Improving Livelihoods of Small Farmers and Rural Women through Value-Added Processing and Export of Cashmere, Wool and Mohair

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Combing Cashmere Goats in Andarob village, Badakhshan Tajikistan April 2010.

Second Progress Report

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1 Introduction

The activities in the reporting period focussed on further developing the components of mohair and cashmere value chains in Northern and Southern Tajikistan, initiation of a breeding program in Iran and training of pilot felting groups in Kyrgyzstan.

Major activities included:

- Improving fiber processing and developing strategies for centralized mohair purchase, dehairing and carding to increase volume and efficiency of yarn production in Northern Tajikistan
- Organizing cashmere fiber collection, sorting and grading in Badakhshan, Southern Tajikistan and assessing fiber properties
- Planning import of breeding bucks and breeding program in Southern and Northern Tajikistan
- Survey on felting groups, training and provision of pilot groups with equipment and raw material in Kyrgyzstan
- Cashmere sampling for establishing the baseline data on quality and initiation of the breeding program in Iran
- Establishing linkages with new partners including Aga Khan Foundation (AKF) and cashmere producers in Afghanistan to support the cashmere project in Southern Tajikistan
- Assisting Docey Lewis, an IFAD consultant, to complete supervision mission focused on marketing yarn and products

As to be expected the components of the Mohair value chain in Northern Tajikistan are the most developed. The project managed to further advance in Angora goat breeding; mohair and harvesting and processing; and organizing the production and export of luxury yarn and products.

2 Project Activities in Northern Tajikistan

2.1 Component 1: Characterize production systems and improve fiber production of small ruminants in all target sites

2.1.1 Collecting data on breeding nuclei and discuss results from selective mating with farmers

In the fall of 2009 the project worked with Angora goat farmers to establish black and white breeding nuclei for producing superior breeding animals. Altogether, 7 farmers with 776 animals participate in the breeding program. 75 of their best females were selected for the nuclei and mated separately with selected breeding males (Table 1). The animals were selected on the basis of fiber quality – fineness, low percentage of kemp and medulated fibers, fiber length and uniformity and volume of the fleece. The project team had difficulties finding breeding males with these characteristics especially for the white nuclei, as most white Angora bucks in Tajikistan have coarse fiber. The project plans to address this issue by importing new genetics. In the spring of 2010 Matazim and Farhod Kosimov collected data on the nuclei kids born in March and April and held discussions with farmers about preliminary results of the breeding.

Table 1. Farmers and number of goats in the breeding nuclei

Farmers	The number of goats as of Jan. 2010		Color of goats	GPS coordinates	Fiber sample	Shorn fiber (kg)
	total	nucleus				
Yrunboev Tirkashali	145	30	White	N 400 40' 766" E 700 26' 188"	30	1.51 ± 0.03
Turaev Makhmud	131	16	Dark	N 40° 38' 111" E 70° 30' 606"	7	1.51 ± 0.03
Turaev Bozorboy	50	6	Dark	N 40° 38' 111" E 70° 30' 606"		
Meliboev Okhunjon	185	6	Mixed	N 40° 35' 941" E 70° 33' 389"	4	1.47 ± 0.05
Abdulloev Egamberdi	122	8	Dark	N 40°36' 540" E 70°33' 389"	7	
Abdulloev Goibberdi	78	4	Dark	N 40° 36' 540" E 70° 33' 389	4	1.40 ± 0.04
Mirzoakhmedov Ikromali	65	5	Dark	N 40° 36' 540" E 70° 33' 389"	3	
Khakimov Khaydarali	130	24	Dark	N 40° 42' 272" E 70° 24' 137"	10	1.36 ± 0.04
Kholmatov Usarboy	180	37	Dark	N 40° 42' 472" E 70° 26" 030"	27	1.35 ± 0.05
Total	**776**	**75**				

Preventive measures against animal diseases were taken in the participating flocks for nucleus and control animals. Upon return from the summer rangelands and in the beginning of spring animals were treated with anthelmintic agents (tablets, suspensions, injections), washed with antiparasitic agents (neocidol), and supplemented with minerals (briquettes). The bucks were fed with concentrates in the mating period and the does in the winter period.

Preliminary results show that the breeding experiment was successful in terms of higher than average survival rate of the kids born from nucleus does compared to those outside the nuclei. The reason for this is that the mating in nuclei flocks was conducted during the optimal period from 22 October to 22 November. As a result the kidding period lasted only one month and started in March when mild temperatures and availability of feed provided good conditions for the does and the kids. Farmers who did not participate in the breeding program kept the bucks with their flocks from August to November. As the rangelands were in comparatively good conditions due to favorable rainfall in 2009, mating started early and was spread over a relatively long period. Consequently, the kidding season at those farms was much longer and started as early as January. Most farmers were unable to protect the kids born in January and February from the cold temperatures and to supply enough feed for the does. In addition the winter lasted longer than usual in 2010 and many farmers lost 30-50% of their kids while the nuclei farmers had a high kidding rate and a high kid survival rate.

The fiber quality of the kids born from nuclei flocks will be assessed in the fall 2010.

Nucleus Farmer with Twin Kids, Asht district, May 2010.

2.1.2 Organizing import of American bucks or semen to Tajikistan

Since January 2010 the project team has been working on the organization of the import of Angora goats or semen from one of the top Angora producing countries such as South Africa, Australia or the United States. The team discussed the pros and cons of importing Angora goats versus semen. The advantage of using frozen semen is the lower cost but the disadvantage is that the insemination rate for goats is only about 40-50% and the semen can be used only once. The advantage of using live animals is that they can be utilized for 6-7 years and their semen can be frozen and stored. The other advantage is that the Tajik farmers would benefit from seeing and examining imported Angoras that represent a very different phenotype compared to Tajik Angoras. However, the import of live animals is much more expensive. The team decided to first explore the option of purchasing live animals and, based on the cost, consider frozen semen as a second choice.

Liba Brent and Joaquin Mueller contacted Angora goat breeders in all three countries regarding possible import of live animals. After communicating with Australian, American and South African breeders, the team decided to work with American breeders from Texas and Oklahoma (including Dee Hadorn of Cerulean Farms) and with Angora goat scientists from the Department

of Animal Science in Texas A&M (Drs. Dan Waldron and Chris Lupton) on selecting breeders, animals and arranging the import. The decision to work with American breeders was made based on the quality of goats available in the USA and the capacity of the team to organize the import.

Liba Brent worked with Matazim Kosimov, Tajik veterinary authorities, Cherie Derouin of American Genetics International and Dr. William Edmiston, a veterinarian from Texas specializing in Angora goats, on producing a governmental certificate for the import goats and semen from the USA to Tajikistan. The certificate was necessary to obtain a quote from the exporter for shipping, handling and performing the required veterinary testing.

The challenge for the import of live animals has proven to be the shipping cost. The US shipping company (Sea Air International) researched a variety of shipping options and learned that goats can be flown to Central Asia on cargo planes only, and that there is no air cargo route between Tajikistan and the USA. The goats could be flown from the USA to Navoi, Uzbekistan, and transported from there to Tajikistan by land. The cost of transporting 40 goats from the USA to Uzbekistan would be approximately $53,000, which exceeds the project budget.

The prohibitive cost of shipping live animals has led the project team to work on importing frozen semen. The project now plans to import frozen semen from the USA for the fall breeding season and use it in the white nuclei. The arrangements for the import are underway.

Three of eight Texas Angora goats the project plans to collect semen from, Texas July 2010.

Tajik Angora bucks represent a very different phenotype compared to their Texan relatives, Asht district, April 2008.

2.2 Component 2: Work on formation and capacity building of women's groups to develop fiber processing and export of value-added fiber and products in all pilot sites. Encourage the development of women-led small businesses.

2.2.1 Working with women's groups on yarn production

The project worked with the 86 spinners, knitters and carpet weavers in established groups on producing yarn, knitted products and carpets. The project developed a short video on fiber dehairing and trained spinners how to select mohair fleeces according to fineness and how to dehair fleeces from kemp. Specialized trainings using the video were conducted with 76 women in Ukh, Oshoba, Markhamat, Alma, Shvar, Gulshan, Terakli, Taboshar and Khodzhand. The team also worked on creating linkages between farmers who participated in the nuclei breeding and the women's groups, encouraging the spinners to purchase quality kid mohair from the project farmers. These market ties will be further pursued once the first kids produced in the nuclei will be sheared in the spring 2011: the project plans to purchase all quality nuclei kid fleeces for processing. This will strengthen the ties between producers and processors and allow us to test the properties of these fleeces through processing.

