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DAIRY FEED RATIONS

KOSOVO CLUSTER AND BUSINESS SUPPORT PROJECT



06 October 2005

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DAIRY FEED RATIONS

DISCUSSION AND REFINEMENT OF DAIRY RATION MIX DESIGN
TO INCREASE MILK PRODUCTIVITY AND PROFITABILITY FOR
MILK PRODUCERS IN KOSOVO

Kosovo Cluster and Business Support project Dairy Feed Rations
Contract No. AFP-I-00-03-00030-00, TO #800

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PURPOSE OF ASSIGNMENT

The objective of this assignment is to evaluate the dairy farmers' present rations and performance results, evaluate ration options, formulate new rations using locally available feedstuffs designed to increase milk production at a reduce cost. Additionally, the consultant will follow up with individual farmers after several months of using his formulas to note results and make adjustments to feed ration. The results are then to be reported to KAMP members in a seminar. These actual results will help motive the farmers to make the appropriate changes on their farms.

BACKGROUND

In March and April Dr. Roy Chapin helped the Kosovo Association of Milk Producers (KAMP) reformulate feedgrain concentrates to maximize profits for the dairy farmer. This assignment builds on the successes achieved at that time.

EXECUTIVE SUMMARY

It is common for consultants to give general nutrition information, such as a scholarly academic discussion on the need for protein, energy, vitamins and minerals. I prefer to give much more specific recommendations. My experience is that general information is not usually applied. To create the impact desired (more milk and money) it is important to give specific advice, including formulating actual rations for many different forage situations.

The following approaches were used to help in the development of the dairy industry of Kosovo:

- ◆ Two hundred ninety-seven generic rations using soybean meal (SBM) were formulated using 36 combinations of forage and malt. These rations are recorded in two different specially created field Milk Money Maker (fMMM) spreadsheets (interactive for price data) that show formulas, selected nutrition parameters and income data.
- ◆ One hundred eight rations were formulated using sunflower meal (SFM). These rations were recorded in a third fMMM that shows rations using SFM compared to a similar 108 rations using SBM. This fMMM shows formulas, selected nutrition parameters and income data that allow the user to make an informed choice between using soybean meal and sunflower meal. (I don't recommend feeding SFM.)
- ◆ Word documents were developed from all three fMMM spreadsheets that can be used in the field by dairymen and field technicians to suggest appropriate rations during on-site visits.
- ◆ Word documents were written that discuss implications for applied dairy nutrition gleaned from the twenty summary sheets linked to the data base produced from the rations in the fMMM's.
- ◆ Word documents and appendix were written giving extensive suggestions on applied dairy nutrition that can be used by dairy technicians and milk producers.
- ◆ Selected dairyman were visited and we created specific formulas accompanied by a personal letter for most of them.
- ◆ Six dairy seminars were conducted.
- ◆ A concentrated vitamin-trace mineral dairy premix was formulated and an outlet was secured who will have the premix custom manufactured and then distribute it throughout Kosovo at a savings of over 10 cents (Euro) per cow per day.

FIELD ACTIVITIES TO ACHIEVE PURPOSES

Five approaches were used to help in the development of the dairy industry of Kosovo:

I. Generic Dairy Formulas (and spreadsheets) for use with specific forage programs

Intro: My original Milk Money Maker (MMM) became very detailed (15 pages for each series of rations), was time consuming for me to enter all the data and a little laborious and confusing to use. I formulated rations using mature, mid-mature and immature grass or legume forage or a combination of grass and legume with 0, 10 or 20 kg of corn silage. There are some rations using 10 kg of malt. [I would like to create another fMMM using 10 kg malt for all combinations of forage (mature, mid-mature, immature, grass, legume, combinations of grass and legume and using 0, 10 or 20 kg corn silage).]

(Ia.) To simplify ration presentations I created a field MMM (fMMM) that is two pages long for each series of rations that (1) gives up to six ration formulas (forage and concentrate) for a specific forage program for milk production ranging from 25 to 50 liters, (2) calculates and shows the percent of each ingredient in the dairy mash, (3) includes a section where the user can enter the size of his dairy mash mix and read out the formula he needs to mix, (4) calculates the milk income over feed cost plus the value of the predicted body weight change using local cost data that the user can enter, (5) includes a page for entry of non-feed costs and determination of these on a per cow basis that is linked to each series of rations to give a net profit/cow/day, (6) presents a barn sheet that shows the kg of forage and dairy mash needed to support each of six levels of milk production with places to record the daily routine of feeding and milking and (7) includes a top-dress feature that automatically shows the kg of corn, soybean meal and limestone needed to be top-dressed to support milk production higher than supported by the base ration (user can choose base ration by changing the mathematical formulas in the appropriated spreadsheet cells).

Several people said they needed an fMMM for cows giving 10 to 35 liters of milk. I did the ration formulations so that there are two fMMM's, (1) one showing rations that support 10 to 35 liters of milk and (2) a separate fMMM that shows rations that support 25 to 50 liters of milk. Each fMMM contains up to 36 series of rations and up to six rations per series so there are a maximum of 216 rations that can be presented in each fMMM. (There may be less than 216 rations for each fMMM since it may not be reasonable to formulate rations for specific forages that support up to 50 liters of milk.) There are 297 rations presented that use soybean meal as the protein supplement.

I added some other features that will be helpful for bunk management (feeding) of the rations that show (1) the rumen degradable protein balance, (2) prediction of body weight change, (3) percentage of forage in the total ration (dry matter basis), (4) percent of non fiber carbohydrates, (5) actual dry matter intake and (6) predicted maximum dry matter intake. (For future fMMM's I plan to add two rows to show (7) percent of acid detergent fiber and (8) percent neutral detergent fiber in the total ration dry matter.)

The field application of the fMMM's is for those technicians giving dairy formulation and feeding advice to farmers so that the technician (1) can enter the appropriate price data, (2) determine which forage program will be the most profitable, (3) have a data base of rations to give to the dairyman and (4) print out a barn sheet for the dairyman.

(Ib.) The two fMMM's mentioned use soybean meal (SBM) as the protein supplement. Sunflower meal (SFM) is commonly fed since it is cheaper than SBM and is a local

product. Several people asked me to compare SBM and SFM so I made a third fMMM that shows formulas that support three levels of milk production using SFM compared to SBM. Since the fMMM is interactive for price data, it is possible to determine whether SFM or SBM is your most economical protein source. Since SFM won't support more than 15 to 20 liters of milk/cow/day, I advise against using SFM for lactating dairy cows. This work shows why. I did a summary of the 20 sheets of linked data for SFM vs. SBM.

II. Word Documents for the Dairy Industry

(IIa.) After these fMMM's were created I wrote a word document that shows the formulae and bulk management data included in the fMMM plus the crude protein and rumen undegradable protein content of the dairy mash for 36 series of rations that will support milk production from 10 liters up to 50 liters of milk (if feasible) for the rations using SBM. (I also wrote a word document for feeding SFM versus SBM.) Since there are several choices of energy ingredients besides corn, I included sections on predicting kg body weight change and adjustments in soybean needed for various grains (barley, wheat and oats) and the adjustment necessary if beet pulp pellets are not used.

