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IMPROVING PASTURE AND FORAGE PRODUCTION

KOSOVO CLUSTER AND BUSINESS SUPPORT PROJECT



April 19, 2007

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IMPROVING PASTURE AND FORAGE PRODUCTION

THE REPORT DESCRIBES THE BENEFITS THAT FARMERS CAN OBTAIN FROM THE PROPER PREPARATION OF FORAGE AND GRASS SILAGE FEED AND THE IMPROVEMENT OF NATIVE PASTURES IN ORDER TO MAXIMIZE THE NUTRITIVE VALUE OF FORAGE PRODUCTION.

Kosovo Cluster and Business Support project – “Increasing the Quality of Concrete and Concrete Related Products”

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PURPOSE OF ASSIGNMENT

The purpose of this assignment is to improve pasture and forage production for milk producers of the Kosovo Association of Milk Producers (KAMP) and other farmer associations by visiting farms in different areas, preparing recommendations for improving forages for dairy producers, and giving field workshops and presentations to farmers and other stakeholders.

BACKGROUND

Proper preparation of forage and silage feed represents the most important factor influencing the nutritive value of forage production. The cost of feed represents over 60% of the total cost of milk production.

Currently in Kosovo, there are more than 130 farms with 10-150 cows per farm. The average yield per cow is still very low. One of the reasons for this is the bad quality of forage, untimely harvesting and the failure to feed the animals high protein & energy feed. The key to producing high quality forage is the timing of the harvest. As forages (grasses or legumes) mature, the amount of fiber increases and the amount of protein and energy decreases, resulting in poor performance from the cows. High quality forages are a must if the farmer is going to have a high producing herd of cows. Just going to the field and harvesting the forage earlier can achieve a substantial increase in the amount of milk produced per cow.

There are about 60,000 ewes with average milk production of 70-80 liters per lactation compared to an industry average of 300 to 400 liters per lactation. Hence the emphasis on improvement of natural pastures and better quality harvested forages for sheep

The significant amount of unimproved pastures in Kosovo represents a great opportunity to increase productivity of the cattle, sheep and goat industry in Kosovo. This intervention will help increase the knowledge base on how to improve these pastures.

EXECUTIVE SUMMARY

This assignment was a follow up to three KCBS assignments made in 2005 and 2006. Many of the larger farmers, which I worked with last year, have adopted the recommendations I had given. They volunteered information to other farmers in training sessions as to how much their milk yields had improved as a result of cutting silage at the correct point of its growth. We reviewed the baleage making and discussed problems that had arisen. Addressing problems and silage making failures is an important step in maintaining the momentum of increased silage production and use. Some will be making grass/legume silage in bunkers due to increased equipment availability.

During this visit there was more interaction with other stakeholders, KTA and the Ministry of Agriculture. KCBS should continue to support the silage initiatives by collecting feedback, producing educational leaflets and working with University Faculty to set up process for analyzing forage samples from farmers and associations.

In visits to pastures [one of the most underutilized resources in Kosovo], where KCBS is conducting field trials, we held field days, discussing fertilizers applied to the different pastures this spring and the growth difference. Efforts by KCBS to encourage Ministry of Agriculture leases to farmers should be continued. A forage team of University faculty from many disciplines, Ministry of Agriculture, farm advisors, and sheep and cattle growers should be assembled to make unified recommendations for pasture improvement and to define research needs.

FIELD ACTIVITIES TO ACHIEVE PURPOSES

Fieldwork consisted mainly in visiting specific farms and studying their practices. The visits concluded with recommendations for improving practices in such matters as seeding preparation, forage collection, harvesting equipment settings and adjustments, and storage of silage. In respect of the latter, I provided much advice on baleage, silage bunker layouts and management.

I gave seminars and I also met with other stakeholders to help arrange better silage harvesting and storage.

My assignment coincided with pasture greenup. I met with Ministry officials to consider how pasture leases might encourage better farmer management, and University faculty about pasture trials.

RECORD OF DAILY ACTIVITIES

Following is a list of my daily activities during the course of this assignment with details of the activities.

