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FEED AND EGG QUALITY CONTROL

KOSOVO CLUSTER AND BUSINESS SUPPORT PROJECT



September 25, 2005

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FEED AND EGG QUALITY CONTROL

RECOMMENDATIONS TO THE KOSOVO POULTRY INDUSTRY TO IMPROVE FEED FORMULATION, PURCHASING AND MILLING IN ORDER TO LOWER FEED COSTS, THUS MAKING THE INDUSTRY MORE COMPETITIVE.

Kosovo Cluster and Business Support project Improving Feed and Egg Quality Control within the Kosovo Poultry Industry
Contract No. AFP-I-00-03-00030-00, TO #800

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PURPOSE OF ASSIGNMENT

The poultry nutritionist expert will show feed millers and poultry producers how to formulate poultry feed using local ingredients, while still maintaining the nutritional integrity of the feed according to the needs of the consuming chicken. The expert will also work in the laboratory located in the Agricultural Faculty by collecting and testing samples of feed (locally produced and imported), eggs (locally produced and imported). The results will be disseminated to the poultry association and government.

BACKGROUND

With an estimated 450,000 to 650,000 hens laying at any one time, this amounts to a production of 50% to 80% of the Kosovo needs. However, some farms have as many as 160,000 hens, while others only have 1,000 or even less. Given an average consumption of 120 grams per chicken per day, the poultry industry consumes about 78 metric tons of feed per day. There is only one commercial broiler operation in Kosovo, but there are also several small farms that produce broilers from time to time and sell the live on the market.

The poultry sector has made considerable progress through its agricultural associations to expand the use of improved poultry breeds like Hy Line and Lohmann and the use of newer feed formulations that provide higher egg production. However, the lack of proper ingredients and finished feed analysis system is one of the major problems that local producers are facing. Feed ingredients and finished feed of different (in majority of cases very poor) quality is imported into Kosovo. Kosovo egg producers are also facing huge problems with imported eggs that in majority of cases are sold for a price that is lower than the local producers' cost of production. These eggs are of suspicious quality of which the consumer is not aware.

EXECUTIVE SUMMARY

Since 2000 there have been several positive changes in Kosovo's poultry production. Progresses has been particularly obvious in egg and pullet production, as well as in the feed mill industry. But there still needs to be much work and investment to reach poultry production to cover local needs for quality poultry products.

According to the estimated 2 million people in Kosovo, the needs for poultry meat are 30,000 metric tons [MT] or 18,000,000 broiler chickens, and around 300,000,000 eggs, or 1,100,000 laying hens, per year

Only two leased farms are large producers of eggs for consumption. Broiler production has started in one farm with small processing facility. There is a hatchery with 70.000 annually chicks production. There are 13 feed mill facilities with capacity 1-3 MT/h – yielding an estimated yearly production 57,000MT.

Presently there are no permanent extension services, which will educate and work with farmers regarding the application of technology, egg production, egg weight, temperature, daily feed consumption etc. There was no sorting of eggs at any of the farms that I visited. With new Administrative Instructions regarding egg quality and grading, eggs cannot be sold without sorting in to weight classes. Many of the eggs imported in to Kosovo have very low internal quality. All imported eggs need to be sampled and analyzed for quality prior to selling. Produced eggs in farms in Kosovo have very good quality but because of poor storage conditions in farms and in market they can lose in quality. KCBS needs to launch an aggressive advertisement campaign to educate Kosovor consumers to buy only high quality fresh eggs, and they should be sold at a premium over inferior products. Seminars need to be held regarding poultry waste management programs including composting dead birds and manure as well as production of bio-gas based on poultry waste.

Predicted broiler meat consumption in Kosovo can be 30,000 MT. In local markets there are three sources of chicken meat: whole frozen broilers (mostly imported from Brazil), frozen legs quarters (imported from USA), and whole fresh broilers from domestic production. In the future Kosovo will need as many as 12,000,000 broiler chicks per year. Present broiler production needs a permanent technical extension service in production management, health control, nutrition and in processing. The main problem in existing broiler production is feed quality.