The intended use of this 61 page word document (that shows 297 rations) is for the dairy feed technician (or the dairyman/women) to be able to go to a dairy, determine the forage being fed and recommend a series of rations on the spot. I've used this to great advantage myself. Upon returning to the office, the fMMM can be used to refine the recommendations and give additional data, particularly cost and thus income predictions.

(IIb.) Since up to 216 rations with the above features (formula, bunk management data and various incomes) gives a valuable data base, I linked 20 pages (will be 22 pages when ADF and NDF are included) to specific data in the data base and wrote up a summary of the findings. This is a valuable document explaining applied dairy nutrition. I learned by creating it and I'm sure the serious reader of this document will learn by studying it. There are some surprises including the need to keep the rumen undegradable protein (RUP) intake up (SBM), even as forage quality improves, since as forage quality goes up, the protein increase is mostly rumen degradable protein (RDP) and not RUP. Also, as forage quality goes up the cow will eat more of it (less neutral detergent fiber) and this replaces concentrate that usually has more RUP than the forage, thus the need to keep the kg of soybean meal in the ration up in order to support high milk production.

(IIc.) There is a 15 page prologue to the 61 page document (showing 297 rations) that gives applied dairy nutrition suggestions. There is also an appendix that gives more dairy nutrition data. The 61 page document can be printed in whole or in parts (1) nutrition information including the information page that separates the two presentations of rations (10 to 35 liters & 25 to 50 liters) and the appendix, (2) rations that will support 10 to 35 liters of milk and (3) rations that will support from 25 to 50 liters of milk.

Formulating these rations, creating the fMMM's, entering the data and writing the word documents was a major effort that took days, nights, weekends and holidays. It is to be hoped that they will be extensively used.

There are many first generation dairy farmers in Kosovo. They need more technical information available to them in their language. Supplying them with specific formulas using feedstuffs available locally that are formulated for the type and quality of the forage that they are feeding plus supplying them with applied dairy nutrition information aimed at raising milk production is a major contribution of KCBS. The material I created on this assignment adds to material I created during previous trips.

III. Selected dairymen were visited and specific rations were formulated for their circumstances.

A letter was written to each of them (27 letters) with specific recommendations or request for information for me to use in keeping their rations updated. These selected dairymen can be used as examples as to what can be accomplished with improved nutrition. These success stories excite all those involved.

IV. Seminars

Seminars were given at five or six locations in Kosovo. It is hard to measure the impact of these but at one we gave at Rudina Dairy (Prizren) a dairyman who had attended a seminar I gave there in April said he had applied the recommendations, saw results and asked us to visit his dairy, which we did. He and Arben had the ration right.

V. A concentrated dairy vitamin-trace mineral premix was formulated.

The pre-mix was presented in the word document that gives dairy nutrition suggestions that precede the presentation of the 297 rations. This is an open formula available to anyone who chooses to mix it. We were able to enlist Fauna to have it custom mixed. (This represents the culmination of work that started with Zijidan during my first trip to Kosovo for KBS in November 2002.) Fauna is making this concentrated dairy premix (CDP/M) available throughout Kosovo. It is also available from BioMin of Austria and Germany.

This concentrated dairy premix is to be fed at 20 grams per 600 kg cow/day. In addition, limestone and salt should be fed according to the formulas presented, which use two kg of wheat bran as a source of phosphorus. It is anticipated that this method of supplying vitamins and minerals will save the dairyman at least 10 cents (Euro) per cow per day and give more specific and better vitamin and mineral nutrition (particularly calcium and salt) than other options where the calcium and salt are included in a package that is to be fed at approximately 200 gram/cow/day. This is a major contribution of KCBS for dairymen with multiple cows (who choose to use this concentrated premix) that will result in better nutrition and substantial savings over products presently on the market.

TASK FINDINGS

The progress report for this three week period does not contain the excitement of accomplishment reported for my seven week period last March and April. Arben and I visited most of the dairymen with which we have worked. There are some exciting success stories and some disappointments. We did or will do ration formulation for most of them plus we picked up three new clients.

Milk production in general is down since March - April in most but not all dairies. This is a natural phenomenon for herds that have a majority of late lactation cows, that have run out of good quality forage including corn silage and are feeding mature grass hay, and for cows that were heat stressed or had some negative change in ration or environment. We need to be honest however and state that some of the decrease reported is from lack of follow-through by the dairyman since our intervention last March and April. The lack of sustainability of these dairies is concerning. Those that aren't good managers will shake out while those people who are good managers will survive and flourish and we have some of both types of dairies. I'm like a Shepherd who looks out for all the sheep so those that have retrogressed really concern me. Most dairies are increasing their cow numbers and are looking forward to higher production this fall than last due to improved nutrition, better forage etc. That can be traced back to KCBS's positive influence.

I have or will formulate updated rations for a number of dairymen. The real evaluation of KCBS's and my work during this period should be reserved to see what happens when these new rations are fed and cows start new lactations with the chance to peak higher than their last lactation. It is noted that most of the improvement reported in my previous report occurred the last three or four weeks of the seven weeks that I was here. I've been here three weeks this trip. It takes time to gather information, formulate and then get out new rations, for the dairyman to feed them and of course for the cow to respond. I'm hoping that we can all get excited about the results that we see in the next month. KCBS will be aggressive in implementation of ration changes, and will monitor and report this to all of us.

In Annex A is attached a Progress Report on Specific Kosovo Dairy farmers. This is an updated report on the dairies that we work with in Kosovo. Rather than start a new document, I'm adding on to the previous report from 20 April 05. I've included the comments made in April so that the reader can read the original observations as well as the recent ones.

CONCLUSIONS AND RECOMMENDATIONS

In order to support the development of the dairy industry in Kosovo it is important to give specific help to selected dairy farmers as well as to hold seminars and supply written technical documents that supports good dairy husbandry. For KCBS to have maximum impact throughout the dairy industry, the above rations should be taken by KCBS technicians to selected individual dairymen who are serious about improvement. I would be glad to give personalized attention to dairyman willing to implement new ideas. Getting the vitamin and mineral nutrition right is important. The formulas and the availability of the concentrated dairy premix give the dairyman an economical way to do this. Deliver the information to the dairymen/women. **Remember that if you want to improve milk production, you must improve what the cow eats! KCBS can do that!**

ANNEXES

- ANNEX A. REPORT OF PROGRESS WITH SPECIFIC KOSOVO DAIRY FARMERS
- ANNEX B LETTERS TO DAIRYMEN
- ANNEX C NOTES ON DR. CHAPIN'S WORKSHEETS

ANNEX A

REPORT OF PROGRESS WITH SPECIFIC KOSOVO DAIRY FARMERS

Introduction written on 21 April 2005.

