



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

# CALF & HEIFER MANAGEMENT

KOSOVO CLUSTER AND BUSINESS SUPPORT PROJECT



February 14, 2006

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 Dobler.

# CALF & HEIFER MANAGEMENT

A PROJECT TO DEVELOP INDUSTRY ACCEPTED MANAGEMENT PRACTICES RELATED TO CALF AND HEIFER RAISING AS WELL AS INCORPORATING ACCURATE FARM RECORD SYSTEMS RELATING TO REPRODUCTION AND IMPROVED GENETICS

---

Kosovo Cluster and Business Support project Heifer "Replacement Program, Kosovo Cluster and Business Support"  
Contract No. AFP-I-00-03-00030-00, TO #800

This report submitted by Chemonics International Inc. / 14 February 2006

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 .....	2
FIELD ACTIVITIES TO ACHIEVE PURPOSES .....	4
TASK FINDINGS AND RECOMMENDATIONS .....	6
CONCLUSIONS AND RECOMMENDATIONS FOR FUTURE ACTIVITY .....	14
ANNEXES.....	15

## PURPOSE OF ASSIGNMENT

The purpose of the assignment is to set up a calf and heifer-breeding program and to provide advice on proper heifer management. This will generate high quality heifers with superior genetic capabilities that are acclimated to Kosovo at less cost than imported livestock within two years. The benefit of the assignment will also be felt through institutionalizing proper veterinary treatment, proper record keeping, ability to determine proper genetic selection and decreased dependency upon imports.

Because of unforeseen circumstances beyond the control of KCBS, the original targeted farmer was unable to participate with this program. Therefore the project was broadened to encompass several different dairy farms resulting in the same number of calves anticipated in the original scope of work.

An interim record system was instituted as a result of another project in December 2005. Implementation of Dairy Herd Improvement (DHI) records, although the enrollment process has been initiated for eight farms, will be a major portion of the second phase of this project in May 2006. Data from the interim program will continue to be transferred to DHI and initial management reports will be available in the near future.

## BACKGROUND

One of the major causes of lost income to the dairy producer is the poor reproductive performance of his dairy herd. If producers could be given a monthly bill indicating the amount of money that improper reproductive management has cost them, then drastic changes would occur.

Most of the dairy cows that are in the production phase have been imported as pregnant heifers. The majority of heifers after calving face reproductive problems because of postnatal acclimatization and bad herd management including inattention to past records.

Raising heifers is a financial investment, the total number of heifers and first-calf heifers produced per year in the dairy replacement herd, strongly influence the profitability of a dairy farm. Many producers also want to upgrade their herds with genetically superior heifers.

Good management is essential to raising healthy calves. Reducing death losses of newborn calves to less than 5% and raising strong, healthy heifers large enough to breed at 14 to 16 months of age are sound management objectives that will greatly influence the profitability of the Kosovo dairy industry. Calves stunted from underfeeding or diseases will not develop into healthy and profitable cows. Good calf-raising practices include proper feeding, bedding, sanitation, ventilation, and prevention of health problems, pertinent vaccinations, and close daily observation. Heifer breeders will learn the daily protocol that is required to accomplish the established goals.

# EXECUTIVE SUMMARY

The goal of all dairy projects in Kosovo is to develop a profitable and sustainable industry. The objectives of this particular project are two fold; to further develop the record system that is needed to properly manage the herds and to develop proper calf and heifer raising that will be required if the goal of sustainability is to be reached.

The records issue has been an area of concern that was mentioned in my previous report last fall. In December 2005, with the assistance of Dr. Silver, a program was initiated utilizing local university staff and students. From that program, initial data has been collected involving 8 farms. I have analyzed that data which unequivocally confirms the need to focus future efforts towards reproduction and calf and heifer rearing. Profitable milk production is a direct result of efficient reproduction and the data is clear that currently efficient reproduction exists on very few farms in Kosovo. Standard management parameters are eluding the management vision. It is imperative that this initial record and data collection program continue for at least another 12 months to make certain that the results can be continually analyzed. At that time, recommendations from both STTA reports and KCBS staff can provide methods to correct the management deficiencies.

Dairy management is a complex issue that encompasses many different aspects and is much different from other livestock enterprises. Because **reproduction** plays the major role in profitable dairy farming, it is necessary that management utilize every aid possible to monitor and improve the performance of all cows in the herd. It is also imperative that farm owners and herdsman understand the basic functions of the reproductive tract and how it relates to nutrition. **Nutrition** is a concern not only during the mature and productive stages of life, but also during the development stages. Incorrect nutrition as a young calf and heifer can have a negative influence regarding reproduction for the entire life of the animal. The **environment** to which the animals are exposed also plays a major role in both reproduction and production. Cows that are maintained in tie-stall barns are limited in degree of estrus display. This coupled with the lack of basic reproduction knowledge of those working with the cows, contributes to false estrus detection. The condition of many of the barns is causing numerous diseases that further decrease the reproduction efficiency. Foot rot and pneumonia continue to be obvious on many farms and are not being prevented by improving the barn management, nor are these cow diseases being treated. Last August recommended treatment protocol was provided and yet there has been no indication that those protocols are being followed. Part of the reason for this failure is due to the unavailability of drugs. These drugs are readily available both in the USA and Europe. I had numerous discussions with FAUNA, the main supplier; however, I feel that since I am not a veterinarian, these discussions accomplished very little.

I do, however, see several areas of improvement on a small number of farms. I was amazed at the superb quality of corn silage that I found at DISA farm resulting from intervention last fall by the KCBS staff and me. These improvements coupled with the introduction of quality, calving ease, semen from the United States will require that calf and heifer growing procedures be improved to protect the enhanced genetics that will be born nine months from now. These calves will not thrive if managed under current circumstances. During this project, emphasis was placed on the first eight weeks of life. This period is the most critical since most of the death loss will occur during this time. This is also the crucial period that will determine the production capabilities of the animal during mature life. Both the workshop and the brochure that I authored address this time frame and if followed, will provide proper care during this period. The major change that will be required to raise healthy calves during this period is the housing. I continue to stress, that the best results will be attained if calves are placed in **individual hutches** during the initial eight weeks of life while they are being fed milk. I am making a concerted effort to implement this process with

the assistance of USAID. This single change will have a dramatic effect on the future production capabilities of progressive dairy farms in Kosovo. An effort will be made to select someone in Kosovo, who is progressive minded, to begin a calf raising operation that would be available for use by dairy farmers who do not have the capabilities of raising their calves properly. This could be a win-win situation for both.

This project was the first of a two-phase program. The second phase will occur in April or May and during that time I will devote more effort to the period of post-weaning until calving of the heifers. I will also spend a large amount of time analyzing the data, which is continually being collected on the eight target farms. Only by doing so, will I be able to suggest management changes required to improve the reproduction segment. I am also receiving data on a monthly basis at this time and will be making some suggestions to KCBS staff regarding individual herds.

## FIELD ACTIVITIES TO ACHIEVE PURPOSES

The focus of this assignment was to develop a single commercial calf raising farm which would purchase purebred dairy heifer calves from dairy farmers who chose not to incur the extra management of raising calves and concentrate only on milk production. Upon arrival, I found that the targeted farmer who had been selected to raise calves was unable to participate. This failure was unforeseen and was due to several reasons beyond the control of either the farmer or KCBS. This situation required increased effort on my part to search for an alternative method of introducing modern calf rearing to the Kosovo dairy industry.

After questioning the KCBS staff regarding several alternatives, I met with other individuals that were possible candidates to cooperate with this project. None of them had the financial capabilities or the intense interest that this program will require. As a result of these meetings and further discussion with Martin Wood, the decision was made to work with the major commercial farms that are presently attempting to raise their own calves or intend to do so in the near future.

