DAIRY RECORDS MANAGEMENT

KOSOVO CLUSTER AND BUSINESS SUPPORT PROJECT

05 January 2006

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A PROJECT IN INITIAL RECORD COLLECTION AND ANALYSIS FEEDBACK TO KOSOVO DAIRY PRODUCERS. RECOMMENDATIONS ARE MADE ON HOW RECORDS SHOULD BE MAINTAINED AT ALL KOSOVO DAIRY FARMS AND THE BENEFITS THAT WILL RESULT THEREFROM.

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PURPOSE OF ASSIGNMENT

The dairy records specialist will assist the Kosovo dairy industry through the development of the management techniques of the Kosovo dairy farmer. The consultant will identify resources and technologies that will modernize the Kosovo dairy industry and will transfer this information to the dairy farmers.

BACKGROUND

The current project has identified many Kosovo dairy farmers that have put their labor and limited capital into the establishment of new dairy farms, milk collection centers and other dairy farm improvements. Farmers are now willing to buy some of the needed equipment and invest in the technology to produce and market high quality milk.

The ability of the dairy sector to grow and prosper must be based on improvements in the farmers business and operational practices. There must be a technology transfer of artificial insemination, high protein feed grains and advanced veterinary practices. It is only through the introduction of these technologies that the farmer will become competitive in the world market for dairy products.

The most important management tool the farmers can use in improving their dairy operations is simple and effective record keeping. Correct record keeping will assist them in implementing proper feeding, reproduction, and milk quality (mastitis treatment) programs. All of these affect the immediate bottom line profitability of the dairy operation. Currently, not one farmer in Kosovo has a total dairy farm management record keeping program in place.

A dairy farm management consultant should have appropriate experience working with farmers that have small dairy herds (in relation to US and EU herds) and helping them to implement a record keeping system that the farmers will immediately start to profit from. The consultant should have experience in Dairy Herd Improvement Association (DHIA) record keeping system and how it can be appropriately used in developing dairy sectors. The same consultant should have experience in analyzing the basic data on a dairy farm to show the impact of the KCBS program on local dairy farmers and extrapolate this data to the larger dairy sector.

A survey of Commercial Dairy Farms (CDF) should be conducted each year so that the Kosovo Milk Producers Association (KAMP)and KCBS can determine the range of Dairy Herd Composition, Management & Production practices. The first year results will serve as a baseline for measuring annual changes caused by KAMP/KCBS interventions and other factors which might be identified. The data will be statistically analyzed to determine the most important independent variables (causes of production changes) and identify correlated variables which can help the farmers improve management.

A local research and monitoring specialist will work through the University of Pristina to develop an outline for the Dairy Herd Composition, Management & Production Survey using 5 Agricultural Students from the University of Pristina. He will develop a research and monitoring survey with a questionnaire. The 5 students will each be assigned 5 to 10 commercial dairymen to help implement the record keeping system and collect the survey data.

EXECUTIVE SUMMARY

The following is a discussion of my activities, results, conclusions and recommendations stemming from my execution of a short term technical assignment as a Dairy Records Specialist based in Pristina, Kosovo from Nov 28, 2005 to Dec 18, 2005.

Like many of the STTA's before me, I found the young dairy sector suffering from a multitude of problems from poor forage quality, inconsistent concentrate components, poor livestock housing practices, serious reproduction management deficiencies, poor calf crops, and rudimentary to non-existent production and reproduction record management. All of these constraints to increased production will require management changes to be overcome. Vital to evaluating if each change is having the desired effect is accurate record keeping and analysis.

Over the three week assignment I was able to assess the current level of record keeping and data analysis and institute a record keeping and analysis program on eight dairies. This 6 month pilot project employs University of Pristina senior agriculture students to collect dairy records weekly from each of their assigned dairies. Dr Mehmeti, Professor of Livestock, and his graduate student will analyze the records and produce monthly feedback reports consisting of a set of agreed upon herd statistics, an explanation of each statistic and recommendations on improving the production and reproduction picture. Emphasis is placed on repeated contact and support of the producer while learning proper record keeping technique and management using record analysis. Recommendations for further local agricultural professional training, expanding the pilot program and preparing for institutionalizing diary record data management are also discussed.

FIELD ACTIVITIES TO ACHIEVE PURPOSES

See Consultants Log (Annex IV) for more detail.

The first week was spent in meeting with, College of Agriculture, University of Prishtina, and visiting Mezreku, Dugagjini, Eurolona, dairies to familiarize myself with the level of dairy record keeping and analysis and to determine the willingness of producers to participate in a record keeping and analysis program (REKAP). We also visited Devolli UHT milk processing plant. Of the six steps of information management that allow records to be utilized for intelligent management decisions and increased profitability; data collection, organization, processing, reporting, integration, and utilization, it was found that the producers, their veterinarians and AI techs were engaged in the collection and some organization of some of the data available on the dairy. In short, the dairy staff was recording insemination, pregnancy check, some hormone injection and calving dates on separate cow barn sheets or in a book. These records were referred to at times for decisions regarding reproduction in individual cows but did not guide managers in systematic management programs. There was no attempt to organize the data beyond the barn sheets. Two producers had no records at all. Mezreku dairy allowed me to have the records copied and I analyzed these reproductive records for average Days in Milk (DIM), Avg Days Open (DO) and Services per Conception (SPC). At 300 days, the DIM was 120 days longer than it should be, while DO was 140 days longer than economically optimal. The SPC was optimal at just under 2, meaning that there were a lot of cows that were not bred after multiple breedings but the ones that did conceive did so by the second insemination. This is not an economically viable situation in the long run and this dairyman is on the verge of expanding.

The milk quality feedback from the UHT plant consisted of a bulk tank Standard Plate Count (SPC), cultures for specific pathogens such as *Staph. aureus*, and the New Methylene Blue test. The average plate count has been running about 70,000 which is at least 7 times the level that would be acceptable in the US. These tests do not provide the dairyman with data he can use to monitor or manage individual cows in the herd for mastitis. We discussed the possibility of ordering a portable Somatic Cell Counter to determine somatic cell counts (SCC) on select individual animals and bulk tank samples.