Eliminations of taxes on imported complete feed and high taxes on imported ingredients (25%) resulted in significant downsizing of the feed mill industry in Kosovo. The tax situation needs to be changed if there is to be stable and competitive feed prices for Kosovo poultry production. Feed millers need to be advised on how to test the quality of mixing and determine the optimal mixing time for each mixer. They should be licensed in their work. Feed millers need to know the quality of purchased ingredients and to use lab results as a source for least cost feed formulation. Bigger feed mill producers and farms need to install required silos with adequate capacities and vehicles for transport of feed in bulk forms. This will eliminate decomposition of feed, decrease price for bags and labor.

FIELD ACTIVITIES TO ACHIEVE PURPOSES

The consultant worked with feed mills to show them new feed formulation software that would improve the feed rations that they are selling.

The consultant worked through the feed mills with farmers detailing the improvements in the feed and how it would affect the farmers' final output.

The consultant worked with the farm personnel, faculty students and faculty personnel to educate them in feed formulation so that they can independently continue these activities.

The consultant educated farms and feed mill personnel, faculty students and personnel in collecting samples and will collect samples of feed ingredients, feed and eggs.

The consultant assisted in improving laboratory procedures for ingredients and feed analysis (especially NIRS) in the Faculty of Agriculture and worked together with laboratory personnel and students to educate them in lab procedures for ingredient and feed analysis.

The consultant developed practical procedures for egg quality determination and educated farm personnel, agriculture inspectors, students and faculty personnel in the application of these procedures.

The consultant worked with the SHPUK and with Ministry of Agriculture and prepared a document suggesting future steps regarding the quality of products (ingredients, feed and eggs).

TASK FINDINGS AND RECOMMENDATIONS

The consultant was charged with following tasks:

1. Review relevant documents related to the animal feed situation in Kosovo.
2. Visit a representative sample of donors, organizations, farm producers and agro-processors to confirm the existing crop and animal feed situation, and the impact on local agro-processors.
3. Using current and historical prices of existing and potential feed ingredients, create a less expensive feed formulation for poultry producers and feed millers, given the primary breed of laying hens in Kosovo.
4. Tour several large commercial layer operations and feed mills in Kosovo and make recommendations for better mixing, reducing costs, increasing throughput, improving storage techniques, and correctly identifying input and output qualities.
5. Conduct a basic nutrition seminar and teach methods for finding the most cost effective feed formulation and optimum nutrient content according to the requirements of poultry (including energy, total proteins, essential amino acids, minerals, vitamins, etc). Discuss how to use alternative ingredients and lower costs, while still meeting minimum nutrient requirements.
6. Make recommendations to the Kosovo poultry industry to improve feed formulation, purchasing and milling in order to lower feed costs, thus making the industry more competitive.
7. Possibly test available and newly mixed feeds to determine their nutritional attributes.

As a result of carrying out these tasks, the following observations were made:

1. EGG PRODUCTION

Present egg production in Kosovo has fluctuated from 450,000 to 550,000 laying hens or approximately 150,000,000 eggs a year. This production can cover only 55% of egg needs. Egg production is concentrated in two big producer (“ADI” with 120,000 and “SONI” with 150,000 laying hens a year) and numerous small producers (1,000 – 10,000 hens per year). There are four genetics stocks that are mostly present in laying hens industry: Hy-Lyne W-36, Hy-Line Brown, Lohmann LSL Classic, and Shaver. More than 85% of replacement pullets are produced in Kosovo. Chicks for replacements flock are mostly imported as day-old chicks from Serbia, Albania, Italy, etc. Some day-old chicks are hatched locally in “Gjini-Tag” hatchery (hatching capacity 76,000 eggs a hatch or 19,200 eggs a week). Fertile eggs are imported. Kosovo does not have any breeder farms, which will permanently supply hatcheries with fertile eggs. Needs for a breeder farm with productions of fertile eggs is between 9,000 and 10,000 to support the laying hen table egg industry.

