

FARMER^TO FARMER

The USAID John Ogonowski and Doug Bereuter Farmer-to-Farmer Program



Volunteer experts: Dr. Archie Devore (dairy nutrition), Mr. Gary Geisler (calf heifers health) Mr. Arvid Fristad (farm management and hygiene) and Mr. Boulos Najjar (dairy farm manager)

JOHN OGONOWSKI AND DOUG BEREUTER FARMER-TO-FARMER PROGRAM: FOOD SAFETY AND QUALITY (F2F FSQ)

SUPPORTING THE DAIRY SECTOR IN LEBANON

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INTRODUCTION

In Lebanon, the agricultural sector — particularly the milk and dairy sectors — is a major source of income for rural communities. This is especially true for households that do not own any land. Almost 60 percent of livestock farmers in Lebanon rely on dairy as their primary source of income, and more than 70 percent of dairy farmers live under poverty line.

Lebanon suffers from a serious deficit in its domestic production of essential food supplies. Therefore, it strongly depends on imports, particularly animal products, and cereal crops. Based on a survey conducted by FAO in July 2022 for 150 households, 79 percent of livestock keepers reported difficulties. The most common difficulties listed in the survey were feed purchase (85 percent), access to veterinary inputs (63 percent) and access to veterinary services (53 percent). Other difficulties included livestock diseases, access to pastures, labor costs, and access to credits. In addition, farmers are facing major challenges in selling their products due to the increase in diesel costs, which impacts transportation and processing, marketing, and selling prices that barely covers their input costs.

In response to these challenges, the USAID-funded Farmer-to-Farmer Food Safety and Quality (F2F FSQ) Program benefited from their experience working with dairy experts in Lebanon to identify three experts in dairy nutrition, dairy calf health, and farm management and hygiene. The experts conducted visits to dairy farmers, input suppliers, veterinarians, and feed formulators across Lebanon. They also provided targeted recommendations for improvements for multiple Lebanese universities.

STAKEHOLDERS MEETING FINDINGS

On October 25, 2022, the Farmer-to-Farmer FSQ Program conducted an online stakeholder meeting over Zoom gathering representatives from different components of the dairy production value chain in order to understand the current challenges faced and identify the needs resulting from the Lebanon economic crisis and their impact on food security.

The meeting was attended by:

- Eng. Kheir Jarrah – Farm owner, cow importer, and the former president of the Association of the Dairy Farmers
- Eng. Mohammad Mourad & Eng. Pamela Jarrouj – Veterinary services and input supplier
- Mr. Mohsen Rohban – Rohban Dairy, Dairy Processor
- Eng. Hassan Istaytiyyah – Agriculture Consultant
- Dr. Georges Abi Rizk – Professor Lebanese University – Animal Sciences
- Dr. Archie Devore – Dairy Nutrition and Management Expert
- Mr. Gary Geisler – Dairy Calf and Management Expert
- Mr. Arvid Fristad – Farm Management and Hygiene

After a brief introduction on the Farmer-to-Farmer FSQ project implemented by Venture37 in Lebanon and a short presentation on the dairy sector challenges, the meeting started with each attendee sharing their experiences in their field of work, covering the challenges and opportunities for improvements.

Eng. Khair Jarrah, with his great experience working with dairy farmers in Lebanon, explained that the sector is struggling, with many smallholder farmers suffering from significant challenges, especially during the last nine months as feed and diesel prices increased, leaving them with a very small margin of profit, if any.

Feed prices increased by around 35 percent from last year due to the war between Ukraine and Russia, and the lack of financial power to purchase and store what they need. Moreover, the cost of diesel increased from approximately 10 dollars per 20 liters, as it was subsidized by the government, to approximately 25 dollars per 20 liters, and with the continuous power shortages, the farmers are now depending almost fully on their generators to sustain their work, resulting in major cost increases. This led many farmers to sell some of their cows to be able to feed the remaining cows and maintain their farms. Currently, no more than 200 metric tons of milk are produced per day; more than 70 percent are produced by large farmers. Farmers usually rely on subsidies and donor grants to acquire their feed and equipment. Many of them do not know how to formulate a balanced ration, affecting their production and animal health.