March 30

We visited 3 farms in the Lipjan area. The first farmer was Bajram Mujota. He had made some corn silage last year. He had planted a Swiss hybrid because the seed was cheap but, when we visited the field last year, the stand was poor and the yield low. He will not be cheap seed again. He ran out of silage and was now feeding purchased hay and grain. Besides being expensive, he had noted that his milk production had declined when the maize silage ran out. He had more land and was going to make more silage this year. We talked about how he could fill the bunker higher to get more capacity. This would work because he could still feed enough daily to stay ahead of spoilage because of the number of cows he was feeding. He asked about putting grass silage in the bunker for the summer and feeding until corn silage was ready to be chopped. We discussed how to do this.

The second farmer visited was Met Shkinder Isufi. He had followed our instructions last year and had harvested grass for silage earlier than previous years. He had made wrapped bale silage and felt that he had only 5% waste. He noted that when it was not fed for a day that his milk production dropped 50 liters (from 600 liter total). His production had also dropped when he had run out of corn silage.

The third farmer was Shefki Asllani who had a bad experience making the bale silage. I had visited last fall and noted that it was wrapped with only two layers of plastic than 6 as I had recommended. The baleage had spoiled and he was unable to feed it to his cows and heifers (he reported that it caused abortions). He was separating spoiled from 'good' which amounted to a 30 to 40% loss. But the 'good' was still moldy and he was feeding it only to his beef cattle. He recognized the problem and said that he would make wrapped bales again this year but make sure the person doing the wrapping used 6 layers. We also made recommendations for grass pasture.

March 31

I worked in office to prepare for seminars.

April 02

We visited Rudina dairy. They had excellent corn silage with very little spoilage (the manager reported only 1%). However this was chopped finer than we recommended. They

reported that it had taken 60 liters of fuel per hectare to chop the silage. By using our recommended cutting length, this fuel use could be reduced by 20 to 30%. They had good bunk face management. Followed our harvesting recommendations – they said milk per cow increased 2 liters per day when began feeding silage. He was selling silage at 5 c/kg (50 € per ton). They had harvested 52 t/ha of corn silage last fall (among the highest in Kosovo). Therefore the gross income per ha was 2600€. He stated his cost of production was 700€/ha which indicated that the corn silage was making a good profit for him.

We visited a contract harvester with Klaas chopper with a header for legume and grass hay. We arranged for field day on next Tuesday where he will drive to Rudina Dairy, chop some silage that they have wilted and we will discuss making wilted grass/legume silage.

April 03

We visited a dairy farm near Gjakovë. He had baleage that he had been feeding. He was concerned about the amount of spoilage. It was like due again to too few layers of plastic wrap. He had made corn silage but had run out. He was feeding harvested green forage when we visited. He had 32 cows and was expanding barn. We discussed the additional forage he would need for the additional cattle.

Baleage and baled hay was sampled by the individual hired by KAMP for forage sampling supported by a USAID KCBS program. He has taken 32 samples. He had DM results from first 21. The average dry matter content for hay was 89% and for corn silage was 27% which are good. However the average dry matter for baleage was 49% which is too dry for good fermentation. No baleage samples were in the recommended moisture range of 60 to 65%.

April 04

We visited the pasture trial near Zatriç. The pasture was just beginning to green up due to the cooler temperatures at the high elevation. We saw significant legumes in the seeded area and additional grass in the area that had been fertilized last year. We had a discussion with 9 farmers about how to get more milk and sheep from pastures. They lamb 2 times per year (when most of Kosovo lambs only once per year). They take first cutting for hay and then graze the haylands commonly. We discussed whether or not they could make any improvements to pasture.

April 05

We met with the farmers' association near Gjakovë. There were 49 farmers present. Some farmers had good experiences making wrapped bales and some did not. We discussed silage making and focused on what had gone wrong where the silage was not good. The major issues were baleage not put up at correct moisture content, too few plastic wrapping layers so oxygen diffused in and caused mold, and not patching holes in the plastic. More farmers will be making silage this year.

April 06

We spent the morning preparing for a meeting with KTA, Ministry of Agriculture and several farmers. We discussed the value of improved pasture using data from the USAID –KCBS supported research through the Kosovo Horticulture Assn. However, farmers need to have ownership or longterm (3 to 5 years) leases to be willing to make improvements to get increased gain and increase animal numbers. We discussed how to speed land transfer so that farmers could rent some land. KTA has transferred 260,000 ha of woodlands and pasture to Ministry of Agriculture. They are currently slowed by needing protocols for managing (which the Minister said would be completed in 30 days) and the concern about

not having clear title to all of the land. They talked about the need for a data base and asked for some help. The ministry of Agriculture was delaying the implementation of leases due to lack of clear title on some of the land. We discussed the possibility of doing 3 to 5 year leases with a clause allowing the Ministry of Agriculture to recover land if a claim is filed and verified by paying leaser cost of improvements.

