



USAID | **KOSOVO**
NGA POPULLI AMERIKAN
OD AMERIČKOG NARODA

ARTIFICIAL INSEMINATION STUDY

KOSOVO CLUSTER AND BUSINESS SUPPORT PROJECT



30 September 2005

This publication was produced for review by the United States Agency for International Development. It was prepared by the KCBS project team of Chemonics International Inc. based on a Final Report prepared by Short Term Technical Advisor, Tom Dobbler.

ARTIFICIAL INSEMINATION STUDY

EDUCATION TO KOSOVO MILK PRODUCER ASSOCIATION
(KAMP) COMMERCIAL DAIRY FARMERS, VETERINARIANS &
ARTIFICIAL INSEMINATION [AI] TECHNICIANS IN THE LATEST
METHODS AND TECHNOLOGY IN THE FIELD OF AI.

MAJOR PROBLEM AFFECTING REPRODUCTION CONTINUES TO
BE A LACK OF PROPER NUTRITION, ESPECIALLY PERTAINING
TO THE DRY COWS AND FRESH OR TRANSITION COWS.

Kosovo Cluster and Business Support project Artificial Insemination Study
Contract No. AFP-I-00-03-00030-00, TO #800

This report submitted by Chemonics International Inc. / 15 September 2005

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

CONTENTS

PURPOSE OF ASSIGNMENT.....	1
BACKGROUND	1
EXECUTIVE SUMMARY	3
FIELD ACTIVITIES TO ACHIEVE PURPOSES.....	4
TASK FINDINGS	5
CONCLUSIONS AND RECOMMENDATIONS.....	7
Exhibits	8

PURPOSE OF ASSIGNMENT

The purpose of the assignment: will be to provide education to Kosovo Milk Producer Association (KAMP) commercial dairy farmers, veterinarians & artificial insemination [AI] technicians in the latest methods and technology in the field of AI. The farmer and AI specialist must be able to recognize estrus and pregnancy in order to maximize the potential benefit from high-yield cow breeds. Recommendations should be made specifically for estrus and pregnancy detection because of the growing number of high yielding imported cows in confinement and poor nutrition.

BACKGROUND

Veterinarians and Farmers have expressed concern for low reproduction/conception in the high yielding potential imported cows. While nutrition and health have been identified as potential problems related to poor reproduction results among high-yield cow breeds, nutrition alone is not sufficient to ensure fertilization. Rather, a more complete knowledge of the reproductive system and its day to day function is essential to making improvements. Good management practices are also important to fertilization. The detection of the right time to breed the cow is essential in ensuring strong results with artificial insemination. This SOW is to obtain a practical AI instructor to help the farmer in getting better results using AI.

Some comments on original scope and background.

The purpose of this assignment was to further educate farmers, artificial insemination technicians, and veterinarians regarding proper artificial insemination (AI) and reproduction. The need for this assignment was evident when reviewing the reproduction process of the national dairy herd. Even though AI has been available in Kosovo for several years, there is still a tremendous need for replacement heifers. Because reproduction has failed, continued importation of high value bred heifers is continuing. This process is a financial burden on the dairy industry and thus milk production is not increasing as rapidly as expected.

Realizing that reproduction relies on several other management aspects, the scope of the project was necessarily expanded to address those issues as they pertain to improved reproduction efficiency. The major problem affecting reproduction continues to be a lack of proper nutrition, especially pertaining to the dry cows and fresh or transition cows.

The project was planned to be a multi-disciplinary team effort with a reproduction specialist, forage specialist, and nutritionist working together. Due to unfortunate circumstances, the forage expert was forced to leave after just three days. When considering the total feed program, it is evident that the forage sector is a major problem. Therefore, upon the forage specialist's departure, I was asked to address both reproduction and forage production for the remainder of the project. The importance of this decision was very evident since corn silage harvest season occurred during this time. After investigating the reproduction performance of many herds, it became evident that the Kosovo dairy industry is in dire need of basic husbandry and management education before AI will be successful. Dr. Undersander, the forage specialist agreed with this concept and supports further training at that level rather than specialized and advanced training.

EXECUTIVE SUMMARY

This project was aimed at artificial insemination and reproduction efficiency in Kosovo dairy herds in order to maximize production on a sustainable long term basis. A multidisciplinary approach was employed to address reproduction, forage, and nutritional issues. During the course of the project over 20 farms were observed, three seminars presented, conversations were had with KAMP, FAUNA, and WWS, and two field days were held. Several areas were identified for improvement, including but not limited to: Records, Nutrition, Sire Selection, Birthing Procedure, Semen Quality, and Heat Detection. Of primary importance is basic education to the dairyman, followed by recommended action items in trouble areas.

The dairy industry in Kosovo is poised to take giant leaps forward. It is apparent that much effort has been expended by KCBS and other organizations with the same goal. It is also evident that there is a huge investment in both cows and facilities. In order to protect this investment and effort, a radical change in the management approach must be instituted immediately. The industry cannot survive while continually importing high priced heifer, milking them a long lactation, slaughtering them and then repeating the cycle again.

