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FOLLOW- UP ON ALFALFA SEED MULTIPLICATION PLOTS

KOSOVO CLUSTER AND BUSINESS SUPPORT PROJECT



March 25, 2008

This publication was produced for review by the United States Agency for International Development. It was prepared by the KCBS project team of Chemonics International Inc. based on a Final Report prepared by Short Term Technical Advisor, James Stanelle.

FOLLOW-UP ALFALFA SEED MULTIPLACTION PLOTS

THIS REPORT DETAILS THE INSPECTION AND EVALUATION OF ALFALFA SEED PLOTS DESIGNED AND PLANTED IN 2007 TO ASCERTAIN IF PRODUCTION IS FEASIBLE IN KOSOVO AND TO DEMONSTRATE THE TECHNIQUES INVOLVED TO POTENTIAL SEED GROWERS. ADDITIONALLY, THE REPORT DETAILS TRAINING AND RECOMMENDATIONS MADE IN THE ANTICIPATION OF FUTURE ALFALFA SEED PRODUCTION.

Kosovo Cluster and Business Support (KCBS) project Follow-Up on Alfalfa Seed Production Plots
Contract No. AFP-I-00-03-00030-00, TO #800

This report submitted by Chemonics International Inc. March 25, 2008

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

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PURPOSE OF ASSIGNMENT

Based on previous local and regional market research and first year field trial results in 2007, KCBS has determined it is justified and important to continue with alfalfa seed multiplication trials in 2008.

The purpose of this STTA assignment is to follow-up on the first year's alfalfa seed and forage trials. Consultant would be expected to provide some training to local seed multipliers, and Government, Institute and Agriculture Faculty staff on specific production practices and the general organization and structure of the seed multiplication industry in the USA and/or the EU.

BACKGROUND

There are only four major seed multipliers in Kosovo and they are currently focused on wheat seed multiplication. There is limited institutional knowledge regarding seed multiplication in general. Only one of the current seed multipliers, Semenarna, develops their own genetic material. They do this in Slovenia.

Consultant is expected to work closely with local subcontractor in assisting them to fulfill their scope of work for the alfalfa seed multiplication trials for 2008.

There is a particular lack of current knowledge and experience on internationally accepted seed laws and standards in the Ministry of Agriculture, Forestry and Rural Development.

EXECUTIVE SUMMARY

This short consultancy was designed as a follow-up to the consultancy of the previous year that designed the alfalfa seed production plots and provided training for the local subcontractor who maintained the plots. A second goal was to provide training for other individuals involved in the Kosovo seed industry in general and the potential alfalfa seed industry specifically.

The current consultancy was designed to:

- 1) assess the progress of the seed plots and the actions of the local sub-contractor Kosovo Agricultural Input Dealers Association (KODAA) and make suggestions for the coming season,
- 2) begin to assess the ability of local farmers, existing seed companies, and regional seed companies to begin the production of alfalfa seed in Kosovo, and
- 3) provide some training for potential seed growers in alfalfa seed production techniques and for the MAFRD seed inspection staff in the inspection techniques involved with alfalfa certification.

It appears that the alfalfa seed production plots performed reasonably well in their first year. Considering that the rainfall for the year was below normal and that there was minimal alfalfa seed production experience, a yield average near 200kg/ha in the seedling year was acceptable. Seed plots were to have been planted in approximately 60cm rows but operator inexperience and planter error meant most rows will have to be cultivated to get the correct row width. Although we requested fields where irrigation was possible, only one plot was irrigated and that was only done one time.

After visiting each of the production plots with the plot contractor and the farmer host, the plan is to cultivate out extra alfalfa rows with approximately 60cm row width as a goal. After cultivation, herbicides will be banded on the seed rows if weed presence dictates. Two of the plot locations will receive irrigation several times in the growing season and it is intended to have several beehives for pollination on those same plots.

We had some discussions with potential alfalfa seed growers and MAFRD personnel. Although there is interest in growing alfalfa for seed and several farmers will be planting fields this spring, it is the opinion of this consultant that neither group possesses the expertise at this point needed to produce quality seed for anything but the local market. Additional experience and training will be helpful. Training sessions for each group were held to begin informing them of the tasks and attitudes necessary to produce high quality seed for a competitive, world market.

FIELD ACTIVITIES TO ACHIEVE PURPOSES

A major thrust of this consultancy was to assess the progress and performance of the alfalfa seed production plots designed and planted last year. To accomplish this we met with KODAA Extension Director Musli Musliu, the project sub-contractor for the alfalfa plots. We discussed the procedures that were used in establishing the plots and what to do in the upcoming year. Additionally, we met with Syl Deshishku of Xeni Seed, the president of KODAA to discuss the future of KODAA's commitment to future maintenance of the seed plots.

We traveled to each of the alfalfa plots; in Istog with farmer Fehmi Geci; Peja and the Dardanian Farm with manager Bajram Dervishai; Pozheran on the farm of Stevic Danilo; to Podujevë with Hamit Shala; and to Gjakovë, Farmer Elez Haliti. Musli Musliu of KODAA was in attendance for some of these visits. During several of these visits we had the opportunity to discuss alfalfa seed production techniques with the hosts and other farmers.

A second goal of this consultancy was to look forward to the possibility of future organized alfalfa seed production. To assess the ability of those individuals and businesses we met a number of local farmers who were planning on planting small seed production fields in the coming year. Most often we met the potential growers at the seed plots and had discussions there, but in Istog we went to a farm and discussed with four farmers, toured a potential field, and discussed the alfalfa seed production process with those farmers who were present.

To get a better feel for the readiness of those involved to produce seed, we met with Adem Arifaj, Chief of the Phytosanitary and Seed Inspection office about seed inspection looking at their needs to prepare for alfalfa seed inspections. At Gjilan we visited Xeni Seed and met with Syl Deshishku, about their plans to produce alfalfa seed. At the Pristina Agricultural University we met with Crop Production Prof. Imar Rusinoci who is also an advisor to KODAA; Prof. Rusinoci discussed his thoughts and concerns about marketing homegrown alfalfa seed. We also visited with MAFRD Rural Development sector and met with Idriz Gashi to discuss alfalfa forage production demonstration plots for the current year.