During the trainings, the project team discussed with the spinners and knitters the challenges they face trying to produce luxury yarn and products and worked to design methods to address these challenges. The most serious obstacle the spinners face is the poor quality of Tajik kid mohair: high diversity between individual fleeces, coarseness of some fleeces and high percentage of kemp in all fleeces. These problems require a considerable time and effort in terms of selecting quality fleeces for processing and preparing the fiber for spinning. The effects of mohair quality on the spinners' productivity are discussed in detail in the following section.

Spinners discussing the quality of yarn and raw fleeces, Asht district, June 2010.

The Effects of Fiber Quality on the Spinners' Productivity and Hourly Earnings

Angora goat breeding and mohair processing are closely linked. The breeding work of farmers directly affects fiber quality, which in turn directly affects the work and incomes of fiber processors. The following section explains how the quality of Tajik mohair affects the incomes of women spinners, and shows how improvements in breeding and fiber quality would benefit both spinners and Angora producers.

As explained in previous reports, Tajik mohair is on average coarser than American mohair, and includes a high percentage of kemp, medulated fibers and also short down fibers. The considerable differences in the fiber of Tajik versus American goats were confirmed during a visual assessment of fleece samples of eight American breeding bucks brought to Tajikistan in the spring 2010. The Tajik project team and a group of farmers from the Asht region examined the fleeces and acknowledged the uniformity of hair types in the American fleeces compared to the diversity of hair types in the Tajik fleeces. The examination also confirmed that the American fleeces contain 0% of kemp fibers while the Tajik fleeces include around 5%-15% of kemp and medulated fibers. The project plans to document these differences by comparing measurements of American and Tajik mohair samples.

The differences between American and Tajik fleeces have important consequences for processing the fiber into luxury yarns and knitwear. Processing Tajik kid fleeces into yarn revealed the following shortcomings:

1) Kemp fibers, present in 95% of the fleeces, cannot be present in luxury yarn and knitwear as kemp generates the sensation of prickle. Tajik fleeces have to dehaired prior to spinning;
2) Coarse kid fleeces with average fiber diameter over 28 micron cannot be processed into soft, luxury yarn and knitwear. Softness of yarn and knitted products is very important to consumers. Coarse kid fleeces cannot be selected for processing.
3) Short and medulated fibers create problems for spinners and consumers of yarn and knitted products because they "shed." Medulated fibers also increase coarseness and prickle of the yarn and products. Medulated fibers need to be cleaned prior to spinning.

Fleeces with a larger percentage of medulated and kemp fibers should not be used for processing.

Spinner from the Chairukh village demonstrating how she cleans fiber from kemp, June 2010.

The problems of coarseness, kemp and short and medulated fibers create considerable hurdles for Tajik spinners. Firstly, they have to avoid working with coarse kid fleeces as these cannot be processed into soft yarn according to standard. This means that the spinners have to spend extra time selecting and sorting fleeces before purchasing raw mohair for spinning. Secondly, the fine fleeces they select for processing have to be cleaned from kemp and medulated fibers (i.e. dehaired) by combing the mohair locks. Dehairing is a very time-consuming process – spinners testified that combing the fiber to eliminate kemp and medulated fibers takes at least 1/3 of the overall processing time. Some spinners who just started to learn how to dehair fleeces claimed that cleaning takes as much as half of their processing time. **This means that the spinners' productivity is lowered at least by one third to due to poor fiber quality.**

The second problem is "waste." After skirting and dehairing, only one quarter of the fleece is usable and three quarters need to be made into yarn for the Russian market. The project calculated that spinners need to buy about 4.3 kg of raw mohair (for 15 Somoni or $3.50/kg) to produce 1 kg of yarn. It costs them $15.05 in raw material to produce 1 kg of yarn for the American market, and about 3 kg of cheap yarn for the Russian market.

In the spring 2010 the project imported American kid fleeces to Tajikistan and conducted a spinning experiment with American kid mohair to identify the relative costs/benefits of working with Tajik versus American fiber. The results of the comparison are outlined in the table below. Table 2 explains the costs and benefits of working with Tajik Kid Mohair, American Kid Mohair and Tajik "Improved" Kid Mohair – meaning mohair produced by Tajik Angora goats that would be free of kemp and medulated fibers. The production of such goats is one of the main objectives of the project.

The experiment has been conducted with spinners from two different villages who were given half a kilo of American kid mohair and asked to process it into yarn, record the processing time for different operations, and comment on all aspect of the processing. The following table summarizes the results and translates them into monetary terms, showing the effect of fiber quality on the spinners' earnings.

Table 2. Fiber quality and spinners' productivity and earnings

Fiber Type	Amount of Raw Fiber Needed	Clean Yield	Price of Raw Fiber	Dehairing	Hand Carding	Spinning	Washing	Time/ Money to produce 1kg of yarn	Earnings
Tajik Mohair $3.5/kg	4.3 kg	90-95%	4.3 kg x $3.5/kg = $15.05	2.4 days x 4 hrs per day: 9.6 hrs	0	4.6 days x 4 hrs per day: 18.4 hrs	1.5 hrs/ $1.1	29.5 hrs/$17	$60 – $16.15 = $43.85/ 29.5 hrs= $1.48/hr
US Mohair $16/kg	1.3 kg	75%	1.3 kg x $16/kg =$20.8	0	3 hrs	4.6 days x 4 hrs per day: 18.4 hrs	2 hrs/$1	23.4 hrs/ $21.8	$60 – $21.8 = $38.2/ 23.4 hrs = $1.63/hr
Im-proved Tajik Mohair $7/kg	1.1kg	90%	1.1 kg x $7/kg = $7.7	0	3 hrs	4.6 days x 4 hrs per day: 18.4 hrs	20 min/ $0.20	21.7 hrs/$7.9	$60 – $7.9 = $52.1/ 21.7 hrs = $2.4/hr

To fully understand the table data, an explanation of the results follows:

Amount of raw material:

The amount of raw material differs substantially based on the type of fiber used. In the case of Tajik Kid Mohair (kid mohair currently produced in Tajikistan), the spinner needs to use approximately 4.3 kg of raw fiber to produce 1 kg of yarn. Approximately 0.3 kg will be lost during washing, and 75% of the clean fiber will be discarded during sorting and dehairing and spun into "Russian" yarn only.[1] The remaining 25% of the clean fiber will be processed into luxury mohair yarn. Because the spinner needs to purchase 4.3 kg of raw Tajik mohair to make 1kg of yarn, the price advantage of using Tajik mohair ($3.5/kg) versus American mohair ($16/kg) is only about $5 per 1 kg of yarn produced.

If the spinner uses American Kid Mohair, she will need approximately 1.3 kg to produce 1 kg of yarn. This is because quality American kid fleeces have 0% of kemp and medulated fibers and do not require skirting and dehairing. In other words, 100% of the raw clean fleece can be processed into luxury yarn. However, because the American mohair has only 70-75% yield, about 0.3 kg will be lost during washing 1.3 kg of greasy fiber.

[1] We mean cheap yarn that sells for $5-7/kg and is exported to Russia.

The project calculated that the Improved Tajik Kid Mohair would work best and the spinner would need to buy only about 1.1 kg of raw fiber to produce 1 kg of yarn. This is because the improved goats would combine the desirable characteristics of the American and the Tajik Angoras: they would produce kemp-free, uniform, fine fiber, 100% of which could be processed into luxury yarn, and their fiber would have a high clean yield similar to the current Tajik Angoras.

Yield:
The Tajik Angoras have a very high yield – 90-95%. This means that only 5-10% of the greasy fleece weight is lost during washing. The clean yield of American mohair is relatively low – only 70-75%. The difference in yield is primarily the result of environmental conditions and husbandry practices – the Tajik goats are produced in semi-desert, mountainous environment free of weeds and are grazed outdoors all year long which keeps their fiber very clean. The Angora goats from Oklahoma, whose kid fleeces were tested, are grazed in a sandy environment with diverse vegetation and kept in pens where their fleeces get contaminated. Genetic factors also may have an effect - the American goat fleeces have a much higher percentage of grease than the Tajik goats fleeces. Grease not only contributes to the weight of the fleeces, it also binds with the vegetable and non-organic contaminants, increasing contamination of the American fleeces. We assume that the Tajik/American goats (i.e. Improved Tajik Goats) would maintain a high clean yield due to the environmental and husbandry conditions in Tajikistan that are the determining factors of clean fleece weight.

Price of Raw Fiber:
Working with Tajik mohair is cheap – this is the main competitive advantage of the Tajik fiber. Kid mohair cost around $3.50/kg in Tajikistan in 2010 while American kid mohair sold for $16/kg and higher in 2010. However, the fact that only one quarter of Tajik mohair fleece can be spun into luxury yarn eliminates much of the price advantage.