The purpose of this narrative is to estimate economic impact, which is on-going, on specific dairies in Kosovo on which KCBS has provided nutritional assistance since the second week in March. When measuring economic impact, the most obvious and immediate as far as cash flow is concerned, is milk flow. In addition, there is the value of improved milk components, particularly milk fat percentage. I'm sure that there is a milk protein improvement in most cases but this is not measured and the dairymen do not get paid on this as of yet as I understand. With development of the milk industry in Kosovo it is expected that dairymen will get paid on the basis of percent milk protein. Increasing milk protein increases cheese and yogurt yield and for sure improves the nutritional value of milk for the consumer, so value is being created by improved dairy nutrition but the milk producer is not receiving compensation for this improved value at this time. For example, in Krasnodar, Russia a 1200 head cow herd I was working with saw an increase in milk protein from 2.7% to 3.2% after they improved their ration, particularly the protein component of the ration. I could give other examples. Improved nutrition can also improve milk quality.

The milk price presently paid in Kosovo is very conducive to feeding for increased milk flow. Our field results show an almost immediate improvement in milk income over feed cost when the ration is improved. The best ration is the one that makes the dairyman the most money and not the one that is the cheapest. Most milk producers in Kosovo know this and act accordingly. Still, KCBS must be vigilant in their selling of the value of improved nutrition and help the milk producer calculate marginal revenue and marginal costs so that he/she will make good decisions based on potential economic gain.

A very real economic improvement that is happening in Kosovo is an improvement in body condition of cows fed improved rations. This is hard to measure but is being reported almost universally by milkers and owners. My U.S. National Research Council 2001 dairy computer program is predicting an average increase in body weight of over 500 grams a day on the rations suggested for cows giving 25 liters. This is worth over 50 cents per cow per day. This is like money in the bank as it helps sustain production throughout the lactation curve, helps improve production during the subsequent lactation and of course means the animal is worth more when she is culled for slaughter.

Another benefit of feeding improved rations is improved animal health as measured by such things as improved breeding performance and the catch-all category of lower vet bills. I haven't put a value on that but it is there and it is real with economic impact becoming apparent during the next twelve months and beyond after improved nutrition is implemented. In the United States I have routinely had dairymen report reduced vet bills during the twelve months following an improved dairy nutrition program, which includes improved energy, protein, vitamins, trace minerals and major minerals.

It is hoped that KCBS's nutritional impact, through seminars and demonstration, will be far-reaching but, except for the dairies with which we have worked specifically, this is going to be hard to measure except by word-of-mouth comments from the field. A survey of impact of the members of Kosovo Association of Milk Producers (KAMP) by KCBS representatives could be illuminating and allow KCBS to evaluate the economic benefit of their involvement, not only from improved nutrition but with other dairy

technologies that have been promoted by KCBS. I'm thinking specifically of improved forage harvesting and preservation, improved hygiene and milk quality technologies, improved animal genetics, improved herd management including record keeping, etc.

By working with specific dairies (large, small, intermediate) KCBS has demonstrated that improved feeding programs will elicit more milk along with a profound economic impact within a week of implementation of the new ration. I compliment Kosovo dairymen on their willingness to try new approaches to feeding their cows and in their rapid acceptance of new technologies when they see that it is economically beneficial to them.

Following are some specific examples from working with individual dairies in Kosovo since 9 March 2005. This economic impact evaluation will be on-going. I can report what has happened up until the latter part of April. I hope Arben will be able to update this once a month or at least once a quarter as the improvement should become greater with time. It should be pointed out that it is difficult to increase milk production of late lactation cows. Your hope is that you can sustain their production without as much decrease in production as expected. When this late lactation cow has her dry period and enters the herd as a fresh cow, you can expect her to peak higher and sustain longer if our recommendations are followed. This means that herd average should continue to improve during the next 365 days as all cows go dry and then freshen. To ensure this result it will be necessary to monitor and advise these herds throughout the change of seasons, change in forage and feedstuff price and availability and to continue encouraging implementation of improved feeding technologies. Holding the hands of milk producers in Kosovo by KCBS staff and consultants will help increase the economic impact and increase the economic return on previous and present technology transfers.

With that introduction, let's look at specific dairies with which we have supplied ration evaluation and reformulation help since 9 March 2005 until the present (last week in April 2005.) Most dairies were visited multiple times. It is not a one-stop proposition.

1. Eurolona Dairy near the Pristina airport.

1.A. 9 March 2005

Manager and owner is Milizim Berisha. On 9 March 2005, 45 cows were producing 750 liters of milk = 16.67 liters average/cow/day. Cows were not fed free choice hay as Milizim and his veterinarian (present) were told that it would unbalance the ration. Arben and I convinced him otherwise and he started feeding more hay on that day. A few days later he reported that butterfat had gone from 3.25 to 3.9% (verified by seeing his record book). This is significant economically as he is paid 25 cents/liter for milk containing 3.5% or less butterfat and 30 cents/liter if the butterfat is 3.6% or higher. This is a return of 85 cents/cow/day on an investment of about 15 cents worth of hay. This amounts to about 1000 Euros per month on his dairy from increased butterfat alone.

Cows are in stanchions, making it easy to feed each cow individually. We urged lining up of the cows in decreasing order of production level and feeding accordingly to help cows peak as high as possible and thus feed to raise the herd average.

His herd is made up of 31 Holsteins some Simmentals and a few Brown Swiss. The Holsteins are very thin with a body condition score of 1 to 1.5. I proposed a new ration. Since it was more expensive, he said he'd put seven Holsteins on it to test for results. After about a week he put the entire herd on the new ration near the end of March. He home mixes his own dairy mash and feeds about 10 kg of dairy mash plus 10 kg corn silage plus free choice hay (now). He will be adding wet malt. I have given him new rations. On 18 April he reported that 42 cows were producing 870 liters = 20.7 liters

average. Therefore, after less than one month on new rations his cows are up four liters of milk/cow/day in addition to the increase in milk butterfat percentage. It is hard to determine exact feed costs on a dairy but using local prices for milk and feed costs and predicting milk production using the U.S. National Research Council's 2001 Dairy software, there is a strong 20 cents per liter income above feed costs per liter of extra milk. Since he is up four liters of milk, he is earning about 80 cents more per cows/day from increased milk production. This will return him another 1000 Euros per month.

In addition, it is estimated from the dairy software that his cows are gaining about 500 grams a day. At one euro/kg to put on weight, this weight gain is worth 50 cents/cow/day x 42 cows x 30 days = 630 Euros per month. I'm not sure this is happening. His cows are still thin and he needs to increase the energy.

Arben and I have visited this dairy six to ten times to give follow-up support plus I sent several letters with technical support and will continue to do.

In summary, 42 cows at Euroлона Dairy have increased the value of butterfat 1000 Euros plus 1000 from increased milk flow and an estimated 630 Euros from body weight gain = 2630 Euros more income per month since the nutritional intervention of KCBS starting about the middle of March 2005.

1.B Latest visit on 10 Sept 05.

Had 40 cows a year ago. 50 cows now and says he is going to 100, since he has privatized a farm where he can move his cows. He held the milk production (about 20 to 21 liters/cow/day until August and it has dropped about 4 liters since then. He said he is not concerned as the cows are at the end of their lactation, he ran out of corn silage and is feeding mature grass hay, the weather got hot, etc. The fact that he plans to expand to 100 cows indicates that he is optimistic about the dairy business. This dairy has bugged me as he never fed his Holsteins enough feed for them to regain good body condition. He is experiencing poor breeding performance in the Holsteins but not the Simmentals. I had warned him in Mar-April that this could be the consequences of under conditioned cows. He told us all cows are bred but not confirmed pregnant. Both Milizam and his younger brother Fasli run this dairy and appear serious about making it successful. They are receptive to KCBS involvement and I think we should continue to work with them. I will prepare a new ration for them for feeding now before they have corn silage and another ration for when they have corn silage in six weeks. I'm cautiously optimistic about this dairy.