Farmers are partially following the instructions of flock suppliers, without monitoring pullet and hen weight, feed consumption, egg production and egg weight and adjusting the conditions to meet performance goals request. Presently there are no permanent extension services, which will educate and work with farmers regarding the application of technology, egg production, egg weight, temperature, daily feed consumption etc. Generally, farmers are using same diet for all laying periods (young peaking flocks and older flocks are fed the

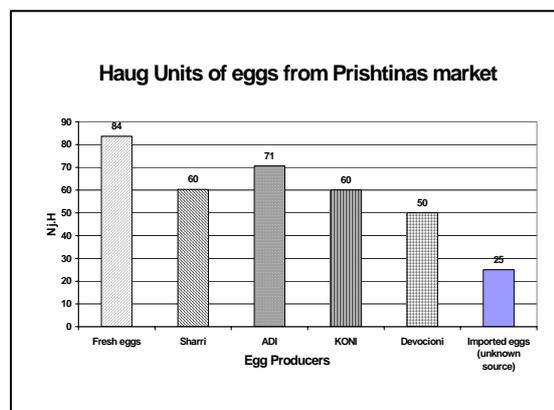
same). Nutrient levels in consumed feed in first phase of production (18-28 weeks) are below requirements, after 50 weeks are above requirements.



Eggs need to be collected minimum once a day (8-12 am) and remove from farm as soon as possible

Surveys show that the least cost feed formulation according to real flock conditions is used only in one farm. Some of farmers are receiving diet composition data only from the feed supplier. Farmers are not sending samples for lab analysis. As many as one third of the hens may be under-fed and one third over-fed. The practice is technically and economically wasteful.

To produce quality eggs they need to be collected as soon as possible, usually before noon (90% of eggs are produced between 8-11 am) and eggs need to be removed from farm as soon as possible, and placed in egg storage rooms with temperature of 10-13°C and 70-75% relative humidity. There was no sorting of eggs at any of the farms that I visited. With new Administrative Instructions regarding egg quality and grading, eggs cannot be sold without sorting in to weight classes.



Egg quality is a very important issue for future egg production in Kosovo. Many of the eggs imported in to Kosovo have very low internal quality. A survey that was done during the Egg Quality Determination Seminar showed that imported eggs from unknown sources in Prishtina's market were of very poor quality (Haugh Units in more than 60% of the samples were below 30) and were not fit for consumption as shell eggs. According to the USDA Grading Manual, eggs declared as AA quality must have at least 72 Haugh Units, eggs declared as A quality must have 60-72 Haugh Units, and eggs of B Quality must have more than 60 Haugh units. Eggs with lower Haugh units than 30 are not for consumption as a shell eggs and can be used only for processed eggs. The Faculty of Agriculture has all necessary equipment and knowledge to permanently monitor egg quality control for producers. All imported eggs need to be sampled and analyzed for quality prior to selling. Produced eggs

in farms in Kosovo have very good quality (more than 75 Haugh Units) but because of poor storage conditions in farms and in market they can lose in quality. Eggs in Kosovo's markets are not kept in cool compartments. Eggs in many stores are exposed to high temperature and low humidity, which will results with rapid decrease in egg quality.



Eggs in Kosovs markets are not sorted by weight and quality classes and kept in poor storage conditions

KCBS needs to launch an aggressive advertisement campaign to educate Kosovo consumers to buy only high quality fresh eggs, and they should be sold at a premium over inferior products

In areas with intensive production of poultry the output of nitrogen and phosphorus from manure is considered to be potentially detrimental to soil and water quality (eutrophication). Poultry producers in Kosovo are currently spreading manure in fields around the farm and apply to soil as a fertilizer once per year. There is not any nutrient management plan for the application of poultry manure to soil. Almost all farmers are burying dead chickens and hens as well as by-products from processing plants. Phosphorus pollution is largely due to the poor bioavailability of phytate phosphorus, most abundant form of phosphorus in cereals, seeds and their by-products. Inorganic phosphorus is usually added to diets in order to compensate for the inadequate utilization of phytate phosphorus by poultry.



Water polluted with phosphorus from poultry manure (Eutrofication)



Poultry waste can be potential environmental contaminant

Alternate methods used to meet the animals phosphorus requirement are the addition of microbial phytase, to enable feed mill companies and farm nutritionist to formulate low-phosphorus diets for poultry. KCBS needs to organize seminars regarding poultry waste management programs including composting dead birds and manure as well as production of bio-gas based on poultry waste. Poultry manure is a very voluble commodity with excellent levels of nitrogen and phosphorus for field crops and pastures. Careful coordination with agronomists and cattle producers is necessary to utilize the soil nutrients in poultry wastes for overall benefit of Kosovo's agriculture. Broiler, and pullet litter can be composted and fed directly to cattle or it can be use to fertilize pastures. Kosovo has great potential for sustainable agriculture through utilizing poultry waste for the already established beef cattle industry.