Sustainability is the key to a viable dairy industry. There has not been proper thought given to calf and heifer growing in the majority of the industry. Economics will not allow the cyclic method of replacement. The following are areas that must improve if the Industry is to survive without continuous subsidies:

- Adequate records
- Improved feeding, especially dry cows and transition cows
- Sire selection
- Quality semen
- Proper calving assistance
- Proper vet care as it pertains to the reproductive tract
- Regular vaccination programs
- Foot and hoof care and health
- Improved housing conditions
- Proper calf and heifer facilities and health programs

FIELD ACTIVITIES TO ACHIEVE PURPOSES

Some general comments on reproduction.

A common problem that historically occurs in developing dairy industries is that no one pays any attention to reproduction until it is too late. A common scenario is to import bred heifers, calve them out and watch the milk revenue grow for several months as the heifers produce according to the natural lactation curve. This means that for the first three to four months, milk production increases even under difficult situations. After this peak though, milk production begins to decline and because of improper nutrition and housing and vet care, the decline in milk production in Kosovo is more rapid than the natural curve.

At this point, the dairyman gets excited as the milk check gets smaller and he begins to examine how he can increase production again. Rations are changed and more high priced concentrate is fed to the cows. Production does bounce up a bit so again he forgets about reproduction. But this is only a temporary fix and in a few weeks production again falters due to the natural curve. It is then that they realize the only hope of increasing milk production is by having the cows give birth again. However, during this time many negative things have taken place preventing the cows from rebreeding efficiently.

Field Activities

During this project, I spent everyday except for one, on farms. Over twenty farms were visited during which I examined the cows' body condition, feet and leg condition as well as performing several rectal exams of problem breeders. I also asked for and reviewed the available records of individual cows. Out of the twenty farms, only two farms had complete records that contributed to proper reproduction management. Both of these farms were two- generation farms where the daily management was performed by the sons. These farms were operating with acceptable reproduction programs but were utilizing natural service.

I presented three seminars in conjunction with Dr Chapin. These seminars attempted to emphasize the importance of total management rather than fragmentation tactics. In addition to presenting information regarding reproduction, I was available for questions regarding anything that pertained to the cows and forage production. I met with the head of KAMP at one farm and discussed several issues with him that could be improved upon at the central government level.

I met with the management of FAUNA on three occasions in an attempt to convince him to change his semen source to someone he can rely on for semen quality and accurate information regarding the resulting off-spring. I continue to work in a liaison capacity with World Wide Sires in an effort to get American semen into Kosovo. While in Kosovo, I communicated on numerous occasions with WWS to get this started.

Two silage field days were held in different areas. At both sights I was in the field when chopping began and stressed the importance of harvesting and storing properly as Dr. Undersander had stated in the hand-outs that were distributed. I worked with the operators of the equipment so that they better understood how to operate and adjust the machine to accomplish the preferred end product.

TASK FINDINGS

The single most important issue regarding efficient reproduction, either AI or natural service is **adequate and accessible records**. During this project, I worked with over twenty herds and found only two of these herds had records that contributed to the reproduction goals. While most herds had one or two segments of the system, the records were incomplete and provided no insight into the reproduction performance. It was impossible to accurately analyze both the past and the future reproduction in these herds. That being said, many reasons for poor reproduction success were identified:

Nutrition.

During this project, I worked as a team with either Dr. Undersander or Dr. Chapin in an effort to correlate our efforts of increased efficiency in the dairy sector. Dr. Chapin has worked previously in Kosovo and has been very beneficial regarding rations, especially the concentrate and mineral and vitamin segments. But as one drives around the entire country, you see hundreds of alfalfa fields that are purple with blossoms before being harvested. The nutrient value of this hay is comparative to straw and the intake of this hay is very low.

By feeding the recommended amounts of concentrate coupled with the low forage intake, the cows are all experiencing either sub-clinical or clinical acidosis. This is a condition that suppresses estrus display by the cows. It also leads to sore feet and abnormal hoof growth which complicates the heat detection problem even more. In some herds I found as high as 90% of the cows suffering from foot rot. There are several causes for this disease, but cows with acidosis are prone to developing foot rot. In one herd there were 4 cows that were “downers” due to advanced stages of foot rot.

Furthermore, the normal prevention of correcting the rations, keeping the barns drier and cleaner, and utilizing proper foot- baths with copper sulfate solutions were not being done. Aggressive antibiotic treatment with sulfa and oxytetracycline is the only cure for the advanced cases. Some of these cows, especially the “downers”, will either die from this or will need to have a claw from the infected foot removed in order to live.

Sire Selection.

Priority in sire selection should be placed on calving ease. Current semen sales provide no possibility of this. The farmer is only given a choice of breeds, nothing else. Selection should also include bulls that will contribute to improved feet & legs and improved udder composites. Milk production should be the last issue in the selection process. The importance of calving ease is evident when I examined many cows in several herds and found reproductive tract infections that are a result of cows giving birth to huge calves and several other improper management techniques.