April 07

We visited the Orllan pasture trial site. The grass seeding from last year was visible and so much so that the farmer wanted to seed more pasture. We also saw significant clover in the pasture.

The farmer put up some corn silage last year in a pile by the barn. He recognized that he had chosen a bad location because it was under the eave of the barn and water ran off onto the pile. He had some financial help from Austria to build a bunker silo for the additional that he wanted to make this year. We had a long discussion with the farmer about location of the bunker and size. He wanted to make it 6 m wide but with his 21 cows he could not feed silage fast enough to stay ahead of spoilage. We recommended a 4 m wide bunker.

April 09

We visited Acareve pasture HAK trial site. We inspected the plots with Dr Fadil Millaku and Dr. Sylë Sylanaj. We had a field day with 7 farmers. We also had the village mayor, an Extension person from Pristina, and a professor from the local Agricultural School present. The plots with fall fertilization showed excellent growth this spring and we talked about it. The fertilizer for this spring was still laying on the soil surface because of late application due to delays with agreement and lack of rain since the application.

April 10

We had a field day at Rudina Dairy concerning chopping grass silage. There is a contract harvester with a used Klaas self propelled chopper. We started chopping at about 10:30 am. The farmers had thought the silage was too wet but it was not. We were able to give them a feeling of what 65 % moisture felt like. Some German advisors were present. They agreed with the moisture assessment. We started chopping and stopped the chopper after about 20 meters because the chopping was too coarse. We shortened the distance between the knives and the cutter bar and got adequate chopping length. We stressed how the most likely problem will be lack packing. Silage will be coming into the bunker faster than ever before and all should be prepared to do much more packing than normal. We spent considerable time with individual farmers discussing bunker size for their size herd.

We visited Lulzim Shamolli from the Ministry of Agriculture who is responsible for pasture lands. We discussed the need to improve pasture to make it more productive and how to design longterm leases so farmers could make improvements to the pasture.

April 11

Depart for U.S.

TASK FINDINGS AND RECOMMENDATIONS

These have been incorporated in the foregoing Record of Daily Activities.

CONCLUSIONS AND RECOMMENDATIONS FOR FUTURE ACTIVITY

- 1) The KCBS-KAMP bale wrapped project was a great success and was well received by the public.
 - a. Need to get forage analysis of some baleage made with KCBS support to show increased quality of baleage compared to hay. Analyses should include dry matter, crude protein, neutral detergent fiber, and pH. Analysis will also show the problem area of baleage made too dry for good fermentation
 - b. Need to educate about use of duct to repair holes rather than plastic tape which degrades in UV light and fall off.
- 2) Significant value can be realized by helping farmers size bunker silos to their herd size. If bunkers are built too big inadequate forage can be removed from the front to prevent spoilage and wrecks will occur. A spreadsheet was developed and this should be printed and distributed as a flyer.
- 3) The study exploring the possibility of alfalfa seed production should pay particular attention to seed insects during the growing season. Make sure the field technician can identify plantbugs, lygus bugs, etc and spray if needed.
- 4) Regarding the pasture trials with HAK:
 - a. We should fertilize the HAK pasture test sites according to soil test recommendations and paying special attention to applying 50 kg nitrogen/ha in mid April.
 - b. Should get a percentage of each species of seeded grass this spring and clover at each of five sites. So that we can determine which grass is best at various sites and use only one grass and one legume for future seeding trials.
 - c. Collect data of numbers of grass plants per unit area in area fertilized last year vs not.
 - d. Collect data of legume contribution in seeded and fertilized areas vs not.
 - e. Collect data of overgrazed areas vs rested areas.
 - f. Should work with Fadil and Syle to develop pasture improvement recommendations based on data collected as described above. I expect that fertilization and resting pastures will produced the most economic gain for farmers.
- 5) Should work to establish a Pasture Team, including University faculty of different disciplines, Ministry of Agriculture staff, advisors, and Association representatives to develop approaches for improving pasture production.
- 6) Work with the ministry of Agriculture to encourage development of pasture leases that encourage pasture improvement and good management.
 - a. Need a multiyear lease if the farmers are to make improvements.
 - b. A lower first year lease if improvements were made would encourage improvements.

