Perceptions of Livestock Extension Education Delivery among Dairy Producers in the North Coast of Honduras

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Abstract

Agriculture is changing in many ways, for both producers and for the institutions that serve them, including extension. The participation of farmers in these new economic relationships demands new skills and knowledge, new communication networks among like-minded producers (Swanson, et al., 2001). The main purpose of this study was to determine the perceptions of dairy farmers on extension’s educational delivery in the northern coast of Honduras as a result of the effects of globalization. The design for this study was descriptive research. Structured interview guides were developed for farmers, service providers and farmer association’s board members. Two groups of farmers were studied. The first group was made up of forty members of 20 Centros de Recolección y Enfriamiento de Leche (CREL). CREL are farmer owned milk collection and cooling centers located along the north coast of Honduras. The second group was made of 10 large farmers selected based on the leadership they provide to the industry; they have no affiliation to CRELs. A stratified sample based on location and length of operation of the CREL was used to determine members to be interviewed for CREL members. Results show that dairy farmers in the North Coast of Honduras have limited access to formal extension services. Most of the farmers have been exposed to sporadic, short-term technical interventions that do not conduct follow up activities. Service providers like concentrate and veterinary supply companies offer programs on a regular basis. Farmer associations encourage and sponsor most educational programs. Still, the quality of these programs is extremely variable. The most common delivery methods used are one-day seminars, field days and farm visits. Farmers prefer participating in programs were both foundational theory and hands-on and applicable practice are used to deliver new knowledge. Long term educational needs for dairy farmers are not limited to technical aspects of milk production. The need to train farm owners as well as workers is a major issue for the industry. Leadership training and program development are key areas that extension service providers must target in order to make positive impacts on the dairy industry of Honduras.
Introduction/Theoretical Framework

Agriculture is changing in many ways, for both producers and for the institutions that serve them, including extension. The participation of farmers in these new economic relationships demands new skills and knowledge, new communication networks among like-minded producers, and the ability to identify and take advantage of emerging marketing and agro-processing opportunities (Swanson, et al., 2001). Farmers are faced with the challenge of having to improve productivity in order to face globalization. Currently, competitive market pressures and the need to compete with neighboring and foreign countries have made agricultural development a priority in the agenda of nations across the world. However, governments and development organizations often struggle when planning and implementing programs that positively impact agriculture in rural areas.

Extension is a vital component in the agricultural development of a nation. An effective extension system provides two-way communication channels between farmers and the formal research bodies. In turn, extension provides an avenue for farmers to access information about the latest research and technology developments (Swanson et al, 1997). Farmers need to understand the changing needs of agriculture at home and abroad to carefully consider how to adapt their businesses to those changes (Klair, 1998). However, extension services are not always available to farmers. As a result, pure farmer-to-farmer extension is often found in areas where appropriate government services are almost nonexistent.

Farmer to farmer extension originated in areas where chronically weak or recommended technologies were inappropriate. Some commonly associated features with this approach are group-based learning and cross visits. The campesino-to-campesino experience in Latin America is characterized by the emergence of a movement initiated and sustained by farmers; the generation of most innovations by farmers themselves, with occasional external support, from instance from an NGO and the provision of training by farmers, to farmers, often through the creation of a structure of farmer promoters and farmer trainers (Scarborough, et al, 1997).

Agricultural development requires a mix of conditions. Although the precise nature of the mix depends on the context, it usually includes good infrastructure, access to credit, water, land, markets, input delivery, social organization, relevant technology and rewarding prices (Mosher, 1966; Kaimowitz, 1990). One of the most important factors listed is social organization. For social organization to occur effective leadership has to direct change. Leadership seen as a process is not a trait or characteristic that resides in a leader, but is a transactional event (interaction) that occurs between leaders and followers (Northouse, 2004). Leadership can only happen in groups, includes attention to goals and involves influence. Leaders who often initiate the relationship with followers, need to create the communication linkages and carries the burden for maintaining the relationship.
Agricultural extension programs are quite diverse from an international perspective. Most are managed as public sector agencies, usually located within the ministry of agriculture or are managed by nongovernmental organizations (NGOs). Private consultants conduct a small percentage of programs. This study takes place in Honduras where some of the most common extension agencies are of international renown such as Land O Lakes, CARE international and World neighbors. National NGO included Zamorano, Panamerican school of Agriculture, National Institute of Vocational Training (INFOP) and other small firms funded usually by former government extension agencies.