I discussed REKAP with Dr. Mehmeti. The project will involve retaining 6 student interns to visit 1- 2 dairies each week for the purpose of obtaining reproduction and production records, meeting with the veterinarian or farm staff to go over and verify data and to help identify and record variables such as changes in feed that occur during the 6 month project. I showed him the data collecting sheet. He said that some students are trained in diary records and showed me a data recording sheet from a Norwegian NGO that some students are currently using on a dairy that records most of the data relevant to this project. Dr Mehmeti and Hysen Bytyqi have produced research papers examining production and reproductive characteristics of the local and imported breeds under different farm conditions and seem the best qualified residents of Kosovo to undertake the analysis and feedback recommendations to the dairy producers. They will have veterinary and dairy technical support from the KCBS and Min of Ag personnel as needed.

The second week we continued to meet with dairy producers that were likely candidates the be part of the REKAP and Dr Mehmeti and students concerning project logistics, and present a power point lecture on record keeping and analysis.

We visited the Isufi,Mujota, Dissa, and Premium Vet dairies and found a range of problems from extremely low conception rates for the Brown Swiss but not the Mountbilliars, to the perceived generally low conception rates of the imported Holstein heifers, to calf raising problems and feed production costs. All Brown Swiss and Holsteins were housed in dark tie stall barns except for Premium Vet that was housing their Holsteins outside in large pens

and bull breeding. It will be very interesting to see differences in conception rates between these housing systems.

The range in management success is varied from Dissa farm, whose milking herd consists of 30 Mountbilliard that consistently peak at 30L and one Holstein cow that peaked at 47L with no perceived breed back problems, Mezreku Dairy with a daily average milk production of 15-20L per cow, low average body condition score and serious breed back problems. The better managed dairies seem to be owned by producers that have been to the US on dairy workshop tours but the correlation is not 100% by any means. The adherence to keeping the cows in tie-stall barns all winter is curious as nearly all the dairies have enough land to pasture or at least pen the animals outside. The amount of precipitation is less than the coastal area of northern California where cows are pastured year round except flooded conditions. It would make sense to supply farms like Dissa farm with high quality semen or for them to buy Holstein heifers with good genetic potential as they could manage these cows to make use of the potential. On the other hand, these improvements would be and are being wasted on farms with poor management.

In conjunction with a lecture given by Lindell Whitelock on milk quality, I gave a 45 min talk on dairy record keeping attended by 20 dairymen, veterinarians and Ministry of Ag staff (see Annex V). Because of time constraints it was not possible to have an in-depth discussion of record analysis, only a justification of keeping and analyzing records from a management and economic standpoint.

Several meetings were held with Professor Mehmeti, his graduate student, Hysen Bytyqi and the 6 students chosen to participate in the REKAP concerning the logistics of executing REKAP. This involved deciding on the basis of the students home town which dairies they will be responsible for, supplying them with data sheets and notebooks, going over proper data recording procedure, data handling procedure once the data is collected, and determining the form of the feedback report to the producer (see Annex VI) and rates of compensation for the students and the professor. These meetings, and guidance from Martin Wood, COP of KCBS culminated in the REKAP proposal (see Annex III).

I attended a meeting with the Director of Livestock, Kosovo Ministry of Agriculture in which he described an EU Reconstruction project, culminating in the development of the Center For Livestock Breeding which will use records gathered in the Identification and Registrations system (I&R) to improve genetic selection of all food animal species in Kosovo. The producers will receive feedback concerning selection of livestock based on production traits. The director requested that we share the data we collect with the Ministry. REKAP appears to complement the EU project by focusing on production and reproduction management skills that will allow the producer to get the most out of the genetic potential for which they are selecting.

Week three was spent in implementing the REKAP program. Students were taken to their assigned dairies as shown in the REKAP proposal. On all farms students were able to copy cow records up to that day except for Rudina farm for which the student will have to come back on Sunday as they were not available. The copying took from 1 – 3 hours. During this time, I was able to demonstrate the wall calendar reproduction organizer and the Excel spreadsheet described in the next section under Task 1. All producers expressed a strong desire to have and use such an organizer and one producer sent it with a worker into town to try to have it copied. Rudina farm was the only farm expressing an interest in using the spreadsheet and insisted we go to his house to copy it onto his computer. In general, producers were reluctant to adopt computer record keeping and analysis programs. Most do not have computers and have no experience with them. Coupled with their inexperience with record analysis and small herd size this provides little incentive to expend scarce resources on a new management tool that will not provide an immediate return.

TASK FINDINGS AND RECOMMENDATIONS

Task 1 – Prepare proper DHIA type of dairy management record keeping system appropriate for Kosovo Dairy farmers

Findings/Recommendations

As I was unable to know the level of current diary record keeping and analysis complexity in Kosovo, I prepared three methods from simple to sophisticated. The first method relies on a paper barn sheet on which are recorded individual cow production and reproduction data including ID numbers, dam and sire, birthdate, calving date, heat dates, breeding dates, confirmed bred date, calf sex and ID number, medical history, cull date and reason, milk volume, % fat and % protein for 24 consecutive test dates (see Annex I). This data sheet is coupled with a 24" by 60" dry erase wall calendar for posting in the barn to guide the breeding and checking of cows. All herd level statistic must be calculated by hand. If the producer has a computer but new to record keeping and analysis I developed a simple record keeping spread sheet that will automatically calculate some basic herd statistics and graph milk, fat and protein production (see Annex II). Had the producer been familiar with computers and already keeping some herd records and statistics, I had brought the Dairy Herd Improvement Association-Plus (DHIA-plus) program that produces numerous reports and statistics and is linked to a large data processing center in Provo, Utah. This data center will upload your reproductive record data, individual cow test day production and milk quality (somatic cell count) data, perform extensive analysis and return monthly and yearly reports for a subscription fee which can amount to several thousand dollars depending on the reports requested and the number of cows.

On visits to the model dairies I found rudimentary record keeping practices with no real understanding of record analysis to guide herd production and reproduction practices. Moreover there appear to be very few resident Kosovar agricultural professionals who have this training either. Therefore I recommended starting with emphasizing the systematic collection of data and developed the REKAP project. The basic herd statistics reported to the producers by Dr Mehmeti and his students will be a huge leap forward in guiding management practices on these dairies if acted upon. I have mentioned their training earlier and feel they are best qualified to perform this service. Six months is a bare minimum to get producers to manage using herd record analysis and I strongly recommend continuation of the project for at least 1 more year. When comfort level with using data analysis increases and the dairy sector infrastructure can support more individual cow testing the producers may want use computer spreadsheets and data analysis services to increase the sophistication of their management.