2. BROILER PRODUCTION

Broiler production in Kosovo is in its starting phase, there is only one commercial broiler producer (“Agraria-Commerce”) with production of 5,000 broilers per house with four houses used for production. The same company has a small processing plant with a capacity of 100 broilers per hour. Predicted broiler meat consumption in Kosovo can be 30,000 MT. In local markets there are three sources of chicken meat: whole frozen broilers (mostly imported from Brazil), frozen legs quarters (imported from USA), and whole fresh broilers from domestic production. In the future Kosovo will need as many as 12,000,000 broiler chicks per year. The “ADI” company is interested in starting with broiler production. They are ready to start production in three chicken houses with 20,000 chickens per house. Total annual production will be 300,000 broilers per year, with possibilities to increase production to 650,000 broilers (975 MT broiler meet).

Present broiler production needs a permanent technical extension service in production management, health control, nutrition and in processing. The main problem in existing broiler production is feed quality. Birds, that I checked, were undersize (as results of imbalanced protein : energy ratio) and more than 70% of necropsied dead birds had symptoms of phosphorus rickets and TD (Tibial Dyschondroplasia) as results of dysfunctions of phosphorus, calcium and vitamin D levels in feed.



First broiler farm in Kosovo after the war



Tibia phosphorus rickets and TD



Small broiler processing plant

3. FEEDMILLS

Eliminations of taxes on imported complete feed and high taxes on imported ingredients (25%) resulted in significant downsizing of the feed mill industry in Kosovo. The tax situation needs to be changed if we wish stable and competitive feed prices for Kosovo poultry production. Capacity of feed mills are from 300 – 500 kg mixed feed per batch. Average mixing time is around 12 minutes per batch, but mixer profiles (determination of best mixing quality and shorter mixing time) are not done for any mixer. KBCS needs to work with feed millers to test the quality of mixing and determine the optimal mixing time for each mixer and give them licenses for their work.

There is no permanent control of ingredients quality. Research data reported by Kastrati (1997) showed that variation of protein content in corn are from 7.26 – 9.20% as well as in soybean mill from 40.51-45.82%. Feed millers needs to know the quality of purchased ingredients and to use lab results as a source for least cost feed formulation. Thru the seminar, feed millers got basic information on how to take ingredients and mixed feed samples and how to send them for proximate analysis. KCBS needs to establish a short term grant for obligatory sampling and analysis of ingredients and feed. Feed millers and

farmers should participate 50% in the cost of lab analysis. Nutritional Laboratory of Faculty of Agriculture is completed for quality and fast proximate analysis of ingredients and feed samples. Feed mill producers and farmers, need permanently to use least cost feed formulation software (WUFFDA). They got a copy of the software and basic knowledge how to use it. KCBS, together with consultants needs to assist feed millers and farmers in feed formulation. Storage capacities and condition for ingredients and mixed feed are not satisfactory and need to be improved. Bigger feed mill producers and farms need to install required silos with adequate capacities and vehicles for transport of feed in bulk forms. This will eliminate decomposition of feed, decrease price for bags and labor.