**Purpose and Objectives**

The main purpose of this study was to determine the perceptions of dairy farmers on extension’s educational delivery in the northern coast of Honduras. The specific objectives for the study were to: 1. Determine the perception of dairy farmers about extension services; 2. Determine educational delivery methods used in extension programs offered to dairy farmers in Honduras; 3. Determine preferred educational delivery methods for dairy farmers in Honduras; 4. Determine short term educational needs for dairy farmers in the north coast of Honduras; and 5. Determine perceptions of dairy farmers on open market policies and its effects on the dairy industry in relation to educational needs.

Honduras is the second largest milk producer in Central America. According to FAOSTAT (2004), 595,500 metric tons of milk was produced in 2002. The industry sustained a 6% annual increase in production between 1990 and 1997 (Avila & Merino, 2001). In 2002, milk production became the second most important agricultural commodity for Honduras following coffee. Milk prices paid to the producer in Honduras range from 22 to 32 ¢ (US dollar) per liter, among the highest in the world (I.A.Matamoros, personal communication, June 28th, 2003). It is estimated that the industry employs 300,000 people living in rural areas, nearly 35% of the economically active population of the agriculture and livestock sector in Honduras (IICA, 2003). The north coast of Honduras also called *Cuenca Lechera* comprises 14% (14,118) of the dairy farms; these farms produce 46% of the total milk nationwide and supply 85% of the milk processed by industrial plants (National Agricultural Census, 1993; INE 2002). Overall the industry has been characterized by low productivity, on average daily milk production per cow is 3.6 kg (INE, 2002), and milk quality is poor because of the lack of milk cooling and proper management.

**Background**

Hurricane Mitch struck Honduras in 1998, and it caused serious damage to the cattle industry. Some 78,000 hectares of grazing land were destroyed and about 30,000 dairy cows were lost. This was equivalent to approximately 15 percent of dairy cows in Honduras, according to IADB (2003). In response to the disaster, the United States Agency of International Development (USAID) funded the Honduran Dairy Enterprise Initiative
(HDEI). This program focused on organizing and training 13 groups of dairy farmers to improve marketing opportunities and milk quality in the north Coast of Honduras during 2000 and 2001. Each group became known as a CREL (Centro de Recolección y Enfriamiento de Leche). CRELs are farmer owned milk collection and cooling centers that have between 15 to 20 members. CREL members are primarily small farmers. According to (O. Javier, personal communication, June 24th, 2003), 80% of LEYDE suppliers (the largest processing plant in the north coast of Honduras) produced 80 liters or less per day.

The Honduran Dairy Enterprise Initiative program provided training and a cooling tank to each CREL. As a result, each CREL was able to negotiate higher prices and reach commitment from processing plants that they would buy all milk produced by the CREL as long as milk quality reached predetermined quality standards. In Honduras, processing plants pay an additional $0.06 to $0.09 per liter when milk has been previously cooled and when the volume supplied per day is greater than 500 liters (I.A.Matamoros, personal communication, June 28th, 2003). These contracts represented a breakthrough marketing opportunity for CREL members, since most processing plants have production quotas for dairy farmers due to production seasonality.

In early 2002, the Honduran Government received proposals from dairy farmers to finance 36 additional CRELs. These groups were conformed by dairy farmers along the departments of Colón, Yoro and Atlántida who realized the advantages CRELs offered. The National Office of Sustained Rural Development (DINADERS) financed the new CRELs (36) and by the summer of 2003 most of the centers had been built. However, most of the new centers did not start operating because processing plants at that time were not willing to buy milk under the same conditions negotiated with CRELs in 2000 and 2001. Training opportunities and support to non-operating CRELs has been limited to basic training on improving milk quality from the Honduran Dairy Enterprise Initiative program. Other than the government there are no official agencies that offer continuity in an extension program. The Agricultural Science and Technology Bureau, (DICTA) is responsible for providing extension services to farmers and dairy producers in all areas of agriculture. DICTA is part of the Ministry of Agriculture and Livestock.

**Methodology**

The design for this study was descriptive research. A mixed methodology was used to determine the perceptions of farmers about extension programs, delivery methods and their views on globalization and its effects. Qualitative and quantitative data were collected in order to gain a deeper understanding of the issues and conditions faced by dairy farmers in the north coast of Honduras. This study was conducted from June to August 2003 in the departments (states) of Santa Barbara, Cortés, Atlántida, Yoro and Colón in Honduras.

Data were gathered from two main sources. Secondary data were obtained from baseline data collected by Zamorano/USAID Dairy Production and Processing Project and the Honduran Dairy Enterprise Initiative Program; membership lists from farmers
associations and a processing plant supplier list were used to determine the farmer population to study. Additional information was obtained from the Análisis de Competitividad de la Cadena Agroindustrial de la Leche y Productos Lácteos en Honduras conducted by IICA (2003), the final report of the Mesa Agrícola Hondureña for the Dairy Industry (2003), and case studies and journal articles relating to the subject.