A PowerPoint slide presentation on alfalfa seed production was developed and given to 25 farmers and several staff members at the Peja Agricultural Institute. A presentation/training was given to 9 inspectors from the MAFRD Phytosanitary and Seed Inspection office on methods for seed field inspection.

TASK FINDINGS AND RECOMMENDATIONS

Task 1—Visit 5 alfalfa trial test plots and assess their condition for seed purposes.

Findings/Recommendations — All five plots were visited and each one had been just emerging from winter dormancy. Alfalfa plants were beginning to grow and most were looking to have survived well and were beginning to grow. Some areas in the plots in Podujevë and Gjakovë looked to have some spots that were not as strong, but this could have been due to slightly later emergence.

Last year the plots were to have been planted with approximately 60cm rows but equipment problems meant most areas were actually planted extra rows. These rows were supposed to be cultivated out but the farmers and the local contractor were hesitant to remove those extra rows last fall due to very dry conditions. We have stressed with the KODAA contractor and each farmer/contractor the importance of removing these extra rows and then the cultivation and weed spraying process. Additionally, the KODAA contractor is to take plant counts early in this year's growing season to compare to counts last fall to see how plants survived over the winter. Assurances were given that the fields would be brought up to the desired condition.

Seed field irrigation is one factor that can help to produce the best seed fields. This is one factor that was discussed in the previous consultancy, but unfortunately irrigation systems were not available in all the areas where the plots were planted. Only one of the plots received any additional water last year. After discussion with the KODAA contractor, it was concluded that two of the plots could be irrigated this year. Even though it was not in the original agreement, the KODAA has agreed to try to have beehives located near those same two plots so that we can see if the additional pollination will have an added effect on seed yield.

Task 2—Advise KCBS staff and subcontractor on next steps to take in developing the seed plots.

Finding and Recommendations — We met with KODAA Extension Director Musli Musliu and Syl Dëshishku of Xeni Seed, the president of KODAA in separate meetings and Mr. Musliu traveled with us to many of the plots. As noted above the suggested changes to plot maintenance have been agreed to.

Milazim Mokolli, Agronomist for KCBS was also involved in all the meetings and trainings and should now also be up to speed on all recommendations and KODAA field activities.

The current sub-contract to KODAA for plot maintenance expires in September of 2008. Since the KCBS project is scheduled to end at that time, there would be no contract for plot maintenance for 2009 and beyond. KODAA sees the value of those plots to their membership and in our discussions they expressed a desire to continue to oversee the plots in 2009, possibly even if there is no further project and no additional funding.

Since advising KODAA as the alfalfa plot sub-contractor was an important aspect of this consultancy, and the SOW between KODAA and KCBS was the template for our discussions and recommendations, that SOW document has been included in Annex 1.

Task 3—Provide training for local seed multipliers, and Government, Institute and Agriculture Faculty staff.

Finding and Recommendations — As noted above, trainings were given to a farmers group in Peja on Alfalfa Seed Production techniques and to the MAFRD Phytosanitary and Seed Inspection inspectors. Both groups seemed interested and better informed but since neither has had actual experience, some additional technical training may be necessary after they have had at least one year exposure to the process.

Copies of both of the PowerPoint trainings are included in Annexes 2 and 3.

Task 4—Provide advisory services to MAFRD on policy and regulations development and regulation implementation.

Findings and Recommendations — A policy input paper for the MAFRD seed department's use in developing future strategy, rules and regulations for the seed industry was written and will be presented to the MAFRD. This paper is included in Annex 4.

CONCLUSIONS AND RECOMMENDATIONS FOR FUTURE ACTIVITY

It became apparent rather early in this consultancy that the alfalfa seed production, seed conditioning and seed inspection segments of the industry are not yet capable of establishing an alfalfa seed industry that can supply a product suitable for the world market. There most likely will be some alfalfa seed produced for seed in 2008 or 2009 that will be available for the less demanding domestic market. It is important now to allow those individuals involved in the process to grow, condition and inspect the seed to the best of their ability and learn from their experiences.

After one or two seasons, they will have some experiences and knowledge about the process that there will be questions that can be answered and help that can be given. The recommendation here is to allow the industry to progress through 2008 and into the 2009 growing season. Sometime during the inspection, harvest or seed conditioning process would be a good time to review and revisit the process. A consultancy during the late growing season of 2009 would allow us an opportunity to answer questions and correct problems that will arise over 2 growing seasons. Trainings at that point would focus on real questions and problems that have arisen over the past growing seasons.

A goal of this project was to be able to produce alfalfa seed in Kosovo for regional or international seed companies. Semenarna, a company from Slovenia has expressed interest in producing seed in Kosovo. It would be prudent to keep them apprised of the progress of the alfalfa seed project and to understand the process they will use if and when they decide to start production. A plan could be developed between KCBS and Semenarna as to how to progress to fill their needs.

ANNEXES

- Annex I Scope of Work--Alfalfa Seed Multiplication Trials Subcontractor
- Annex II Alfalfa Seed production
- Annex III Seed Inspector Training
- Annex IV Suggested Policy and Regulations

ANNEX I: Scope of Work--Alfalfa Seed Multiplication Trials Subcontractor

I. Overview

The goal of the USAID-funded Kosovo Cluster and Business Support Project (KCBS) is to stimulate economic growth and to improve employment opportunities for Kosovar citizens. This particular project is intended to determine if economical alfalfa seed multiplication can be done in Kosovo thereby increasing jobs while contributing to economic development.

II Purpose

Based on previous local and regional market research, KCBS determined it was justified and important to proceed with the second phase of this activity.