CONCLUSIONS AND RECOMMENDATIONS FOR FUTURE ACTIVITY

1. KCBS and members of SHPUK need to lobby and insist on changes in current tax policies and tax exemption for imported ingredients for feed production and impose taxes on imported complete mixed feed.
2. The poultry industry must identify needs for ingredients and organize for bulk purchasing. Bulk purchasing will reduce the price of ingredients, reduce the prices of transportation and quality storage and will make conditions for permanent quality control of imported products. KCBS and SHPUK need to identify the best sources, to organize and assist feed millers and farmers in bulk purchasing.
3. Quality of ingredients and feed must be routinely tested by feed mill producers, farmers, and government inspectors for all imported and domestically produced ingredients and feed. Members of SHPUK and inspectors have basic knowledge in sampling procedures. The Laboratory of Nutrition (Faculty of Agriculture, Prishtina) is capable to successfully analyze ingredients and feed samples.
4. KCBS and SHPUK will need to establish grants for permanent analysis of ingredients and feed samples. Feed mills and farms should be willing to pay 50% of cost of analysis other 50% will be paid from the grant.
5. Least cost feed formulation should be routinely done by feed millers or farmers on the basis of requirements, actual prices of ingredients and quality of ingredients. The feed formulation software was provided to all SHPUK members, KCBS livestock staff, students and professionals of Faculty of Agriculture, with basic instruction how to use this software. KCBS staff, students and Faculty of Agriculture professionals and consultant will continue to help in further solving the problems, which will occur during feed formulation.
6. One of the priorities is to establish a permanent extension poultry advisory service team or teams which will include veterinarians, nutritionists, poultry management and agribusiness experts which will provide a wide variety of services to poultry farmers and feed producers. KCBS could provide short term grant (1-3 years) to get such a service started. In the future such service can be paid by the poultry farmers and feed mill producers on the basis of a need for advisory services. This service could be located at the university.
7. Feed mills need to be licensed to maintain and guarantee mixing quality. KCBS should, as soon as possible, organize mixer uniformity testing of all feed mixers. In commercial feed manufacturing, the standard for uniform mixing is a coefficient of variation (CV) of 10% or less. If the CV is over 10%, the mix time needs to be increased/or the system inspected for factors that caused the poor ingredient distribution. Shortened mixing times appeared to be a common practice and intention. Mixing time in Kosovo varied from 5 to 14 minutes and there is a big possibility that mixing time can be shorter for some mixers without having negative effects on quality of mixed feed, but needs to be longer than others.
8. My recommendations to KCBS are to identify possible broiler producers (e.g. "ADI" is ready to start with 60.000 birds per batch or totally 300.000 per year in 2006, with possibilities that in 2007 production will increase up to 800,000 broilers per year) with

goals to increase broiler production to 1,000,000 broilers in 2007 (or 1,500 MT broiler meat).

9. KCBS and SHPUK should organize seminars and workshops as well as field trips regarding broiler production including: broiler management, nutrition, disease prevention programs (vaccination), processing etc. An excellent opportunity for exposure is International Poultry Exhibition in Atlanta each year and the International Poultry Short Course offered at University of Georgia the next week.
10. KCBS should encourage and help SHPUK members to set up a database for daily recording of production that will be used as a source to create joint statistical information system for poultry production in Kosovo.
11. TKCBS should educate farmers to apply voluntary nutrient management plans for manure, dead birds and poultry waste, and to educate beef producers on how to use poultry manure to best advantage.
12. KCBS and SHPUK need to identify potential candidates for breeder farm for a commercial egg production (10,000 birds/year) and broiler breeder farm (6,000 birds/year).
13. KCBS should work with MAFRD to assure acceptance of Administrative orders for Standards of egg quality and grade as well as for quality of animal feed.
14. KCBS should negotiate with LGB Company from Gjilan to reactivate the poultry processing plant or to identify candidates for a new poultry processing plant.

ANNEXES

- Annex I – List of Contacts and Site Visits Made
- Annex II –Review of Seminars Conducted

ANNEX I:

List of Contacts and Site Visits Made

1. Meeting with KCBS personnel:
 - Date: August 8, 2005.
 - Place: USAID-KCBS office in Prishtina.
 - Subject: Final discussions regarding work schedule.
 - Participants: Mr. Peter Dickrell, Mr. Ilir Zenelaj and Mr. Mentor Thaqi.