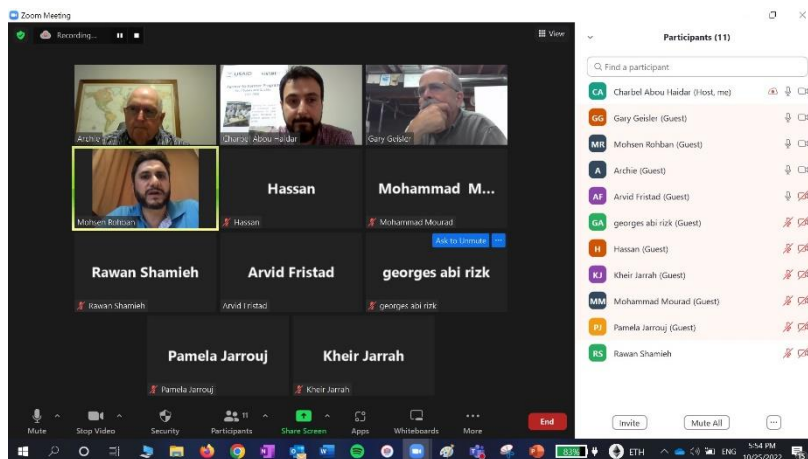


Figure 1: Stakeholders meeting over Zoom

*“Feed quality is very important, as farmers need to be educated in feed formulations and farm management. Close support is needed for feed producers to train them on the production of higher-quality corn silage as it is produced locally, and in parallel, work with feed formulators to train them on the production of higher-quality balanced feed rations.” - **Mohamad Mourad***

In addition to feed availability and costs, veterinary services and inputs play an instrumental role in their success, and to that end, Eng. Mohamad Mourad, working at one of the main veterinary companies in Lebanon, shared that veterinary medication and feed additives are still available, but that veterinarians are facing some challenges in the supply chain and shipping, especially with the local currency devaluation. This directly affects the farmers, who need to pay in cash USD (which is very challenging at the current economic crisis) for these veterinary supplies while getting paid in LBP for their milk, often after six months. With the current economic situation, farmers are shifting their limited investments to invest in power sources, like solar panels, instead of investing in their farms, improving their facilities, and importing higher quality animals.

Eng. Hassan Istaitiyah, an independent consultant with 30 years of experience in livestock production and a sheep dairy farmer, shared that the livestock sector is a major sector in Lebanon that supports local production and rural communities. 2022 was a catastrophic year for this sector: production was significantly stunted. Many farmers left their businesses or were in the process of leaving, mainly due to the high price of feed, a major cost for this business (65 percent of the overhead cost) because of the Russian war on Ukraine and the current economic crisis in Lebanon. In the last nine to 11 months, many

farmers have sold their cattle to feed others, which is a disaster. Winter is a critical season; the availability of feed is affected by price; meat prices are extremely low, leaving farmers with low cash flow to purchase feed. As a potential solution, nationwide, the ministry of agriculture is announcing 200 thousand dunums for planting forages for import substitution, and some NGOs are studying marginal lands for potential production of forages. This may be helpful, but the process is time consuming. The international community/NGOs should focus its support on feed formulators to teach them how to produce higher quality feed rations that are cost effective, which can significantly impact profits and are critical for survival, especially for small farmers who, if they lose their business, find it difficult to return.

On the processing side of the value chain, Mr. Mohsen Rohan, a major dairy processor in North Lebanon, shared his feedback on milk quality, which has significantly decreased over the last two years, which affects dairy processing as some farmers face problems in using feed additives. Currently, dairy processors are paying the milk prices in fresh USD (USD per the daily market rate), which increased by around 17 percent. “We used to pay 60 cents per 1L, and currently we are paying 70 cents per liter of milk.” Akkar is considered a large region in North Lebanon, and farmers are suffering, as they are not able to sell the milk for more than 40 cents per liter. As a recommendation, support should be focused on milk collection which could greatly improve the quality of the milk and prices. The main challenges can be summarized as low feed quality affecting milk quality, high feed prices and input supplies, and poor veterinary services, as some veterinarians are mainly focused on selling medications and others have poor service, sometimes leading to animal deaths. Finally, Mr. Rohan added that as a processing facility, his business is facing significant problems with the quality of milk received, especially from smallholder farmers, since these farmers are not getting good feed rations and are unable to maintain milk quality.