Task 2 – Teach students and model farmers the record keeping system

Findings/Recommendations

Within the three weeks allotted we have been able to assess the level of record keeping and analysis and introduce them, via the farm visits and the lecture, to the need for and alternative ways of record keeping and analysis. The REPAK program will extend this learning with repeated contact with students skilled in record keeping and the faculty doing the analysis through their monthly feedback reports and farm visits.

Task 3 – Prepare Dairy Herd Composition, Management and Production Survey

After discussion with Arben Musliu it was decided to forego the Survey for the following reasons:

1. Time constraints would not allow both the survey and REKAP project implementation and the priority of this STTA is the assessment and introduction of record keeping

and analysis skills. Local long term KCBS staff or University of Pristina students and faculty would be better employed in the compilation of the data for the survey.

2. Most of this data is already in the STTA reports and files of KCBS, the Ministry of Agriculture, and the Department of Livestock at the University of Pristina

3. Once the students were regularly visiting the farms they could collect the data necessary to complete the survey

Task 4 – Direct the implementation of the record keeping program and survey with 5 university students on one model farm each.

Findings/Recommendations
The REKAP project which addresses this task is now underway as described in the REKAP proposal (Appendix C). It must be stressed: THIS SHOULD BE A LONG TERM PROJECT. VERY LITTLE BENEFIT WILL BE SEEN BY THE PRODUCER IF IT IS STOPPED AFTER 6 MONTHS. Six months is not even half of one calving interval. It will probably take 18 months to 2 years to see the production and reproduction statistics and hence the dairies profitability increase. Therefore it cannot be managed by STTA's. It is best handled by trained resident dairy specialists.

Another point to keep in mind is that the point of the analysis is to help the producer see the precise areas in his dairy management that are keeping him from increasing production and quality of milk. If for example, through analysis of the records the producer identifies that semen quality is poor or that feed quality is keeping cows from cycling as they should but he has no recourse in correcting these deficiencies, the difference between the optimum benchmark statistics and his herds statistics may remain far apart and profitability of the dairy may decrease. When administrators evaluate this project they should understand that project success should be measured by the producers ability to interpret his dairy records to identify 1) exactly where he stands in relation to his optimum milk production goal and 2) be able to identify <u>early</u> when problems with herd production and reproduction are arising so they can be corrected and 3) be able to quantify the effect of management changes he implements toward achieving his goals. Whether the farmer can overcome the constraints facing him, such as semen and feed quality, is a separate issue.

Task 5 – Analyze and report the data collected by the students

Findings/Recommendations
As stated before, to see sustained adoption data collection and analysis is a long term activity. The REKAP project provides for monthly feedback reports and person-to-person contact between producers and livestock faculty over 6 months. The emphasis is on repeated contact and support for the producer learning to keep accurate and complete records and interpret record analysis.

ECONOMIC RESULTS

To give the producers some idea of what they were currently losing financially by having poor production and reproduction performance I calculated the monetary losses sustained on a 30 cow dairy using benchmarks for the 5 management areas on the dairy.

Milk/cow/day - by losing 5 liters /cow/ day = Losing 950 euros/month

Days In Milk – by being 25 days past the 175 day optimum = Losing 450 euros/month

Pregnancy Rate – relates to Days in Milk

Somatic Cell Count (SSC) – if the SCC goes from 200,000 to >800,000 = Losing150 euros/month

Culling – if culling rate is increased from 30% to 40% = Losing 300 euros/month on theoretical 30 cow US dairy (difficult to extrapolate; many variables involved)

This gives some idea of what the existing losses are. Hopefully an economical analysis of REKAP can establish quantifiable improvements derived from record-analysis-driven management practices.

CONCLUSIONS AND RECOMMENDATIONS FOR FUTURE ACTIVITY

Overall the dairy sector in Kosovo is very young with many new dairymen and herds high in numbers of imported heifers. These new producers have received a series of financial shocks in the form of the inability to purchase consistently high quality seed and feed and thus produce quality feed, poor reproductive performance, poor semen selection, quality, availability and variable insemination technique. In general, few of the herds, neither the local dual purpose breeds nor the imported Holsteins or Brown Swiss, are performing up to their genetic potential. There are a few exceptional small herds but until the feed quality, heat detection, semen quality and selection issues are addressed and local breed herds are consistently peaking over 30L/day/cow and DIM is below 200 for the imported Holsteins and Brown Swiss, genetic potential and the availability of expensive imported semen are not the main constraint to increasing production in the Kosovo national herd.

Given the above picture, I conclude that there is an urgent need for dairy data collection and analysis. Without this ongoing analysis there will be no way to evaluate the numerous changes of management and technology needed to overcome these constraints. It is apparent from the reception by the producers of the proposed REKAP project that the producers feel the lack of management tools to guide dairy management efficiently.

My recommendations are divided into general dairy sector and specific dairy record keeping and analysis recommendations.

General:

1. Promote, strengthen and expand programs that 1) teach proper forage production and feed practices 2) strengthen the ability of local labs to perform feed analysis 3) develop and enforce seed and feed component label standards.

2. Target an extension program to the differences in management practices for local dual purpose breeds (Simmental and Montbrillard) and milking breeds (Holstein and Brown Swiss), specifically the practice of keeping Holsteins and Brown Swiss in dark tie-stall barns. Coupled with marginal feed and poor heat record keeping, this practice makes heats very difficult to detect. This is the major constraint to breeding efficiency. Also producers currently think it is not good to let cow outside in the cold but it is fine to let them lay in soiled bedding and feces when the exact opposite is true. Hysen Bytyqi has data to support promoting these management changes.

3. Provide for technology transfer of somatic cell counter with capacity for large number of milk samples to an institution, either the Ministry of Agriculture, the Milk Processors Association, the University of Prishtina or an independent, for-profit lab. Without SSC testing on individual cows, record analysis for mastitis control cannot be achieved. This could become the nucleus of a national milk testing laboratory.

Record keeping and analysis:

1. At 5 months into the REKAP have a STTA dairy record specialist evaluate the data and reports generated, assess the progress of the farm management, hold a workshop with the faculty, students, producers, KAMP, Min of Ag staff, and KMPA to discuss results, and devise an expanded version of REKAP with input from all parties.