2. Meeting in Agriculture Faculty (FA) and Central Veterinary Diagnostic Laboratory (CVDL):
 - Date: August 8, 2005.
 - Place: Department of Animal and Veterinary Science.
 - Subject: Introduction the FA and CVDL personnel with programs of incoming seminars regarding feed formulation, egg quality and sampling and laboratory analysis of ingredients and feed.
 - Participants: Dr. Xhevat Domi, Head of CVDL, Dr. Ragip Kastrati, Head of Department of Animal and Veterinary Science (FA), Ms. Alltane Kryeziu, Mr. Muhamet Kamberi, Mr. Beqe Hulaj, CVDL; Mr. Adem Rama, CVDL, Mr. Izedin Goga, CVDL, Betim Berisha, CVDL, Mr. Gazmend Sylaj, Ministry of Agriculture; Mr. Ilir Zenelaj and Mr. Mentor Thaqi KCBS

3. Field trip to Peje:
 - Date: August 9, 2005.
 - Place: "Taka" Peje,
 - Subject: Visiting pullets and laying hens farm and feed mill. Discussion regarding of ingredient and feed quality Introduction the FA and CVDL personnel with programs of incoming seminars regarding feed formulation, egg quality and sampling and laboratory analysis of ingredients and feed quality. Demonstration of feed formulation program (WUFFDA).
 - Participants: Mr. Osmon Uka, owner; Mr. Ilir Zenelaj KCBS.

4. Field trip to Gjakove:
 - Date: August 10 and 20, 2005.
 - Place: N.T.P.SH "SONI" Rezine, Gjakove,
 - Subject: Visiting laying hens farm and feed mill. Discussion regarding ingredient and feed quality, handling with eggs after collection (sorting, storage). Demonstration of feed formulation program (WUFFDA)
 - Participants: Mr. Zef Pjetri, owner, Mr. Fahri Vula, nutricionist, Mr. Albert Xerx, farm manager, Mr. Florin Alija, Ms. Berlinda Pjetri, Mr. Gjonson Pjetri, and Mr. Ilir Zenelaj KCBS
Mr. Agim Sahiti owner of "KONI" Company was present in meeting conducted in August 20

5. Field trip to Gjakove:
 - Date: August 10 and 22, 2005.
 - Place: "Gjini TAG" Luk Bunar, Gjakove.

Subject: Visiting hatchery, pullets farm and mill. Discussion regarding of ingredient and feed quality. Demonstration of feed formulation program (WUFFDA).

Participants: Mr. Tome Gjini, owner; Mr. Ilir Zenelaj KCBS.

6. Field trip to Lipjan:

Date: August 12 and 19, 2005.

Place: N.P.T "ADI" Lipjan.

Subject: Meeting regarding pullet, egg and feed production and possibilities for future broiler production. Discussion regarding of ingredient and feed quality, handling with eggs after collection (sorting, storage). Demonstration of feed formulation program (WUFFDA)

Participants: Mr. Abdurrahman Konjufca, owner, Ms Shemsije Llugiqi, Mr. Avni Thaqi, Feed Mill manager, and Mr. Ilir Zenelaj, KCBS.

7. Field Trip to Dubrave – Theranda:

Date: August 13, 2005.

Place: "MALOKU" Dubrave – Theranda.

Subject: Visiting laying hens farm and feed mill. Discussion regarding of ingredient and feed quality, handling with eggs after collection (sorting, storage). Demonstration of feed formulation program (WUFFDA).

Participants: Mr. Hasan Maloku, owner, Dr. Ragip Kastrati, nutricionist - Faculty of Agriculture, and Mr. Ilir Zenelaj, KCBS.

8. Field trip to Miradia e Eperme, Fusha e Kosoves:

Date: August 9 and 15, 2005.

Place: "Agraria Commerce", Miradija e Eperme, Fusha e Kosoves.

Subject: Discussion regarding of broiler production, processing and feed quality.

Participants: Mr. Hasan Abbaz, director and owner, Mr. Tahir Benknele, Mr. Florik Haxhikadrija, veterinarian, and Mr. Ilir Zenelaj, KCBS.

9. Field trip to Gjilan:

Date: August 17, 2005.

Place: LGB "Meat Production" Gjilan.

Subject: Discussion regarding of using processing plant for processing laying hens and broilers and reactivation facility for processing poultry by-products.

Participants: Mr. Latif Talla, owner, Mr. Ibrahim Abazi, sale and marketing managere, Mr. Besnik Blakçori, and Mr. Ilir Zenelaj, KCBS.

10. Field trip to Ferizaj.

Date: August 18, 2005.

Place: NPT "AGROPRODUCT" Pojatishte – Ferizaj.