On the education side, the F2F FSQ program is actively supporting youth and graduate students, Dr. Georges Abi Rizk, a professor of Animal Sciences at the Lebanese University (LU), shared that university students need a lot of support and practical training sessions — they currently lack internship opportunities. Students are always eager for the practical experience, which will help them after graduating and increase their chances on the job market to avoid leaving the country for better opportunities — a phenomenon known as “brain drain.” Dr. Abi Rizk shared the previous collaborations with Farmer-to-Farmer experts and explained how they supported the students by filling this gap. The Lebanese Universities greatly benefit from the support of international experts, especially the students that are graduating soon, since most of them lack motivation, mainly because they feel uncomfortable doing the practical work and formulating feed.

Finally, the Farmer-to-Farmer FSQ volunteers — Archie Devore, Gary Geisler, and Arvid Fristad — shared their remarks on the discussion and potential recommendations. After mentioning that recovery will take some time due to these challenges, this assistance can start by planting the seeds for change. They also recommended monitoring the supply of milk to processors, which will affect the supply to end customers. Working with feed and input suppliers will be much more productive and will lead to significant responses in calf production and health with fewer needs for veterinary services. The Lebanese students are eager and capable of learning, and they will play an important role in leading future improvements in this sector, and we will continue to support university students and graduates. Furthermore, we need to focus on giving recommendations to farmers that do not cost money and increase animal comfort, health, and productivity, such as farm hygiene, feed rations, farm management, and best practices.

DAIRY NUTRITION – DR. ARCHIE DEVORE

OBSERVATIONS AND RECOMMENDATIONS

“This is my fourteenth Farmer-to-Farmer program assignment in Lebanon, supporting the dairy industry”. The volunteer expert provided several recommendations and observations, following the field visits conducted to several dairy farms in Bekaa, North, South and Mount Lebanon, major input suppliers, veterinary services, feed mills and a local university, to assess and address the effects of the current economic situation on the dairy producers in Lebanon:

Dairy farmers need to continue to look for ways to increase milk production per cow using improved management practices and improved nutrition that are now available.

In the visits to dairy farms, Archie provided recommendations for doing this with little increase in costs that would bring about an immediate increase in milk yield and profits. At one of the major dairy farms in Bekaa, “I recommended they keep feeding the high group Total Mix Ration (TMR) to mid-lactations cows’ group rather than creating a separate TMR that currently reduces milk yield when cows are moved from one group to another. This will allow for a significant increase in milk yield by preventing the huge drops in milk yield that the cows are now experiencing when moved

from High producing group to the low producing groups. He projected they would have enough milk to increase average milk yield for the entire herd by more than 2 kg per cow per day, as it appears that many cows lose up to 15 to 16 kg per day for the remainder of their lactation when moved. When extended over 1,330 cows for one year, this would equate to more than 1,000 tons of milk per year for the farm, which would generate nearly one million dollars in additional income for the farm annually with minimal additional cost, and there would be an improvement in getting more cows pregnant on time. Similar recommendations have been made in the reports for individual farms. In all cases, the recommendations that Archie made were based on implementing practices that are feasible by making small changes to their feeding program now in use.



Figure 2: Dr. Archie Devore checking dairy feed during dairy farms field visits

“We provided assistance in developing heifers that can be used in creating new business opportunities for keeping dollars in Lebanon” - Dr. Archie Devore

It is encouraging that the feed industry is attempting to implement branded feeds formulated so that improved milk yields are possible. This practice will bring impressive results by using concentrate mixtures that provide balanced nutrients for higher milk yield. It will also result in much greater efficiency in operating feed mills and fewer chances of error in blending concentrates for individual producers. “I commend the two large feed mills I visited in Byblos



Figure 3: Dr. Archie Devore delivers training session to Lebanese University students

and Tripoli for their efforts to bring improved feeds to the market”. Whenever branded feeds are balanced with nutrients supplied from forages, improved milk yields will result. It also builds trust between the feed industry and the farmers themselves — it is a win-win for Lebanon.