The purpose of this phase is to explore the production economics and feasibility of alfalfa seed multiplication in Kosovo. Through this activity, KCBS would like to determine if it is possible for Kosovo to reduce imports of alfalfa seed by replacing some of them with local seed production in the future and economically produce alfalfa seed for regional markets. The first year of these trials was completed during the 2007 growing season with alfalfa plots for seed trials and forage trials established for four different new varieties and a control at five different locations in Kosovo. The forage trial plots were harvested twice with yield measurements taken and the seed plots harvested twice with the first one harvested for forage and the second one for seed yield.

During the 2008 growing season these same yield measurements will be taken including chemical analysis for crude protein and estimated energy values. Subcontractor will also be responsible for supporting and overseeing maintenance fertilization and weed/pest control practices.

III Background

Alfalfa, as one of the main forage crops in Kosovo, covering 4% of the total cultivated land in Kosovo. Even though the amount of alfalfa planted is being increased, it is still insufficient for local animal feed needs.

Based on statistical data from MAFRD, the average yield in Kosovo is low with only 35% of the alfalfa production potential possible being used based on local agro-climatic conditions.

The main reasons for this are traditional practices on farms such as:

- Use of traditional seed with low potential for quality and quantity.
- Poor adaptation of some imported varieties in special ecological environments
- Late harvesting resulting in fewer cuttings per year and poorer quality
- Application of traditional, less productive, fertilizers
- Limited use of pesticides

Local production of improved alfalfa seed could make seed of new and improved alfalfa varieties more readily available at lower cost to livestock farmers and other forage producers. It would also provide an additional cash crop for some crop producers.

IV Tasks To Be Performed

- Overseeing and supporting the maintenance of 5 alfalfa seed production demonstration plots of one hectare each as established in the 2007 growing season at 5 separate locations through out Kosovo.

- Monitor and support the trial plot land owner to insure fertilizing, pesticide spraying, and harvesting are completed properly and in a timely manner.
 - Arrange for the provision of maintenance fertilizer and plant protection products as needed.
 - Oversee the actual work being done
- Organize field days, invite interested parties and provide presentation of the complete technology package used, including seed varieties, fertilizers and herbicides used and timing.
 - Select optimum date for field day
 - Provide training brochures that were developed in year one on establishing and monitoring alfalfa seed multiplication fields during the vegetative season. Also including determining optimum harvest time and procedures
- Create a second brochure that provides information on crop production and management as noted above and present the results of the demonstration plots including but not limited to:
 - Time of seeding in year 2007
 - Seeding rate/hectare
 - Fertilization used and plant protection products used and rates of use for both in the fall of 2007 or spring of 2008 for the 2008 growing season.
 - Soil PH and test results before fertilization
 - Yield of seed produced per hectare in the second year (2008)
 - Germination and other quality parameters of seed produced in 2008.
 - Forage yields for both forage trials and seed trials in 2008 including protein and TDN tests on forage samples.
- Invite media to participate in field days in order to make the information available to greater number of farmers.
- Organize a conference for presentation of the demonstration plot results and make appropriate recommendations. KCBS will present the results of earlier market research. Media should be invited to attend.

V Deliverables

- Supporting and monitoring the maintenance of 5 alfalfa seed and forage production demonstration plots one hector each in size at the 5 locations as established in the 2007 growing season.
- Organization and implementation of one field day during the growing season at one of the trial plots best suited to practically educate farmers regarding new and advanced methods of alfalfa forage production.
- Organization and implementation of four (4) additional field days, one at each of 4 trial plot locations just before or during harvest (late August or early September) to practically educate farmers on harvest timing and techniques.
- Report to KCBS two weeks after harvesting containing analysis of harvesting data from demonstration plots.
- Brochure presenting data analysis from the demonstration plots in year two (2008) and recommended agronomic practices for alfalfa seed production.
- Organization and implementation of a conference in Pristina for presentation of results achieved in demonstration plots in the second year (2008) and recommended agronomic practices for alfalfa seed production.

- Deliver final report to KCBS, two weeks after the end date of activities described above but no later than September 20, 2008

VI Duration

This activity should start in March 2008 and end in September 2008.

Eligibility Requirements:

To be eligible for funding, the Applicant must be:

- 1) A membership-based association; or
- 2) A Kosovo-based services provider, firm, agricultural enterprise, or any other active non-profit or for-profit organization.

Together with your proposal please include the registration document of your organization.

KCBS and USAID/Kosovo reserve the right to fund any or none of the submitted applications.

ANNEX II: Alfalfa Seed Production Training

Alfalfa Seed Production

Jim Stanelle
Seed Consultant to KCBS

1

General Seed Production

- The process of increasing the amount of seed of specific varieties to be available for general farm production
- Use of specific techniques to maintain the genetic purity of the variety
- Prevention of the introduction of impurities and removal of foreign substances from the seed mass

2

Benefits Of Producing Seed

- Adding value to the farm product
- Beginning of business activities
- Use of best management practices
 - Use of the best land and inputs
 - High levels of management
 - Emphasis on pure seed

3

Seed Production Steps

- Selection of clean fields
- Purchase of parent seed
- Maintaining seed fields
- Field inspections
- Harvest and seed handling
- Seed conditioning
- Sampling, testing and labeling
- Seed sale

4

Seed Certification & Quality

- Monitors the quality of seed through the production steps
- Instructs growers and seed companies to produce quality seed
- Insures that seed quality steps have been followed
- Seed quality means the removal of all seeds and particles that are not the specific desired seed variety

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Alfalfa Seed Production

Steps to Produce High
Quality Seed on Your Farm

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Selection of Fields

- Uniform, well drained soil
- Sandy loam soils or other light soils
- No alfalfa or clovers the previous 2-3 growing seasons
 - Rotation from wheat or barley being preferred
- Avoid weedy sites
 - No dodder (*Cuscuta*), or clovers