Subject: Visiting laying hens farm and feed mill. Discussion regarding of ingredient and feed quality, handling with eggs after collection (sorting, storage). Demonstration of feed formulation program (WUFFDA) and demonstration procedure for feed sample collection for mixer profile determination.

Participants: Mr. Ibrahim Kamberi, Owner, Dr. Ragip Kastrati, Ms. Alltane Kryesiu and Mr. Muhamet Kamberi, nutricionist - Faculty of Agriculture, Mr. Hajriz Neziri, Adem Doshllaku, Mr. Mergim

Mestani, and Mr. Arben Rexhepi, students, and Mr. Ilir Zenelaj, KCBS.

11. Meeting in Ministry of Agriculture, Forestry and Rural Development of Kosovo.

Date: August 23, 2005.

Place: Ministry office in Prishtine.

Subject: Discussion regarding of laws in Livestock , and Administrative Instructions for Egg Quality and Animal Feed Quality.

Participants: Mr. Bajram Imeri, Director, Mr. Agim Nuha, Chief of Poultry Fishery and Apiery Section; Mr Lulzim Shamolli, Chief of Animal Nutrition and pasture management, Mr Fatmir Lahu, Coordinator of Breeding, Mr, Arsim J. Memaj, Chief of Breeding, Production and Marketing Section, and Mr. Ilir Zenelaj, KCBS.

12. Meeting with the Director of REA company.

Date: August 25, 2005.

Place: KCBS Office in Prishtine.

Subject: Discussion regarding of realization of SHUPK Strategic Plan.

Participants: Mr. Mr. Ahmet Jetullahu, Director of REA Company, Mr. Mentor Thaqi, Policy, Advocacy and association Specialist, KCBS-SHPUK, and Mr. Ilir Zenelaj, Poultry and Animal Feed Specialist, KCBS.

13. Meeting in USAID headquarter in Prishtine

Date: August 26, 2005.

Place: USAID Office in Prishtine.

Subject: Final presentation of my work in Kosovo.

Participants: Mr. Tim Hammann, CTO, Ms. Flora Arifi, Development Specialist, Mr. Martin Wood, Chief of Party, Dr. Peter Drickrell, Senior Cluster Advisor, Ms. Dardane Peja

I held a meeting with Dean of Faculty of Agriculture Dr. Shukri Fetahu, vice deans Dr. Skender Muji and Dr. Skender Kaqiu, Dr. Ragip Kastrati, Head of Department of Animal and Veterinary Science; and Mr. Ilir Zenelaj, KCBS.

ANNEX II: Review of Seminars Conducted

According to the scope of work I conducted three seminars

Seminar No. 1 Least cost feed formulation for poultry (WUFFDA)

Dates: August 11 and 15, 2005.

Place: Computer lab, Faculty of Agriculture, Prishtina.

Subject: Least cost linear formulation problem for poultry, possibilities and problems.

Participants: 34 (see attached list of participants), including poultry feed producers, poultry farm managers and nutritionists, agricultural inspectors, students and professionals from Faculty of Agriculture

Two days seminar included practical application of software for least cost feed formulation WUFFDA, developed by Dr. Gene M. Pesti et al., and adapted in Albanian by Dr. Remzi I. Bakalli from Department of Poultry Science, University of Georgia, Athens, Georgia, USA.

Main objectives of the seminar were:

- a. To understand the purpose of linear programming in solving least cost feed formulation problems.
- b. To learn how to use Microsoft Excel to set up and solve a linear programming feed formulation.
- c. To understand how dietary restrictions may effect the cost of feed.
- d. To becoming familiar with entering data in solving feed formulation problems for broilers and layers with the WUFFDA feed formulation software.
- e. To learn to distinguish the synthetic amino acids (L-Lysine HCL and DL-Methionine) from amino acids in intact protein.
- f. To understand how ingredient costs may effect the nutritional composition of feed.
- g. To understand how to set minimum or maximum ratio between nutrients.
- h. To understand how to provide minimum or maximum levels of a group of ingredients in feed formulation problems.
- i. To understand how to apply linear programming results in economic decision making

Copy of the WUFFDA software was given to each participant and was installed at biggest poultry farms and feed mills, to KCBS, Department of Animal and Veterinary Sciences, Faculty of Agriculture and students hired by KCBS as volunteers. All participants got hard copies of handouts in Albanian. Handouts included General Instructions and four chapters of Laboratory instructions (see attached handouts). During the Seminar, each participant worked individually in computer laboratory of Faculty of Agriculture. On the second day of the Seminar, two of the participants, from the biggest egg and feed producers presented their versions of feed formulation for laying hens and discussed their formulation strategies.