On numerous occasions, I met with Professor Mehmeti, his graduate student, Hysen Bytyqi, and the students selected to participate in the record system introduced in December 2005 by STTA, Dr. Silver. The purpose of these meetings was to review preliminary data regarding the major commercial dairy farms as a means of determining which farms displayed characteristics enabling successful calf raising programs. All data that has been gathered was provided to me and although the primary goal was the calf-rearing program, I also analyzed this data regarding reproduction efficiency. If the calf and heifer-raising program is to be viable, there must be a supply of calves to enter the system. Without efficient reproduction on the commercial farms, there is a decreased need for calf raising facilities.

After reviewing the data, I then visited several of the targeted farms. I did so at random and attempted to listen to the comments of each farmer to see if I could determine interest in the importance of raising calves, rather than approaching the farmer directly with yet another management program. These farm meetings proved successful in that five farms displayed intense interest in calf and heifer raising improvements. The cow numbers of these farms will contribute to approximately 120 – 150 heifer calves per year.

Part of a successful calf program depends upon the semen that is used to conceive the future calves. Therefore four meetings were held with FAUNA ownership and management regarding the distribution and usage of the 4000 units of calving ease American semen that was just now made available. The staff posed many questions during these meetings concerning individual sires. Time did not allow going into detail, as I would deem necessary to insure a thorough understanding. FAUNA asked that these focused discussions continue during the May segment of this project. There will be no need for FAUNA to order additional semen previous to that time, so the May timing will be acceptable although not optimum.

I had three meetings with the Livestock Ministry staff regarding the possibility of a close working relationship with KCBS regarding the issue of calf and heifer raising. The Ministry is instituting a financial assistance program designed to assist dairy farmers in improving calf-raising practices. During the first meeting, I was asked to present to the Ministry, a preliminary criteria that could be utilized for targeting the farmers worthy of this financial assistance. A copy of these criteria is included in the annex section of this report. These meetings were very successful in directing the Ministry program to somewhat parallel the efforts of the KCBS program. The result will be a strengthening of both programs.

Three meetings were held with the REA staff regarding the means and importance of continuing to pass to farmers the recommendations and information of STTA programs and KCBS.

One workshop was held with emphasis being placed on the first 8 weeks of raising calves since this is the area that sets the stage for the entire production life of the calves. Records and selected data that relate to successful reproduction and calving were discussed as well. The five targeted commercial dairymen, KAMP officials and staff, Professor Mehmeti, Hysen Bytyqi, the students who are collecting the data, REA staff, other dairy farmers as well as others who have an interest in the success of the dairy industry, attended this workshop. A copy of the presentation that was made is included in the annex section of this report. A copy of a pamphlet entitled "Raising Dairy and Heifers", which I prepared during this project, was also distributed to all who attended. The REA staff will also distribute this pamphlet in the future.



# TASK FINDINGS AND RECOMMENDATIONS

## **Best Heifer Management Practices:**

During my work in Kosovo in August 2005, I found that even though purebred pregnant dairy heifers have been imported since 1999, very few resulting replacements have entered the herds as a result of calves born in Kosovo. During that project, I visited over 20 farms and did not find even one farm that had a calf / heifer program established. The farms have continued to import expensive pregnant heifers and as a result of this are currently facing difficult cash flow positions.

Recommendations: Following my project in August, I was asked to provide a means of alleviating part of this cash flow problem by providing a plan to improve the calf and heifer raising on commercial farms in Kosovo.

Young-stock often are the most neglected creatures on the dairy, especially in countries that are in the development stages of the dairy sector, yet they possess the highest potential for economic improvement of the operation. There are several different variations of raising calves that can be successful, however those operations, which succeed in raising healthy calves, have two major things in common.

- 1. Detail** – These farms delegate calf feeding to the most dedicated person on the farm who pays attention to the small things, the details that most people don't see. The ability to notice a calf that had a decreased consumption of calf starter today, or notices droopy ears on a calf can be the difference between a live calf and a dead calf. It is proven that women or girls are more successful feeding calves than most men, simply because of the natural mothering instincts and capability to monitor details closely.
- 2. Sanitation** – This does not simply apply to the calf feeding utensils. Successful calf raising operations are typically found within dairy farms that exhibit sanitation on the entire farm premise. Manure is removed daily and stored away from the dairy to prevent flies and other insects from spreading disease. Young calves are highly susceptible to diseases since their immunity level is reduced. Feed supplies are kept in proper facilities to prevent contamination from rodents and harmful chemicals. The milking herd facilities as well as calf and heifer facilities are managed to keep all animals as clean and dry as possible. This insures that when cows give birth, the newborn calf is not contaminated by manure, which is the most common cause of calf mortality. Veterinary tools are disinfected between animals and needles used for injections are used one time and disposed of properly. Breeding and palpation gloves are used one time only and disposed of properly to prevent spreading of reproduction diseases.

But where does calf management really begin and what factors will influence the success of the program?

- A comprehensive vaccination for the entire herd to assure healthy calves at birth.
- Utilize artificial insemination with proper semen selection.
- Proper dry cow nutrition
- Accurate records.
- Adequate facilities
- Dedication

This is simply an overview of the management practices since all detailed segments will be covered in the following recommendations.

### **Selection of Calves:**

A sustainable dairy industry depends on the continued availability of reasonably priced replacement animals for the herd in adequate numbers to allow accepted culling procedures from the milking herd. Every herd has cows that are continual problem cows, due to several issues such as mastitis, reproduction failure or feet and leg problems.

If the financial health of the dairy is to be protected, these cows must be removed to prevent a negative pressure on the cash flow. But if the genetic capabilities of the available replacement heifers are low or the number of heifers is restricted, then the dairy will not prosper.

#### *Recommendation:*

Since we have changed this project from operating as a commercial calf farm to involving several dairy herds the selection of calves is not an option. But the genetics of the calves born and raised on these dairies can be selected. The commercial dairy farms of the future will need to have the capability to compete with the world market. They will be forced to select dairy breeds that can enable them to compete. Selection of breed should also be made to accommodate the market demand which at present is a fluid driven market in Kosovo. It would be logical to select breeds that are known to produce large volumes of milk if managed properly. Breeding a dairy herd is not a short-term goal. We must consider that one production generation will require three years until production begins. We breed the cow with selected semen, then wait 9 months for a calf and then wait another two years until this calf matures and enters the milking herd.

The only method of improving the dairy cow genetic traits, short of expensive imports, is artificial insemination with proven semen. By utilizing the American semen, farmers have the ability to select for 30 different characteristics which all lead to increased production and efficiency.

### **Nutrition:**

Improper nutrition has been a segment of dairy production that has been identified by numerous consultants, although no work has been done regarding the nutrition program for calves and heifers. This is a natural situation since the response from improving milking cow nutrition is usually quite fast and easily identified, while the response from improved calf nutrition again is not noticed for three years or until this animal enters the milking herd. Initially, it was wise to concentrate upon the rations for the imported milking cows, but failure to address the calf program for several years has now left the industry without a supporting cast, which includes healthy calves and replacement heifers.

#### *Recommendations:*

Emphasis was placed on the first eight weeks of life of the calves. These first eight weeks have the most dramatic effect on the lifetime production capability of the animal. Therefore detail is critical during this period and every detail is crucial. If one step is left out of the nutrition program, it will collapse. Proper nutrition promotes rapid growth and rumen development that will enable converting the heifer from a daily liability to an income-producing asset quickly.

- Adequate quality colostrums: Within one hour of birth hand-feed at least 2 liters of clean colostrum calf utilizing a sanitized bottle or bucket. Before the calf reaches 8 hours of age, another 2 liters of colostrum should be fed. Calves are born with very little immunity and rely on the colostrum to gain this needed immunity. Anti-bodies

from the colostrums are absorbed through the stomach wall directly into the blood stream. The lining of the stomach begins to lose this absorption ability shortly after birth and ends by 8 hours age. Research has proven that 25% of calves that are left with their mother during this eight-hour period to nurse the colostrums fail to nurse at all. Another 25% of those that do nurse do not receive adequate volumes to transmit the antibodies.