Please note the example of "Tajik Improved Mohair" – in this case we increased the price paid to the farmer from $3.5/kg to $7/kg. Even if the price of this quality kid mohair was double the price of the low quality kid mohair currently produced, this raw material would still be less than half the price of the American Kid Mohair.

Dehairing:
Dehairing Tajik mohair takes about one third of the processing time or 9.6 out of the 28 hours that are needed to spin 1kg of yarn. The other two types of fiber do not have to be dehaired and the spinners would save 9.6 hours if they had access to those fibers. It would be possible to dehair Tajik mohair on a dehairing machine. However, the project may not have funds to purchase a dehairing and a carding machine. The best long-term solution is to eliminate kemp through breeding.

Hand Carding:
The dehaired Tajik mohair does not have to be hand-carded – the dehairing process replaces the carding. The other two types of mohair – American and Improved Tajik – have to be hand carded or machine carded. Hand carding is a much easier and less time consuming process than dehairing. However, in order to increase efficiency, hand carding needs to be replaced by machine carding in the future. This will save the spinners 3 hours of work and will increase the cost of the yarn approximately by 25 cents.

Spinning:
All three types of fiber require the same or similar amount of time for spinning.

Washing:
The Tajik mohair fiber, improved or existing, requires less time and washing detergent for scouring. The American fiber is much more costly to wash due to the high degree of contamination with vegetable matter and sand and the greasiness of the fleece.

Analysis of Earnings from Processing Tajik, American and Improved Tajik Kid Mohair.

Tajik Kid Mohair:
The average Tajik spinner can make 1 kg of yarn per week, working part time – about 4 hours per day. If she spins with Tajik Kid Mohair, the cost of raw mohair will be low but the volume of fiber she has to buy will be high. Moreover, the time she will have to spend dehairing and spinning the fiber will be very high – 29.5 hours. If we subtract the cost of raw fiber, her earnings from processing will be about $1.5/hr.

American Kid Mohair.
If the spinner uses American Kid Mohair, the costs of raw material will be very high, but it will take her about 6 fewer hours to produce 1kg of yarn because the fiber does not have to be dehaired. In that case her earnings will be about $1.6/hr. If we would factor in shipping American mohair to Tajikistan, the cost of the raw material would be even higher and the spinner's earnings might be lower than if she worked with the Tajik fiber.

Improved Tajik Kid Mohair.
The best option for the spinner would to use Improved Tajik Kid Mohair. **Even if this mohair cost twice as much as the low quality Tajik mohair, the cost of raw material would still be much lower than the American mohair while the processing time would be short. As a result, the spinner's hourly earnings would be 90 cents higher than her current earnings.** Even if the Improved Tajik Mohair sold for the same price as American mohair – $16/kg, and the raw material cost for 1 kg of yarn would be $17.6, the spinner would still earn $1.95/hr – 50 cents more than she earns using the low quality Tajik Kid Mohair we currently work with. This is because this expensive Improved Tajik Kid Mohair would have a high yield, would be cheaper to clean than the American Kid Mohair and would not have to be dehaired.

The seemingly low hourly earnings are relative to the purchasing power of spinner's income. If the spinner works for 4 hours a day, she can earn $5.86 or 25 somoni. For 25 somoni, the woman can purchase 1 kg of meat (16 somoni), 2 loaves of bread (2 somoni), 2 l of milk (4 somoni), and 1 kg of apples (3 somoni). Having or not having this purchasing capacity can make a considerable difference for the wellbeing of the woman's household, especially her children. Raising the woman's earnings by 90 cents an hour by giving her high quality fiber for processing would increase her daily income by 15.48 somoni. This would allow her to buy nearly 2 kg of meat instead of 1 kg.

Although the spinners are pleased with their current earnings, they could earn additional 90 cents/hour if they could have access to better fiber, Asht district, June 2010.

2.2.2 Project strategies to improve fiber quality and organization of production

Improving fiber quality through breeding

The previous chapter clearly outlines the reasons why it is extremely important to improve the quality of Tajik mohair. Improvements in terms of increasing fiber fineness and decreasing the percentage of kemp and medulated fibers would allow us to increase the spinners' productivity and income by 90 cents/hour or 60%! Such improvements would also lead to increases in the incomes of Angora goat producers by driving up the value of quality fiber on the local market and by making the Tajik mohair more competitive on the world market.

Tajik farmers who breed colored Angora goats can improve fiber quality by selecting quality local bucks for breeding. Tajikistan has a larger number of colored Angoras than any other country in the world, and the diversity of goats in terms of fiber quality is relatively high. This provides a good opportunity for local selection once farmers receive guidance and training how to select quality animals. The project has been working on improving breeding of colored Angora through the colored nucleus.

Farmers who produce white Angora goats have many fewer quality breeding goats to select from. This is because the governmental breeding program, which has worked exclusively with white goats, has been focused on producing coarse fiber for the Russian market for many decades. Bucks with coarse fiber have been kept for reproduction and fine-haired bucks were castrated. After decades of this practice, there are virtually no fine-haired bucks to select for the white breeding nucleus – all breeding bucks at the main breeding farms examined by the project team produced coarse fibers. Although the governmental breeding program has paid some attention to kemp, most breeding animals in Tajikistan have a relatively high percentage of kemp fibers compared to American, South African or Australian goats. These are the reasons why it is very important for the project to assist farmers and processors by importing improved white Angora bucks to Tajikistan.

Improving organization of mohair processing through economies of scale

Improvements in breeding are long-term and will show effects only gradually. In the immediate future, the Tajik spinners will have to work with low quality kid mohair that will need to be dehaired. The question becomes what other improvements are necessary to streamline the processing and increase spinners' incomes.

The project developed the following strategies to increase production efficiency and volume: centralize purchase of quality kid mohair, dehairing and carding, establish quality control and yarn purchase center, yarn and fiber dying center, and shipping and distribution center. These types of improvements are expected to resolve many current problems in production and marketing.

Centralized Purchase of Quality Kid Mohair:

While in 2009 the mohair market was depressed and the spinners were able to find and select from hundreds of unsold kid fleeces, in 2010 the mohair market became active early in the season and many farmers sold their clip in bulk for a single price. As a result, the purchase of quality kid mohair became much more challenging for spinners and many of them complained about the difficulties of finding quality, fine kid fleeces. To prevent this situation in the future, the project plans to purchase at least 880kgs of quality kid mohair in the spring of 2011. This will allow us to produce 200kgs of luxury yarn, allowing the spinners to earn $12,000.

The project plans to buy quality kid mohair from farmers who participate in the breeding program, and train buyers who will select and buy kid mohair according to specific criteria from farmers and on local mohair markets. The project team also plans to work with large mohair traders who agreed to select and separate kid mohair for the project during the spring 2011 season.

Centralize Dehairing:

Dehairing mohair fleeces from kemp is time-consuming and challenging for many spinners. In fact, the need to comb mohair fleeces prior to spinning is the single greatest obstacle to increasing the number of spinners participating in the project and the volume of production. The project plans to resolve this problem by setting up a dehairing center for mohair that will employ a group of women who will dehair the fiber purchased by the project. This will allow us to prepare a large volume of dehaired fiber of desired quality for spinning. The women who are not good at spinning can find a good earning opportunity dehairing mohair fleeces from kemp. Women who become skilled in this task will be able to dehair fleeces faster and better than most spinners and produce a semi-processed fiber of consistent quality. We anticipate that a trained dehairer will be able to produce 1 kg of dehaired fiber in approximately 6 hours.

Some spinners are already trying to subcontract the dehairing process and pay other women for dehairing their fleeces. The project will reproduce this division of labor at a large scale.

Centralize Carding:

Currently, each spinner dehairs, cards and spins her own fleeces and produces several skeins (about ½ kg of yarn) from several different fleeces. These skeins are marketed as a single batch. The Tajik fleeces are highly variable and it is challenging for the spinner to fully blend the fleeces to ensure that all the skeins in the batch are the same in terms of fiber type and color. The project has to examine, label and market many small, individual batches which is inefficient and costly. Moreover, based on the comments from yarn buyers, many knitters would prefer larger batches that the project currently produces. The project plans to improve this by purchasing a carding machine and carding/blending the dehaired mohair to produce a large amount of uniform raw material that can be easily spun into a standard yarn. Instead of dehairing and carding

individual fleeces, the spinners will work with this uniform fiber supplied by the carding center. This will allow us to achieve consistency in terms of color and fiber quality, decrease the number of batches, increase the number of skeins in a single batch, and make the yarn marketing and labeling much more efficient. Yarn produced from the standard fiber can then be dyed to a uniform color.