Primary data was collected using structured interview guides. Three structured interview guides were prepared for (1) farmers, (2) farmer association boards and (3) service suppliers. A panel of experts in extension education, dairy science and research methodologies from the University of Florida and Zamorano, Panamerican School of Agriculture, in Honduras established content validity for the structure interview guides. Reliability of the data sources was determined by 1) interviews confirm the accuracy of the data gathered through secondary sources and 2) answers were cross-referenced between different groups interviewed. All instruments were also submitted to the Institutional Review Board (IRB) at the University of Florida to ensure that participant’s welfare and rights would be protected during the study. Finally, a pilot study was conducted in two CRELs prior to the study, a total of four farmers were interviewed for this purpose.

Two different groups of dairy farmers along the north coast of Honduras were selected for the study. The main reason to study two different groups of dairy farmers was that both groups represented important segments of the industry but would most likely have undergone different experiences and face different needs in relation to extension education services. The first group chosen (n=41) was members of twenty CRELs. A stratified sample based on location and time of operation of the CREL was used to select the CRELs that would participate in the study. Within each CREL, two farmers were randomly selected. The second group of farmers interviewed consisted of (n=10) large dairy farmers that were non-CREL members. Large farmers were selected based on the leadership they provide to the industry. Most of the farmers in this group have served leadership positions and roles in farmer associations as well as in other organizations related to the development of the livestock and agriculture sectors. Production characteristics for both groups of farmers are presented on table 1.

The structured interview guide for the two groups of farmers was identical, except for the last question that was related to the changes experienced after joining CRELs.
Table 1. Characteristics of farm operations.

<table>
<thead>
<tr>
<th>Production Parameters</th>
<th>CREL farmers (n=41)</th>
<th>Large farmers (n=10)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily average milk production during peak season (kg)</td>
<td>211</td>
<td>1197</td>
</tr>
<tr>
<td>Average number of cows in milk for peak season</td>
<td>29</td>
<td>94</td>
</tr>
<tr>
<td>Daily average milk production during low season (kg)</td>
<td>139</td>
<td>1153</td>
</tr>
<tr>
<td>Average number of cows in milk for low season</td>
<td>23</td>
<td>90</td>
</tr>
<tr>
<td>% farms on dual purpose systems</td>
<td>90</td>
<td>20</td>
</tr>
</tbody>
</table>

Board members from the three most influential farmer associations on the north coast of Honduras were interviewed with the objective of documenting their role on the dairy industry and learning about the services they provide to their members.

According to secondary data reviewed prior to the study, it was determined that commercial input suppliers were providing most of the educational programs on the geographical areas chosen for this study. A total of three service suppliers were contacted to determine what type and quality of educational opportunities were available to dairy farmers. Individuals interviewed in this category included two salesman from concentrate companies, a veterinarian and the manager of a general store for agricultural and livestock products.

Finally, during the study several farmers throughout all geographical regions mentioned that the National Vocational Training Institute (INFOP) was considered an important provider of educational programs. As a result, two livestock agents from INFOP were interviewed. INFOP was set up in 1972, and is the most important organization in Honduras dealing with the nonformal education sector (Government of Honduras and ILO/CINTERFOR, 2004).

Descriptive statistics were used to analyze quantitative data from the structured interview guides and qualitative data was analyzed via content analysis. Qualitative data was arranged by trends and patterns that emerged from responses into major and minor categories.

Results

Objective 1. Perceptions about extension services
A. CREL members

There are no permanent extension service providers for dairy producers in the departments of Cortés, Atlántida, Yoro and Colón. As a result, participants based their answers on experiences they have had in the past with extension programs that have targeted different problems facing the industry and different impact levels.

Most of the farmers (93.7%) had previously attended extension educational programs related to milk production. Non-participants (6.3%) cited bad timing, lack of time and no interest on the subject as main reasons for not attending extension programs. According to farmers, extension programs have been short term (2-3 years), sporadic and have conducted no follow-up activities. Consequently, farmers feel they easily forget or have trouble implementing practices in the long term. Lack of credit and high interests on loan repayment were also cited as leading causes for not implementing changes at the farm after attending educational programs.