- Whole milk or milk replacer: After the colostrum feeding period a choice can be made to feed whole milk or quality milk replacer. Twice a day feeding of 2 liters for an eight-week period is sufficient. Feeding more milk will just decrease the amount of calf starter consumed. Excess amounts of milk can also contribute to excessive fatty tissue developing in the infantile milk secreting glands, which will decrease the milk production capability later in life.
- Calf starter concentrate: There are several qualities to be considered when selecting the starter feed. The feed should contain a minimum crude protein content of 16% to 20% depending upon the choice of whole milk or milk replacer formula and contain 0.52 to 0.56 Mcal of net energy per pound of gain. Physical properties include palatability, and texture. Adding either dry or liquid molasses can increase palatability. The texture should be coarse to add to palatability and to prevent stomach disorders. Several studies have proven that calves will perform well utilizing whole corn as the grain portion of the calf starter. Rations utilizing soybean meal will result in faster daily gains than rations utilizing sunflower meal. Part of this difference relates to decreased intake with the sunflower meal protein source due to less palatability. Begin hand feeding the calf starter at 2 days of age and continue to hand feed until calf eats willingly by itself. Feed only amount that calf will consume between feedings in a clean, easily accessible bucket. Empty un-eaten starter every feeding before adding fresh feed. This prevents musty and moldy starter, which will decrease consumption. Make certain that you are placing adequate amounts of feed into container to allow the calf to consume unlimited amounts. The sooner we can initiate adequate consumption of starter, the sooner the rumen begins to develop. Earlier rumen development will promote faster growth during the adolescence stage of growth. At 28 days of age, calves should be consuming between .8 kg and 1.2 kg per day.
- Water should be available ad lib at 4 days age. Calves with water available will consume 46 % more starter than those without and will have an increased average daily gain (ADG) of 61%.
- Hay should not be fed until after weaning calves because it does not contain readily fermentable carbohydrates and therefore does not stimulate volatile fatty acid production and microbial activity in the rumen. Feeding hay to young calves can delay the time required until entering the milking herd by as much as 4 months.

Calves should be weaned from milk one week before moving them from the recommended individual hutches. At this critical stage, consumption of calf starter will increase dramatically. Continue to feed ad lib during this period as the calf makes the adjustment away from a partial fluid diet. Upon successful transition, quality hay can now be added to the ration along with continued feeding of the same formulation calf starter for an additional month. Limit daily intake of starter at 2.5 kg and continue to have free choice water. I feel that this is where we need to stop for the moment regarding the nutrition program simply due to the amount of information. As mentioned previously, this is part one of a two-part program. Farmers need to concentrate on this segment from now until May when I will go

into detail on feeding from this stage until calving. General comments that can be used for the older heifers do include;

- Goal of 0.8kg ADG from weaning until calving. Increased rate of gain beyond this goal results in undesirable fatty tissue in reproductive tract that lowers conception rate and increased fatty tissue in mammary system that lowers milk-producing capability later in life.
- Attain goal of breeding weight of 365-375 kg by 14 to 15 months of age
- Utilize increased percentage of quality forages in rations as heifers grow

Sample rations for following stages of growth are found in the annex section of this report as well as nutrient analysis of those same rations and current costs.

Dry cow rations have also been ignored during the entire life of this project. This fact is a contributing factor to the large number of stillborn calves that is currently occurring. The dry cows certainly need a separate ration if we are going to improve the health of the calves and the cows as well. Many metabolic disorders are limiting both production and reproduction performance as a result of this failure of attention to detail. I will defer this issue to the nutrition consultant who is currently doing the cow nutrition.

#### **Heifer Growth Rate:**

Currently the time needed to grow heifers to proper breeding weight is having two major negative impacts on the dairy industry. Although there is no data concerning the age at first breeding or calving of heifers born in Kosovo, I have had reliable reports exceeding the target by as long as six to even 10 months. The lack of accurate records prevents assessing the heifer growth rate, but by viewing the heifers I am certain that most are falling way behind the ADG goal of .8 kg and attaining breeding weight 365-375 kg.

#### *Recommendations:*

Farmers should have a weight and growth tape measure to monitor the growth rate monthly. A standard weight and height graph is attached in the annex section of this report. Proper heifer growth rate can be attained and even surpassed by utilizing the nutrition advice and the attached rations.

#### **Reproductive Status:**

Information obtained during farm visits and from the preliminary data of the REKAP program, my assumptions of last August were confirmed. Reproduction status of herds on the majority of commercial dairy farms is a major problem. Profitable milk production is a direct result of efficient reproduction. It clearly follows that several commercial farms are experiencing severe cash-flow difficulties. The tremendous value of the data being collected by the college students from the eight herds is evident when I analyze this data. There are several different measurements of the reproduction efficiency, but the single number, which will give a true picture, is average days in milk (DIM).

This is simply derived at by calculating the elapsed days from date of calving until today for each cow and then applying an average. This number changes daily since each cow in the herd is at a different stage of lactation, depending on her calving date. The goal for DIM is 160 to 180 DIM. For each day beyond the optimum goal of 160 days, we can expect that the average milk production will be reduced by .17 pounds. DIM for the herds enrolled in the

REKAP program currently range from 185 to 307 resulting in annual milk losses for the five herds, which had adequate data to rely upon, exceeding 165,000 euros.

The DIM number measures several management issues including heat detection, days to first service, and number of services per conception. This is a number that needs to be monitored frequently since this is the first indicator of problems concerning reproduction.

In addition to losses incurred from decreased milk production, there will be fewer calves born in herds with extended days in milk. I have calculated the losses of heifer calves only for the five herds with losses per herd ranging from 2000 euros to 10,000 euros annually.

These calculations are included in the annex section of this report.

*Recommendations:*

Data suggest that the education level concerning heat detection, pregnancy confirmation, and breeding technique is very low. Although most farmers think they understand the management criteria regarding reproduction, they truly have no concept of the importance of achieving the target goals. Following are goals that will need to be achieved if the industry is to be sustainable.

- Days to first breeding – 45 to 60 days. Breeding before 45 days can actually increase the DIM because the condition of the uterus in most cases, although the cow is displaying estrus, will not be conducive to a maintained pregnancy. This results in the egg being fertilized, the fetus beginning to develop but then being absorbed. This then requires added time for the uterus to reach the condition needed to sustain a pregnancy, in simple terms we further increase the DIM and calving interval. Improper heat detection is resulting in many cows not being bred until well beyond the goal, in some cases cows are not bred until 250 days in milk. A simple rule is that for each day open beyond the target of 60 days, a loss of 1 euro per day is being incurred. Certainly, a concerted effort must be made to train the farm owners as well as employees to understand how to manage the reproduction of the herd. Until there is an understanding of the targeted goals and how to attain them, reproduction in Kosovo dairy herds will suffer.
- Days open – 60 to 80 days. Many farmers assume that if they have bred the cow and she does not return in estrus that she is pregnant. This is apparent when I view the data and find many cows that were bred more than 9 months ago (the average gestation period is 283 days) and have not given birth. Pregnancy exams should be a given priority if the DIM are to be decreased. These exams should be made between 45 and 60 days after breeding so that if the animal is not pregnant, a concerted effort can be made to get the cow cycling and rebred as soon as possible.
- Calving interval – 12.5 to 13.5 months. This is a direct reflection of days to first breeding and days open and is the ultimate measurement of the reproduction program. It appears that when adequate data is available, there will be herds with calving intervals exceeding 20 months.

The single management tool to shorten the entire reproduction process will be proper pregnancy examinations at the recommended time of 45 to 60 days post breeding. Another helpful tool would be to have post partum exams performed by a competent veterinarian at 20 to 30 days to isolate problems such as metritis. Treatment at this time can have a dramatic impact on the days to first service. Veterinary care on the majority of herds is not

of the quality needed to promote efficient reproduction. This seems to be a deep-rooted problem that will take much effort to resolve. Veterinarians seem to have the attitude that they are merely a drug sales operation rather than a professional services operation.