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Seed Selection

- Purchase quality certified seed
- Is it adapted in your area and a good yielder for the area?
- Quality label
 - High germination percentage
 - Pure seed–no weeds
- Inoculated with Rhizobia to insure proper nodulation

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Land Preparation

- Soil test
- Fertility rate of 16ppm P and 250ppm K
- Soil will be worked fairly fine, free of large clods or residue, and firm
- Clean tillage equipment of plant parts before starting seed field

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Planting

- Late March or early April
- Weed control before planting
- Seed rate 1-1.5 kg/Ha is desired
- Sown less than 2 cm deep, firm seedbed
 - Small seeds require a more prepared seedbed
- Row width accommodate available cultivation equipment - 60 cm centers

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Water Requirements

- 1200 mm of water per year
 - Applied, precipitation and residual moisture
- Irrigate into rather than across the soil
 - Proper time and in sufficient quantities
- Do not allow moisture stress to the crop
- Good soil moisture is needed until bloom
- Irrigation levels and timing are gradually cut back to mid-bloom which synchronizes the bloom timing

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Pollination

- Natural pollination with bees will produce fair seed yields
- Additional bee hives can increase seed set
- 5 or more hives per hectare
- Bees will cover area of 100M from the hive
- Place hives when alfalfa is at 1/3 bloom
- Remove hives 4 weeks before harvest
- Field should not be too wet for bees to pollinate
- Do not apply insecticides when bees are in field

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Weed Control

- Cultivation between the rows
 - Tool bar and sweeps
 - Cultivated two or more times up to bloom
 - 80% of the weeds in the seed field controlled
- Weeds in the crop row
 - Backpack or towed sprayer—banded application
 - 4 liters Meteor + 2kg Prometrin/ha
 - Dodder patches
 - Non-selective herbicide to destroy patches
 - Pulled and removed from the field
- Weeds around the field
 - Cut weeds from perimeter
 - Control dodder patches

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Insect Infestations

- Monitor for insects
- Insecticides can be used up until the bloom stage
- Be careful not to harm pollinating bees with insecticides

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Alfalfa Seed Harvest ⁽¹⁾

- Cut 1st crop at early/mid-bloom for forage
 - Cutting helps to establish a shorter/more compact seed set time for the next crop
- Harvest when seed horns are dry and the first ones are beginning to crack open
- Desiccate the plants to remove excess vegetative material and uniformly dry the plants and seeds

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Alfalfa Seed Harvest ⁽²⁾

- Seed is small so it is easily lost in the harvest process
- Slower cylinder speeds
- Set concaves to diminish seed breakage
- Combine modifications according to manufacturer
- Clean out well between varieties

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Post Harvest Activities and Seed Storage

- Remove crop residue from seed fields
- Treat dodder infested spots with Prowl
- Soil sample and/or fertilize
- Removal of plant matter from harvested seed
- Watch for heating of stored seed
 - Spread seeds out and move it until it is dry/cool
- Use quality seed cleaning methods and equipment

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Quality in Seed Production

- A belief that no seeds except those of the desired variety are present
- Using techniques in the field, equipment, storage and handling that will not allow seed contamination
- Do all you can to produce pure seed

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Alfalfa Seed Production Potential in Kosovo

- Domestic Market
 - Local/Publicly available varieties
 - Local seed sale
 - Relaxed quality standards
- Regional/International Market
 - Private varieties
 - Sale out of the country
 - Higher quality standards
 - Higher profitability

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Initial Alfalfa Seed Production Goals

- Seed production for the domestic market
- Learn alfalfa seed production techniques
- Understand the need for purity in seed production
- Demonstrate to regional seed companies that you can produce good seed
- Cultivate relationships with seed companies

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ANNEX III: MAFRD Inspector Training

Alfalfa Seed Inspection Techniques & Certification

Jim Stanelle
Seed Consultant to KCBS

Seed Certification

- A process that insures that seed being produced and sold has met certain minimum standards during production and handling
- It does not insure the quality of the final product, but only that the steps have been taken to insure quality
- Inspectors and Ag. Ministry only monitor the steps in the process
- The goal is to provide a seed product that the farmer/customer can depend on

General Seed Inspection: Parent Seed

- Proof of seed class – Seed Tag?
 - Pre-basic
 - Basic
 - 1st Generation Certified
- Ownership restrictions
 - Are there contractual or consensual agreements necessary

General Seed Inspection: Fields

- Field Application
- Cropping history
 - Restrictions due to previous crops
 - Unwanted volunteer plants
 - Weed problems
 - Previous seed classes of the same variety
- Field borders
- Isolation
- Length of stand requirements

General Seed Inspection: Field Inspection

- Walk through the field
 - Generally cover all areas of the field
 - Look specifically at potential problems
- Varietal purity
 - Off-type plants
 - Planting problems
 - Volunteer plants
- Weed contamination
 - Noxious weeds
 - Common weeds
- Phytosanitary condition of the field
- Write a field report

General Seed Inspection: Field Inspection Techniques

- Look for plants growing between crop rows
- Look for unwanted plants where the planting equipment began planting the field
- Look for unwanted plants around the outside edge of the field
- As you walk through the field turn around and look behind you
- Kneel down and look at crop canopy at eye level
- Look at field areas where the crop is stressed

General Seed Inspection: Seed Testing

- Germination
- Mechanical Purity
- Seed Moisture
- Other observational factors
 - Insect infestation
 - Disease problems
- Informational testing
 - Dormancy/Hard seeds
 - Seed stress tests

General Seed Inspection: Final Certification & Tagging

- Review that all steps have been taken and that all minimum standards have been met
- Issue a document saying that the seed is officially certified
- Provide a seed tag so that the farmer/buyer knows that the seed has gone through the certification process
- Maintain the field and seed records
- Communicate this information to other agencies or countries at their request

Seed certification is of no use unless the final user of the seed is sure of the process and what it means

The certified seed tag tells the seed buyer that this seed product has been subjected to certain standards that will help to insure that it will perform well in his field.