2. In the short term, I suggest that a KCBS dairy staff person work with KAMP and the dairy processors trade organization to develop a Dairy Records Committee to address records analysis and its effect on milk quantity and quality, on an industry wide basis

3. The core of local agricultural professionals that are trained in dairy data collection and analysis is too small. I suggest one person from the Min of Ag, Div of Livestock and one faculty member from the Department of Livestock be sent to a facility such as the DHIA data analysis facility in Provo Utah, the University of California, Davis Production Medicine facility in Tulare, Pennsylvania State University at New Bolton Center or sites in Europe that may have similar ongoing training. There they would spend 1-6 months in learning data analysis and management techniques with a goal of becoming capable in not only becoming highly proficient in analyzing individual dairy records but also beginning the process of designing a Kosovo National Dairy Record Management center.

4. Start the process of institutionalizing dairy record keeping and analysis into a Kosovo entity. These records need a home. The amount of data accumulated will start to become very large and it needs to be stored in a stable institution where security, access and organization are assured. For the time being, the Department of Livestock at the University of Pristina should be adequate. I think, however, that KAMP and the processors should shoulder some of the responsibility for data storage and management as they directly benefit. The Ministry of Agriculture is a natural choice also however until they have a functioning extension service to support record information dissemination, depending on them for this function would be ill advised. A requirement for whoever maintains the database should be an adequate budget and manpower to assure that producers get timely feedback and support.

5. It would be wise to keep in close contact with the upcoming EU Recovery project for the development of a Center For Animal Breeding which builds on the I&R system already being carried out. If this center is sustainable, it would be synergistic to join a Dairy Data Analysis component that analyzes reproductive and milk quality characteristics with the Center which will work with production traits.

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ANNEXES

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ANNEX I: Albanian Barn Sheet

Kartele Individuale ne kopen e Lopeve Qumeshtore

Reg. Emri		ID #		Ditelindja	
Ati		E ëma			

Historiku i Riprodhim

Laktacion 1 Fresh Date ___/___/___			Laktacion 2 Fresh Date ___/___/___			Laktacion 3 Fresh Date ___/___/___			Laktacion 4 Fresh Date ___/___/___		
Calf Sex _____ Calf ID _____			Calf Sex _____ Calf ID _____			Calf Sex _____ Calf ID _____			Calf Sex _____ Calf ID _____		
Afsh Data	Afsh Interval	Mbarshtim Data/ Ati Numri	Afsh Data	Afsh Interval	Mbarshtim Data/ Ati Numri	Afsh Data	Afsh Interval	Mbarshtim Data/ Ati Numri	Afsh Data	Afsh Interval	Mbarshtim Data/ Ati Numri
Confirmed Data		Ati	Confirmed Data		Ati	Confirmed Data		Ati	Confirmed Data		Ati

Historiku i Trajtimit Mjeksor

Data	Code	Data	Code	Data	Code	Data	Code

1	Mastitis	3	DA	5	Milk Fever	7	Injury Abscess	9	Vaccination	11	
2	Ketosis	4	Dystocia	6	Metritis	8	Lameness	10	Antibiotic	12	

Lopet per therrje Data

Data	Code	Data	Code	Data	Code	Data	Code

1	Calving Problem	3	Low Production	5	Failure to Breed	7	Lameness	9		11	
2	Mastitis	4	Injury	6	Infectious Disease	8	Sudden Death	10		12	

Test Day Shenime

	Laktacion 1					Laktacion 2					Laktacion 3					Laktacion 4			
Data	Litra Milk	% Yndyra	% Proteina	SCC	Data	Ltr Milk	% Yndyra	% Proteina	SCC	Data	Ltr Milk	% Yndyra	% Protein	SCC	Data	Ltr Milk	% Yndyra	% Proteina	SCC

ANNEX II - Simple Excel Dairy Herd Analysis Spreadsheet

To be completed by Students working on REKAP

Sample Only

ANNEX III: REKAP Proposal

**PROPOSAL FOR THE USE OF STUDENT INTERNS IN THE
ADVANCEMENT OF DAIRY RECORD KEEPING AND ANALYSIS
AMONG KOSOVAR DAIRY PRODUCERS**

James Kevin Silver MS, DVM
STTA Dairy Records Specialist
Kosovo Cluster and Business Support
December 5, 2005

PURPOSE

A large number of deficiencies and constraints have been noted in the emerging Kosovo dairy sector. To correct them will require ongoing data collection and analysis. This proposal is attempt to provide a low cost method for dairy producer training in record keeping while providing them with feedback analysis and recommendations for better dairy management practices based of the records.

BACKGROUND

Fueled by high raw milk prices and scarcity of alternative income generating opportunities, the ownership of cows intended for milk production has increased sharply in Kosovo since the cessation of civil war. In fact all levels of the dairy foods production chain have seen an increase in the number of participants. Since pre-war Kosovo had only a small agricultural sector, most of these milk producers are new to the industry and do not have the knowledge base and support of previous generations to rely on.

Reports from dairy specialists touring the area have identified severe deficiencies in all areas of the dairy management including improper feed production, facilities design, reproduction management, milk handling and veterinary care. Some of these deficiencies are due to a lack of access to capital for facility improvements or the purchase of new equipment. Others are due to insufficient management skills and knowledge of correct dairying practices. Solving the former problems will require a general improvement in financial markets and their relationship with the agricultural sector, and changes in government policies regarding the support of agriculture. The latter can be addressed by employing relatively low-cost training methods.

Of the management skills most critical for success, record keeping and record analysis are central. The ability to evaluate herd trends as well as compare individual animal and sub-group performance is essential for the long term profitability of the dairy. Dairy records and their analysis direct and monitor the management of all other areas of the enterprise. Situations that cause large financial losses to dairies can arise from only small changes in the cows ability to produce at an expected level but that change can occur in a large number of cows. These changes, which can cause thousands to hundreds of thousands of euros lost over time, can rarely be visualized and are only identifiable by analysis of accurate records.

Without the ability to constantly monitor and analyze new data using records, and make decisions optimal for new situations, dairy management becomes largely a set of habits

which generate actions that produce, at best, acceptable (sub-optimal) but occasionally catastrophic results. Most often management by habit leaves the dairy enterprise so financially weak that it will last only as long as milk prices are high and then folds when milk prices make a normal cyclical decline. Usually the producer does not even know why he went broke.

Many of the producers visited already exhibit a management-by-habit style. Like any habit it is difficult and stressful to learn and adopt a new dairy management style. Managers at the best managed dairies are very busy and producers with poor management skills often feel overcome by crises. The best chance for successful adoption can only occur with a real willingness to change and support from experienced lay and professional people in the field. With so many dairies needing assistance and limited personnel and financial resources, we are proposing to use upper class agricultural students, trained in dairy record collection as weekly support personnel for the dairymen in collecting and verifying data on records and as liaison with the veterinarian and herdsman to identify notable changes in the condition and health of the cows, the environment and management.