#### **Best time for selling pregnant heifers:**

This issue becomes mute because of the modification of the program. At this time the program is directed at dairy farms, which will utilize the calves and heifers in their own herds.

#### *Recommendations:*

If a commercial calf farm is developed before my return in May, I will work with that operation at that time. Usually the highest returns are received if the pregnant heifers are marketed to dairy farmers when they are 7 months pregnant. At this time the udder development is obvious for assessment by the farmer and a premium price can be achieved. This also allows ample time for the heifer to acclimate to the diseases found on the dairy farm and to build immunity in her system and pass that immunity to the resulting calf through her colostrum.

#### **Proper Selection of Semen:**

A major cause of the inferior reproduction performance found today is a result of a large number of difficult births that are taking place on the farms. There are several factors contributing to this such as inadequate size of cows and heifers and improper rations during the period 60 days pre-calving. The major factor however, is failure to select semen from bulls known to sire calves that are delivered easily (calving ease sires)

Prior to the arrival of the American semen, this was not an available option. In fact, the only selection process was for breed.

The plague of difficult births has led to many cows becoming infertile as a result. Inadequate treatment of the cows experiencing these difficult births only complicated the problem further. When cows require assistance at calving most experience retained placenta (RP) that develops into metritis. This further complicates the reproduction cycle. And again the incompetence of the veterinarians contributed to poor response to any treatment given.

#### *Recommendations:*

With the arrival of the American semen, the farmers now have not only the choice of calving ease semen, but also have a choice concerning over 30 different body characteristics that contribute to healthy and profitable cows.

Bulls are rated for calving ease by the number of difficult calves born from their semen during the testing phase. Bulls that result in less than 8 % difficult births are considered to be calving ease bulls. This criterion was utilized when the initial semen was imported. However, there are two bulls in this shipment, **Ron 14H002955** and **Farady 9H002763**, should only be used to inseminate larger mature cows. This is simply a recommendation because of the smaller scale of cows in Kosovo as a result of poor nutrition and improper heifer programs of the past. All of the bulls available through this initial shipment have a positive milk increase ranging from +180 pounds to +1509 pounds per lactation for the daughters. Currently the level of management, especially nutrition, will probably not allow these increases to occur. I am optimistic though that within the next three years the management will improve to attain these results when the resulting calves enter the milking herd. One of my main concerns is to get the calf-raising program improved during the next 9 months so the dairy farmers will not compromise the genetic capabilities of these calves when they are born and raised to maturity.

As mentioned earlier, FAUNA has asked for an intense program regarding the specific genetic traits. Time did not allow me to address this issue on this project, but I will simply state that when we are selecting semen for the mating, we should only select for one or two traits to improve with each generation. By doing so, significant improvements can be made. If we attempt to select for additional traits, we end up not improving any of them significantly. As an example, analyze the herd and select a bull that will make a contribution to the largest fault, such as feet & legs or mammary system.

**Selection of proper housing:** Current housing facilities being utilized on most farms are simply a corner of the cow barn or an unused dark and cold shed. This system worked fine for the indigenous breeds and when we did not expect more than 15 liters of daily milk production. Once improved dairy breeds were imported, problems began to develop such as scours and pneumonia. Most of the calves that developed pneumonia as a result of poor ventilation have survived. But as a result of lung damage, they will never realize their full genetic potential. High levels of milk production require large amounts of blood to be circulated through the mammary system. Therefore, if the lung capacity is compromised, they cannot support the heart in its job to pump those large quantities. Sub-clinical pneumonia is also a disease that requires continual medical expense.

*Recommendations:*

The purpose of proper housing selection is simply to reduce stress during the critical first 8 to 10 weeks of the calf's life. Stressed calves become sick calves, dead calves, or heifers and calves that never attain the goal of profitable milk production. Stress comes in several disguises.

- Thermal
- Environmental
- Disease
- Nutritional
- Inconsistency

Therefore we must select a form of housing that will aid in preventing all of these forms of stress. There is only one form of housing that will provide such a broad range of protection. Individual fiberglass hutches, if managed properly will provide an ideal condition for raising calves.

Hutches should be placed outside on a gentle slope to prevent excessive moisture accumulation and bedded with ample amounts of straw. The hutches prevent drafts that lead to pneumonia. Placing the hutches outside away from the mature animals prevents passage of disease pathogens from the mature animals to the calves. Individual housing enables monitoring of feed intake as well as preventing competition of feed consumption. Hutches address all the needs to provide proper conditions to raise healthy calves and heifers for the industry and provide an alternative source of herd replacements rather than continued imports. When calves are weaned they should remain in the hutches for one more week to assure proper transition from a partial fluid diet to solid feed. Then move to small groups housed in a larger hutch or open building. Do not move into cow barns or similar environment, as this will simply reintroduce the animal to the same problems that exist currently. As long as the growing heifers have a dry place to rest and adequate nutrition they can accommodate very cold temperatures.

I recommend that a minimum of 36 hutches be provided for distribution to the following dairy farms; Disa, Mujota, and Mazreku. I would also suggest providing 3 "super hutches, one for each farm, to be utilized for immediate post weaning period. These farmers have displayed management characteristics leading me to believe that they are serious about their dairy

business. They have people working with the herd that can and do apply proper recommendations. All of these farms have had steady improvement within the segments that consultants have assisted them. A price quote is provided in the Annex section along with nearest contacts.

**Selection of user-friendly, efficient and accurate record system:**

During my project last August, it was apparent that ability to analyze the performance of the herds by the owner was impossible due to lack of any consistent record system. Records are the road map for successful dairy operations. We must know where we have been if we are to continue down the road in dairy production. There was also no accurate method for KCBS to monitor the effectiveness of programs in the dairy sector. The only measurement being utilized at that time was daily milk production of those cows, which were in production at a given time. The danger of relying on this one form of performance is that it did not provide any predictions of the future. The future has now arrived and we find a total breakdown in reproduction that is no decreasing production on the majority of farms unless they have intervened with additional investments of imported heifer.

*Recommendations:*

Dr. Silver introduced an excel spreadsheet system last December which is utilizing college students to gather the data from the farmers. I suggest that this process of gathering data be continued for a minimum of one year. I request this extension of time since I feel it will take that time until the farmer actually sees financial returns from any record system. If the student gathering process ends before that time, I predict that the dairy farmers will simply drop the ball. Although only preliminary data is available at this time, it enabled me to determine where the critical issues are in the reproductive sector that needs immediate attention. This will enable KCBS to target future consultants correctly.

The Dairy Herd Improvement (DHI) record system has been installed at KCBS and data from the spreadsheets is now being transferred as the validity of the information is assured. I will continue to work with DHI/Provo and KCBS to assure that the original 8 herds are fully enrolled and receiving crucial reports during the following months and during the May segment of this project will attempt to enroll additional herds. I commend Dr. Silver as well as the staff and the students for playing a tremendous roll in providing this original data.

This one project will have a huge impact on the dairy industry for years to come.

**Provide information that will enable heifer grower to establish adequate contacts, including calf purchases and heifer sales:**

Not Applicable at this time until a commercial grower develops.

## ECONOMIC RESULTS

I will not address the economic results until adequate data has been gathered which will allow a comprehensive picture. You will see in the annex section just a brief glimpse of the economic losses, which are occurring simply due to poor reproduction results. In May, I shall provide a further comprehensive study of continued losses. Due to the long reproduction cycle of cattle, there will be no improvement in this loss for several months.