Alfalfa Seed Field Inspections

- Understand the what the variety is supposed to look like
- Similar to other seed inspections
 - Isolation distances
 - Off-type plants
 - Weed, insect & disease infestations
- Differences from other inspections
 - Perennial plants – length of stand requirements
 - Cross pollinated
 - Different weed problems
 - Increasing number of volunteer plants
 - More demanding international customers

Alfalfa Seed Regulations OECD Seed Schemes

- Use your general seed inspection criteria
- Previous Cropping History
 - No legumes in the field for the past 3 cropping seasons
- Isolation – *Certified seed class*
 - Fields 2 Ha or less – 100m
 - Fields greater than 2 Ha – 50m
- Weeds
 - Reject fields with excess weeds
 - Reject fields with noxious weeds

Alfalfa Seed Regulations OECD Seed Schemes

- Number of harvest years
 - You must decide how many years the field may be in production
 - To remain eligible fields must be inspected each year
- Field Inspections
 - One within 4-6 weeks after planting
 - Or after emergence for fall planted alfalfa
 - One inspection at flowering time
 - Other inspections as you see fit

Alfalfa Seed Regulations OECD Seed Schemes

- Field purity levels
 - Varietal purity – *No more than 1 plant/10 sq. m that is not true to type*
 - Other distinguishable varieties
 - Species purity – *No more than 1 plant/10 sq. m of a related species where the seed is difficult to distinguish from alfalfa*
 - Other legumes like clovers, sweet clover or lespedeza
- No prominent disease infestations

Cooperation with International Alfalfa Seed Producers

- Discussion with seed companies will help you to understand the quality they are looking for
- You can inspect to more stringent standards if they request it
 - Increased isolation
 - Density of off-types
 - Length of stand
- Limit the number of certified generations beyond Basic Seed

Other Seed Compliance Issues for Seed Movement in International Trade

- Membership into OECD Seed Schemes
- ISTA seed testing
- Seed variety registration lists
 - Alfalfa is not currently on the Kosovo seed list
 - Seed for "production only" should not be on the list
 - For seed produced here and taken back to country of origin
- Labeling of "not finally certified" seed
- Ease of movement of seed across borders

Alfalfa Seed Regulations OECD Seed Schemes

The full set of regulations for the
OECD Alfalfa Seed Schemes can
be found at:

<http://www.oecd.org/dataoecd/30/13/40202826.pdf>

Or go to:

ANNEX IV: MAFRD Policy Paper

Suggested Policy and Regulations
For the Production and Inspection of Alfalfa Seed

Prepared by James Stanelle
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USAID Kosovo Cluster and Business Support Project (KCBS)

Prepared For
Phytosanitary Inspection and Seed Section
Kosovo Ministry of Agriculture, Forestry and Rural Development (MAFRD)

The introduction of alfalfa grown for seed in Kosovo will impose some new seed inspection responsibilities for MAFRD that will require adapting current skills and regulations for the new crop. The regulations and standards have been developed through the OECD Seed Schemes, so they are easily available but the skills associated with implementing the standards may involve a learning curve.

The initial production of alfalfa seed by farmer/growers will most likely be in smaller fields and distributed in many parts of the country. It is assumed that parent seed used to plant these fields would initially be non-proprietary varieties and therefore easier to acquire for planting but also may be varieties that do not have the best yield potential, hardiness and disease resistance. These varieties are less likely to have the exacting requirements for production, inspection and sale as the proprietary varieties and therefore may be the best in the short-term while those entities involved learn and better understand their role in the alfalfa seed production chain.

As the alfalfa seed production chain matures it is expected that regional and international seed companies will see the advantages of seed production in Kosovo. Once they begin producing the seed of proprietary alfalfa seed varieties in this country the production, inspection and conditioning components will be expected to perform according to the standards demanded by the seed companies operating in the international community.

Until recently Kosovo was a part of Serbia and thus Serbia's inclusion into the Organization for Economic Co-Operation and Development (OECD) Seed Schemes allowed Kosovo to function under those rules. As a newly independent country, Kosovo is most likely going to have to seek application to OECD in order to produce seed that will move beyond its borders. This could mean that a full application process is necessary or maybe it would mean easy acceptance because Kosovo was already a member under Serbia. It is strongly suggested that MAFRD and the Government of Kosovo begin the process of securing OECD membership.

As long as alfalfa seed produced in Kosovo is destined for markets inside the country OECD membership and rules will not be necessary, but MAFRD would be prudent to adopt their standards and begin to inspect and approve seed according to OECD rules. OECD standards can be found at <http://www.oecd.org/dataoecd/30/13/40202826.pdf>.

Since alfalfa is a perennial, cross-pollinated crop, the philosophy and practice of inspection is different than for field crops like wheat. Some of the major differences in the standards include:

1. Previous cropping history—alfalfa seed will require that fields will not have grown alfalfa (for seed or forage) for the past three cropping seasons. This is most likely longer than the restriction for small grains. It is possible that the restriction can be shortened if a lower class (Basic seed and then Certified class) of the same variety is grown on the field.
2. Isolation distances from other alfalfa fields will be increased over field crops. This is because the movement of pollen through the air or more importantly by bees will more easily cross-pollinate and contaminate more distant seed production fields. The OECD standard for production of Certified 1 class is that no other alfalfa shall be grown within fifty (50) meters of an alfalfa seed production field. If the seed field is less than two (2) hectares, the isolation distance shall be one-hundred (100) meters from any other alfalfa. This standard for smaller fields is necessary because the mass of available pollen in these fields is less and bees could easily come from other plants at a greater distance for pollination. These isolation distances also apply to individual volunteer alfalfa plants growing near the fields but out-side of the field boundaries.
3. Weed contamination in seed fields has to be viewed differently in perennial fields as compared to annual seed production fields. Weed control programs are a necessity otherwise weed problems can multiply over the life of the seed production field. Inspection programs should stress the control of weed patches and the removal of any weed vegetative matter. *Cuscuta* is a major problem in alfalfa and should be dealt with whenever those patches are found.
4. Alfalfa seed production programs often limit the number of years that an existing field can produce seed. Since alfalfa is a perennial crop and some seed loss can be expected from shatter or harvest losses, this seed will tend to replant the field with plants that are of subsequent generations. Under the definition of certified seed these next generation of plants are really of a lower certified class. The possibility always exists that some contamination has occurred in the pollination process of these plants meaning that the varietal purity of these plants has been compromised. A common standard is a length of stand of 4-5 years.
5. Alfalfa seed fields should be continually inspected each year even if the fields will not be producing seed. Continuing inspections mean that contaminants that could be present in a non-seed year will be removed instead of multiplying and causing problems in the next seed year.
6. OECD standards mandate one seed field inspection each year, but allow for other inspections during the growing season. The final or mandated inspection occurs at the full-bloom stage when the seed plants most readily exhibit the distinguishable characteristics needed during field inspection. MAFRD should probably add an inspection 4-6 weeks after planting in the seedling year to look for volunteer plants and deem that isolation distances are correct. In subsequent years, a similar inspection in mid-to-late April would verify the emergence of unwanted plants and continue the monitoring of isolation distances. A pre-bloom inspection would again monitor isolation, especially volunteer plants within the isolation zone and would alert the grower of any problems to be corrected before the shed of pollen.
7. OECD standards permit minor field contaminations of other plants. For the production of certified seed, the standards (for the Certified 1 class of seed) allow 1 off-type alfalfa plant per 10 square meters of field. The standard for similar species (clovers, sweet clover or lespedeza) also allow for a maximum of 1 plant per 10 square meters of field. During the inspection process, the seed grower should be encouraged to remove any of these contaminating plants from the field to prevent reseeding and increasing the level of contamination.

8. Inspectors should become familiar with common diseases of alfalfa and fields with out-breaks of those diseases that could be seed-borne should be rejected.
9. OECD Standards are considered to be minimum standards. That means that any standard can be changed as long as it becomes more restrictive than the OECD standard. MAFRD can review those standards and make relevant changes if it is believed that the result would be a benefit to the alfalfa seed industry in Kosovo. Additionally, alfalfa seed companies with ownership over proprietary seed varieties may request inspections to a more stringent standard than current adopted standards.
10. Seed companies with proprietary varieties often want to limit unauthorized propagation of their variety. Therefore they may ask or have as a condition within the variety release that the variety be restricted to certain certification classes. Instead of the normal Pre-basic, Basic, Certified 1 and Certified 2 generations, the variety owner might ask that the Certified 1 class be eliminated and therefore the Basic class would directly produce Certified 2 seed. This would eliminate much of the possibility of unauthorized propagation of that variety.

With the possibility of regional or international seed companies producing seed here for return to the international market, there may be some additional points that have to be considered.

1. Alfalfa is not currently on the Kosovo approved seed list. If this will be changed, it may be necessary to exclude those varieties that are used in this country for propagation only. In these cases, the variety should be allowed as long as a plan is in place for seed to be grown here and all the subsequent production of certifiable seed shipped back out of the country to the parent company for further processing and sales.
2. Seed that has been inspected and will be moving out of the country for further processing and sale but has not been finally certified still has to be identified. The OECD system has a procedure for tagging of individual seed lots as “not finally certified” to maintain lot integrity. MAFRD will have to establish procedures for the tagging of this seed.
3. To maintain the attractiveness of Kosovo as a place to grow alfalfa seed for international production, the seed must be able to move across borders with ease and in a consistent manner. MAFRD and other appropriate government agencies should establish transparent procedures that will allow the movement of alfalfa seed across borders with a minimum of hassle and costs.

The establishment of an alfalfa seed production industry in Kosovo will provide additional opportunities for farmers in this country. Standards and practices that are consistent with international norms and the ease of product movement will make Kosovo an attractive country to produce this seed. The Government of Kosovo and MAFRD should adopt those policies and standards and apply them with consistency so that the farming economy can flourish and that Kosovo can be viewed as a true player in international alfalfa seed trade.

Alfalfa Seed Inspection Techniques & Certification

Jim Stanelle

Seed Consultant to KCBS

Seed Certification

- A process that insures that seed being produced and sold has met certain minimum standards during production and handling
 - It does not insure the quality of the final product, but only that the steps have been taken to insure quality
 - Inspectors and Ag. Ministry only monitor the steps in the process
 - The goal is to provide a seed product that the farmer/customer can depend on
-

General Seed Inspection: Parent Seed

- Proof of seed class – Seed Tag?
 - Pre-basic
 - Basic
 - 1st Generation Certified
 - Ownership restrictions
 - Are there contractual or consensual agreements necessary
-

General Seed Inspection: Fields

- Field Application
 - Cropping history
 - Restrictions due to previous crops
 - Unwanted volunteer plants
 - Weed problems
 - Previous seed classes of the same variety
 - Field borders
 - Isolation
 - Length of stand requirements
-

General Seed Inspection: Field Inspection

- Walk through the field
 - Generally cover all areas of the field
 - Look specifically at potential problems
 - Varietal purity
 - Off-type plants
 - Planting problems
 - Volunteer plants
 - Weed contamination
 - Noxious weeds
 - Common weeds
 - Phytosanitary condition of the field
 - Write a field report
-

General Seed Inspection:

Field Inspection Techniques

- Look for plants growing between crop rows
 - Look for unwanted plants where the planting equipment began planting the field
 - Look for unwanted plants around the outside edge of the field
 - As you walk through the field turn around and look behind you
 - Kneel down and look at crop canopy at eye level
 - Look at field areas where the crop is stressed
-

General Seed Inspection: Seed Testing

- Germination
 - Mechanical Purity
 - Seed Moisture
 - Other observational factors
 - Insect infestation
 - Disease problems
 - Informational testing
 - Dormancy/Hard seeds
 - Seed stress tests
-

General Seed Inspection: Final Certification & Tagging

- Review that all steps have been taken and that all minimum standards have been met
 - Issue a document saying that the seed is officially certified
 - Provide a seed tag so that the farmer/buyer knows that the seed has gone through the certification process
 - Maintain the field and seed records
 - Communicate this information to other agencies or countries at their request
-

Seed certification is of no use unless the final user of the seed is sure of the process and what it means

The certified seed tag tells the seed buyer that this seed product has been subjected to certain standards that will help to insure that it will perform well in his field.