ANNEXES

Annex I: Bunker sizing worksheet

Annex II: PowerPoint Presentation to KTA and Ministry of Agriculture

ANNEX I – BUNKER SIZING WORKSHEET



Bunker silo size needed

	Example	Enter yours
1) Number of cattle	20	<input type="text"/>
2) Silage fed per cow per day (kg)	21	<input type="text"/>
3) Bunker silage density (kg/m ³)	675	<input type="text"/>
4) Bunker silage width (m)	4	<input type="text"/>
5) Silage height (m)	1	<input type="text"/>
6) Days to feed with silage from bunker	365	<input type="text"/>
7) Daily silage need - (multiply 1 x 2)	420	<input type="text"/> kg
8) Silage to remove (15 cm/day) - (multiply 3 x 4 x 5 x 0.15)	405	<input type="text"/> kg
9) Length of bunker needed - (multiply 6 x 0.15)	54.75	<input type="text"/> m
10) Total silage needed in tons - (multiply 1 x 2 x 6) then divide by 1000	153	<input type="text"/> tons
11) Total silage produced t/ha	25	<input type="text"/> tons/ha
12) Hectares needed for silage - (Divide 10 by 11)	6.12	<input type="text"/> ha

ANNEX II - POWERPOINT PRESENTATION



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High Producing Pasture – Greater income for Kosovo Agriculture

[Dr. Dan Undersander]

[Apr 6, 2007]



Low pasture production – few animals with little production





Cattle consumption and production increases with tall, thick Pasture



60 bites per minute

X

500 minutes of grazing/day

X

? Grams forage per bite

=

Total Forage Intake



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Animal Intake on Pasture

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Want **big bites** for more
milk and meat production





Want Tall and Dense Pasture





Want high quality Forage



Boot
stage

1330
liters milk
per ton
of forage



Heading

625
liters
milk per
ton of
forage

Graze grasses before heads appear



High Yielding Pasture

- Produces more milk per cow or sheep
 - At Orllan, cattle increased 2 liters/day after 3 days on improved pasture
 - At Doganaj, sheep produced 150 ml more milk per day on improved pasture
- Produces faster growing animals
 - Bulls (up to 2 kg/day), dairy heifers (0.8 kg/day), lambs (0.3 kg/day).



Getting High Yielding Pasture

- Good pasture forages
- Adequate nutrients
- Pasture rest periods over summer



Getting High Yielding Pasture

- **Good pasture forages**
 - High quality grass for energy
 - Legume for protein and for nitrogen for grass





Getting High Yielding Pasture

- Good pasture forages
- Adequate nutrients

Site	Natural	seeded + Fertilized
	-----Kg/m ² -----	
Orllan	0.72	2.32
Zatriç	0.95	2.12
Açerevë	0.51	1.65
Doganaj	1.30	2.80
Nasheve	1.08	2.65

Source:

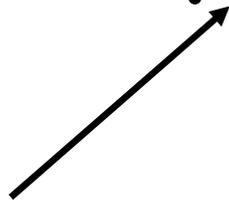
Horticultural Assn of Kosovo



Getting High Yielding Pasture

- Good pasture forages
- Adequate nutrients
- Soil test pastures to determine needs
- Pastures need adequate levels of Phosphorus and Potassium
- Pastures nitrogen need:
50 kg/ha 2 to 3 times annually

If more than 40% legume in pasture do not need to add!





Getting High Yielding Pasture

- Good pasture forages
- Adequate nutrients
- Pasture rest periods over summer



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High gain

Low gain



Rest Pastures periodically

Too frequent grazing:

- Reduces root growth
- More susceptible to drought





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Rest Pastures periodically

More forage growth if
pastures rested

Unrested pasture yield 0.25 t/ha

Rested pasture yield 3.00 t/ha





Getting High Yielding Pasture

- Good pasture forages
- Adequate nutrients
- Pasture rest periods over summer

Investment in pastures will benefit Kosovo agriculture
more milk
more meat per animal



Policy to increase pasture production



- Privatization
- Long term leases
 - Some grazed even months
 - Some grazed odd months
- Agency improve and charge higher rent