# CONCLUSIONS AND RECOMMENDATIONS FOR FUTURE ACTIVITY

The dairy industry is just now beginning to show some real signs of progress. But as I mentioned previously, dairy farming is a complex business, which requires all segments to be improved simultaneously. Therefore there are several aspects of management that must be continually improved if progress is to continue:

- Reproduction is certainly the segment that is behind the other areas of management. There are several areas that I suggest as a means of improvement.
  1. Continuing the current record system with data gathered by the college students for a minimum of 12 months. Two years would be even better since the reproductive and replacement cycles are involving nine months and 2 years. Without this data, there is no means of establishing a baseline from which to improve
  2. Provide intense seminars focused on heat detection, breeding technique, reproduction parameters, genetics and semen selection.
  3. Provide workshop, preferably including a veterinarian who is involved in a working practice, concerning adequate pregnancy diagnosis. Although I am told the veterinarians are capable, I do not see the results in the field.
- Currently there is no resemblance of proper calf rearing at any of the farms I have worked with. I did concentrate on this issue in January and provided the brochure, but this program will require another consulting period to nurse it along when the hutches have arrived. There will be misunderstandings, shortcuts, and application questions that all need further effort.
- Because there have been few calves rose in previous years, there has been no development of management of growing heifers. Consequently the few heifers that have been raised have been almost ignored. This is evident when we see the continued need of imported heifers simply to keep the farm alive as a milk production facility. I suggest that this be incorporated into part two of my project in May, but this too will need continual monitoring and further education for the next few years.

Sometimes we think that developing dairy management is a quick fix. If a sustainable program is to be developed, it will require a minimum of four to five years, simply due to the tremendous amount of knowledge, which needs to be passed and absorbed. I have worked in numerous projects around the world during the last 15 years and find that the most successful projects have a similarity. They rely on experts who are heavy in practical experience and can work with the farmers showing them how rather than telling them how. I feel that Kosovo is no different. The dairy industry will grow and thrive if the farmers are provided with practical experts that continue to build upon the basics.

# ANNEXES

Annex I	Heifer Rations, Vaccinations, P&L Statement
Annex II	Weight and Height Targets
Annex III	Calf Raising Brochure
Annex IV	PowerPoint Presentation
Annex V	Criteria for Ministry of Agriculture, Forests and Rural Development
Annex VI	Effect of calving Intervals on Herd Replacements
Annex VII	Milk Income Losses due to Extended Days in Milk
Annex VII	MOU Revisited

# ANNEX I: HEIFER RATIONS, VACCINATIONS, P&L STATEMENT

## HEIFER REPLACEMENT PROGRAM

KOSOVO CLUSTER AND BUSINESS SUPPORT

### CASH FLOW PROJECTION (PER CALF)

#### Input Summary

Starting Weight	90.8 kg
Daily Gain	0.816 kg/day
Time to end of Ration	17.5 MOs
6mo Preg Heifer	1200 €
Death Loss	2%

#### Output Summary

Cost of 3 day old Calf	150.00 €
Calf Ration	60.68 €
Cost of Stage 1 Ration	67.71 €
Cost of Stage 2 Ration	84.75 €
Cost of Stage 3 Ration	131.34 €
Cost of Stage 4 Ration	168.12 €
Vaccinations	23.48 €
Bedding	2.40 €
Depreciation (calf hutches)	8.88 €
Labor	0.00 €
Miscellaneous Expense	25.00 €
<b>Total Cost</b>	<b>722 €</b>
<b>Death Loss</b>	<b>14 €</b>
<b>Profit to Heifer Grower</b>	<b>463 €</b>

### Input Values

Cost of 3 day old Calf	150 €
Stage 1 Starting Weight	90.8 kg
Daily Gain	0.816 kg/day
Time to end of Ration	17.5 MOs
Milk Replacer	44.4 €
Calf Grain	16.28 €
6mo Preg Heifer	1200 €
Corn	0.12 €/kg
Barley	0.12 €/kg
Oats	0.1 €/kg
Soybean Meal	0.28 €/kg
Alfalfa Hay	0.08 €/kg
Corn Silage	0.02 €/kg
Wet Brewers Grain	0.032 €/kg
Molasses	0.096 €/kg
Salt	0.2 €/kg
Dicalcium Phosphate	0.4 €/kg
Limestone	0.07 €/kg
Magnesium Oxide	0.28 €/kg
Straw	0.6 €/15 kg
Vit - TM premix	0.04 €/day
Death Loss	2%
Vaccinations	23.48 €
Depreciation (calf hutches)	8.88 €
Labor	0 €
Miscellaneous Expense	25 €

### Intermediate Values

Stage 1 Starting Weight (kg)	90.8 kg
Stage 1 Ending Weight	181.6 kg
Duration Stage 1	111 days
Stage 2 Starting Weight	181.6 kg
Stage 2 Ending Weight	272.4 kg
Duration Stage 2	111 days
Stage 3 Starting Weight	272.4 kg
Stage 3 Ending Weight	385.9 kg
Duration Stage 3	139 days
Stage 4 Starting Weight	385.9 kg
Stage 4 Ending	17.5 Months
Duration Stage 4	182 days
Total Duration	543 days

### Heifer Ration

#### Ingredient Detail

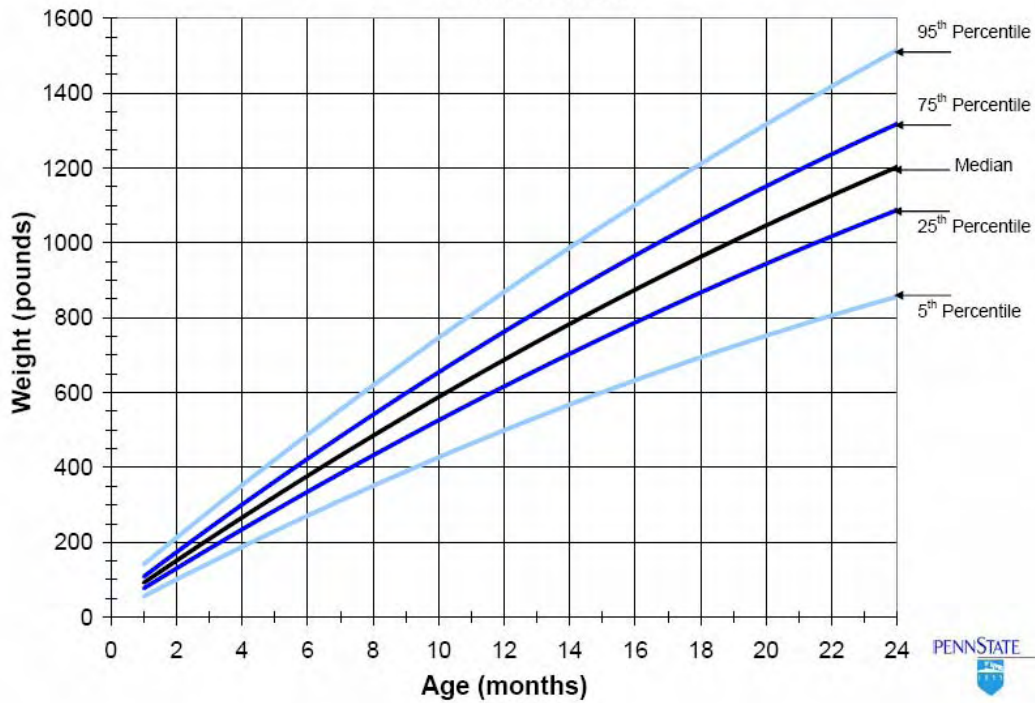
Stage 1	Stage 1 (kg/day)	Stage 2 (kg/day)	Stage 3 (kg/day)	Stage 4 (kg/day)
304 Corn Silage 30% Gr	0.000	8.172	14.528	24.970
202 Alfalfa pre bud	1.816	1.816	1.816	1.816
407 Corn Ground Grain 56lb/b	0.908	0.908	2.270	0.000
414 Molasses Cane	0.227	0.000	0.000	0.000
401 Barley Grain Heavy	0.908	0.908	0.000	0.000
502 Brewers Grain 21%DM	1.362	3.632	5.448	6.810
525 Soybean Meal - 49	0.454	0.227	0.000	0.000
831 Salt	0.023	0.036	0.050	0.050
810 Dicalcium Phosphate	0.018	0.018	0.018	0.014
813 Limestone	0.000	0.000	0.036	0.045
816 Magnesium Oxide	0.009	0.009	0.009	0.009
997 Vit - TM premeix	0.023	0.023	0.023	0.023
<b>Total Weight (kg)</b>	<b>5.748</b>	<b>15.749</b>	<b>24.198</b>	<b>33.737</b>
<b>Duration of Ration (days)</b>	<b>111</b>	<b>111</b>	<b>139</b>	<b>182</b>
<b>Total Cost (Euro)</b>	<b>68</b>	<b>85</b>	<b>131</b>	<b>168</b>