Raising baby heifer calves can create a significant opportunity for the creation of heifer ranches or contract raising facilities where the female calves are taken to a rearing facility for growth and development. Various agreements would be between the farmer and the heifer raiser, such as retained ownership or a cash sale with no interest in getting them back. On the other hand, it is understood that during these difficult economic times, they are sold soon after birth since raising them creates negative cash flow for the producer. In Lebanon there is a demand for replacement heifers to maintain the milking herd. If heifers are not available locally, they are imported from other countries, and this creates a negative flow of money outside Lebanon. Thousands of pregnant heifers are imported each year from other countries.

It is impressive to observe renewed commitments from forage growers to provide more tons of alfalfa hay (a major grower in Byblos is growing 195 hectares of alfalfa hay in the Bekaa) and corn silage for the livestock industry. Again, this keeps dollars in the country and will have huge dividends for Lebanon, preventing all the feed dollars that have been exported in past years.

There are significant opportunities for Lebanese University to encourage students to creatively provide services to the dairy and livestock industries.

Students could...

- Volunteer to assist producers to measure growth and development in dairy heifers using the measuring tools provided by Gary Geisler. Alternatively, offer this as a service to producers who do not have time or the resources to do it themselves.
- Seek internship opportunities to work on dairy farms for specified periods of time, like vacations from university classes, summer vacations, to learn hands-on skills in dairy or livestock production.
- Conduct feeding demonstrations such as comparison of textured dairy calf starter with ground dairy calf starter- looking at starter intake and body weights gain or hip height measurements; compare differing milker replacements when fed according to label to verify growth and development.

- Perform dehorning for producers using caustic paste or electric dehorning devices.
- Work with agricultural engineers who do ration balancing services for livestock producers.
- Perform CMT testing for dairy producers to identify cows with high somatic cell counts and potential mastitis.

The creation of partnerships or relationships between dairy producers and other service providers is important for the development of the dairy sector. Many times, this amounts to developing trust between differing groups—but the survival of the dairy industry will be dependent upon everyone working together and trusting one another. There is significant distrust between many producers and many differing service providers, including veterinarian services.

The larger dairy herds are doing much better than the smaller dairy herds. There is a need for small herds to be considered important to the dairy economy. Who is an advocate for the small dairy producer in Lebanon? How can they implement better management techniques? Larger herds are able to justify Smart Tag technology, whereas the smaller herds must rely on their own management or hired workers to make observations that identify potential issues that may be of concern and, if overlooked, may be very costly.

Dairy service providers need to adhere to the concept of providing clear, concise, and consistently correct advice and messages to dairy producers. On more than one occasion, the expert found that they were compromising the instructions for using a multibuffered product. In one instance, they were instructing the producer to use it at half the recommended rate, and in another, they were recommending that it be used at 75% of the recommended rate. In both cases the dairy farmer was experiencing significant acidosis with off-feed conditions and occasional diarrhea in cows that were eating too much concentrate with insufficient buffer from sodium bicarbonate. This is unforgivable and should not be tolerated—but there are no checks and balances to prevent such practices. When the nutritionists and advisors were confronted with the situation, they became quite defensive and argued the product had superior qualities that more than offset the reduction in recommendation. That is like trying to build a barn with a measuring stick that is 50 to 75% of a meter rather than using a full meter measuring stick. What is gained with such advice?

Future assignments should address the training needs of small farms so they can be brought up to the level of technology that is available in Lebanon. Dairy farming in Lebanon is no longer lacking in technology and improving practices, but there is a significant gap between the haves and have-nots.

DAIRY CALF HEALTH – MR. GARY GEISLER

OBSERVATIONS

“Since I first visited Lebanon in 2013 with the Farmer-to-Farmer program, there have been significant improvements in the adoption of technology, feeding programs, and management practices for dairy calves”. This is especially true with large dairy farms and, to a lesser extent, with small dairy farms. Some calves receive colostrum earlier in life and more of it. Many farms have delayed weaning calves until 75 to 90 days. On many of the farms visited, calf health, growth, and physical appearance are much improved. Gary was also on farms where there are lots of opportunities for improvement. Dairy farmers are seeing better calf starter consumption, more calf growth, and healthier calves.