The dehaired, carded fiber will be distributed to qualified, trained spinners for processing. This will allow them to save time by not having to search for quality material and dehair and blend their fleeces. The spinners will be able to focus on spinning quality only. Based on discussions with the spinners, all of them would prefer organizing the processing in this way. The "waste" fiber remaining after skirting and dehairing the kid mohair will be also carded and sold to spinners who make yarn for the Russian market.

Small carder used by women in the Asht district, May 2010.

Quality Control and Mohair Purchase Hub:

All yarn produced will be processed in a mohair purchase center that will include a quality control team responsible for evaluating all yarn and purchasing only yarn that meets the project standard. New spinners who want to work with the project will be able to bring yarn samples to the center and receive feedback and advice.

Yarn and Fiber Dying Center:
The purchased yarn will be dyed at a dying center using natural or safe chemical dyes based on the orders received. The dying center will employ trained dyers who will be able to use sophisticated dying techniques and work with natural and chemical dyes. The dying center can also organize a collection of local plants that can be used for natural dying such as walnut and pomegranate.

Shipping and Distribution Center:
The shipping and distribution center can be an extension of the mohair purchase hub. It will be responsible for receiving orders and shipping yarn via DHL to buyers. We anticipate that 200 kg of yarn can be distributed to 25-30 yarn stores in the United States and Europe in 2011.

2.2.3 Developing new products from adult mohair

The project is working on developing new products from adult mohair such as carpets and blankets. A second carpet sample was produced by professional carpet-makers in Khodzhand in the spring of 2010. The project will work on improving the carpet-making technology (i.e. use a finer warp) to increase the number of knots per square inch. This will increase the fineness and thickness of the carpet. Feedback on the first carpet samples will be solicited in the summer 2010 and new carpet samples in view of the feedback will be produced in the fall 2010.

The project established contacts with professional carpet-makers in Herat in Afghanistan and plans to send 10 kg of white mohair yarn to Herat to be dyed and made into a Heart-style carpet. Based on the quality and marketing potential, the project can either sell yarn to carpet-makers in Herat or try to bring trainers from Herat to Tajikistan to train Tajik women in Herat-style carpet-making.

The project plans to collaborate with CACSA on bringing a weaving loom to Tajikistan in the fall of 2010 and train Tajik women in weaving blankets and throws from quality adult mohair.

2.3 Component 3: Develop sustainable market chains that link fiber producers and processors with buyers

2.3.1 Test-marketing yarn and products in the US

Yarn produced by the project continued to be test-marketed at the Sow's Ear yarn store in Madison WI, USA. From March 2009 to June 2010 the project sold yarn samples and mohair scarves for a whole sale price of $1941.80 at the Sow's Ear and at a Fair Trade show in December 2009. $1,000 has been reinvested into the project to support the purchase of new yarn. $941.80 remains in the project fund.

Tajik yarn in the Sow's Ear yarn store, April 2010.

The yarn received compliments from professional knitters and publishers of knitting books such as Terri Shea and Donna Druchunas and both offered to promote the yarn.
The project plans to continue selling yarn produced in 2010 through the same venues and ship small orders of yarn to Austria and Germany where buyers expressed interest in purchasing the project yarn dyed with natural dyes. Expansion of yarn marketing will be contingent on increasing yarn production. Currently the production capacity is small and the project cannot supply large orders of yarns to buyers. The new production strategies outlined in the previous section are expected to lead to the increase of yarn production to 200 kg in the spring of 2011.

IFAD invited a marketing consultant, Docey Lewis, to Tajikistan to overview the marketing process and provide feedback on yarn marketing (Annex 1). Docey Lewis' report will highlight the marketing issues and offer new strategies and approaches.

2.4 Component 4: Research on changes of income of fiber producers and women processors and their effects on livelihoods and gender roles

2.4.1 Collecting data on spinners' earnings

The project is recording incomes of spinners and knitters who are starting to sell their yarn and products on the export market and plans to measure the effects of changes in incomes during the second, third and fourth project year.

2.5 Component 5: Forge linkages (business, scientific and cultural) between the pilot communities and the global communities of producers, processors and consumers of fiber and fiber products.

2.5.1 Progress on developing linkages between Tajik and American Angora goat producers and between the spinners and the American public.

The project has begun developing linkages between Tajik and American Angora goat producers that are expected to lead to the import of new genetic material to Tajikistan.
The project also began developing ties to persons and communities that support handicrafts and fair trade such as the Hand/Eye magazine (http://www.handeyemagazine.com/) that published an article about the Tajik spinners in the June 2010 issue. A knitting magazine "Yarn Market New" plans to publish a version of this article in its October 2010 issue.
The project plans to update the existing website in August 2010 to promote the yarn and the project activities.

3 Project Activities in Badakhshan in Southern Tajikistan

3.1 Component 1: Characterize production systems and improve fiber production of small ruminants in all target sites

3.1.1 Evaluation of goat breeding in the pilot region

The project team worked with Cashmere goat producers in eight pilot villages to evaluate goat breeding and assess the condition of local flocks. The assessment showed that none of the households interviewed practice selection of breeding animals; producers select bucks for breeding mostly randomly. They do not trade or purchase bucks from other villages and do not have a community breeding system in place. Goats that belong to individual households graze in village flocks together and the households take turns in taking the goats to pasture each day. From May to September the village flocks migrate to summer pastures. Some of the households keep one or two non-castrated bucks that mate with goats in the communal flock. This means that the households do not have much control over the mating process. The bucks left to breed examined by the project team did not exhibit any exceptional characteristics in terms of live weight or fiber quality and some were clearly inferior, immature animals – smaller than average in size and with low yield of cashmere fiber.

Breeding buck in Khaskhorug village, October 2009.

As a result of this unorganized, unselective breeding, there are many different types of goats in the village herds and most of them are not particularly good meat or fiber producers. The crosses include Altai and Angora goats as well as different types of native meat goats. The crosses of the Altai goats produce the largest volume of cashmere-type fiber (300-500 grams). Some villages still have about 30% of the Altai crosses while other villages have only 10% or less. Based on producers' testimonies, many of the Altai goats were sold to Afghanistan and Pakistan in 1997 after privatization of the state goat breeding farm.

The state farm produced different types of goats in different villages. Some villages focused on producing Angora goats while others had Altai goats. Villages that produced the Angora goats such as the Kuilal village still have around 30% of Angora crosses. The Angora crosses produce fiber that is coarser and in most cases not suitable for processing into luxury yarns. The Kyrgyz traders who purchase sheared goat fleeces for cashmere do not buy fleeces of Angora crosses but purchase fiber of Altai crosses.

The local meat goats represent about 60-70% of the flocks and some of them produce 50-150g of fine, short cashmere. Because of the short staple length, the short cashmere is not suitable for hand spinning. It can be sold to industrial processors or blended with longer cashmere.

The project team concluded that the village households would benefit from a community breeding system that would produce quality breeding bucks for all households while all other males would be castrated. Such breeding system could substantially increase the productivity of local goats in terms of meat and fiber. The villagers and community leaders interviewed by the research team showed a great interest in collaborating on developing a community breeding system and proposed methods of organizing community breeding in the villages. All producers understood the importance of community breeding for improving the overall productivity of their goats.

Women waiting for their goats returning from pasture, Andarob, April 2010.

3.1.2 Import of breeding goats to Badakhshan

As in Northern Tajikistan, the project team had difficulties finding breeding bucks for the community breeding nucleus – there were no suitable males in any of the households they visited. The project needs to assist the villagers by importing either Altai Cashmere Goats from the Altai region of Russia, or Cashmere goats from Herat in Afghanistan. Both options are currently being explored.

As described in the previous report, the Altai cashmere goats were bred in the region previously and a number of Altai crosses remain in some of the villages. Survey of the village herds showed that these are either females or castrated males but not breeding bucks. Based on testimonies of farmers who worked with the Altai goats during the Soviet period, the goats adapted well to the local conditions and were excellent meat and fiber producers. However, the visual examination of fiber from the Altai crosses suggests that these goats do not produce fine cashmere, but cashgora-type fiber with a diameter between 17 and 20 micron. Samples of the fiber will be sent to the fiber laboratory in Almaty, Kazakhstan for further testing. Some data sources suggest that purebred Altai goats produce somewhat finer fiber, around 16-18 micron. Although this type of fiber is still too coarse for industrial cashmere processors and has a much lower market value than fine cashmere of 13-14 micron, it has a long staple length (5-7cm) and can be easily handspun into luxury cashgora yarn. Cashmere of 13-14 micron produced by Tajik local meat goats is too short to be handspun.

Because of the small number of goats per household (8-12), it is more advantageous for the women to produce cashgora-type fiber to which they can add value through spinning and knitting as opposed to fine but short cashmere they would have to sell without processing. Given that the Altai goats are also very good meat producers and have a history of successful local adaptation, it would be beneficial to import Altai cashmere goats to Badakhshan. Research on the availability of the Altai goats from Russia is currently in progress.