### Nutrient Analysis (DM%)

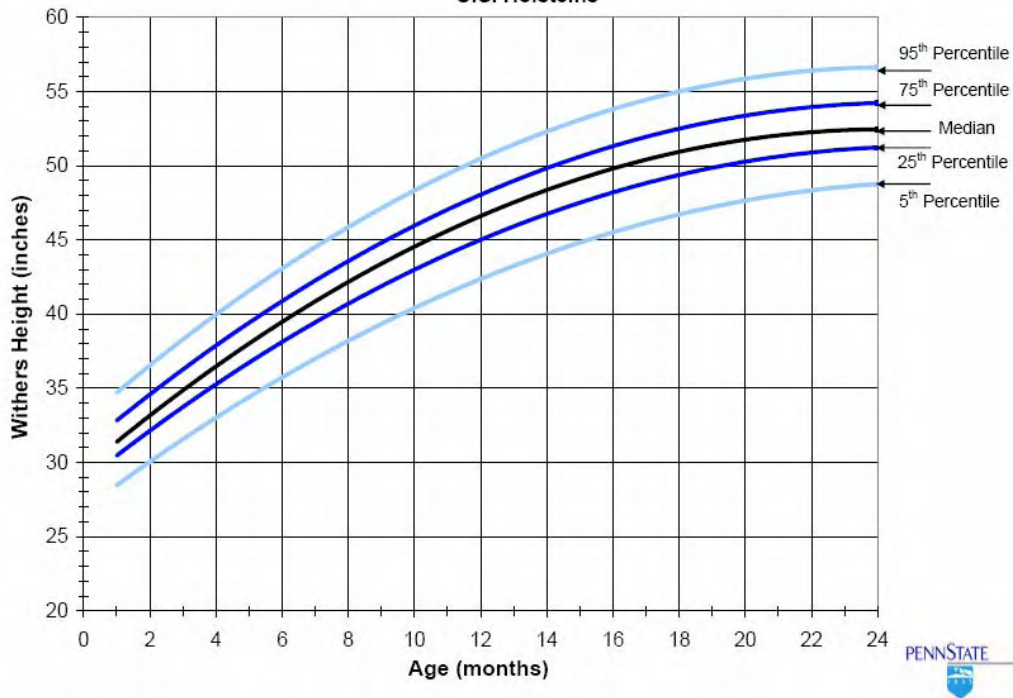
		2-4 wt Heifers	4-6 wt Heifers	Breeding Heifers	Bred Heifers
1 Dry Matter	%	78.8	44.44	40.18	33.97
2 Protein	%	20.13	15.79	13.45	13.2
3 RUP % Prot	-	35.84	35.29	36.43	32.05
4 RDP % Prot	-	64.16	34.71	63.57	67.95
5 SOL % Prot	-	22.91	29.44	32.6	40.11
38 RUP % DM	%	7.21	5.57	4.9	4.23
39 RDP % DM	%	12.91	10.22	8.55	8.97
67 RUP Met % DM	%	0.07	0.06	0.06	0.05
68 RUP Lys % DM	%	0.34	0.22	0.16	0.15
7 ME	Mcal/lb	1.21	1.17	1.16	1.1
79 NEI Level 1	Mcal/lb	0.81	0.77	0.76	0.72
8 NEI	Mcal/lb	0.81	0.77	0.76	0.73
9 NEg	Mcal/lb	0.48	0.46	0.47	0.45
10 NEm	Mcal/lb	0.75	0.73	0.73	0.69
11 ADF	%	16.04	23.82	24.82	31.16
12 NDF	%	24.21	35.99	37.58	46.09
13 eff-NDF	%	16.12	23.51	24.24	31.13
14 TDN	%	72.66	70.22	69.62	66.13

# ANNEX II: WEIGHT AND HEIGHT TARGETS

## Weight by Month of Age U.S. Holsteins



## Withers Height by Month of Age U.S. Holsteins



# ANNEX III: CALF RAISING BROCHURE

- Sanitation - This does not simply apply to the calf feeding utensils. Successful calf raising farms are typically found within dairy farms that believe in sanitation on the entire farm premise. Manure is removed and stored away from the dairy daily to prevent flies and other insects from spreading disease. Feed supplies are kept in proper facilities to prevent contamination from rodents and harmful chemicals. The milking herd facilities as well as calf and heifer facilities are managed to keep all animals as clean and dry as possible. This insures that when cows give birth, the newborn calf is not contaminated by manure, which is the most common cause of calf mortality. Veterinary tools are sanitized between animals and needles used to treat sick animals are disposed of immediately. Breeding and palpation gloves are disposed of properly to prevent spread of reproductive diseases.



#### Weaning suggestions to minimize stress:

- Calves can be weaned when daily consumption of calf starter reaches 1.2 kg. This usually occurs between 7 and 8 weeks of age.
- Dehorn and remove extra teats at least 10 days prior to weaning to eliminate additional stress.
- Move weaned calves into small groups that have been weaned at the same time.
- Wean in the morning so extra attention can be given the calves during the day.
- Provide well bedded and well ventilated area and utilize open shedding.
- Provide ample feed bunk space and water trough area to reduce competition.

- Monitor feed intake of individual calves during this transition period.
- Continue vaccination programs that will build immunity as the calves grow.
- Continue feeding the same calf starter and add small amounts of premium quality hay to the diet in the week following weaning.
- Calves should continue to consume minimum of 1.2 kg of the starter ration and within one week should be consuming up to 2.5 kg.



Attempt to reduce stress throughout the calf program.


Stress comes in several disguises.

- Thermal
- Environmental
- Disease
- Nutritional
- Inconsistency

Following the guidelines outlined in this pamphlet will help you manage your calves in a manner that will insure that they enter the herd as soon as possible and become healthy, high-producing cows that will contribute to the profitability of your dairy herd.

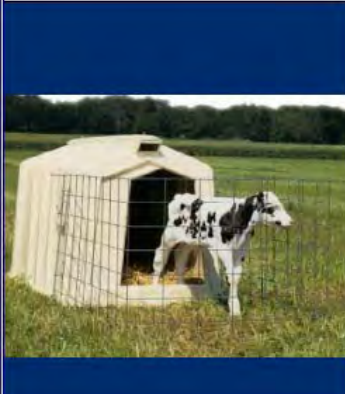


Opinions expressed in this publication do not necessarily represent the views of United States Agency for International Development or the United States Government



**Kosovo Cluster and Business Support**

**RAISING DAIRY CALVES AND HEIFERS**



#### Where do I begin?

- Thorough vaccination program of the entire herd to assure healthy calves at birth
- Utilize improved semen from calving ease bulls
- Proper dry cow nutrition as an aid in easy calving process
- Clean, sanitized, and well bedded maternity pens
- Accurate records

During the first 8 weeks of life, calves need six basic things in order to thrive.

- Adequate colostrum. 2 liters within one hour of birth, preferably hand fed rather than by nursing and 2 additional liters during the next 6 to 8 hours. The absorption of antibodies from the colostrum through the stomach lining begins to decrease within one hour of birth and ends at eight hours of age. Research has shown that 25% of the calves left alone at birth do not nurse within 8 hours and between 10% and 25% do not get adequate colostrum.