Alfalfa Seed Field Inspections

- Understand the what the variety is supposed to look like
 - Similar to other seed inspections
 - Isolation distances
 - Off-type plants
 - Weed, insect & disease infestations
 - Differences from other inspections
 - Perennial plants – length of stand requirements
 - Cross pollinated
 - Different weed problems
 - Increasing number of volunteer plants
 - More demanding international customers
-

Alfalfa Seed Regulations

OECD Seed Schemes

- Use your general seed inspection criteria
 - Previous Cropping History
 - No legumes in the field for the past 3 cropping seasons
 - Isolation – *Certified seed class*
 - Fields 2 Ha or less – 100m
 - Fields greater than 2 Ha – 50m
 - Weeds
 - Reject fields with excess weeds
 - Reject fields with noxious weeds
-

Alfalfa Seed Regulations

OECD Seed Schemes

■ Number of harvest years

- You must decide how many years the field may be in production
- To remain eligible fields must be inspected each year

■ Field Inspections

- One within 4-6 weeks after planting
 - Or after emergence for fall planted alfalfa
 - One inspection at flowering time
 - Other inspections as you see fit
-

Alfalfa Seed Regulations

OECD Seed Schemes

- Field purity levels
 - Varietal purity – *No more than 1 plant/10 sq. m that is not true to type*
 - Other distinguishable varieties
 - Species purity – *No more than 1 plant/10 sq. m of a related species where the seed is difficult to distinguish from alfalfa*
 - Other legumes like clovers, sweet clover or lespedeza
 - No prominent disease infestations
-

Cooperation with International Alfalfa Seed Producers

- Discussion with seed companies will help you to understand the quality they are looking for
 - You can inspect to more stringent standards if they request it
 - Increased isolation
 - Density of off-types
 - Length of stand
 - Limit the number of certified generations beyond Basic Seed
-

Other Seed Compliance Issues for Seed Movement in International Trade

- Membership into OECD Seed Schemes
 - ISTA seed testing
 - Seed variety registration lists
 - Alfalfa is not currently on the Kosovo seed list
 - Seed for “production only” should not be on the list
 - For seed produced here and taken back to country of origin
 - Labeling of “not finally certified” seed
 - Ease of movement of seed across borders
-

Alfalfa Seed Regulations

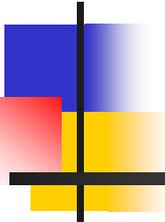
OECD Seed Schemes

The full set of regulations for the OECD Alfalfa Seed Schemes can be found at:

<http://www.oecd.org/dataoecd/30/13/40202826.pdf>

Or go to:

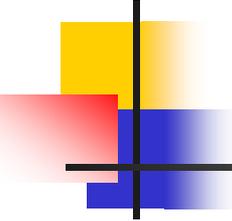
<http://www.OECD.org>



Alfalfa Seed Production

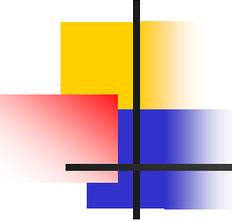
Jim Stanelle

Seed Consultant to KCBS



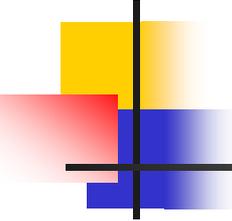
General Seed Production

- The process of increasing the amount of seed of specific varieties to be available for general farm production
- Use of specific techniques to maintain the genetic purity of the variety
- Prevention of the introduction of impurities and removal of foreign substances from the seed mass



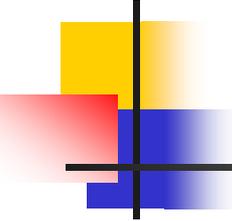
Benefits Of Producing Seed

- Adding value to the farm product
- Beginning of business activities
- Use of best management practices
 - Use of the best land and inputs
 - High levels of management
 - Emphasis on pure seed



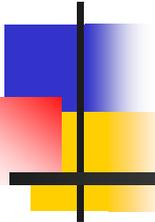
Seed Production Steps

- Selection of clean fields
- Purchase of parent seed
- Maintaining seed fields
- Field inspections
- Harvest and seed handling
- Seed conditioning
- Sampling, testing and labeling
- Seed sale



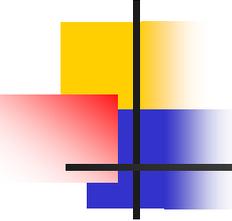
Seed Certification & Quality

- Monitors the quality of seed through the production steps
- Instructs growers and seed companies to produce quality seed
- Insures that seed quality steps have been followed
- Seed quality means the removal of all seeds and particles that are not the specific desired seed variety



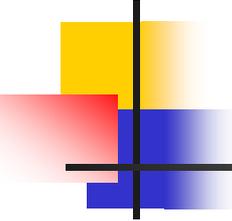
Alfalfa Seed Production

Steps to Produce High
Quality Seed on Your Farm



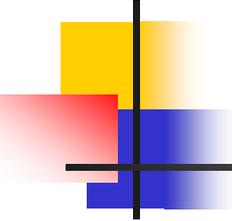
Selection of Fields

- Uniform, well drained soil
- Sandy loam soils or other light soils
- No alfalfa or clovers the previous 2-3 growing seasons
 - Rotation from wheat or barley being preferred
- Avoid weedy sites
 - No dodder (*Cuscuta*), or clovers