PROJECT OUTLINE

Participants

<u>Students</u>

After discussions with Prof. Mimeti of the University of Pristina, College of Agriculture, Department of Livestock, it was found that a number of students had training in record collecting and were engaged in collecting dairy records using a record sheet designed by a Norwegian NGO. He has stated that there are 5 qualified students he could recommend to the program. KCBS would provide additional training as needed in dairy husbandry and data collection and verification.

Each student will be assigned to 1-2 dairies. In the initial stage of the project, each student will accompany the KCBS record keeping specialist on the first visit to their assigned dairy. The goal of that day is to create a baseline record for each cow which will include as much information as is relevant on the cow record sheet plus its initial body condition score. This information will be verified with old receipts, pedigree sheets, previous records, where possible, plus rectal palpation and examining teeth. The student and farmer will then go over filling in the event dates and codes on the individual cow record. One day milk volumes will be recorded for each cow on a bi-weekly schedule with the student present at the afternoon milking to assist and record volumes. The producer will keep one set of records on which he will make daily entries. The student will keep another set on which all the entries made on by the producer on his set over the previous week will be recorded. On the initial visit the producer will be surveyed as to his readiness and desire to use other record keeping aids such as wall calendar date managers and computer records. Attempts will be made to provide these as possible. On subsequent visits, the student will continue to verify and transfer data on a weekly basis. At weekly intervals the student will input the data into a computer spreadsheet for analysis under the direction of the KCBS dairy records specialist. The student will participate in monthly meetings to discuss the results of the analysis. The meetings will be attended by the producer, his veterinarian, the KCBS records specialist, the student, and such specialists as may be indicated by the record analysis. KAMP and Ministry of Ag, Livestock Dept. representatives will be urged to attend.

<u>Dairy Producers</u>

Priority will be given to producers that exhibit a strong commitment to learning and adopting record keeping and analysis management methods. They should have a herd size large enough to make record analysis feasible, already be practicing some AI breeding and have pregnancies confirmed by rectal palpation. The producer must also be willing to share the reports he receives from the processing plant regarding volume, protein, fat, and bacterial counts.

<u>Support Personnel</u>

The data collected represents a valuable resource and must be managed in a careful and consistent manner. Therefore the project requires a qualified data manager/analyst focused on proper data input and analysis and dissemination of results and recommendations. The specific tasks set for the records analyst will be to 1) direct the input, backup and storage of the data, 2) analyze data to produce reproduction and production statistics relevant to previously determined benchmarks, 3) summarize and relate statistical results to other events occurring on and off the farm and, in cooperation with other specialists (Min of Ag veterinarian, REA staff, KCBS staff, University of Pristina College of Agriculture faculty) make recommendations in a monthly report 5) disseminate the report to the producer, Min of Agriculture, KAMP, REA, the veterinarian working on that farm and other entities at the producers request. The producer may request to have his data remain anonymous.

Time Line

1) Identify students and producers participants
2) Set schedule for initial visits and 6 months of student visits, and monthly producer meetings
3) Conduct initial data collection, copy previous records, reproduction and milk quality data, perform data entry and baseline analysis of data. Have reports produced and reported to producers.
4) Students continue data collection on weekly basis. Monthly reports produced and distributed to producers, REA, KAMP, veterinarians.
5) On-going evaluation of project for expansion of number of dairy producers, students and veterinarians included in participating.
6) By 6 months producers should be comfortable with collecting data and interpreting results of computer analysis.
7) Evaluate producer interest in continuing to use stand alone spreadsheet, commercial program or entering into contract with DHIA to undertake remote data analysis. Evaluate KAMP interest and capability for taking control of the project and/or supporting further training of producers in record keeping/analysis
8) At 5 months, hold workshop for participants, KAMP, dairy processors, Ministry of Agriculture staff to discuss expansion of project and design improvements.

KCBS Support

KCBS will provide the following types of support:

1) Half time salary to Dr. Mehmeti and his graduate student for record analysis and feedback report for producer
2) Round trip transport of 6 - 8 students to dairies on a weekly basis
3) Student per diem enough for one meal
4) Financial support for providing access to commercial dairy record analysis (DHIA) if producers support this action

PROJECT OUTPUTS

1. A core of 7-10 dairy producers skilled in record keeping and interpreting dairy records. They will help spawn further producer interest in record keeping and analysis.

2. A core group of trained support students, veterinarians and academics actively involved in monitoring improvement in dairy production through the use of record collection and analysis

3. Data that the Ministry of Agriculture can use to formulate and monitor dairy production policy.

4. The present proposal will fit together with possible follow-on projects i.e. the Heifer Replacement Program proposed by Thomas Dobler and the European Agency for Recovery Programme development of the Identification &Registration system

BUDGET

Personnel	Time Committment	Funds Allocated
Two Dairy Record Analysis Specialists	Up to 20 hrs/week each; appointments for 6 months	100 euros/mo/each up to 1200 euro for 6 months
Data Collection student	4 hrs/week for 26 weeks	40 euro/mo for 6 mo. 240 total
Data Collection student	4 hrs/week for 26 weeks	40 euro/mo for 6 mo. 240 total
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Data Collection student	4 hrs/week for 26 weeks	40 euro/mo for 6 mo. 240 total
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Data Collection student	4 hrs/week for 26 weeks	40 euro/mo for 6 mo. 240 total
Logistical support		
Paper / printing supplies Computer supplies Copying		20 euro/month for 6 months 120 euros total
DHIA		$1995 =1734euro
Lecture/Banquet Hall		25 euros
TOTALS		**4999 euros**

ANNEX IV – CONSULTANTS LOG

Monday Nov 28
Met with   Martin Wood, COP KCBS,
            Arben Musliu, Supervisor dairy sector
Read reports from previous STTA's of dairy sector

Tuesday Nov 29
Prepared materials for presentation. Worked on eliminating bugs in spreadsheet program; worked on cow tracking wall calendar to be used with paper cow record.

Wednesday Nov 30
Met with Prof. Harpmemiti, prof of livestock, College of Agriculture. Discussed retaining 5 student interns to visit 1- 2 dairies each weekly for the purpose of obtaining reproduction and production records and meeting with veterinarian to go over and verify data and to help identify and record variables such as changes in feed that occur during the project. I showed him the data collecting sheet. He said that some students are trained in diary records and showed me a data recording sheet from a Norwegian NGO that some students are currently using on a dairy.