- A dry environment. Calves can tolerate extreme cold when bedding is dry and clean and the calves are free from drafts. Dirty calves become sick calves.
- Good ventilation. This cannot be achieved by keeping calves in the same facility as the mature cows. Ammonia odors in the environment weaken the tiny hair-like fingers, or cilia, that line the trachea. When weakened, the cilia are less effective at sweeping respiratory pathogens out of the trachea, allowing them to enter the lungs, thus contributing to respiratory illness.
- Individual housing such as fiberglass or wooden hutches is important to prevent spreading of disease, navel infections and juvenile mastitis. This also aids in monitoring feed intake by individual calves.
- Navels dipped, not sprayed, with 7% iodine solution to prevent bacteria from entering.

- Proper nutrition that promotes rapid growth and rumen development. Proper nutrition consists of milk or milk-replacer, appropriate calf starter concentrate and water.

#### Frequently asked Questions:

- Why should I use individual fiberglass hutches? Fiberglass hutches are much easier to keep clean and disinfected between calves. They also tend to keep temperature variation to a minimum and reduce drafts.
- Where do I place the hutches, inside or outside? Hutches should be placed outside on a well drained sloping area. In the winter, they should face away from predominate wind direction and facing the sun if possible. Calves will perform well in outside temperatures as cold as -20°C as long as they are dry.
- When do I dip the navel with the 7% iodine solution? As soon as the calf is born. Repeat at 12 and 24 hours of age. Use a clean container with fresh solution for each calf.
- Should I feed whole milk or powdered milk? Research has shown that whole milk results in optimum gains, although milk replacer containing all animal product protein sources and minimum of 20% fat content can be utilized successfully. It is important to maintain consistent feeding amounts and feeding intervals. During extreme cold weather, it is advisable to increase the volume to provide more energy which will be needed to maintain body temperature.
- What are the qualities of a good calf starter ration?
  - 16% to 20% crude protein
  - 0.52 to 0.56 Mcal of net energy per pound of gain
  - Coarse ground or rolled grain free of excess fines.
  - Highly palatable (may need to add molasses)
  - Free of mold
- When should I begin feeding starter and what amounts? Between day and day 4, begin to hand feed the calf small amounts. Continue hand feeding until calf will eat by itself. Provide fresh starter each feeding. By 28 days of age calves should be consuming .8 to 1.2 kg of starter
- Do I need to provide water for the calf to drink since it is already drinking milk? Yes, water should be provided free-choice in a separate container beginning at 4 days of age. On farm trials have proven that calves with free-choice water consume 46% more starter which translates into an increase of average daily gain of 61%
- Should I feed hay to calves to promote rumen development? Actually feeding hay to calves under 8

weeks of age delays development of the rumen. Hay does not contain readily-fermentable carbohydrates and therefore does not stimulate volatile fatty acid production and microbial activity in the rumen. Adding hay to calf rations can delay the development of the rumen by several weeks. This also delays the time until the calf will enter the milking herd by as much as 4 months.

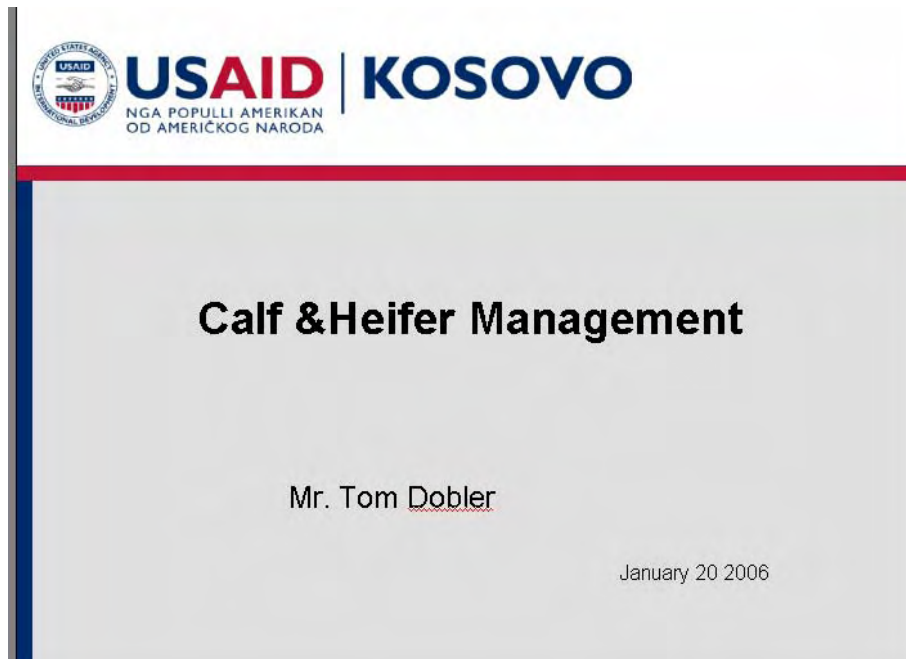
- How often should I wash and sanitize feeding utensils? Milk utensils should be cleaned between every feeding. Starter feed containers should be emptied every day to prevent stale and moldy feed build-up. Between calves all utensils as well as the hutch must be cleaned and sterilized. Plastic utensils are easier to keep sanitary. If milk feeding buckets are to be shared between calves, they must be sanitized between calves.
- Is there a proper order of feeding the calves? Always begin with the younger calves first to prevent spread of disease. If there are known sick calves, feed them last.
- Should I dehorn the calves and when is the best time to do so? All calves should be dehorned to prevent injury to other members of the herd as they mature. This can be done using several methods. Either an electric dehorning tool or dehorning paste can be utilized as soon as the horn bud is distinguishable. This normally is between 3 and 4 weeks of age.
- Should I be concerned about extra teats on the heifer calves? These extra teats should be removed at the same time as dehorning utilizing a surgical scissors. After removal topical ointment should be applied to prevent infection and promote rapid healing. Extra teats can be a problem if the herd is milked using machines and can also contribute to mastitis infections.

Young-stock often are the most neglected creatures on the dairy, yet possess the highest potential for economic improvement of the operation.

There are several different variations of raising calves that can be successful. Those operations who succeed in raising calves have two major things in common.

- Detail - These farms delegate the calf feeding to the most dedicated persons on the farm who pay attention to the small things, the details that most people don't see. The ability to notice a calf that had a decreased starter consumption rate, or noticed droopy ears on a calf can be the difference between success and failure. It is a fact that women or girls are more successful feeding calves than men, simply because of their mothering instincts and capability to monitor details closely.

# ANNEX IV: POWER POINT PRESENTATION



This presentation is available on the CD submitted with the report.



## ANNEX V: CRITERIA TO MAFRD

The “Dairy Heifer Assistance Program”, closely parallels the current program which is being instituted by KCBS. During August, 2005, calf and heifer raising were determined to be issues that were placing financial constraints upon the Kosovo dairy industry. Although the issue of raising replacement heifers is only one of several management deficiencies, it is of major importance if the industry is to become sustainable. Therefore, a program was developed to aid the dairy industry regarding improved practices associated with raising replacements in an efficient manner.

A major concern in this segment of dairy management, is to raise the calves and heifers quickly as a means of converting the young-stock from a daily expense item to an income asset. This will certainly contribute to improvement of the current livestock deficiency situation. The dairy industry has experienced financial stress as a result of continued expensive imported dairy heifers and will benefit tremendously from this program.

In January of 2006, 4000 units of American Holstein semen arrived in Kosovo through cooperation between KCBS and FAUNA. This semen has the genetic capability of increasing the milk production of the resulting offspring by over 500 liters per lactation. The full benefit of this semen will not be realized unless the resulting calves are raised properly. Therefore, it is imperative that the Ministry of Livestock and KCBS cooperate to realize the full potential of the newly introduced genetics.

The following criteria for farmers are suggested as a method to establish cooperation and will result in maximum return on the investment of both KCBS and the Ministry. These suggestions are brief and concise. I will be happy to discuss them in depth during our next meeting. The KCBS staff has the knowledge to assist in any way that the Ministry would see fit during the development of this important program. Because this program is funded only for one year, it is important that it be structured in a method that will attain results if additional funding is to be considered.