Figure 4: Gary Geisler inspecting the newly produced calf feed flaked corn

“On this visit to Lebanon, I got to see much more of the feed industry than on previous visits”. A major feed company in Tripoli has successfully introduced flaked corn to the dairy industry in Lebanon. This has significantly impacted dairy farms, with more milk and improved cow health. Calves have also benefited from texturized calf feeds made with flaked corn and pellets. Two large feed companies that we visited in Byblos and Tripoli are developing and introducing branded feed products for all sectors of livestock. The one in Byblos appears to have an extensive network of independent retail store customers.

Dairy farmers seem to have a low level of trust in the feed industry and veterinary practices. Farmers feel like they are being sold to, without receiving useful information and advice. The expert heard comments made by both feed producers and veterinarians, to discredit the other. This lack of cooperation between the feed industry and veterinarians leads to farmers getting mixed messages. The confusion results in no action, no change, and no progress. “I met many enthusiastic veterinary students at Lebanese University who are seeking more hands-on learning experiences”. There are many potential opportunities for student involvement in the transfer of information and technology to dairy farmers.

“It is exciting to see texturized calf feed, made with flaked corn, on farms. This is a recommendation that I have been making since my first F2F assignment in Lebanon in 2013” - Mr. Gary Geisler

RECOMMENDATIONS

Promote the use of texturized calf feeds, that are now available in Lebanon, by all farmers.

This will result in increased growth, enhanced rumen development, healthier calves, and more productive dairy herd replacements and it will reduce the need for imported heifers.

- Get testimonials from current users
- Establish feeding demonstrations and track the results
- Share the results with other influencers on the farm
- Use the results of feeding demonstrations to convince more dairymen to try it.

Continue programs to promote calf health and growth. All dairy farms should be able to raise their own replacement heifers, without having to import them.

- Farm visits to assess calf health, nutrition, housing, and management practices
- Provide recommendations for improvement
- Continued emphasis on measuring growth provides benchmarks and a way to measure progress



Figure 5: Gary Geisler delivering a practical training to the Lebanese University Students

Work with Lebanese University to get veterinary students involved with hands-on experiences on dairy farms. Identify innovative dairy farms that would be willing to host student interns. Projects could include:

- Survey of management practices and assessments of calf health and growth
- Measuring the growth of calves and heifers, using a weight tape and hip height stick. Then use Penn State Heifer Growth Charts to summarize the data
- Texturized calf starter feeding demonstrations at measure increased starter consumption and increased calf growth and health
- Use a refractometer to measure colostrum quality and the transfer of passive immunity

Provide sales training experience for retail salespeople going to the farm. A major veterinary service company in Bekaa has two staff now. As the two feed companies in Byblos and Tripoli launch their branded feed programs, they will need salespeople to sell the higher price added value.

- Customer-focused sales skills that are in the best interest of farmers
- Increase adoption of products and programs that result in improved calf growth and health
- Everybody wins, the animals, the farmers, and the supplier companies

There is a need for information and training for small to medium-sized dairy farms. In the United States, there have been several successful programs provided by industry and educational institutions:

- Young farmer classes
- Adult farmer training
- “Twilight meetings” on a farm for farmers in the area
- Formation of peer groups
- Farmer networking events

The Professional Dairy Producers of Wisconsin (PDPW) could serve as a model for a self-help organization for dairy producer education. This organization was formed by dairymen and has been successful in helping dairymen help themselves. They provide:

- Seminars and workshops on feeding and nutrition, animal care, milking practices, and financial management.
- Training sessions for employees and farm workers.
- Farm management training for owners.

Explore the potential to develop a custom heifer grower service for dairy farmers. On a lot of dairy farms, calves and heifers don’t get the attention they need because they are an expense and not a source of income. In the United States, many dairy farmers pay to have specialized growers raise their replacement heifers.