2. Luma Commerce.

2.A 10 March 2005.

Sadri and Safet Luma are owners and managers. I worked with this dairy during November 2002 and June 2003. At that time there was no milk market. Without a milk market, there was no incentive to improve rations that cost more. In June of 2003 Sadri said he and some fellow milk producers were planning to build their own milk processing facility because he was tired of not being paid for his milk. During the present trip he acknowledged that he was owed in excess of 50,000 Euros from past milk deliveries. Working in the present economic environment that is favorable for milk production due to a strong demand for milk and favorable prices, is a welcome change. Luma Commerce used to have 140 Simmentals but is down to 70 now with the intention to replace all Simmentals with Holsteins within the year, which he re-confirmed today (21 April). He is milking a little over 40 cows now. Cows are group housed in six different pens inside a very nice barn so that cows can be divided by production level and fed accordingly. I think this has been done only partially. We have supplied rations to be fed to support various levels of production. Sadri indicated that he plans to implement major

management changes over the next several months, including grouping according to production.

It is difficult to get absolute production levels per cow but Sadri said that present production is 23 liters, which is very good for Simmentals and this is up 2.5 to 3 liters/cow/day. The man who does the milking reported about the same thing and volunteered that the cows were gaining weight and looking better. This would mean that there is 50 - 60 cents gain in the value of milk/cow/day and probably about the same value from the increase of body weight for a total of about one Euro/cow day x 43 cows x 30 days equals about 1300 Euros per month for this dairy.

In our conversation with Sadri today (20 April) after he had hosted a dairy nutrition seminar attended by the press he expressed his appreciation for KCBS's help and said they were implementing new management techniques now and this fall as a result of KCBS's involvement. He and I set a production goal of 25 liters/cow/day for his Simmentals and higher if he repopulates with Holsteins, which is his intention.

2.B 10 Sept 05.

No report as we weren't able to contact Sadri, the older brother who was in the USA and then another country, or find his brother Safit at the dairy. This is a large dairy (was over 100 Simmentals but now down to less than 40 milking. Arben and I were never able to find out what is happening. Last trip they said they were going to Holsteins. Sadri has always been cooperative but we can't figure out Safit. I'd stay in contact with them but feel that it is their move if they want further involvement with KCBS. I'd like to see more cooperation.

3. Rudina Dairy.

3.A 11 March 2005.

This is one of the largest dairies in Kosovo with about 100 milking cows. Rudina processes their own milk and sells 80% as fresh milk and 20% as yogurt. I visited them for the first time in November 2002 and have stayed in contact via e-mail with their senior veterinarian, Dr. Rogova, who I met again several times during this trip. He is very supportive of KCBS's involvement and reports good results from KCBS intervention including improved animal breeding performance (early indications), weight gain and improved milk flow. Mr. Orus Krasniqi, the owner, announced he plans to depopulate the Brown Swiss (65) and Simmentals (4) and replace them with Holsteins. Both he and Sadri Luma have said they like milk and money and feel Holsteins will supply more of both than other breeds. His two on-sight veterinarians don't favor the replacement of the Brown Swiss with Holsteins because of breeding problems with the Holsteins. Holsteins are a more fragile cow and need to be fed better than Brown Swiss and Simmentals in order to reach their potential. In the meantime KCBS is working to improve milk production with the existing animals. Mr. Krasniqi spent some time in the U.S. and observed the amount of protein that is fed to high producing cows. He came home and did the same without taking care of the other nutrients, particularly minerals, and was not pleased with the results which included more health problems and eventually falling milk production. I'm not clear on the etiology of these problems. He has been relying on 200 grams of Sano's Camisan to supply enough calcium and salt. This results in serious deficiencies of both calcium and salt, particularly when milk production exceeds 15 to 20 liters. I don't know if this is causative of his problems but should be avoided by adding limestone and salt to the ration. I don't think his problems are related to high protein intake, except that increased protein intake encourages more milk production and without balancing the rest of the ration, problems could result including morbidly thin cows, demineralization of the skeleton, reduced immune system health with susceptibility

to opportunistic pathogens, poor breeding performance and eventually reduced milk production.

I have spent most of a day doing ration formulation for his beef raising project. He is to receive beef calves shortly and we're trying to maximize his inputs and outputs. This is a new service for KCBS and will need to be evaluated after it is implemented and results are known.

I have spent over two days of computer work on weekends preparing rations for him to evaluate present and proposed rations using present feedstuffs plus the economic impact of feeding legume forage versus grass forage. He has received a hard copy of these data recorded in a complete Milk Money Maker with six rations that will support 25, 30, 35, 40, 45 and 50 liters of milk using grass forage and another six rations using legume forage. I don't know if this input was used in his decision making but he has planted seeds for legume forage since our involvement. We'll have feedback this fall.

As a result of KCBS involvement Mr. Krasniqi has grouped his cows according to production. Arben and I don't feel like there has been complete cooperation in implementing ration changes and that reporting of milk response has been incomplete. From what Mr. Krasniqi has reported plus reports from milkers and veterinarians, it appears that milk production is up about two liters with improved body condition amounting to about 500 grams of weight gain per day. I'm estimating that the economic impact at Rudina is about one Euro per cow/day. With 100 milking cows this would amount to 3000 Euros per month from the milking herd. This may be a stretch. The potential is much greater. I'm somewhat frustrated with this dairy. I expect some economic benefit from our involvement from the feedlot beef calves also but there is no way to measure this at present.

3.B 10 Sept 05.

This is a large dairy (130 with 112 in lactation) of Brown Swiss and Holstein. Up about ten cows from a year ago. Milk production up from about 17 liters/cow/day a year ago to about 19 now. He's trying to privatize his operation. We have done a lot of ration work for him for his lactating cows and for his beef bulls, most of which he has followed. He said he fed the bull ration as presented and was happy with results with 1.2 kg average daily gain. This trip I formulated a new lactation ration for him using his current forages. Last visit he separated high from low producers at our suggestion. This trip I suggested he make a special pen for high producing Holsteins as their body condition is not adequate and they are having some problems getting the Holsteins pregnant. No problem with Simmentals. There is a continuing foot disease problem. We met his banker (Mustafe Maxhuni of European Agency for Reconstruction) there and he later told us the owners (Krasniqi) are open to new ideas and apparently doing OK. KCBS should keep supporting this dairy with outreach programs as KCBS is making a difference here. We conducted a seminar at the special seminar building on the dairy.

4. Dukagjini Data Dairy.

4.A 17 March 2005.