The other option would be to try to import cashmere goats from Herat, Afghanistan. The only Afghan cashmere goats that produce fiber long enough for handspinning are the Herat goats – their fiber is approximately 2.5-3 cm long. Liba Brent visited Herat in June 2010 and discussed the option of bringing Herat goats to Badakhshan with cashmere producers in Herat and with AKF representatives. The advantage of bringing goats from Herat is the proximity of Afghanistan to Tajikistan, the contacts to cashmere producers in Heart, and the possible assistance of AKF which is active in Tajikistan and Afghanistan. However, the agro-climatic conditions and goat production system in Herat is very different from Badakhshan. The climate in Herat is very hot during the summer, the winters are relatively mild and the goats are grazed outdoors all year. The goats in the Pamirs are grazed at much higher elevations and are stalled for 5 months in winter. The project is currently researching both alternatives and trying to find an optimal solution regarding the import of breeding goats to Badakhshan.

Cashmere goat, Herat Afghanistan, May 2010.

3.2 Component 2: Work on formation and capacity building of women's groups to develop fiber processing and export of value-added fiber and products in all pilot sites. Encourage the development of women-led small businesses

3.2.1 Harvesting cashmere from goats in pilot villages

The objective of the project is to work with local women to harvest the cashmere-type fiber and process it into yarn. The women usually shear their goats and sell the unprocessed, sheared fleeces for about 8 Somoni/kg ($2) to Kyrgyz traders who take the fiber to Osh, Kyrgyzstan and resell it to Chinese traders. It is impossible to spin yarn from sheared goat fleeces due to the high percentage of guard hair in the fiber. Combed fiber has a much lower percentage of guard hair, and can be more easily dehaired and handspun. The project team purchased 350 cashmere combs from Afghanistan that were distributed to women in the villages to comb their goats to obtain better quality fiber for spinning.

Although the combs were distributed at the end of the combing season in early April, due to difficulties in arranging the shipment of combs from Afghanistan to Tajikistan, 164 women from nine villages participated in the combing and combed altogether 467 goats. Only women in the Devloch village sheared their goats before they received the combs.[2] Two women from Devloch participated in spinning goat fiber and the villagers plan to comb their goats next spring. This level of participation was not expected by the project team. It showed that the women are very enthusiastic about harvesting and processing fiber from their goats and willing to invest in changing the method of fiber harvesting.

This mass combing of fiber in nearly all villages provided valuable information about the types of fiber goats and fiber produced at the pilot sites. This information helps the project team to select effective methods of fiber processing and develop appropriate goat breeding strategies.

3.2.2 Results of the combing experiment and methods of fiber quality assessment

The project helped to offset the efforts of the women by paying all of them for the combed fiber. The payments varied based on the quality of the harvested fiber. Fiber combed from individual goats was sorted into five categories based on the presence of guard hair, fineness, presence of vegetable matter and other contaminants and presence of Angora-type fibers. A payment scale was developed for these categories and the women received anywhere from 70 Somoni or $16/kg for the highest quality fiber (category 1) to 5 somoni or $1.1/kg for the lowest quality fiber (category 5).

Combing Altai-cross goat, Khaskhorog village, April 2010.

The five fiber categories had the following standards and prices:
Category 1: Fine cashmere, low percentage of kemp, low percentage of other contaminants (70 somoni or $16/kg).
Category 2: Fine cashmere, higher percentage of kemp and contaminants or slightly coarse cashmere but free of contaminants (50 Somoni or $11.6/kg).

[2] The Devloch village is located at the highest altitude. The livestock in this village is stalled longer and the villagers shear the goats while they are still stalled in March.

Category 3: Coarser fiber, specifically from Angora crosses, with or without contamination, or finer cashmere, highly contaminated (30 Somoni or $7/kg).
Category 4: Coarse fiber (23 micron and higher), with or without contamination (15 Somoni or $3.5).
Category 5: Coarse and/or highly contaminated fiber, sheared fiber (5 Somoni or $1.1/kg).

During the sorting, grading and pricing of fiber, the women were trained to identify the desirable and undesirable characteristics of fiber and to use proper harvesting techniques. The women were asked to package fiber harvested from individual goats separately, and each fleece/goat thus received an individual rating. The team recorded each woman's fiber weights and categories, and also recorded which of her goats produced fiber in a specific category. The goats/fleeces were marked based on their phenotype: Altai cross (O), Angora cross (A) or local meat breed (M). * was added to the letter if the fiber was of exceptionally good quality. The women know their goats very well and remember which fiber came from which goat and what rating it received. This information will be important during the selection of goats for breeding nuclei. The data on the phenotypes of combed goats was collected in all villages except the Sist village.

Combing Angora-cross goat, Khuilal village, April 2010.

Data on goats and fiber collected

The largest number of goats was combed in the Andarob village (Table 3). This is not only because of the large number of goats in the village but also because the village is the district center located on the main road and it was easy to distribute combs and information about combing to the villagers in time. The Devloch village is the most remote and not accessible by road. The women in Devloch could not comb goats because they received the combs after they already sheared their goats. The villagers in Devloch plan to comb their goats during the 2011 season.

Table 3. Number of households, women participants, village goats and goats combed in the project villages.

Village Name	Number of households	Number of women participants	Approximate number of goats in the village	Number of goats combed
Garmchasma	86	36	774	96
Vozd		11		24
Andarob	56	39	504	138
Dascht	37	17	333	41
Sinib	37	15	333	42
Devloch	19	2	209	0
Kuilal	30	10	270	47
Sist	37	18	333	30
Khashkorug	32	18	288	49
Total	**334**	**119**	**3044**	**467**

Woman with Altai or Meat goat fiber, Dasht village, April 2010.

The women collected 67.6 kg of fiber from 467 goats, which is 144 grams of fiber per goat on average (Table 4). This statistic does not reflect the average amount of fiber produced by the goats. Based on interviews and observations of the combing process, the women did not try to comb all the fiber from the goats but mostly experimented with combing. This is because they did not know how much would they earn by selling combed versus sheared fiber. Many women quickly combed some of their goats, leaving some cashmere in the fleeces, and then sheared the goats, hoping to still sell the sheared fiber to Kyrgyz traders. This method worked out well for the women and the project: the women were paid for the combed fiber and trained to assess which types of goats they need to comb next season and which goats are not suitable for combing. The project collected a sufficient volume of samples, and can put in place an effective pricing and sorting system before the next season.

Table 4. Volume of Fiber per Category.

Site	**Volume of fiber in categories (kg)**					**Total**
	1	**2**	**3**	**4**	**5**	
Dasht	2.51	1.95	0.13	0.21		4.8
Snib	2.9	0.88	0.4	0.21		4.39
Vozd	0.62	1.26	0.34	0.85		3.07
Andarob	10.49	7.02	5.34	1.02		23.87
Garmchasma	9.26	1.52	0.83	0.08		11.69
Sist	1	1.15	1.9			4.05
Khuilal	1.54	0.78	1.27	1.40	3.1	8.09
Khaskhorug	2.87	1.56	1.4	1.29	0.47	7.59
Total	**31.19**	**16.12**	**11.61**	**5.06**	**3.57**	**67.55**

Table 5 shows that the largest percentage of fiber in the first category was collected in Garmchasma. This may be the result of the large percentage of Altai and meat goat crosses combed in Garmchasma compared to Angora crosses (Tables 6 and 7). Altai and meat goat crosses produced a better quality fiber than Angora goat crosses in terms of fineness. During the the state farm existed, Garmchasma had a large flock of Altai crosses. Andarob also produced a large percentage of category 1 fiber, but also a larger percentage of category 2, 3 and 4 fiber than Garmchasma. This can be explained by the larger percentage of Angora crosses that were combed in Andarob.