We discussed a general approach to the project as follows: During initial week the Dairy Record specialist from KCBS would train students in record taking and rudimentary data analysis. The first week the reproductive status of each cow would be verified by palpation. We need to determine if individual milk wts are obtainable. We discussed making a proposal to Martin Woods for KCBS to fund logistical support for training and transportation of students and recording supplies. Collected data would be processed by the students and results analysed jointly by the students, veterinarian, dairymen and KCBS dairy record specialist. A report will be distributed to Prof. Harpmemiti, KAMP, Kosovo Dairy Processors Assoc. Data storage will in a Excel spreadsheet form that should be available to be up loaded to the DHIA program when and if DHIA is contracted to process data.

Arben and I also visited Mazreku dairy farm owned by Osmon Mazreku. The owner and staff veterinarian were present. The herd consists of approx. 120 cows; 60% Semmintal, 40% Holstein with a goal of converting to all Holstien. I palpated several cows that were difficult breeders. One was bred the others were open with healthy uteri, one had a probable follicular cyst. They do have prostaglandin and the vet uses it in the correct manner. He had diagnosed a respiratory infection in one recently arrived Holstien heifer correctly and had treated it with Gentamycin and an inflammatory. The dry cows were housed with and fed the same feed as the milking cows and were grossly over wt. (BCS = 5+). Water pipes that fed the waterers ran directly over the feed bunks. These pipes leaked thus the there was 1- 2 cm of standing water in the bottom of the cement feed troughs. This is a potential hazard because of increased risk of mold and Listeria overgrowth, especially in warm weather.

The owner and veterinarian were very open to participating in a record keeping and analysis project and showed us a record keeping sheet they kept for breeding. It provided breeding dates and preg check dates and so could be used as a baseline for some reproductive perameters.

Thursday Dec 1
We visited the Devolli UTH plant. The goal was to discuss hygiene monitoring data they collected on the milk, the possibility of individual data could be collected, what information is returned to the producer regarding his milk and the possibly individual cow data could be obtained. Lindal Whitlock discussed his observations of the milk pick up protocol he observed by one Divolli milk truck driver.

We spoke with the staff veterinarian and the plant manager. They perform the NM Blue screening test for somatic cell protein, the 70% alcohol test and collect a sample for bacterial culture at the farm or collection center then perform cultures for SPC, Coliform count, Salmonella, Staph. aureus. They do not have a somatic cell counter. The average SPC is 70,000 Information returned to the producer is the results of the bulk tank tests by the driver and the SPC.

We discussed the possibility of buying a portable SC counter that can be operated for approx. $1.25 per test.

We also visited Dugagjini dairy farm. The herd consisted of 36 milking Semmintal. The average BCS was 3.5-4. Average daily milk production was 25 L with one cow reaching 41L per day. The owner stated that 98% were bred and he had no problems with his herd. He had been to the US with Lindal on a dairy production workshop. He agreed to participate in the records analysis project and should be a good contrast to other producers.

Friday Dec 2
Continued to debug the spreadsheet program
Visited Eurolona Dairy owned by Milazim Berasim, veterinarian Korab
The Eurlona Dairy herd consists of 100 mixed holstien cows. Body condition ranges from scores of 1.5 – 2.5 Feed is a course dry corn silage. The smell was a normal fermented smell. Fiber length was 30% over 3". This has been fed for one week Prior to this a poor grass hay was fed. The owner stated the breeding success was very low and he was very frustrated with his veterinarian. He had assigned Korab to be in charge of breeding which included watching for heats although he is not there regularly. Korab states he is paid inconsistently for his services. Breeding records have been kept and Milezim has allowed me to copy and analyse them. Preliminary analysis reveals that breeding interval is extremely eratic, the days to first service can be as much as 180 days and at least 5 people are doing the artificial insemination. He has agreed to participate in the record keeping and analysis project.

Monday Dec 5
Visited Isufi Dairy east of Shtime owned by Skender Isufiki The herd consisted of 20 Mountbilliard adult cows and 20 1st calf heifers which are on average at least 260 days in milk. T he owner has stated that his inseminator cannot get the Brown Swiss heifers bred and they were all giving only about 10L / day now. I palpated several recently bred heifers and found one 60 day pregnancy. The others were open. He stated that all the Montbillard cows are bred. He does not raise any calves and buys bred heifers. He has agreed to participate in the record keeping and analysis project.

Met with Prof. Memeti Dept of Livestock, University of Pristina and 4 of the 5 students willing to participate in the project. We discussed the project logistics. The students will need money for transportation, the amount of which will vary with the distance from Pristina. They will also need funds for one meal on the test day. We set a date (Thursday) to go over the data collection procedure with the students.

Tuesday Dec 6
Conducted seminar in record keeping and analysis for 20 farmers, veterinarians, and university faculty. I covered the justification for keeping records, management areas, benchmarks, and data recording and analysis options. I spoke with Hyek Bytyqi, the graduate student of Prof Mimeti and FAO research associate. He was very eager to participate in the project and judging from the publications and research record, has the capability of handling the analysis with Prof Memeti in the initial stages of the project.

Wednesday Dec 7
Visited Dissa farm and Premium Vet farm near Istoc. The herd consists of 30 Montbillard adult cows approx 15 breeding or bred heifers, about 12 calves and one late term holstien. The milk cows are all clean and in excellent condition with BCS of 3.5-4. The owner stated that the top production peak reached by the Montbillards is around 30L / day whereas the Holstein peak was 47L /day. Therefore he is converting the herd to AI holstien. He is currently using a bull for breeding and appears to have a very good conception rate. He is keeping breeding records of the bull breedings. I palpated 3 cows that he had bred within the last 60 days and found them all to be pregnant. Instead of the usual straw bedding, the owner uses sawdust bedding over the concrete floor of the tiestalls. The cows seemed comfortable and the bedding was mostly clean. I warned him it was very important to change the bedding often and keep it dry because of the increased risk of Klebsiella spp. and coliform infection with sawdust. The udders were very clean but he stated that the SPC was 84,000 so this herd is definitely suffering from sub-clinical mastitis. The calves were somewhat thin and the owner stated they were not growing as well as expected. They ranged from about 1 – 4 months of age and were being fed only milk and grass hay. He asked about introducing grain concentrates and I stated that calves as early as 2 weeks should have access to calf grain to help introduce and stimulate rumen flora and increase energy density of ration. The owner stated he would be happy to participate in the record keeping and analysis project and was added to the list of participants.