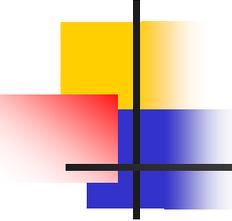
Seed Selection

- Purchase quality certified seed
- Is it adapted in your area and a good yielder for the area?
- Quality label
 - High germination percentage
 - Pure seed–no weeds
- Inoculated with Rhizobia to insure proper nodulation



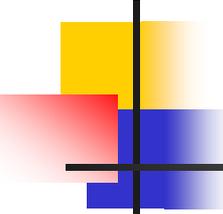
Land Preparation

- Soil test
- Fertility rate of 16ppm P and 250ppm K
- Soil will be worked fairly fine, free of large clods or residue, and firm
- Clean tillage equipment of plant parts before starting seed field



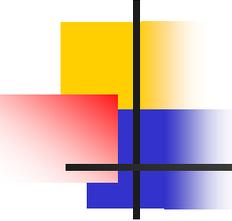
Planting

- Late March or early April
- Weed control before planting
- Seed rate 1-1.5 kg/Ha is desired
- Sown less than 2 cm deep, firm seedbed
 - Small seeds require a more prepared seedbed
- Row width accommodate available cultivation equipment - 60 cm centers



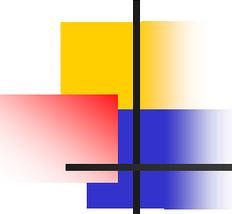
Water Requirements

- 1200 mm of water per year
 - Applied, precipitation and residual moisture
- Irrigate into rather than across the soil
 - Proper time and in sufficient quantities
- Do not allow moisture stress to the crop
- Good soil moisture is needed until bloom
- Irrigation levels and timing are gradually cut back to mid-bloom which synchronizes the bloom timing



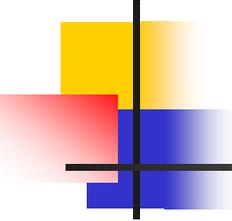
Pollination

- Natural pollination with bees will produce fair seed yields
- Additional bee hives can increase seed set
- 5 or more hives per hectare
- Bees will cover area of 100M from the hive
- Place hives when alfalfa is at 1/3 bloom
- Remove hives 4 weeks before harvest
- Field should not be too wet for bees to pollinate
- Do not apply insecticides when bees are in field



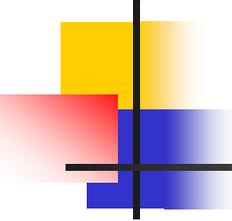
Weed Control

- Cultivation between the rows
 - Tool bar and sweeps
 - Cultivated two or more times up to bloom
 - 80% of the weeds in the seed field controlled
- Weeds in the crop row
 - Backpack or towed sprayer—banded application
 - 4 liters Meteor + 2kg Prometrin/ha
 - Dodder patches
 - Non-selective herbicide to destroy patches
 - Pulled and removed from the field
- Weeds around the field
 - Cut weeds from perimeter
 - Control dodder patches



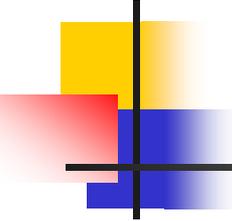
Insect Infestations

- Monitor for insects
- Insecticides can be used up until the bloom stage
- Be careful not to harm pollinating bees with insecticides



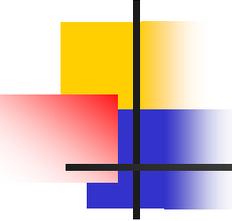
Alfalfa Seed Harvest ⁽¹⁾

- Cut 1st crop at early/mid-bloom for forage
 - Cutting helps to establish a shorter/more compact seed set time for the next crop
- Harvest when seed horns are dry and the first ones are beginning to crack open
- Desiccate the plants to remove excess vegetative material and uniformly dry the plants and seeds



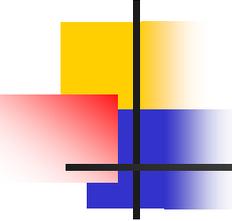
Alfalfa Seed Harvest (2)

- Seed is small so it is easily lost in the harvest process
- Slower cylinder speeds
- Set concaves to diminish seed breakage
- Combine modifications according to manufacturer
- Clean out well between varieties



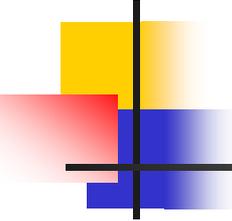
Post Harvest Activities and Seed Storage

- Remove crop residue from seed fields
- Treat dodder infested spots with Prowl
- Soil sample and/or fertilize
- Removal of plant matter from harvested seed
- Watch for heating of stored seed
 - Spread seeds out and move it until it is dry/cool
- Use quality seed cleaning methods and equipment



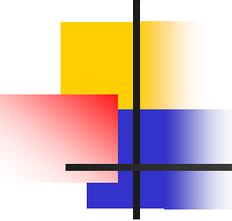
Quality in Seed Production

- A belief that no seeds except those of the desired variety are present
- Using techniques in the field, equipment, storage and handling that will not allow seed contamination
- Do all you can to produce pure seed



Alfalfa Seed Production Potential in Kosovo

- Domestic Market
 - Local/Publicly available varieties
 - Local seed sale
 - Relaxed quality standards
- Regional/International Market
 - Private varieties
 - Sale out of the country
 - Higher quality standards
 - Higher profitability



Initial Alfalfa Seed Production Goals

- Seed production for the domestic market
- Learn alfalfa seed production techniques
- Understand the need for purity in seed production
- Demonstrate to regional seed companies that you can produce good seed
- Cultivate relationships with seed companies