Participants in least cost feed formulation seminar



Shemsije Llugiqi ("ADI") presenting her feed formulation solution



Berlinda Pjetri ("SONI") presenting her feed formulation solution

Participants in the seminar received practical information and knowledge for independent work and with the help from consultant, KCBS and Faculty personnel, as well as from the students will be ready to solve problems regarding least-cost feed formulation.

Seminar No. 2 Procedures for egg quality determination:

Date: August 16, 2005.

Place: Classroom and laboratory in Department for Animal and Veterinary Sciences.

Subject: Laboratory procedures for egg quality determination.

Participants: 27 (see attached list), including poultry feed producers, poultry farm managers and nutritionists, agricultural inspectors, students and professionals from Faculty of Agriculture.

Main objectives of the seminar were:

- a. To learn basic facts about eggs.
- b. To be informed which are the factors that effects the overall quality of the eggs.
- c. To learn procedures for determination of exterior egg quality.
 - i. Egg weight.
 - ii. Specific gravity.
 - iii. Egg shell quality.
- d. To learn procedures for determination of interior egg quality.
 - i. Yolk quality.
 - ii. Albumen quality (Haugh Units).
 - iii. Egg air-cell determination.
- e. Criteria for egg weight grade classification.
- f. Criteria for egg quality grade classification.
- g. Risks for egg infection with salmonella and procedures for determination of salmonella contamination of eggs (lecture was conducted by Dr. Beqe Hulaj).

Department for Animal and Veterinary Sciences provided the Seminar with eggs with different storage times and storage conditions. All participants where involved in egg quality determinations of eggs stored for different time (0-42 days), storage conditions (0-4°C and room temperature), and fresh eggs from farms and eggs from Prishtina's market.



Participants in egg quality determination seminar



Student hired as a volunteer by KCBS measuring egg weight



Air cell of different quality grade eggs



Determination of albumen quality (Haugh Units)

All participants received PowerPoint presentation handout in Albanian (see attached handout).

Seminar No.3 Procedure of ingredient and feed sampling and laboratory analysis

Dates: August 24, 2005.

Place: Classroom and laboratory in Animal and Veterinary Sciences Institute of Faculty of Agriculture.

Subject: Procedures for sampling of ingredients and feed and laboratory procedures for proximate analysis.

Participants: 31 (see attached list of participants), poultry feed producers, poultry farm managers and nutritionists, agricultural inspectors, students and professionals from Faculty of Agriculture.

Main objectives of the seminar were:

- a. To inform participants with significance of sampling and quality control of ingredients and feed.
- b. Definitions of different kinds of samples.
- c. Procedures and frequency in sampling ingredients and feed.
 - i. Bagged ingredients and feed.
 - ii. Bulk ingredients.
 - iii. Time and frequency of sampling.
- d. Sample preparation.
 - i. Sample reduction.
 - ii. How to prepare, label and send working samples for analysis.
- e. Introduction with basic procedures for proximate analysis.
- f. Application of NIRS technique in ingredient and feed analysis.
- g. Introduction to the nutrition laboratory of Department of Animal and Veterinary Sciences, Faculty of Agriculture, University of Prishtina.

Participants received handouts with basic sampling and analytical procedures for ingredients and feed analysis (see attached handouts).



Participants of ingredient and feed sampling and analysis seminar



Adushe Ukshini (agriculture inspector from Gjilan) demonstrates corn sampling





Sample preparation (grinding)



NIRS system for nondestructive analysis of ingredients and feed (Faculty of Agriculture, Prishtine)



Alltane Kryeziu (Faculty of Agriculture) analyzing ingredients and feed samples brought by Abdurrahman Konjufca ("ADI") using NIRS system