Thursday Dec 8
Went to the University to meet with the students and discuss the record keeping protocol and record analysis report forms with Dr. Mehmeti and Hysen Bytyqi. We did not have time to arrive at the final form of the report. Hysen showed me his SAS spreadsheet program he used to analyse dairy production records for previous papers. It should be adequate to do the statistical analysis needed for the six month project.

Friday Dec 9
Worked on the proposal and spreadsheet and went to see the Director of Livestock in the Ministry of Agriculture. He explained an EU Recovery project which would establish a Center for Reproduction Improvement. The center will be based on records from the E&I program and will be focused on genetic production improvement of food animal breeds. It is due to start in January '06 but has a large component of capacity building of the Ministry of Ag and may take a while to get going.

Monday Dec 12
Took two students (Mirjeta Rrustemi and Blerta Citaku) to their assigned farms (Mujota, Isufi and Eurolona dairies). Both women will work together on the three farms. All past records from Eurolona and Mujota farms were copied. Isufi farm did not have any breeding records. I explained the scheduling wall calendar which received enthusiastic inquiries as to where it could be purchased. I will request KCBS make some available. All three dairymen seemed happy to have the students collecting data.

Tuesday Dec 13
Took two students (Njazi Bytyqi and Fidan Skeraj) to their assigned farms (Mazreku and Rudina). Mezreku had 30 new Holstein heifers that had not calved yet so reproduction records were lacking but they were entered into our records to be monitored. Records for the other approx. 60 adult Semmintal and Montbrillard were copied. The insemination technician and farm owner were very interested in the wall calender. They asked to take it into town and copy it however the copy shop could not copy it so Arben said we would purchase one for them and send it. They were not as interested in the Excel spreadsheet as neither the owner nor the vet tech inseminator has a computer.

Rudina dairy said at first they had no records on the cows but then said that if the student came back Sunday he would be able to get the records. They were not interested in the wall calander organizer but insisted on putting the Excel spreadsheet on the managers computer.

Wednesday Dec 14
Dugagjini Farm owner was unavailable today so we decided to move Dissa farm visit to tomorrow when we are scheduled to go to Premium Vet dairy. I worked on the final report during the day.

Thursday Dec. 15
Took the assigned students on there respective farm visits. The students were able to copy all the records at Dissa farm. The Divolli truck came for milk pickup came while we were there. There was no cover on the end of the hose and the driver dropped the hose end on the dirt. The assistant to the driver was smoking over the open milk tank and was asked to leave the tank room. I used the weight tape on the Montbrillard bull and he taped at approx1800 lbs. The heifers that he was beginning to breed tape out at well into the breedable wt range for Guernseys which is probably the closest breed. He again expressed an interest in the wall calendar organizer.
The students were also able to copy all the records at Premium Vet although there was 100 cows. Premium Vet owners have been to the US and are the only ones to keep their Holsteins outside in large dirt lots in the winter. They are bull bred with the bull in the pen all the time. It will be interesting to see what DIM and DO are on this herd. He expressed frustration that the seed and feed components he says are expensive are usually adulterated and his alfalfa and grass plantings are not satifactory. Premium Vet facilities were once a state owned dairy with 1000 cows thus they have a large capacity to expand. Their silage production system seems adequate. The silage in the pit bunkers smells right, particle size is good and the bunkers are lined with plastic and 4" of dirt weight on top of plastic layer.

Friday Dec 16
Arben and I had a meeting with the supervisor of KCBS agriculture sector at USAID. I discussed the REKAP project and some of my recommendations. She seemed pleased with the report.

We had a final meeting with Hysen concerning the producer reports, reportable herd statistics and side research papers. He seems ready and eager to take on this challenge and he stated he would like to meet with the producers at their farms to discuss the reports which we readily agreed to.

Records answer questions

- Are the cows producing the same amount of milk on the corn grown on this ground last year?
- Is the producer meeting his breeding goals on this feed?
- Is the dairy profitable?

Why records are important

- **Managing by:**
    - "It seems like…,
    - "I think….."
- **Memory Drill**
- Your grandfathers and mother birthday
- Your uncles birthday
- How much your uncles make in there first year of work and how much they make now
- How many nieces and nephews they have
- When was the last time each was sick
- Of those that were sick, had they been in a restaurant within 1 month prior to being sick
- Of those did they have French fries?

- Three important functions record keeping and analysis allow you to do:

- scheduling/organiz-ing day-to-day events,

- Monitoring for early appearance of problem

- diagnosing problems efficiently

Using record analysis to manage

Goal: Provide:
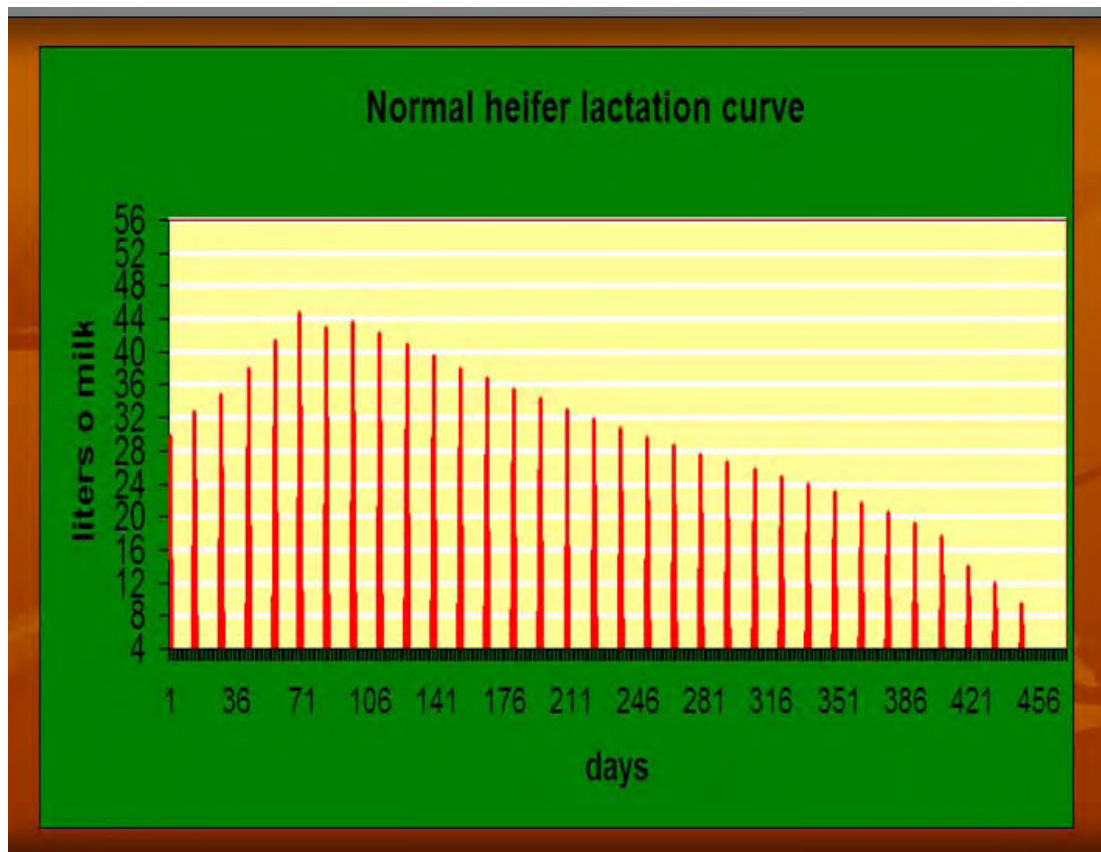   1) Early warning monitoring system