I became acquainted with Dukagjini in November 2002 with KBS when there was no milk market. I visited him again in June 2003. After the June trip for CARE International I formulated about 250 rations for use in Kosovo. Arben extracted specific ones and published them in a several page brochure for dairymen in Kosovo to use. Dukagjini was using one of these rations on his herd of 20 lactating Simmental cows. Milk average/cow/day is 450 liters/20 cows = 22.5 liters. He sells retail for 40 cents per liter with some marketing costs. Cows are in good body condition. I estimated 3.5 BCS. I

formulated a new ration and presented it to him with the suggestion that he feed extra protein and energy to his top producers. He has done that and 21 cows are now producing 510 liters/day = 24.28 liters/cow/day and thus his cows are up two liters in milk. Twenty four liters of milk from Simmentals is very good. The point to make here is that even at 22.5 liters of milk, the herd average can be increased by feeding the top producers better. I don't know if there is any increase in body weight and his cows don't need any. I'm estimating the economic impact here at 60 cents/cow/day (he sells his milk for 40 cents/liter) x 21 cows x 30 days = 378 Euros per day.

4.B 10 Sept 05.

This is a success story dating back to our first involvement when working for CARE International in June 2003. He's been using our rations ever since. In August his milk production was about 25 liters/cow/day and for the first part of Sept he is reporting 26. This is exceptional for a herd of Simmentals. As usual, his animals are in excellent shape. He's very appreciative of the help he has received from KCBS. He's the only dairy of about ten who is still in business. He bottles and sells his own milk. When I first met him (I think in Nov 2002 with KBS) he didn't have a milk market and you could see the economic pain in his eyes. It's nice to see the success he is now enjoying, partly due to intervention of CARE International (and particularly Arben) and now KCBS. His is a continuing success story. I will upgrade his rations as needed.

5. Premium Vet Dairy.

5.A 17 March 2005.

This dairy near Istog is owned and run by Qerim Halilaj and Dr. Fadil Sadikaj (DVM). They are milking 38 Holsteins and a few Brown Swiss and Simmentals for a total of 44 lactating cows from which they were getting 830 liters of milk = 18.86 liters/cow/day. Milk is sold at 32 cents/liter. Cows are in tie stalls. From mid-May until November they have green grass that they will pasture or bring to the cows. Wet malt is fed throughout the year. The present ration contains corn silage, wet malt, wet beet pulp and a little hay. The dry matter content of the total ration was less than 40%. Dry matter intake was below predicted amounts. Ration dry matter should be 45% or higher. New rations were formulated including drying out the ration some by cutting back on wet feed and feeding more dry hay. Dry matter intake improved. With the new ration cows went up about three liters of milk within a week. At our suggestion they lined up the cows by production level to ease feeding by production. A string of top producing Holsteins is averaging over 30 liters of milk/cow/day. Three weeks after KCBS intervention 42 cows were giving 1005 liters = 23.9 liters/cow/day, which is a five liter increase. This is worth at least one Euro/cow/day plus about 50 cents of weight gain/cow/day for an estimated value of 1.5 Euros x 42 x 30 = 1890 Euros per month of increased value since KCBS intervention. On 28 April they reported that they had five Holstein cows give 55 or more liters of milk with top cows up ten liters/head/day. They expected to increase the size of the herd by about 200 cows so the extended benefit here will be substantial. They are also looking at importing and supplying dairy premixes.

5.B 10 Sept 05.

The lack of continued progress of this dairy was a big disappointment to me as it was one of our primary success stories last Mar-April as reported above. They are having financial problems, which curtails one's ability to manage well, but I suspect that lack of good management in the past is catching up with them and is partly responsible for the cash flow crunch. They are producing about 21 liters of milk/cow/day, which is three liters more than when we intervened in March of last year but below the average of about 24 liters they reached in April of last year. I think money problems (substantiated by the banker) has them skimping on feeding enough soybean to their top producing Holsteins

which are not over the 50 liters of milk they reached last April (are about 40 liters now) and look like they are gaining weight. Feeding more soybean meal would help convert the good body condition to more milk. Hay quality is poor – mature grass forage. They were still working on their corn silage harvester when they should be out in the field harvesting the corn. They are not feeding any premix (since the middle of August) due to pecuniary strangulation (out of money) and this will cause them problems in the future if not corrected soon. They need to improve their milking procedures. For example, we saw the milker prepare several cows for milking at one time with a lag time of ten minutes or so from preparation to milking. The milking machine should be on the cow about one minute after prepping to get best milk let-down and milk-out. Since one of the owners is a DVM, I'm surprised that this poor procedure goes unnoticed and/or uncorrected. While we were there we saw a calf that had just been born with its mother tied up in her regular stanchion so she couldn't lick the calf. She was not in a private stall as she should have been. They were wiping the calf with straw, which stimulates the sucking response, which the mother is supposed to do by licking. They were attending the calf. The approved procedure is to milk colostrum from the cow and force feed the calf within minutes of birth rather than letting the calf suck the cow to be sure enough colostrum is consumed to assure immunity. They expected the calf to suck the cow. While we were there, five trucks arrived with 70 bred heifers. They unloaded the first truck by shoving the animals out an almost perpendicular end gate/ramp with some heifers landing on their back and all falling over each other. All the animals were excited and very stressed. There were more men with sticks trying to get them tied up in stanchions that there were heifers per truck. I would think the appropriate scenario would be to let them rest, untied, in an open paddock with forage and water. After seeing this I thought these must be donor cattle since an owner would not treat his animals this way. It turned out that these were cattle being put in quarantine by Heifer International. I question the advisability of running a quarantine facility on the same property as your dairy. When our group complained to the Premium Vet manager, who seemed to be overseeing the handling of these animals, we were basically asked to leave, which we did. The owners were not there as Fadil was in the USA and Qerim had a medical emergency and was in Macedonia. On the positive side Premium Vet dairy has increased from having 44 lactating cows in March to 80 with plans for more. Growth can cause cash flow problems of course and lack of cash has a real numbing influence on your ability to manage properly so I wouldn't write off this dairy. KCBS should continue giving technical support to Premium Vet and help them through this difficult time. At the same time, Premium Vet must do their part of course. I will continue to support them from home.

6. Teuta Mi Dairy near Peja and Istog.

6.A 18 March 2005.

Manager is Shefquet Dreshajj. I visited this dairy in November of 2003 with Zijadin and Gani of KBS. By adjusting the ration then there was a marked improvement in milk production. We have no data to report from this trip as they are drying up all their cows and expecting to receive 160 Simmentals and 66 Holstein bred heifers. I have formulated a heifer ration for them. On 22 April 2005 we held a seminar there with a little over 20 participants followed by a lamb barbeque. Mr. Dreshajj said that the importation of bred heifers was delayed waiting for a letter of credit. I told him that I would like to work with him when he has a herd of milking cows.

6.B 10 September 05.

Teuta Mi is out of the dairy business.

7. Mazreku Dairy at Malashiva.

7.A 21 March 2005.