Other issues regarding extension programs that were exposed are the expertise of extension agents and the relevance of the subject matter covered during programs. Some farmers (20%) argued that most agents have theoretical knowledge about dairy operations but lacked skills and knowledge needed at the farm level, while others (80%) strongly believed agents are well prepared for the job. Negative experiences included losing money or animals due bad advice received by agents. In addition, farmers said that some training programs teach techniques and skills that do not necessarily solve farm problems.

Overall, 85.4% of farmers have very positive attitudes toward extension education providers and understand the benefits of extension education programs, (85.4%) of farmers said they would be willing to consider paying for extension services.

As a result, farmers rely on other farmers (32.2%), veterinarians (22.5%), salesmen (16.1%), short-term extension programs (9.7%) and private consultants (1.7%) as their main source of advice. Nevertheless, 17.8% of farmers rely solely on their own experience instead of seeking new information.

Participants in this study do not see DICTA (the National Extension Service) as an important extension service provider as only 26.8% of the farmers reported having participated on programs sponsored by this organization on the past. Certainly, most farmers reported attending programs from INFOP (government sponsor non formal education provider) and considered it to be very useful to them.

B. Large Farmers

All large farmers have attended numerous extension programs related to milk production and were able to discuss experiences of at least 3 training programs attended. Although only 30% reported having had negative experiences with extension providers the
majority of the group (80%) felt that programs offered locally were not targeting their needs. As a result, they receive most of their contacts with providers are on a one on one basis. Farmers explained that a lot of programs are repetitive and offer very little useful and relevant information.

The most important educational providers for this group are: veterinarians (32%), salesmen (13%), other farmers (13%), consultants (9%), extension providers (non governmental; 9%) and international dairy farm magazines (13%). Consequently most farmers (45%) rely on their own experience rather than seeking information.

As CREL members, large farmers also face the consequences of not having a permanent research based extension provider. The difference between these two groups is that large farmers were able to describe the disadvantages and problems of not having a reliable extension education provider mainly because the majority had seen the opportunities and advantages offered by these type of programs on other countries. As a result, a good number of farmers in this group (90%), are willing to consider paying for extension services.

Although 60% of farmers had participated on programs directly sponsored by DICTA in the past, almost all (80%) do not think this organization can effectively target their needs on the near future. The lack of a research based component in addition to the overall low quality of the field staff were cited as leading causes for lack of impact at the farm level.

Objective 2. Determine educational delivery methods used in extension programs offered to dairy farmers.

Among the most common educational delivery methods used by extension education providers in the past are information-giving techniques such as lectures and seminars. These methods are very popular and are offered by farmer associations and input suppliers on a regular basis. Larger events such as fairs and conferences are used to encourage farmers to attend this type of programs. Some private extension providers have also used them extensively; with poor results according to CREL farmers. Another type of methodology that has been extensively used is skill-acquiring techniques. These techniques include process & result demonstrations and field days. Finally, knowledge-applying techniques such as using model farms and farm visits accompanied by group discussion were also reported by participants.

Objective 3. Determine preferred educational delivery methods.

Dairy farmers prefer programs where hands on activities are involved. Almost 75% of the interviewees said they have a preference for programs where the emphasis is given to developing new knowledge through practical skills. The rest of the farmers (25%) expressed that they still need a strong theory based component in order to understand why the
information presented is relevant. Field days, process and result demonstrations and visits to other farms by small groups are among the most accepted forms of training by CREL members. In contrast, large farmers prefer short seminars accompanied by demonstrations or activities where technologies could be demonstrated.

Participants emphasized that regardless of the educational delivery method used, a very important practice all extension providers should follow is providing handouts and brochures that contain detailed information about the subject matter covered during the program. These type of materials are known as reinforcement methods. Almost 85% of the farmers said they had no problem understanding brochures and supporting materials. Many farmers displayed supporting materials and literature they had received from programs they had attended in the past, and they gave testimonials of the usefulness of having these materials. Some farmers said that although they could not read, their kids or close relatives had found them useful.

In this study, 50% of the CREL farmers had a sixth grade level education or less and 5% were illiterate. According to farmers sometimes extension providers do not take their education level into account and use methods that are not adequate. Some farmers reported that they feel frustrated when trying to understand speakers who use complex vocabulary, speak too fast or offer examples they cannot relate to.

Objective 4. Determine short and long term educational needs for dairy farmers in the north coast of Honduras.

According to CREL farmers, their training priorities include: (1) Feeding and nutrition of dairy cows, (2) Improving milk quality, (3) Pasture Management, (4) Reproduction, (5) Marketing, (6) Genetic improvement of dairy herd, (7) Forage conservation techniques and (8) Improving milking procedures. This ranking is based on the answers of 84% of the population; the remaining 16% were not able to come up with a defined set of priorities for training and improvement of their farms.