    2) Tools to diagnose problems

Management areas and their indicators
1. Production – Milk/cow/day
2. Herd lactation status – Days in milk
3. Reproduction – Pregnancy Rate
4. Udder Health – Weighted Somatic Cell Count
5. Culling and Replacements – Cull rate

Normal heifer lactation curve

Kosovo Dairy Record Keeping and Analysis Project

- **Goal**: To provide record keeping and analysis training, support and feedback to dairy producers, veterinarians and students

- **Objectives of project**
  - Use students for continued support in record collection
  - Provide training in analysis and interpretation to producers, veterinarians and students
  - Determine baseline benchmarks for producers and monthly feedback sheets
  - Keep initial database for uploading to DHIA analysis center, KAMP, FAUNA or Min of Ag analysis group

Record analysis options

- Manual calculations, working right from record sheets

- Developing a custom spreadsheet for the farm example, Excel

- Using a commercial dairy record analysis program to upload farm data to a data analysis center, example DHIA, Dairy Comp 305

ANNEX VI - MONTHLY PRODUCER REPORT TEMPLATE

MONTHLY HERD SUMMARY REPORT

Dairy Name: _____ Owner Name: _____ Location: _____

Herd Size: _____ Herd Composition: _____ Holstein: _____ Semmintal: _____ Brown Swiss: _____

Cows Milking: _____ Cows Calved: _____ Cows Dry: _____ Cows Left Herd: _____

Calves born: _____ Calves 1-6 months: _____ Calves 6-14 months: _____ Bred Heifers: _____

Production – All Breeds

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Date												
1st lactation												
2nd lactation												
3+ lactation												
% milk fat												
% protein												

Analysis of Production:

Milk Quality

Specific Plate Count (SPC):
Bacterial count:
Acidity:

Interpretation of milk quality figures:

Reproduction

- **Days in Milk (DIM)** – The herd average for the number of days each cow has been milking on the test day
- **Days Open(DO)** – The average for the number of days between calving and conception for all cows with successful conception in the last month.
- **Days to First Service (DFS)** – The average for the number of days between calving and the first recorded breeding for all cows with a first breeding during the previous month
- **Conception Rate CR)** – The number of successful services in one month divided by the total number of services multiplied by 100.
- **Heat Interval (HI)** – The average number of days between recorded estruses in the previous month.
- **Services Per Conception (SPC)** – The average number of inseminations needed to achieve conception

	Benchmark figures	Your herd figures
Days In Milk		
Days Open		
Days to First Service		
Conception		
Heat Interval		
Services per Conception		

Analysis of Reproductive Performance:
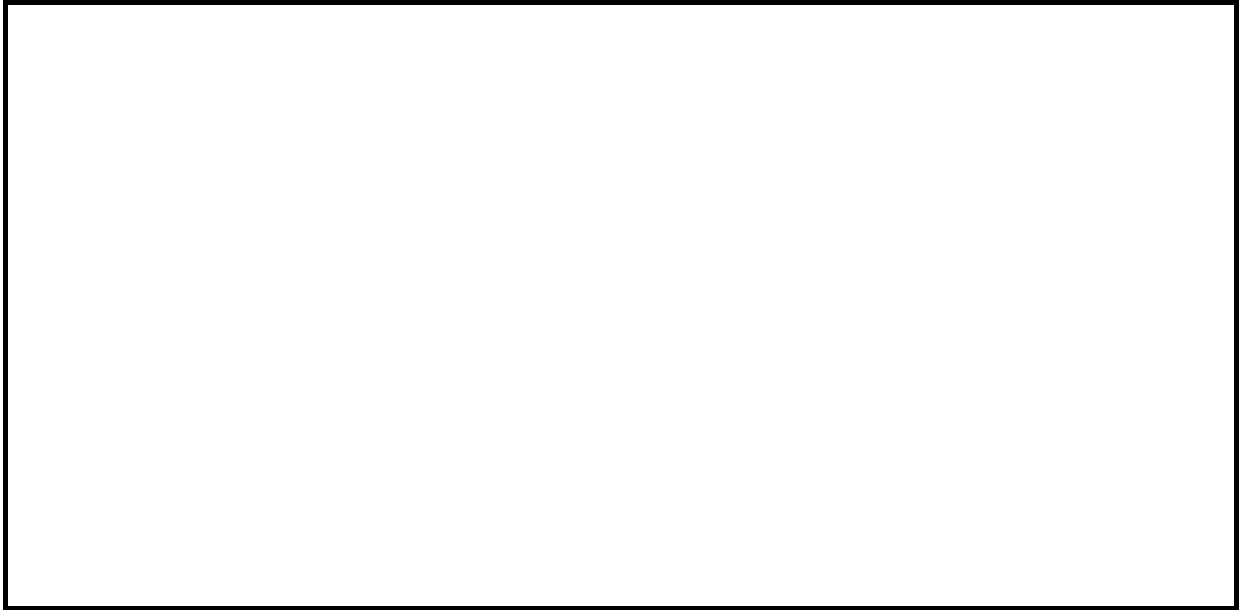
Current Individual Cow Data

Summary table of age, lactation, individual milk volume and reproduction and health