This is a new dairy by the Mazreku family, Sedri – Father - and sons Osmon and Azrem. By their own admission, they are not cattle people. They invested over 500,000 Euros from their petroleum business. They have about 120 cows (20 Brown Swiss and 100 Simmental. 110 were lactating when we first saw them on 17 March. They were marketing 1050 liters per day = 9.5 liters/cow. They calves were consuming about 100 liters so with that added in, production was about 10.5 liters/cow/day. Included in their feeding program were two kg of straw so we had them remove that immediately. They fed it because someone said they should. We gave them a new ration on 23 March, which they started within a few days. Concentrate is made by a local mill. Production started going up in about three or four days. Within three weeks it was 16.1 liters/cow/day. The goal is to hit 18 liters/cow/day by the first of May and 20 liters by the 4th of July. At present levels of production the value of increased milk production is about 1.20 Euros/cow/day plus an estimated 50 cents weight gain for a total of 1.70 x 100 cows x 30 days = 5,100 Euros per month increase in net income. The owners have been sorry that they invested 500,000 Euros in this dairy. They even have the foundation laid for doubling their size. KCBS can know they have made an impact if they see the expansion continue, as it was stopped due to poor production. The milk processor said that if milk production did not increase from the 10.5 liter level that the dairy would go bankrupt. I think the owners are pretty optimistic now. Osmon called Zijadin and said their biggest problem was that they needed a bigger milk tank. They are having some high acidity problems now. This is probably due to poor hygiene and could include not cooling the milk fast enough. (Confirmed to be a milk cooling tank problem.) I look for improved milk production here. I will be supplying new rations including malt. Previously there was a report written on the success of KCBS intervention at Mazreku Dairy.

7.B 10 Sept. 2005.

Mazreku dairy is our premier success story. When we became involved with this dairy in March 2005 the herd average was 10.5 liters/cow/day. It went up to over 16 liters during April. Osman Mazreku said that the herd average reached 18 liters but has since declined to about 15 liters due to most of the cows being at the end of lactation and because of forage changes. He told us that without KCBS intervention last March that he would have been out of business. He and his family have invested over 500,000 Euro in the dairy. He is expanding his herd from the present 110 cows (mostly Simmental) with the purchase of 30 Holstein heifers and plans to go to several hundred cows. He is raising his own forage this year and was putting in corn silage when we were there. He has purchased his own feed mixer to be operational soon. I upgraded his ration. He has asked me to continue to do his ration work and he even offered to pay me. I am pleased that he feels my dairy nutrition input is worth something and that he's enough of a professional manager to seek it. I said I would continue to do it at no charge to him. I will work with him and hopefully help him to take his herd average to 20 or 21 liters, which would be double what it was when KCBS became involved. I think it possible to reach this level of milk production when his cows come fresh again. KCBS can take pride and satisfaction with what they have done with this dairy.

8. Disa Dairy.

8.A 22 March 2005.

This dairy is near Istog and owned by Bekin Osmani. There are 16 milking cows made up of one Holstein, one Simmental and the rest Montbeliarde, a French breed of cows. These 16 cows were giving 420 liters of milk = 26.0 liters/cow/day. The Holstein cow had been fresh about a month, was giving around 50 liters of milk and was melting away with a body condition score of about one. She was fed only two kg more feed. I urged

that the cows be fed more forage, as the bunks were empty, and the cows be fed according to production, which they agreed to do. Three weeks later they were reporting a milk flow of 440 liters from 16 cows = 27.5/cow/day and thus an increase in herd average of 1.5 liters. This along with an anticipated improvement in body condition means that there was a improved earnings of about 80 cents/cow/day x 16 x 30 = 384 Euros per month. The impressive development here is that even though this was the highest producing herd we encountered, there was still more milk to be produced by feeding better. I think there is still more.

8.B 10 September 2005.

The number of lactating cows has increased from 16 to 18. The thin Holstein mentioned above is still producing about 40 liters of milk and has gained a little weight. One year ago this herd was giving 22 liters of milk and now it is giving about 26. First class operation, cooperative and impressive. I will be sending them some upgraded formulas.

9. Agim Ramadani, Gjilan.

9.A 23 March 2005.

This is a small dairy with seven milking cows (3 Holstein, 3 Simmental and 1 Brown Swiss. These seven cows give 110 liters of milk = 15.7 liters/cow/day. Milk is sold at a local cheese factor for 27 cents. We met Agim earlier this week and he said production was up about two liters per cow. This will increase income on this farm about 30 cents plus about 50 cents weight gain = 80 cents x 7 x 30 = 168 Euro's/month increased net revenue.

9.B 10 September 2005.

We didn't visit and I have no new information on this dairy.

10. Pal Raja Dairy near Gjakova.

10.A 24 March 2005.

This is a small dairy with six cows in lactation producing 98 liters = 16.3 liters/cow/day. We did the ration work and delivered it to him. To date (28 April), despite promises to implement the changes immediately, nothing has been done here. This is a disappointment to us as we used valuable assets and as yet see no benefit.

10.B 10 September 2005.

We visited. Nice guy and nice family but very small dairy and no indication that KCBS intervention is being used here. Unless he asks for help I see no reason to burn up KCBS resources to chase him.

11. Ismail Demiri Dairy.

11.A 25 March 2005.

This dairy has 8 cows producing 160 liters of milk = 20 liters/cow/day. We worked out a new ration for him plus encouraged him to feed hay free choice and to feed the higher producers more grain. He reported on 22 April that his cows were up three liters/cow/day in milk. Adding this to the estimated value of increased weight gain gives 1.10 x 8 x 30 = 264 Euro's increased net income per month.

11.B 10 September 2005.

Very cooperative and supportive. Putting up high quality alfalfa hay cut before bloom because of KCBS intervention. Showed me a cow that I said was copper deficient last

time that looked much better this time as he had added trace minerals to her diet. Getting about 20 liters of milk, which is up from 12 a year ago and about the same as when we visited him last trip. At that time he added some soybean meal and saw a milk response but not feeding now and not feeding premix. When asked why, he said he ran out of money as dairy processor slow in paying him and he had other investments. When he quit feeding SBM he dropped in milk immediately. He knows this is short-sighted. Looked at his various fields of corn for silage to give opinion on when they should be cut. Worth further KCBS involvement. I will upgrade his ration for his good alfalfa hay and corn silage being made now.

12. Rhame Xhema. Peja.

12.A 9 March 2005.

Nine cows are producing 400 liters of milk = 21 liters/cow/day. Since he does not have a working lacto-fridge, he is making cheese that he sells at 2.2 Euro/kg. With a 9/1 conversion of milk to cheese this amounts to about 24.4 cents per kg of milk. This is not good. (I've been told his cheese yield is better than 9/1.) A lacto-fridge would allow him to sell his milk for about 30 cents and eliminate a whole lot of work. He has 5 Red Holsteins, 5 Brown Swiss and 9 Simmentals. He feeds alfalfa hay as the only forage. He also feeds dried malt which costs him 12 cents a pound. Wet malt costs 2 cents at the brewery. I did the ration evaluation and formulated a new ration for him that he said on 22 April that he would implement soon. There is no economic impact to report at this time.

12.B 10 September 2005.

They have 20 cows at the very last of lactation. They process all milk to cheese. He said they have a 6/1 conversion, which is a lot better than he told us last time. He has not implemented KCBS ration inputs. His son said that when they increased feeding grain and SBM the cows became loose and they stopped. He's feeding mature grass hay and mature alfalfa hay. He will have corn silage about the middle of October. He was feeding dried brewers grains and when he ran out, cows dropped from giving 21 liters of milk to 14 liters. He said the dried malt will be available in late September. Wet malt costs 2.2 cents at the brewery while dried malt costs 14 cents. (10 kg wet = 2.4 kg dry) Because of the information on dried malt gathered from this dairy last March I did a lot of ration work that showed the value of dried or wet malt because of the greater rumen undegradable protein. I think this is a big opportunity for KCBS to show the brewery the benefit to the dairyman to dry the malt. This would create value in Kosovo. He requested that I do some ration work for him, which I will do.