Table 5. Percentage of collected fiber by category

Site	Percentage of fibers collected by categories (%)				
	1	2	3	4	5
Dasht	52	42	2	4	
Snib	66	20	9	5	
Vozd	20	41	12	27	
Andarob	44	29	23	4	
Garmchasma	79	13	7	1	
Sist	25	28	47		
Khuilal	19	9	16	18	38
Khaskhorug	38	21	18	17	6

Table 6. Number of Angora, Altai and meat crosses combed

Village	Angora cross	Altai cross	Local meat goat cross	Total
Snib	17	6	13	36
Sist				
Garmchasma	23	38	31	92
Dasht	13	13	13	39
Andarob	45	53	32	130
Khaskhorug	7	26	14	47
Khuilal	23	16	7	46
Vozd	15	5	4	24
Total	**143**	**157**	**114**	**414**

Table 7. Percentage of combed Angora, Altai and local crosses

Village	Angora cross (%)	Altai cross (%)	Local meat cross (%)
Snib	11.9	3.8	11.4
Sist			
Garmchasma	16.0	24.2	27.2
Dasht	9.0	8.3	11.4
Andarob	31.5	33.8	28
Khaskhorug	4.9	16.6	12.3
Khuilal	16.0	10.2	6.1
Vozd	10.5	3.2	3.5

Tables 8 and 9 show that the Altai and Meat crosses were much more likely to produce category 1 fiber than the Angora crosses. 70% of fiber harvested from these crosses is in category 1. The Angora crosses produce fiber that is distributed across all categories. Although this data gives us a general idea about fiber quality, it is important to note that it is not always easy to establish which type of goat produce a specific sample of fiber without seeing the goat with grown fleece. The Altai crosses are the easiest to identify because their colour is brown. The local Meat crosses and Angora crosses are more difficult to distinguish because their fiber ranges from white to creamy, beige and grey. It will be easier to identify the crosses once the team evaluates the individual goats with grown fiber in the fall 2010.

Table 8. Number of Angora, Altai and local crosses by categories

Goat Type	Category 1	Category 2	Category 3	Category 4	Category 5	Total
Angora cross	42	53	41	24	17	177
Altai cross	113	26	13	8	0	160
Local Meat cross	81	22	11	0	0	114
Total	**236**	**101**	**65**	**32**	**17**	**451**

Table 9. Percentage of Angora, Altai and Local Crosses in Categories.

Goat Type	Category 1 (%)	Category 2 (%)	Category 3 (%)	Category 4 (%)	Category 5 (%)	Total
Angora cross	24	30	23	13	9	177
Altai cross	70	16	8	5	0	160
Local Meat cross	71	19	9	0	0	114
Total	**52**	**22**	**14**	**7**	**4**	**451**

Buying and registering combed fiber, Dasht village, May 2010.

Preliminary findings

Most of the fiber is closer to cashgora than to cashmere:

Perhaps the most important finding is that most of the fiber harvested in the pilot region seems to be closer to cashgora than cashmere. The bulk of the combed fiber falls within the range of 18-23 micron, which is coarser than cashmere. Most of the combed Altai and Angora crosses produce fine hair, not cashmere down. The fiber also has a much greater average staple length than cashmere – about 5-7cm – another characteristic of cashgora. This evaluation was based on visual testing and needs to be confirmed by a laboratory test.

This finding does not mean that there are no cashmere producing goats within the village flocks. Many of the meat goats that were not combed also produce cashmere. However, these goats 1) produce much less cashmere-type fiber than the Alai and Angora crosses and the women did not prioritize them when choosing which goats to comb; 2) the cashmere-producing meat goats should have been combed earlier than in early April because some of them began to shed their down. Although the project team expects to obtain more complete data on goats and fiber production during the 2011 season, the additional data is unlikely to change the conclusion that a large percentage of goats in the pilot villages are cashgora-type crosses produced by crossbreeding of Altai, Angora and local meat goats.

What do these findings mean in regard to the project objective of adding value to fiber and producing luxury yarn for export? Most importantly, the yarn will be cashgora yarn, not cashmere yarn and has to be marketed as such. This should not matter very much during marketing as long as the yarn does not contain any guard hair. In fact, there is less competition for cashgora yarn on the market. Secondly, the advantage of cashgora fiber is that it can be very easily spun due to its long staple length and that the cashgora-type crosses produce a large volume of fiber. This has been demonstrated by the women many of whom were able to produce nice yarn samples from the fiber. Finally, the yarn and products are expected to wear well because, unlike cashmere yarn and products, the cashgora products do not pill. In conclusion, the Tajik women will have a much better chance to spin the cashgora fiber into yarn than if they had to work with very fine but very short cashmere produced by aboriginal cashmere-type goats that predominate in others parts of Tajikistan.

Test-spinning combed fiber, Sist village, May 2010.

<u>The fiber has to be dehaired prior to spinning:</u>
Although the fiber harvested can be very easily spun, it needs to be fully dehaired prior to spinning. The dehairing can be done by hand, or by a dehairing machine. The women agreed to try to dehair the fiber by hand during the winter months. However, we expect that machine-made dehairing will be more efficient and will produce a higher quality fiber that can be very easily spun. The project will most likely not be able to afford a dehairing machine as it costs about $50,000 USD. However, an AKF project in Faizabad Afghanistan, near the Tajik border, is setting up a cashmere dehairing facility that will be able to dehair cashgora fiber. The dehairing

plant should be in operation by the end of 2010. The team discussed collaboration with the AKF project and plans to dehair the cashgora fiber at this new plant.

3.3 Component 3: Develop sustainable market chains that link fiber producers and processors with buyers

In Badakhshan, the women themselves produce the goats which means that the producers will themselves process the fiber. Some of the women in the pilot villages are very good spinners and knitters and look forward to making yarn and products for export from their own fiber. Based on the dehairing process, the women will start processing their dehaired fiber during the winter of 2010 or spring 2011. Their samples will be test-marketed in the US.

Activities under Component 4 (Research on changes of income of fiber producers and women processors and their effects on livelihoods and gender roles) and Component 5 (Linkages (business, scientific and cultural) between the pilot communities and the global communities of producers, processors and consumers of fiber and fiber products.will be conducted during the next project years.

4 Project Activities in Naryn, Kyrgyzstan

4.1 Component 1: Characterize production systems and improve fiber production of small ruminants in all target sites.

4.1.1 Characteristics of sheep producers in Min Bulak and Lahol village

Five farmers from Lahol village and five household farms from Min-Bulak village were interviewed. In Lahol village, the age of the farmers ranged from 30 to 50 years, and the number of family members from 5 to 7 persons. The farmers keep between 50 to 120 sheep, of which 80% of sheep are Tian Shian that produce white semi-fine wool, while the remaining 20% are coarsw wool fat-tailed breeds for meat production.
In Min-Bulak village, the household farms have a flock size of 20 to 30 sheep, mainly coarse wool fat-tailed sheep for meat production.

Preliminary findings include:

- There is no organized breeding system; as a result sheep of various breeds with different colors are found in the villages.
- No selection of breeding animals is practiced.
- Wool productivity of sheep is low (2.5-3.0 kg per shearing);
- Sheep wool shearing is conducted manually using "dzhuushan".
- No classification of wool is practiced.
- Semi-fine wool is sold to middlemen for 30- 50 Kyrgyz Som (KGS) per kg without sorting, while the coarse wool is sold for 5 KGS per kg.
- In the villages no trained specialists for classifying wool and sheep are available.
- Farmers and household farmers are interested in breed improvement through an organized breeding program.
- All interviewed farmers emphasized the high potential of Tian Shian sheep production.

It was concluded that it would be useful to procure improved Tian Shian rams from the governmental breeding farm.

4.2 Component 2: Work on formation and capacity building of women's groups to develop fiber processing and export of value-added fiber and products in all pilot sites. Encourage the development of women-led small businesses.

4.2.1 Assessment of training, raw material and equipment needs of women's groups

The project is working with four artisan groups in the Naryn region that include 55 women. Two pilot groups were identified by CACSARC-kg: "Ak-Bairak" Public Foundation in At-Bashi village and "Cheber Koldor" artisan group in Acha-Kaindy village, At-Bashi Rayon. Two other groups of felters recommended by Dr. Ajibekov, National Coordinator in Kyrgyzstan, are located in Lahol and Min-Bulak villages of Naryn Rayon, Naryn Oblast.

The ICARDA project team visited the four felting groups in Lahol, Min-Bulak, At-Bashi and Acha-Kaindy village during the initial visit to the Naryn region in November 2009 to assess the groups' capacities to produce felt products for export and to clarify their needs in terms of training, raw material and equipment.

Felting Group in Naryn District

The team conducted a visual survey of products produced by the pilot groups and the groups were informed about the goals of the project and the quality requirements for export products. The groups were shown samples of products made by more advanced felting groups in the city of Bishkek that are currently sold to western tourists. In order to evaluate the creative capacity of the groups and the skills of group members, all women were given a task to produce one mat of new design in a shyrdak technique by 15 January 2010.

The project team also discussed equipment, raw materials and trainings needs with the groups. Based on these discussions the team identified a potential supplier of Merino wool in At-Bashi and a felting machine constructor in Kyzyl-Tuu village, Tonsky Rayon, Issyk-Kul Oblast.

CACSARC-kg supported Dr. Ajibekov in arranging the order of two felting machines from Sapar Ismailov, felting machines producer in Kyzyl-Tuu village, Issyk-Kul Oblast. The felting machines were produced and installed by the constructor for "Uz-Nur-Ayim" group in Min-Bulak village and "Cheber Koldor" group in Acha-Kaindy village in mid-May 2010.