KEY RESULTS AND ANTICIPATED IMPACTS

- Texturized calf feeds result in increased calf starter intake, increased growth rates, and improved calf health. For the dairy farmers, this means higher quality dairy replacement heifers and a reduced need for imported heifers.
- More on-farm experiences for veterinary students will result in better-trained veterinarians entering the workforce. They will have firsthand knowledge of management practices, new technologies, and nutrition programs that result in better, more profitable replacement heifers. They can be more effective in helping dairy farmers learn and improve.
- Customer-focused sales training can help dairy industry providers be more successful while, at the same time, assuring their customers are getting products and services that improve profitability at the farm.

FARM MANAGEMENT AND HYGIENE – MR. ARVID FRISTAD

“I think great progress was made in this Farmer-to-Farmer assignment, but there needs to be a higher focus on milk quality”. There appears to be a lack of discipline with the smaller dairy owners when it comes to sanitation and cleaning of the milking equipment. The expert pointed out dirty equipment, especially at the milking parlors, to many of the dairies visited, and their response was that they were not able to afford anything new at the present time due to the economic crisis in Lebanon. Arvid suggested to start implementing a quality premium campaign to encourage milk safety and quality. Perhaps an antibiotic program to lead the pathway to a safer product. This would create a highway to additional quality programs among the Lebanon producers. A milk quality premium could drive an incentive to try harder to produce higher quality milk. An antibiotic program followed by a somatic cell counts (SCC) premium and deduct program could work if implemented slowly and with scientific proof that the higher the SCC, the lower the cheese yield.



Figure 6: Mr. Arvid Fristad at the feed mill checking feed quality



Figure 7: Mr. Fristad checking milk parlor hygiene

The expert mentioned to several larger producers that the use of a variable speed drive (VSD) pump could save extensive electricity costs. This concept is new to Lebanon, but if enough producers requested the equipment, dealers would bring this technology to the forefront and make it available, large amounts of electricity could be saved. The intent of the VSD pump is to automatically and on-demand run the vacuum pump at much slower speeds when only a few milking machines are attached. The opposite is true when all the milkers are attached, the VSD pump will then run faster to admit air into the system during wash-up.

There was lots of good discussion regarding the pricing of milk. Currently, the government determines the price, and there are no other options, even if the product is of high quality. The same is true for lower-quality milk. No deductions apply, regardless of quality. “I am very optimistic, however, that the dairy industry in Lebanon has a great future”.

RECOMMENDATIONS SUMMARY:

- Practice good hoof trimming to avoid foot problems.
- Consider using a variable speed drive vacuum pump to save electricity.
- Perform a food-grade hot acid rinse with 80 degrees Celsius water on the milking machine through the pipeline until all the milk stone is cleaned out.
- Clean milk tanks using food grade acid detergent with 80 degrees Celsius water.
- Cut off cow tail switches. Some are excessively long and inconvenient.
- Pre-dip the cow's teats with a 0.5% Iodine-approved teat dip and scrub the cow's teat ends when wiping.
- Conduct milk tests for antibiotics in addition to acidity, IDEXX Snap test for antibiotic residue.

SUMMARY

The dairy sector represents a major source of income for rural communities in Lebanon. Currently, this sector is facing major challenges due to the country's economic crisis and the impact of the Russian war on Ukraine, forcing many farmers, especially smallholders, to leave the business, while others struggle to keep their farms operational with a very small margin of profit, if any. The devaluation of local currency led to a significant increase in feed and diesel costs, both of which represent major overhead costs, not to mention the cost of veterinary supplies that are paid in USD cash. 2022 was a catastrophic year for this sector: production was stunted due to the decrease in milk production and quality. Farmers were not able to afford high-quality feed and veterinary supplies, which negatively impacted their milk production. This affected dairy processing: processors received low quality milk for a variety of reasons, including quality of feed, farm hygiene, and transportation challenges. This negatively affects the production of dairy products and increases costs. Following the outcome of the stakeholders meeting held back in October 2022, the F2F FSQ program responded to this increased risk of food insecurity by recruiting three volunteer experts in dairy production to assess the current situation and provide their recommendations for improvements.