13. Jetishi Dairy at Gjakova.

13.A 31 March 2005.

Nineteen cows (11 Red Holsteins, 6 Brown Swiss and 2 Simmentals) on 31 March were producing 350 liters/day = 18.4 liters/cow/day. Cows a little thin. New rations were suggested at our visit and a complete recommendation was made the next day followed by some adjustments for use with wet malt. Argeont Jetishis reported that milk production is up 4.5 liters/cow/day on 26 April. This would mean a benefit of 90 cents plus the weight gain expected of 50 cents equals 1.4 Euros x 19 = 30 = 800 Euros/month.

13.B 10 September 2005.

This is another success story for KCBS. When Arben and I approached them last March, Adam Jetishi, the father, pretty much brushed us off as just another international

do-gooder. This time he and his two sons welcomed us with open arms and he told me that he owed me a lot for the help that I'd (KCBS) given to him. This dairy is producing about 21 liters of milk, which is up from about 18 liters in last March, so it is defying the trend to less milk during the late summer. They are feeding mature grass hay and mature grass silage that I'm sure is limiting their production. They have a cow producing over 40 liters of milk that is thin. I'm sure feeding better hay and therefore the opportunity to feed more concentrates would help her produce even more milk and allow her to maintain a better body condition. I will formulate new rations for them for feeding with corn silage. If you want a testimonial on how they value KCBS intervention, please visit them. They are doing a wonderful job of maintaining their cows. The neatness of their homes and dairy show that they pay attention to details.

14. Berisha Dairy near KEK coal Ids outside Prishtina.

14.A 5 April 2005.

Twenty-two Simmental cows are producing 320 liters of milk (40 goes to calves) = 14.5 liters/cow/day. After learning what they were fed, it is fortunate that there is not higher production and the high outgo of calcium that more milk would entail. Cows are fed bran and nothing else. There is no salt, no limestone, no vitamins and mineral – nothing. The high level of wheat bran put up a red flag about high phosphorus. The ratio of absorbed calcium to phosphorus to calcium is about 1 to 2. This is bad as absorbed calcium should be above absorbed phosphorus to prevent demineralization of the skeleton. We gave a suggested ration while we were there and they said they would buy limestone, salt, vitamins and minerals, corn and soybean that weekend. To date, this has not happened. I have written them a letter explaining the concern I have for the calcium and sodium deficiency as well as protein inadequacy in hopes that they will make the changes necessary to prevent disaster in this herd and to increase milk production and profit. There is no economic impact to report as they haven't made any changes.

14.B 10 September 2005.

No involvement this trip. I understand that the son wants to make changes but the father won't allow it or won't come up with the money. We're ready to help when they are ready to receive it.

15. Mujoto Dairy at Shtime.

15.A 5 April 2005.

This is a new dairy with some of the best facilities I've seen in Kosovo. Twenty lactating cows (1 Red Holstein, 11 Simmentals and 8 Brown Swiss) are producing 360 liters = 18 liters/cow/day. Cows were not fed hay or corn silage free choice. We returned with a new ration which we mixed in his barn with a shovel. Cows started up in milk on the third or fourth day. On 22 April Bajran Mujoto said the cows were up three liters in milk. He said so on two television interviews at Luma Commerce after our seminar there. Economic impact would be 60 cents net from more milk plus 50 cents from improved body weight. $1.10 \times 20 \times 30 = 660$ Euros per month increase in net income on this farm after about two weeks of ration implementation - and counting. The French KFOR provided them with a lacto-fridge.

15.B 10 September 2005.

This is another success story for KCBS. They have gone from 20 cows during to 49 in the last year. Cows are giving the same as when we met him in March, after being up several liters from ration changes. He is not concerned as forage has changed, time of year and stage of lactation. Very complimentary of KCBS help. Putting in corn silage

now. I will upgrade their ration and expect them to reach new highs in milk production this fall and winter.

16. Isufi Dairy near Ferizaj.

16.A 5 April 2005.

This dairy has 14 cows in lactation with 26 heifers freshening soon. It is a little difficult to get a base line here as some cows were almost dry and the amount of milk produced didn't jive with what we saw later in his records. It appears that milk production was about 14 liters per cow/day. Cows were Montbeliarde and Brown Swiss. Both breeds are capable of producing a lot more milk than this. He was not feeding hay free choice. During our initial visit we modified his concentrate ration and urged him to feed more hay. Three days later milk production from about 11 cows had gone up over 30 liters. We gave him a new ration that he is feeding now but I don't have present production. One Isufi brother was at the Luma Commerce seminar and said to the audience how his cows had shown an immediate response from improved rations. On 15 April he reported 187 liters from 8 cows = 23.8 liters/cow/day. He dried up some low producers and his remaining cows were up in milk but it is hard to put a number on the exact improvement. Preliminary economic impact appears to be three to five liters of milk (60 cents to one Euro) and 50 cents worth of weight gain = $1.50 \times 8 \times 30$ = about 360 Euros/month. The actual impact will be much higher when the 26 heifers calve and all cows are fed better.

16.B 10 September 2005.

A happy client of KCBS and a developing success story. He has gone from 14 cows in lactation in Mar-April to 35 now. Milk production was about 14 liters in March and was over 18 when we visited. He's putting in corn silage. I will supply him with a new ration and we'll expect milk production over 20 liters this fall and winter.

17. Qerim Qerreti Dairy near Peja.

17.A 7 April 2005. Twenty-eight cows (Mostly Simmental and Black Bulgarian plus 2 Red Holsteins and 1 Brown Swiss) are giving 600 liters = 21.4 liters/cow/day. We recommended a new ration during our visit on a Thursday the 7th of April. We return on the next Monday for a seminar and cows were up about a liter/cow/day. If we postulate on what we've seen elsewhere, there should be an improvement of at least one Euro/cow/day = 840 Euros per month.

17.B 10 September 2005.

Receptive but not feeding soybean meal now. Putting in corn silage. I will prepare him a new ration. I think we can help make this a success story. No news to report at this time.

18. Sokol Mulaj Dairy, Peja.

18.A 7 April 2005.

I met Sokol in June of 2003 with Arben when we both worked with CARE International. He is one of the persons feeding according to the formulas Arben had extracted from ones I had formulated for Kosovo. He was very satisfied with production of 120 liters from 5 cows = 24 liters/cow/day. He has whole soybeans that he raised and wanted a recommendation on how to feed them, which I have supplied. There is no economic impact to report at this time. It is hoped that he can squeeze a little more milk out of his cows by increasing attention to the top producers.

18.B 10 September 2005.