Birth Procedure.

When I found these “dirty cows in so many herds I questioned the birthing procedure. Even if we have big calves, we should be able to prevent the damage I found. Most farmers and even several vets stated that as soon as the cow began to calve that they pulled the calf immediately. Mechanical calf pullers seemed to be a good sales item for vet supply stores. No time was given for the cow to dilate before pulling. So we are trying to pull this huge calf through a cervix that is only the size of a banana, thus the tearing that leads to pyometria and endometritis.

Most of these cows then do not receive proper treatment to alleviate this development. Rather than infusing with large volumes of antibiotics and sterile fluid or IV administration

of drugs to get the blood level high enough to combat the infection, a small and ineffective bolus is inserted into the uterus and the cow is forgotten until six or seven months later when she has not displayed estrus.

Most of these cows, which receive premature assistance during calving end up with a retained placenta. So here we go again, rather than utilizing proper hormonal and antibiotic therapy, the placenta is removed manually. This practice was abandoned in developing dairy industries over 50 years ago when the veterinary industry realized more damage was done by manual removal than if we did nothing. A very high percentage of cows that have retained placentas will be problem breeders the remainder of their life.

Another cause of the retained placenta is the fact that there are no "Dry cow rations" being fed. Thus blood calcium levels are out of balance at the calving period and result in milk fever. Even though most of these cows can be successfully treated with calcium IV, they will end up with the retained placentas.

Semen Quality.

Kosovo's current semen supply is of low quality. I performed several motility examinations of semen both in the field and at the distributor level. The straws were taken from the nitrogen storage tanks, thawed properly and placed under a microscope immediately. Although the percentage of live sperm was higher at the distributor level, even that was not acceptable.

Breed Concern: The Simmental semen was consistently higher than the Holstein semen. This is disturbing since I see most imported cattle are Holstein. The motility of the Holstein semen ranged from less than 10% to 30%.

Poor Handling: Then due to either poor education or lack of care, the semen is being thawed improperly or being handled by the inseminator in a manner that further decreases the motility before getting it into the cow. My opinion is that the actual placement of the semen is correct, but by this time the percentage of live semen is almost zero. Several inseminators are removing the semen from the nitrogen tank and placing into the thaw canister for prolonged periods of time before getting it into the cow. This is due to the fact that they have no "shuttle nitrogen tanks" to go to the farms with. Consequently, the semen is in the thaw water for as long as 45 minutes. Maximum time to achieve optimal conception is 5 minutes.

Heat Detection.

Heat detection does not receive the proper attention by local farmers. It seems to be easier to blame poor conception on either the inseminator or the poor semen quality. I assume that poor heat detection is complicated through the use of the common tie-stall systems. Part of the seminar presentation emphasized all stress signs in an effort to raising the percentage of legitimate heats.

CONCLUSIONS AND RECOMMENDATIONS

After being on farms in every area of Kosovo and visiting with semen suppliers, veterinarians and other consultants in Kosovo, I concur with Dr. Undersander when he so emphatically stated that we need to go back to basic "Dairy 101". Due to the rapid expansion of the dairy industry, we find many involved who have no background or education in animal husbandry. It would be great to be able to consider highly technical rations, embryo transplants, and efficient milking parlors. But that is not reality in Kosovo today.

On the other hand, the cows are there today. What do we do with them until we get the foundation in management? We cannot just suspend them in time until management is prepared to move forward. I feel that currently the genetics are in front of the rest of management. The genetic capability of the cows far surpasses the current production level.

After lengthy discussions with Peter Dickrell, I recommend that a comprehensive calf and heifer program be instituted through KCBS. This is the only method that will tie all aspects of management together and in a way that can be monitored on a regular basis. A rough proposal is attached in Exhibit E of this report.

It appears that there has been a tremendous amount of good sound advice and information provided to the dairy industry in Kosovo. It seems as though it has not been consistent though when I read some of the previous reports. If the industry is to be sustainable, all aspects of the management equation must be included. They must be instituted simultaneously if success is to be forthcoming. Again the "Heifer Project" accomplishes this goal.

I have also attached as Exhibits copies of other information, which Peter asked me to leave with him in Kosovo. Included is a simple "milking procedure" brochure. Information from a milk quality study shows that over 80% of the cows are infected with mastitis. This is having a negative effect on the conception rates also.

Exhibits

- EXHIBIT A. CORN SILAGE PRODUCTION AND MANAGEMENT
- EXHIBIT B. PROPER UDDER PREP AND MILKING PROCEDURES
- EXHIBIT C. REPRODUCTION & ARTIFICIAL INSEMINATION
- EXHIBIT D. KOSOVO VOCATIONAL DAIRY INSTITUTE
- EXHIBIT E. KOSOVO DAIRY REPLACEMENT PROGRAM
- EXHIBIT F. REPRODUCTION AND ARTIFICIAL INSEMINATION
- EXHIBIT G. GUIDELINES FOR WEIGHT AND HEIGHT