CACSARC-kg in collaboration with Dr. Ajibekov organized the purchase of 438 kg of merino wool from Monolbay Manatbekov, the local farmer in At-Bashi area, based on the agreement reached during the survey mission to Naryn Oblast in November 2009. The purchased wool was distributed between two groups from At-Bashi Rayon: "Ak-Bairak" Public Foundation and "Cheber Koldor" group.

4.2.2 Production of experimental product samples by group members

By 15 January 2010 the artisan groups had produced 42 experimental samples of felt chair mats in Shyrdak technique (Table 10), which were collected by the project. Photos of the samples were sent to Liba Brent. From these samples 16 chair-mats were sent to the USA for test-marketing based on design and quality of the samples. The best samples were provided by the "Cheber-Koldor" group in Acha-Kaindy village; 8 out of the 9 samples that they submitted, were sent to the USA.

Table 10. Number of product samples produced by the felting groups and numbers sent to the US for test marketing

Group name	Village	No of samples produced	No of samples sent to US
Ak-Bairak	At-Bashi village	17	5
Cheber Koldo"	Acha-Kaindy village:	9	8
Uz Nur Ayim	Min-Bulak village:	10	2
Village group	Lahol village group	6	1
Total		**42**	**16**

From these samples, 16 samples were selected and sent to Dr. Liba Brent for testing in the USA (1 from Lahol village, 2 from Min-Bulak village, 5 from At-Bashi village, and 8 from Acha-Kaindy village).

Samples of Felt Mats, January 2010.

The samples showed that the skill levels vary greatly among the four groups and among individual felters. The artisans from "Cheber Koldor" group were most successful in producing samples with innovative product design and made an effort to meet the standards of western consumers in terms of quality, design and color. However, only a small number of women from this group were producing the highest quality samples. The majority of products were of relatively low quality and not suitable for export.

Liba Brent discussed the samples with marketing experts from SERRV International, a Fair Trade organization based in Madison that works with artisan groups worldwide on the production and marketing of handicrafts. The marketing specialists at SERRV concurred that the groups need additional training to improve the quality of their workmanship as well as assistance in terms of product design and selection of colors that would appeal to western consumers. In short, the experiment has shown that although some individual artisans have the capacity and motivation to produce high quality felts that are approaching the export standards, most artisans do not have the required skills to produce competitive export products.

Based on discussions with the marketing team of SERRV International, the project team identified several felt products with export potential: ala kiiz felt cushions, mats and slippers and incorporated these ideas into the training programs for the groups.

4.2.3 Training Programs for Women's Groups

In order to attract additional resources for training the pilot groups, "CACSARC-kg" Public Foundation submitted a project proposal «Support to Women Artisans of Kyrgyzstan on their Way to the Market» to the AUB (Asia Universal Bank) - Charity Fund. The project aimed at training of artisans in Naryn, Talas, Osh and Jalal-Abad Oblasts of Kyrgyzstan was supported by the AUB-Charity Fund.

CACSA-kg was able to generate funding for 2 groups in Min-Bulak and Acha-Kaindy villages through the AUB-Charity Fund in the amount of $8,500USD. As a result, CACSA-kg will be able to finance training programs for all the four pilot groups under the ICARDA project (2 groups from IFAD funds and 2 groups from the AUB-Charity Fund).

Trainings on the primary wool processing and hollow-form felted products were conducted in June 2010 for artisans of the 4 pilot groups: Lahol and At-Bashi villages funded by the ICARDA project; Min-Bulak and Acha-Kaindy funded by the AUB-Charity Fund project (Table 11).

Table 11. Trainings conducted per village in Naryn Oblast

Villages	Dates	Donor	No of participants
Acha-Kaindy	31 May-2 June 2010	AUB-Charity Fund	15
At-Bashi	3-5 June 2010	IFAD	15
Min-Bulak	6-8 June 2010	AUB-Charity Fund	15
Lahol	9-11 June 2010	IFAD	10

The first training was in wool processing and felt making. The trainer was Kenjekan Toktosunova, a felt maker from a felt-making family dynasty in Tamchy village of the Issyk-Kul Oblast. She is highly skilled in wool processing and felt making. Her felt products in hollow-form technique and ala-kiiz technique were awarded with the UNESCO Seal of Excellence for Handicraft Products in Central Asia.

Trainer Kenjekan Toktosunova, June 2010.

The training program contained the description of the main technical operations of primary wool processing. The trainer provided specifications of various sorts of wool and requirements for the quality of wool products.

«CACSARC-kg» prepared handouts, which included description of the wool processing techniques (in Kyrgyz language), photos of various felt slippers made in hollow-form felting technique, as well as notebooks and pens. All relevant instruments and raw materials were bought for each group: wool, synthetic silk, cotton cloth, oilcloth, metal rods, scissors, soap, soda, shoe-making templates for men and women, etc.

Training of "Cheber Koldor" Group

Training for "Cheber Koldor" artisan group, Acha-Kaindy village, was conducted from 31 May to 2 June 2010; it had 15 participants. Group leader is Tuyum Amanova[3].

Cheber Koldor Group, June 2010.

The group showed a great interest in learning the hollow-shape felting technique. The artisans did not know this felting technique; they produced mainly shyrdaks (felt rugs) and chair-mats; the assortment of their products has not been upgraded for many years.

The training focused on the production of felt slippers, as an example of products produced with the follow-shape felting technique. The artisans prepared templates, mastered all the preparatory stages and learned how to felt slippers of the required size. Dyed merino-wool was used as raw material for felting slippers. After completing the classes on cleaning and dyeing of local wool, the artisans produced several pairs of slippers from the wool processed during the training.

[3] Tel.: (+996 778) 717957.

Cheber Koldor Group, June 2010.

Cheber Koldor Group, June 2010.

The artisans of "Cheber Koldo" were well-experienced in primary wool processing. They had been trained by Janyl Alibekova, a well-known felter living in Acha-Kaindy village. However, the wool processing methods shown by trainer Kenjekan Toktosunova have their own nuances and differences, which have enriched the artisans' experience with new knowledge and methods. Previously, the wool washing process took them 3 days. Now they learned a new technique, which allows them to reduce the wool washing process to 3-4 hours, using soda and AVE liquid. The new technique not only reduces the time, it also prevents diseases caused by keeping the hands in water for a long time.

Janyl Alibekova and Kenjekan Toktosunova, June 2010.

The participants of the training have processed 15 kg of wool during the training and produced 15 pairs of slippers, 6 of which were given to the project as samples for the marketing experiment.

Analysis of the questionnaires shows that all the participants appreciated the training. To the question "What did you like most of all in the training?" most of the participants replied - to dye wool and to felt slippers. They are ready to continue this work and to train their children, friends and relatives.

Training of "Ak-Bairak" Group

Training for 15 artisans of "Ak-Bairak" group, At-Bashi village, At-Bashi Rayon, was conducted from 3 to 5 June 2010. Group leader is Shaigul Omuralieva[4].
The artisans of this group had training in 2009 on wool processing; they know the hollow-shape felting technique. The group worked very productively. Their products are distinguished for good quality of felting, but they are not well qualified in design and color-combinations. This group wanted to learn basics of design and to get handouts with samples of well-designed products.
13 participants felted slippers and 2 participants felted hollow-shape, double-sided ala-kiiz – chair mat and cushion 40x40 cm.
By the second day of the training the group received merino wool (200 kg) purchased by the project from the local farmer Monolbay Manatbaev and started processing the wool – cleaning, beating with metal rods, washing, dyeing; 15 kg of wool were processed.

[4] Tel.: (+ 996 777) 239758

Ak-Bairak group, June 2010.

Ak-Bairak group, June 2010.

Artisans of "Ak-Bairak" Public Foundation have a good experience of team work, because their production workshop is located in the building of the kindergarten for disabled children, and being mothers of these children they are always at the production site. The group is very active and skilled in many felting techniques. They submitted 8 pairs of slippers, 1 seat-mat and 1 cushion made in double-sided ala-kiiz technique for the marketing experiment.

The analysis of the questionnaires shows that the participants are ready to learn new techniques and improve the quality of their products to reach international standards. They are especially interested in the production of ala-kiiz double-sided cushions and slippers using the hollow-form felting technique.

Training of "Uz-Nur Ayim" Group

Training for "Uz-Nur-Ayim" group, Min-Bulak village, Naryn Rayon was conducted on 6 to 8 June 2010. It had 15 participants. Group leader is Burulush Djanbaeva[5].

Uz-Nur Ayim group, June 2010.

The training participants mastered with great interest the wool processing technique offered by trainer Toktosunova. They sorted the wool, cleaned it, beat with metal rods, then boiled the wool on open-fire in order to economize time and the wool washing liquid; then rinsed the wool in the running aryk water, then dyed the wool and dried it. They have processed 13 kg of cross-bred wool purchased under the project by A. Ajibekov from the local farmers.