We didn't visit as he continues to do well as he has done since we helped him with his dairy ration in June of 2003 when Arben and I visited him with CARE International. He is a success story of USAID help but not specifically of KCBS, although we're sure here to help him again if he asks. He has Simmentals. During Aug & September they were giving 25 liters. This is remarkable for Simmentals. He and Dukagjini are doing it right (both 26 liters of milk from Simmentals) and showing that you can get a lot of milk from Simmentals if they are fed right. He and Dukagjini can sure be held out as good examples of the results of good nutrition and the benefit of USAID help. Sokol runs a milk collection center.

19. Gjilan Dairy.

19.A 25 April 2005.

Dairyman where we had a seminar in early March began feeding soybean meal last Friday. By Monday he reported a milk increase of 11 kg from 4 cows. This would amount to about 72 Euros per month. He'll need to feed some more energy along with the protein or cows will lose weight.

19.B 10 September 2005.

We didn't visit and no report.

20. NEW DAIRIES

We have visited a few new dairies in the last several days so impact is not know. It looks like there is an impact to date of 15,000 to 17,000 Euros's/month from about 440 cows, which would be a little over a Euro/cow/day.

In addition, we have given ten seminars to about 150 dairymen that represent 1723 cows. Some of these are included in the above count. If they follow suggestions, 1200 cows could increase net revenue a Euro/day, which would be double the above benefit and could be added to the above benefit. This will take a lot of effort to effect.

A compendium of 216 rations has been prepared. If this can be distributed throughout Kosovo, it can have an impact of about a Euro/cow/day if the suggested rations are fed. I'll be interested in feedback from Arben during the next several months.

Milk production is expected to increase with time so the economic benefit of KCBS intervention can be assessed at that time. I'm optimistic of big numbers. Follow-up is important for continued success and evaluation. The above is a rough estimate

Guersel Gucci Dairy at Rona.

This dairy of 42 milking Holsteins is perhaps the worst run medium sized dairy in Kosovo. I was surprised when a young veterinarian (DVM and Ph.D.) that we met at one of our seminars talked about there being a terrible dairy of about 40 cows. When I asked him if it was this one, he said it was. There are many problems there including feed, mastitis, herd health, barn and facilities management, etc. Mr.Gucci asked for KCBS help and we're trying to give it to him. He has a purchased herd and does not know the calving date of the cows. We can surmise that they are in late or very late lactation when it is hard to get improved milk flow. His vet, who also owns Rona Cheese where he ships his milk, told us that all cows have been confirmed pregnant. My hope is that we can get the pregnant cows in better body condition and that he can realize good milk production after

they calve. Cows are producing only 10 to 11 liters of milk. I have given him new rations which I hope will help him. The cows are so thin that even if the improved rations don't result in more milk he should benefit by improving the body condition of the cows prior to calving. I'm sure his finances are strained. I think KCBS can give him hopes and help if we aren't too late. I will upgrade his ration some more. He was feeding sacked wet malt that was sitting in the sun for a couple of week and I was afraid to have him feed it so formulated rations without malt. I'll formulate some with it and hope he can buy and feed it before it sours. Some of what I saw was rotten but the inside seemed pretty normal. No results to report as of this date. I'm afraid we're playing with fire but we could be at the beginning of a success story. Stand by and we'll see.

Shefki Asllani – Praposhtica Dairy near Luma Commerce.

Shefki Asllani asked us to help him. He has a modern barn, 42 animals, 13 in milk with three dry and getting 16 liters of milk. He thinks they have too much body condition and I would agree. He is feeding beautiful alfalfa dried green-chop. He will feed 20 kg of corn silage when it is ready. He will start a new ration Arben and I have given him as soon as he can buy soybean meal. We will know results by the end of the month if he really goes on the program soon.

Xherolet Morina. Rogova Village.

Was at our seminar at Rudina last April and again this trip. He adapted our recommendations after the April seminar including adding limestone and salt to the 200 grams of Camisan that he feeds and removed sunflower meal and replaced it with soybean meal. He has 25 lactating cows (Brown Swiss, Holstein and Simmental) of which most are in their first lactation. His herd average is 22 liters/cow/day. Holsteins were thin and a little brown in color suggesting they aren't getting enough copper. He was preparing to harvest his corn for corn silage. I will prepare him new rations for his situation.

Fatos Ameti & Memsurgin Ameti at Koznic - Novo Brdo

We visited this dairy but until they have a milk market there isn't much we can do there. They have a lactofridge but I don't think it is operational. Good potential that hasn't been realized because there is no place to sell the milk. While there we met William Ortiz, the local community officer for UNMIK. He asked us to see the local ag minister as he has been sitting on his hands for several years. We didn't have time to arrange a meeting but perhaps Arben can do some good here.

ANNEX B

Letters to Dairymen

Fatos & Memsudia Ahmeti Brothers

Berisha Dairy

Disa

Dukagjini Data Dairy

Euroлона Dairy , Milazim & Fasli Berisha

Guci Dairy - Update after five days o new ration

Gursel Guci Dairy-Ferizi ;Suggested Ration

Gursel Guci Dairy-Ferizi ;Suggested Ration

Ismail Demiri

Skender Isufi

Jetishi Dairy

Luma Commerce

Mazreku

Osman Mazreku - Ration Suggestions

Mujoto

Pal Raja

Premium Vet

Qerim Qerreti

Ramadani

Rame Xheme

Rudina Dairy

Rudina Dairy-Suggested Ration

Shefki Asloni

Shefki Asloni-Prapashtica Dairy

Sokol Mulaj

Xhevolet Morina

ANNEX C

Notes on Dr. Chapin's Worksheets

Kosovo Field Milk Money Maker for 10 - 35 liters of milk.

This spreadsheet is the field Milk Money Maker for 10 - 35 liters of milk. Please read the first tab on the rest for operating instructions and then price sheet and enter appropriate prices and go from tab to tab to see what this contains: Non-feed costs, 20 summary tabs and many ration tabs. This is a major spreadsheet Dr. Chapin created for this work. Dr. Chapin started on it in April with KCBS and upgraded it substantially. It will take some study and time to understand.

36 series of rations

This is a massive word document showing rations from 10 through 50 liters. Dr. Chapin formulated the rations and then entered them in two spreadsheets (that Dr. Chapin will send later - 10-35 liters and 25 to 50 liters).

Dr. Chapin compiled the attached word document with all rations (297) plus a lot of dairy nutrition verbage that will be of help to anyone trying to get milk from dairy cows. The appendix has a lot of useful information. This and the spreadsheets that accompany it are a major work of Dr. Chapin's last trip.

Twenty Linkages from Data Base of 36 Series of Dairy Rations Discussed

This is the word document that explains the summary sheets that link data from the two spreadsheets. It contains a whole lot of information and Dr. Chapin thinks you will learn from reading it. You can read it alone but it will be easier to understand if you print out the A-1 to C-13 tabs of at least the 25 to 50 liter spreadsheet and better the 10 to 35 liter one to see the continuum. Dr. Chapin considers this document and the verbage part of the 61 page document with the ration as very helpful information to understand dairy nutrition and to help the dairymen of Kosovo.

Report with Formulas Comparing Sunflower Meal & Soybean Meal.

Effect of Forage Maturity

This is a spreadsheet Dr. Chapin upgraded while in Prishtina. It shows the importance of forage quality for grass and legume forage at different stages of maturity.