Short term educational needs for CREL members must include training farm workers. This study revealed that there is on average three permanent workers per farm but only 32% of the workers have attended training programs despite the fact that they do all the work on the farm. Only 4% of the farmers stated they personally train their farm workers regularly.

Objective 5. Determine perceptions of dairy farmers on open market policies and its effects on the dairy industry in relation to educational needs.

The majority of farmers, 81% of CREL farmers and 100% of large farmers were aware that the Central American Free Trade Agreement (CAFTA) was being negotiated by
Central American countries with the United States involving dairy products at the time this study was conducted.

However, a large number of farmers (60%) were not able to define in general terms what the free trade agreement is and its possible implications. Farmers reported not having been informed by any of the farmer associations, the Ministry of Agriculture and Livestock nor any other organization involved with dairy farmers about the possible implications CAFTA could have on the industry.

Farmers reported that the only source of information relating to CAFTA was newspapers and news broadcasts. As a result, farmers expressed statements like “We are not prepared to face CAFTA, no one has explained to us what could happen.” Or “We feel threatened by the situation, this is what got us organized but we don’t know what is going to happen.” Almost half (53%) of CREL farmers thought CAFTA could have negative effects on their farms, 15% considered it could have positive effects and 32% were uncertain about the type of effects CAFTA could have on their farm operations. Accordingly, 78% of farmers thought the Honduran dairy industry could be severely affected by the outcome of the treaty. In contrast, 100% of large farmers expressed their concerns for the negative effects CAFTA could have on their farms and on the Honduran dairy industry in general.

Conclusions and Implications

This study was conducted with the objective of raising awareness among farmers and leaders of the dairy industry in Honduras about the importance of having effective extension programs. During the last three decades, the Honduran Government has funded numerous extension programs with the objective of transferring technology and skills to dairy farmers. However, it can be inferred from the findings of this study that their impact is questionable. Programs were short term, sporadic and followed no logical sequence. For the most part they did not necessarily target relevant farm problems, instead the priority was to disseminate new technologies that many times farmers considered irrelevant and did not solve their problems. In addition, the level of expertise of the agents was very variable. As a result farmers were only allowed to visualize a distorted image of the benefits extension education has to offer.

The findings of this study suggest that as a result of the growing economic pressures faced by the dairy industry in the past two years, farmers are changing their attitude toward change and see extension education programs as a viable option for improving their operations. In the past, farmers would attend programs not worrying about the impact the program would have on his or her farm. Now the time has come when farmers are willing to engage in educational programs in order to change their old production schemes with more productive ones. However, farmers do not have the training or expertise to improve by themselves. Although participants had positive perceptions toward extension programs, their main complaint was the lack of a permanent service provider who can offer educational services that target their needs. Farmers need educational providers who can be held

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accountable for the quality and effectiveness of programs delivered. The industry cannot continue relying on current sources of information solely. Despite the fact that they are very valuable, they cannot fulfill the role extension education has.

It is the responsibility of the farmer associations, governmental institutions involved in the sector and the leaders of the industry to seek for educational programs that are consistent with the reality of their members. Extension programs need resources, expertise and experience in order to provide truly educational programs. Training should not be limited to farmers. All members of the industry (leaders, farm owners, workers, youth, processing plants, artisanal processors, input suppliers, etc) should have access to training.

Finally, the dairy industry is struggling with the current leadership schemes. While farmer associations are very influential in the national arena, they have not provided the type of leadership the industry needs. Traditionally, farmers associations have focus their efforts on events and negotiations that are not coherent with the needs of its affiliates. Farmer associations became places for social gatherings rather than organizations advocating for change and agricultural development. For this reason, their members do not see them as proactive organizations. It is not until recent times that farmer associations interviewed have started questioning their role and realizing they need additional skills and knowledge to fulfill their responsibilities with the industry.

Implications

This study was conducted with the objective of raising awareness among farmers and leaders of the dairy industry in Honduras about the importance of having effective extension programs. During the last 30 years, the Honduran Government has funded numerous programs with the objective of transferring new knowledge and skills to dairy farmers. It can be inferred from this study that the actual impact at the farm level is questionable. In the past, farmers felt there was no need to change and become competitive. As a result, free trade agreements have done what no one was able to do in the last few decades. Honduran farmers need to change, but farmers cannot do it alone. They need services they can rely upon on a permanent basis to lead them through this time of rapid change. The findings of this study will provide baseline data for the extension organization or other educational providers who are prepared to take the challenge of bringing farmers to new levels of productivity, profitability and sustainability.

References