1. The Farmer will be utilizing accurate and comprehensive records regarding all livestock.
2. The Farmer will be utilizing artificial insemination of improved dairy breeds to include Holstein, both black & white and red & white; Brown Swiss; Simmental. I suggest major emphasis be placed on Holstein and Brown Swiss.
3. A standardized I. D. system utilizing approved ear tags will be incorporated into the record system
4. The Farmer will utilize proper veterinary care including comprehensive vaccination programs for both the milking herd and the young-stock. The vaccination program must include Brucellosis vaccination.
5. The Farmer will attend management workshops and seminars provided by KCBS and the Ministry of Livestock, which are related to this program.
6. Only commercial Farmers who have displayed their ability to manage a minimum of ten (10) cows will be considered to participate
7. The Farmer will be required to submit quarterly reports to the Ministry that include comprehensive records of the enrolled livestock. These records will furnish death losses and growth information.
8. Although this is a one-year program, farmers who have satisfied the Ministry by meeting all requirements will be given preference if the program is extended.

As I mentioned previously, there are 4000 units of American Holstein semen currently in Kosovo. I urge the Ministry to give priority to farmers who agree to utilize this semen. The cost is subsidized substantially as a means to generate interest by the dairy farmers. Any assistance that the Ministry would offer will certainly improve the interest in this semen. The primary selection criteria for these 4000 units was ease of calving. This decision was made after viewing the high incidence of calving problems that contribute to extended future calving intervals and sterile cows due to improper care following difficult births. The loss to Kosovo dairy farmers from extended calving intervals is huge.

Currently there is a dairy record system being introduced to a select group of commercial farms. Although the system is in its infancy, the data to date encompasses approximately 300 cows. Preliminary calculations indicate annual losses in milk sales due to increased days in milk (DIM) as a result of increased calving intervals in excess of 180,000 euros. In addition to lost milk sales, significant losses to fewer calves born, are adding to the financial stress of the dairy industry. I have computed an additional loss for these herds approaching 40,000 euros. This number only reflects lost heifer calves and does not place a value on the fewer number of bull calves. These eight farms compose a realistic view of the Kosovo commercial dairy industry.

The primary management issue that is currently preventing proper calf raising is the method of housing. Dairy calves cannot be raised in the environment of the cow barns, which is common in Kosovo. The genetic potential of the calves is compromised due to increased diseases such as pneumonia. It will be necessary for the industry to incorporate the use of individual calf hutches before this segment of management will improve significantly. I would urge the Ministry to consider this as a part of the criteria in the future and would certainly suggest that priority be given to any farmer who chooses this form of housing at the present time.

These suggestions and comments are made from the practical aspect of management. I just recently transferred the ownership and management of a large commercial dairy farm of 500 milking cows to my son. This farm was started over 35 years ago with 15 cows and through consistent and improved management practices has reached a production level exceeding 10,000 liters per cow per year. I have also been involved in a partnership that specialized in raising calves and heifers for other dairy farmers who did not want the additional management load of replacements.

This proposed program could significantly improve the dairy farm management in Kosovo if structured properly and administered professionally. I commend the Ministry for the foresight and dedication in developing a means of improving management in the dairy sector.

## ANNEX VI: EFFECT OF CALVING INTERVALS ON HERD REPLACEMENTS

Poor reproductive performance in a herd will adversely affect the sustainability of a dairy operation. The potential number of calves available will decline as the calving interval increases. It is important, therefore, to maintain a sound reproductive management program based upon sound record keeping programs. Accurate records are essential aids in determining the success of the farms reproduction program.

The following table provides a view of the financial losses that can be expected with decreased reproduction efficiency.

Calving Interval	Calves born / year	Resulting Bred Heifers	Financial Loss Euros
12 month	100	38	
13 month	92	35	2142
14 month	84	32	4284
15 month	76	29	6426
16 month	64	26	8586
17 month	56	23	10710
18 month	48	20	12852
19 month	40	17	14994

\*The financial loss in the above table is calculated by assuming the cost of imported bred heifers as 1300 Euros and cost of raising calves born until 6 months pregnancy being 586 Euros, thus a difference of 714 Euros.

In addition to the loss from the decreased number of heifers, one must also consider the loss of income from the decreased number of bull calves available for sale as well as drastic decreases in milk production as the calving interval increases beyond 15 months.

\* cost of raising heifers can be found in detailed cash flow projection included in the **KCBS Heifer Replacement Program**

## ANNEX VII: MILK INCOME LOSSES DO TO EXTENDED DAYS IN MILK

The following data was computed utilizing the Pfizer on line calculator. Price of milk was calculated using .26/L and is shown in Euros rather than \$ as shown. The herd data was taken directly from the summary sheets gathered by the agriculture college students associated with the REKAP program. The optimum goal is 160 days in milk. Milk loss for each day greater than 160 days is .17 pounds for each milking cow, which is according to proven scientific data.

<b>Dukagjini;</b> 28 cows milking, 185 average DIM	Annual loss 4,613
<b>Euroлона;</b> 38 cows milking, 307 average DIM	Annual loss 40,491
<b>Mazreku;</b> 54 cows milking, 275 average DIM	Annual loss 45,014
<b>Mujota;</b> 38 cows milking, 217 average DIM	Annual loss 13,322
<b>Rudina;</b> 77 cows milking, 286 average DIM	Annual loss 62,513

---

235 cows          254 average DIM

**Total annual milk income loss from extended DIM for five farms 165,953 Euros**

**Average annual milk income loss for five farms 33,190 Euros**

Source: <http://www.100daycontract.com/calculator.asp?country=US&lang=EN>:

# ANNEX VIII: MOU REVISED

## MEMORANDUM OF UNDERSTANDING

Between  
FAUNA  
And

DAIRY FARMER: \_\_\_\_\_  
in relation to Kosovo Cluster & Business Support Program  
USAID PRIME CONTRACT NO. AFP-I-00-800-03-000130 TO # 800

This Memorandum of Understanding is entered into and executed this \_\_\_\_\_ day of November, 2005 by and between:

FAUNA, a sole proprietorship registered in Gjilan and represented by Owner, Mr. Zija Idriza, hereinafter referred to as "FAUNA"; and

Dairy Farmer, \_\_\_\_\_ in \_\_\_\_\_  
Hereinafter referred to "the Farmer"

Whereas, FAUNA and the Farmer desire to improve the genetics of the Farmer's dairy herd, and FAUNA have access to stocks of superior bull semen through importation from the United States; and Whereas, the importation of bull semen is being financed by the United States Agency for International Development [USAID] through its Kosovo Cluster and Business Support program [KCBS] under a Strategic Activities Fund grant; and Whereas, in addition to improved stocks of semen other investments and commitments are required by both FAUNA and the Farmer to ensure the success of this genetic improvement program,

Therefore,  
the Farmer agrees to purchase no less than \_\_\_\_\_ straws of semen at €3.00 per straw;  
the Farmer agrees to purchase, prior to the first delivery of straws, a Nitrogen Refrigerated Semen Storage tank at an approx. cost of €550;  
the Farmer agrees to keep accurate records including the form, which is provided at time of purchase. This report will be provided to KCBS on a quarterly basis.  
The Farmer agrees to utilize recommended pregnancy checking procedures relating to the animal inseminated with this semen.  
FAUNA agrees to take delivery of the imported semen, store it at his facility, distribute the semen straws to the Farmer, and maintain and re-supply with nitrogen the Semen Storage tank at the Farmer's farm.  
FAUNA agrees to keep accurate records of sales including farm name, number of units of each individual bull, and date of sale. This information will be reported to KCBS on a quarterly basis.  
FAUNA agrees to provide pedigree, production and conformation information to the farmer at time of sale.

Signed on this \_\_\_\_\_ day of November, 2005.

On behalf of FAUNA:

On behalf of the Farmer:

\_\_\_\_\_

\_\_\_\_\_