The experts addressed many of these challenges through recommendations to help farmers in formulating balanced feed ration to increase milk quantities and adopt better farm management practices to improve milk quality. Following their assessment, the experts advised to focus projects support on feed producers and train them on developing high-quality, locally produced corn silage and assist feed formulators in creating high-quality feed rations. When achieved, this will impact many dairy farmers, especially the small farmers that lack the capacity to formulate their own rations. The experts reported the availability of locally produced good quality texturized calf starter feed. More efforts are needed to promote this type of feed to all farmers as it increases growth and leads to healthier calves, and eventually reduces the need for imported heifers, keeping dollars in Lebanon. Experts also recommended that the industry should encourage more farmers to produce alfalfa and corn for silage to substitute dairy feed import. Regarding milk quality, focused trainings are needed to help farmers understand the importance of adopting better cleaning practices for the milking equipment and milk tanks, particularly on small farms. The experts also suggested that milk collection centers should improve their practices to preserve the quality of milk as well as developing price incentives for premium-quality milk. This would significantly improve the quality of milk reaching the dairy processors. An antibiotic program followed by a somatic cell count (SCC) premium program could work if introduced gradually and backed up with scientific data that the higher the SCC, the lower the cheese yield. With the continuous electricity challenges, the experts suggested the use of a variable speed drive pump for the milking machines while adopting better on-farm hygiene practices.

Students graduating from Lebanese universities are enthusiastic and eager to learn, but with few opportunities for practical experience. More support is needed for local universities to offer hands-on training and provide services to the dairy and livestock industries. This will increase the students' experience and improve their chances in the local job market. In addition, the adoption of the experts' recommendations will improve productivity and income, especially for smallholder farmers.

ANNEX

FARMER-TO-FARMER EXPERTS BIOGRAPHIES

Archie Devore

Archie Devore received a Ph.D. from the University of Illinois and has served the U.S. dairy industry for more than 50 years, first as an assistant professor of agriculture teaching dairy production and farm management for three years. He served as a regional dairy specialist, to more than 700 dairy producers how to adopt modern research-based technology before becoming a dairy specialist for MFA INC, a farmer-owned cooperative, and served 12 years working throughout the multi-state territory, advising producers, and coaching field staff who served the dairy industry. Since retirement in 2006, Devore has completed 44 USAID Farmer-to-Farmer volunteer assignments in 10 developing countries teaching and demonstrating ways to increase food production worldwide.

Gary Geisler

Gary Geisler grew up on a dairy farm in Wisconsin. After getting an Ag Education degree at UW-River Falls, he taught high school agriculture for three years. Then for the next 37 years, he worked in several positions in the livestock feed business with Land O'Lakes and Purina Animal Nutrition. The last 12 years were specifically focused on calf health and calf nutrition. As the regional calf and heifer specialist covering Wisconsin, Gary provided technical open support for the sales team and troubleshooting on farms. Gary worked with dairy farmers, calf raisers, and their veterinarians, to build better dairy replacement heifers, by helping them update management practices and implement new technologies. Gary has been a volunteer for many USAID Farmer-to-Farmer projects, including four trips to support the Lebanese dairy farmers and dairy industry.

Arvid Fristad

Arvid Fristad spent 40 years in the dairy industry before retiring in 2018. Most of those years were with the farmer-owned cooperative, Land O'Lakes, Inc., assisting dairy producers with milk quality, dairy facility design and construction, and milking equipment troubleshooting and evaluation. Much of his career was spent coaching and mentoring other field staff. Fristad has completed 10 international Farmer-to-Farmer program assignments focusing on milk quality in five different countries. He won the dairy fieldman of the year award in Minnesota in 2010 and holds a degree in Business Administration from Fresno Pacific University.

In recognition of **MANY YEARS** of devotion and support to our Lebanese Dairy Farmers

Archie Devore, Gary Geisler and Arvid Fristad

THANK YOU SO MUCH FROM ALL OF US!



Figure 8: Cedar Tree Planted in the Name of Archie Devore (14 F2F Assignments in Lebanon) in the Shouf Biosphere Reserve-Barouk Cedar Forest