ **Marda Center is key contact for co-op discussions**

✓ **Land O'Lakes promotes idea of forming a women's cooperative**

✓ **Village women decide to establish a cooperative and begin legal process to do so.**

West Bank Project Land O'Lakes

IMPACT!

Lamb Mortality Rate Reduced from 17% to 5%-7%

Sheep and goats dominate the hills of the West Bank and more than half of the families live directly on the income from them. The family of Mr. Ibrahim Abu Al-Kbash, 45 years old, is one of those families who depend on sheep as their source of income. The conditions on his 300-sheep farm in Frosh Beit Djan, Jordan Valley, at the start of technical assistance interventions were:

- Lack of technical information on sheep production practices.
- Poor veterinarian and artificial insemination services.
- Mortality in newborn animals of 17%, some of it caused by mismanagement of the flock.
- An absence of financial records, which made the calculation of profitability very difficult.

After the Land O'Lakes West Bank project in sheep and goats started, Mr. Abu Al-Kbash was one of the farmers whom the field agents visited. They studied his individual problems and how to solve them. They gave him the Lamb Booklet and Calendar which included information, stated in a simple manner, needed by the farmer for achieving good production. The agents helped him to understand the brochure and stimulated him to incorporate new practices such as:

- disinfecting the navel of newborn animals,
- isolating the lambs and the mothers four to six days to allow them to take all the colostrum,
- cleaning the newborn daily, and
- controlling external parasites.

The agents emphasized that a vaccination program is important. The treatment of sick animals should be done by a veterinarian and the dead or aborted animals taken to the veterinary department to be anatomized.

The mortality rate of lambs had been 17%, which meant that 54 lambs died yearly, a loss of 5400 JD: $54 \times 100 \text{ JD} = 5400 \text{ JD}$ (Jordan Dinar = 1.40 US\$). The improved farm management practices of isolation, vaccinating, proper feeding, and other items

✓ Lamb mortality rate of 17% at start of program

✓ Absence of financial records

✓ Lamb mortality decreased to 5%-7%

played important roles in decreasing the mortality rate to 5%-7%, meaning 15 lambs died (1500 JD). The simple calculation below shows a gain of 3900 JD.

| | | |
|---|------------|-------------|
| | Before | 5400 JD |
| - | After | <u>1500</u> |
| | Difference | 3900 JD |

Financial records are important to use on a farm. After the field agents received training in financial management at Ber zit University C.E., they presented the idea of a simple record system. The farmer daily registers all transactions related to the farm. He records expenses for anything connected to animals and the revenues from selling any products, with the net profit being the difference between expenses and revenues. The West Bank project aims to help make the net profit the best it can be.

✓ **Farmer institutes records system to track profitability**

West Bank Project Land O'Lakes

IMPACT!

Three Lambing Seasons in Two Years Increase Profits

Mahmoud Jermi is a farmer from Zbaidat village, 35 kilometers north of Jericho. He raises about 80 ewes and the biggest problem that he faced was the low percentage of newborns within his flock, due to low fertility. The paucity of newborn lambs reflected negatively on sheep income, which made the farmer think seriously about selling his sheep.

The low percentage of newborn lambs was a reflection of poor feeding practices and the bad health of the ewes, in other words, poor management inside the farm. To solve those problems, in the summer of 1998, a Land O'Lakes field agent designed an effective feeding program, taking into consideration the available feeding materials with the lowest possible prices (the high price of feed is one of the main problems that face the Palestinian breeders). After two months of work with this farmer, the health of Mahmoud's flock had improved.

To raise the percentage of lambs born in the season – that is, to increase the numbers of lambs born in the season through improved fertility – the field agent convinced the farmer to use artificial hormones and intravaginal sponges outside of the reproductive season. This causes the ewes to get pregnant in the spring and late summer seasons, thereby getting more pregnancies and more lambs during the year.

The farmer practiced this method on 50 of his ewes after preparing them for insemination using the flushing program. The farmer followed the instructions completely, and, after 40 days, the field agent checked pregnancy for the ewes by using ultra sound. Thirty-seven (37) of the ewes got pregnant, which means that the farmer got three lambing seasons during two years. In other words, Mahmoud's income increased when he solved one of the most important problems he faced.

✓ **Problem: Low fertility among ewes.**

✓ **Field agent advises on methods to improve farm management.**

✓ **Flock health improves.**

✓ **Methods to enhance fertility implemented.**

✓ **Three lambing seasons in two years.**

✓ **Income increased.**

West Bank Project Land O'Lakes

IMPACT!

Farmer Begins Raising Sheep to Provide for Family

This story is about a man that Salah Abu Eisheh, a West Bank project field agent, met by chance in the summer of 1999. His name is Ra'ef Mahajneh, a 51-year-old man from Marj Na'jeh, 40 kilometers north of Jericho. He suffered an attack last summer that caused partial paralysis to the right part of his body, which made him unable to work to provide for his large family.

✓ **Family man incapacitated**

The field agent advised Ra'ef to buy some sheep and goats and have his children take care of them. The revenue from this operation would help Ra'ef's family in their difficult life. He agreed, but the problem was that his treatment consumes all of his money. This stood as an obstacle to beginning work on the project. However, the field agents found a farmer from the same village who agreed to sell Ra'ef twenty-one (21) goats on credit for one year. An effective program was put into place, including:

✓ **Field agent advises raising goats**

- An effective feeding program.
- Healthy practices inside the farms.
- Use of intravaginal sponges and artificial hormones out of reproductive season.
- A continuous and fruitful extension program.

✓ **21 goats bought on credit**

Ra'ef followed the advice and practiced the program completely. In October 1999, sixteen (16) kids were born from ten (10) goats, and the others were checked for pregnancy by an ultra-sound device. Just two goats were not pregnant, and the decision was to cull them and sell them for meat. The others were pregnant (more than three months). More than ten (10) kids are expected to born within two months, at the most. The revenue that came from selling the offspring and milk (cheese) will be used for paying debt.

Simple calculations yield the following favorable results:

The actual and expected costs for Ra'ef Mahjney's new project, from the beginning until February 2000, will be as follows:

Goats' price: $21 \times \$85 = \1785

Operational costs for 5 months (the end of season): $1.2 \text{ kg feed/day} \times 21 \text{ goat} \times 150 \text{ days} \times \text{price per ton of feed} = \$680.$

Other miscellaneous costs = \$80

Total costs will be **\$2,545.**

The actual and expected revenue for the project:

Kids (meat): 16 kids already born, in addition to more than ten (10) that are expected to be born within the coming two months (5% mortality rate taken into consideration). The price of 26 kids immediately after weaning will be 26 kids x \$90 = \$2,340 (the cost of rearing was calculated above and there will be no additional costs). In addition to that, two goats which are not pregnant will be sold for meat at \$110 each (\$220). As of the writing of this report, the revenue from selling milk (cheese) is about \$250.

The total actual and expected revenue will be **\$2,830**.

With these results, Ra'ef will be able to pay the debt on time from his project revenue and after that he will be able to gain more than \$300 monthly. This will solve his problem and provide the money he needs for his family.

✓ **Revenue expected to exceed expenses**

✓ **New sheep farmer able to pay debts and provide for family**

Farmer Reduces Kid Goat Mortality Rate by 19%

Salameh Abu Kharbeesh (Abu Nayef) is a farmer from Ain Al Oja Village 12 kilometers north of Jericho City. Abu Nayef is 40 years old and has 150 head of goats. Agent Asa'd Abu Saleh has visited Abu Nayef since the Land O'Lakes project opened in the West Bank. When he made base line surveys in the first visits to Abu Nayef and other farmers in his neighborhood, he saw that the farmers are suffering from a high mortality rate of more than 35%, a decrease in milk production, and a decrease in the fertility of the animals. The agent worked with Abu Nayef and other farmers to decrease the mortality rate by following good management practices on the farm. He explained the importance of increasing the nutrition of the animals in both quality and quantity (balanced feed) to increase fertility, of disinfecting the navel of the new birth, and of ensuring that the kids suckle the colostrum. He stressed the importance of making isolated and separated places for the delivery of animals and the kids to prevent crowding.

Abu Nayef thought that if he followed this advice, it would be difficult and would cost him too much money. But one day, Abu Nayef and other farmers traveled to Alduke village 7 kilometers west of Jericho City to see the innovative farm that the project had built at Abu Omer. There they saw that the mortality rate had decreased at Abu Omer's farm to 3%. Abu was convinced of the importance of creating isolated and separated places for animals in the kid delivery season.

Because Abu Nayef is a Bedouin farmer and can not build a permanent innovative farm, he adapted the idea and made temporary isolated and separated places in his farm. In addition, Abu Nayef replaced 25% of his flock.

Two years ago, the mortality rate at Abu Nayef's farm reached 35%, but when he followed the field agent's advice and instructions, the mortality rate decreased to 16%. He saved 19% of his kids, which that means more meat produced – more profit.

✓ **Farmer has 35% goat mortality rate, decreased production.**

✓ **Farmer visits demonstration farm with 3% mortality rate**

✓ **Farmer replaces 25% of flock and creates isolated and separated places for the kidding season**

✓ **Farmer saves 19% of kids, for more profit**