[5] Tel.: (+996 773) 853464

Uz-Nur Ayim group, June 2010.

Uz-Nur Ayim group, June 2010.

Uz-Nur Ayim group, June 2010.

The group did not know the felting technique of producing hollow-shape slippers. During the training they learned all the preparatory stages and the felting technique itself. They have demonstrated a very good quality of work. They have produced 15 pairs of slippers, 10 of which were given for the project marketing experiment.

Analysis of the questionnaires shows that the participants have learned many new skills. This group replied that wool dyeing and wool-washing techniques were the most interesting for them.

Training of Lahol Village Group

Training for artisans in Lahol village, Naryn Rayon was conducted on 9 to 11 June 2010. It had 10 participants. Group leader is Gulmira Usupbaeva[6].

[6] Tel. (+ 996 773) 484149

Lahol Village Group, June 2010.

Participants of the group showed interest in both themes: wool processing and hollow-shape felting technique. Similar to groups from Min-Bulak and Acha-Kaindy, they did not produce products in hollow-shape technique; and the wool processing technique offered by trainer Toktosunova had many elements which were new for them. They processed 16 kg of wool.

Lahol Village Group, June 2010.

During the training, the artisans have produced 10 pairs of slippers, 5 of which were given for project test-marketing.

Lahol Village Group, June 2010.

Analysis of the questionnaires shows that the participants also highly appreciated the training and acquired new useful skills and knowledge.

General conclusions from the trainings

All participants have shown their great interest in obtaining new knowledge through the trainings and expressed their desire to continue their studies in additional training courses.
Indeed it is necessary to continue the systematic training of artisans on new techniques and design in the light of the main goal of the project – to promote felt products from Naryn artisans at international markets.
In order to prepare for trainings, the groups need photos of products and samples of high-quality products.
It is also important to identify the individual abilities of each participant during the trainings, to foster the achievement of maximum product quality and to conclude the trainings with a comprehensive analysis of the quality of the products.
The project should work with the participants of the pilot groups on a continuous basis to promote and explain the main idea of the project – only high-quality products can be exported and promoted on international markets, and only those artisans who strive to achieve international quality standards will be able to market their products with the help of the project.

4.2.4 Survey on felting groups

A structured questionnaire was developed for the survey of Kyrgyz felt producers on their needs for wool types, volume, quality and prices.
It is planned to interview a minimum of 50 groups of wool processors. At present 21 groups from Chui and Talas oblasts and Bishkek city have been interviewed.
The first results of the survey show that the most demanded type of wool for a wide range of products is Merino wool. The survey also shows a great concern of producers about the fact that the quantity of merino wool is decreasing, its quality is deteriorating and the prices are increasing.
It is planned to complete the survey and the data analysis end of September 2010.

4.3 Component 3: Develop sustainable market chains that link fiber producers and processors with buyers.

Felt products made by the 4 pilot groups will be evaluated by SERV International and other marketing specialists in the United States and market outlets will be developed based on the results of the evaluation and additional market research.

Components 4 and 5 will be developed in the following project years.

5 Project Activities in Kerman province, Iran

5.1 Component 1: Characterize production systems and improve fiber production of small ruminants in all target sites

5.1.1 Prioritization of specific activities to improve fiber quality according to market needs and local constraints

Objective: To evaluate the production characteristics and productivity of goats at the start of the project

As explained in the previous progress report the baseline study comprised 30 nomad cashmere producers that were chosen at random within a 20 km radius of Baft city. The data collected for each flock data on flock structure, management, nutrition, cashmere fibre production and processing, and marketing is currently being analyzed and results will be presented in the next progress report.

5.1.2 Establishing a database on fiber quality at the pilot site

Objective: To assess fiber quality in Cashmere producers' flocks at the start of project

In total 720 Cashmere samples were taken from the thirty flocks that participated in the baseline study. In each flock 24 goats were samples; 4 female and 4 male white Cashmere goats from 3 different age classes and fleece weights were recorded.
In addition 60 fiber samples from bucks kept in the Cashmere goat breeding station at Baft were taken. All goats that were sampled were ear tagged and a total of 780 samples packed and labelled.

Nomad tent near Baft city

Nomad family near Baft city

The cashmere samples were sent to Almaty fiber laboratory. The analysis of cashmere samples is currently being done for the below characteristics:

- ACD: Average cashmere diameter.
- CDSD: Cashmere diameter standard deviation.
- CDCV: Cashmere diameter coefficient of variation.
- CL: Cashmere length.
- PCFW: Percentage of cashmere fibre by weight.
- PCFN: Percentage of cashmere fibre by number.
- EC: Efficiency of cashmere.
- Character/style (crimp)

5.1.3 Improving breeding and animal husbandry practices focusing on fiber quality

Objectives:

- To build nucleus flocks with interested nomad farmers for producing higher quality fiber suitable for value added products
- To develop in the long-term a breeding strategy and structure to achieve high quality cashmere production including other traits of interest to the nomad farmers.

Establishing nucleus flocks at pilot site

During March 2010 interested farmers were visited and the project explained. Criteria for finally selecting the eight nucleus flocks included:

- Interested to participate
- Location – accessibility
- Quality of cashmere in the flocks
- Accept ear tag identification of 40 best females
- Accept separate mating of best females
- Accept ear tag of progeny from the 40 nucleus females
- Accept fleece sampling
- Interest of the women in the family to participate in cashmere processing

Selection of 40 best females in the eight nucleus flocks to be mated with best males

In each of the nucleus flocks the 40 best cashmere producing female goats were jointly identified by the scientists and the farmers and tagged based on:

- fleece weight, softness, fineness, density, staple length
- cashmere color and quality
- body size

Introducing the selection scheme and breeding structure

The 40 best females were divided into two groups with 20 does each and mated with the two best bucks from the same flock in June/July 2010 (Table 12). The project offered to purchase a buck from Baft breeding station to be used in one of the mating groups. This was rejected by the farmers. The agreed next steps will include:

- The progeny from the two mating groups will be ear-tagged and birth date recorded.
- Body weight will be measured at birth, at weaning and at one year age (spring balances will be distributed to farmers for this purpose)
- Fleece samples will be taken from the male candidates in January-February 2011 and analyzed in Almaty
- Fleece weight of all nucleus progeny will be recorded during first shearing.
- Best male progenies from the nucleus will be used as replacement in the nucleus flocks.

Exchange of bucks among nucleus farmers still need to be discussed.

Table 12. Cashmere nucleus flocks.

Nomad farmer	Winter grazing location	No. does Selected	No. bucks Selected	Mating system*
Ghassemi, Mahmud	Roodan	40	2	1
Ghassemi, Mehrab	Roodan	40	2	2
Moussapour, Reza	Roodan	40	2	1
Moussapour, Sohrab	Baft	40	2	2
Moussapour, Mohammad	Roodan	40	2	1
Moussapour, Dad Mohammad	Roodan	40	2	1
Moussapour, Ali Reza	Roodan	40	2	1
Moussapour, Ebadullah	Roodan	40	2	2
Total	**8 flocks**	**320**	**16**	

*System 1: Mating of selected female goats in separate fenced corral; System 2: Mating of selected female goats by separated grazing.

One of the nucleus flocks and a young female presented by the farmer as desirable breeding animal.

5.1.4 Introducing better cashmere harvesting methods

Two different metal comb types were imported from Afghanistan (the same batches that were introduced in Badakhshan); 200 small and 80 large combs. Because of the mild winter in 2010 the shearing period was about one totwo months earlier than the year before; so the combs arrived too late to be tested. So far 40 small combs were distributed among the base line flocks and farmers were trained on how to use the combs. The remaining will be distributed to cashmere producers in fall before the migration to warmer areas starts. Combing should be best done at the end of winter and beginning of spring. In spring it will be determined which of the two comb types is better suited for collection of cashmere from Raini goats.

The two comb types imported from Afghanistan.

5.2 Component 2: Work on formation and capacity building of women's groups to develop cashmere processing in pilot site

5.2.1 Forming and organizing groups of women processors at pilot site

First measures have been taken to organize groups of women processors. An existing group of women processors in Baft that are being supported by NGO was contacted. Two women of the group agreed to be trained in Khojand/Tajikistan for making yarn.

1) A. Salari, Fariba.
   - BSc. in applied chemistry.
   - Producer of carpets.
   - 8 years of experiment in teaching carpet weaving in Baft training center.

2) Ghassemi Zeinab,
   - B Sc. in computer science.
   - Animal producer.

Their training will be organized in fall.

5.2.2 Introducing new production technologies and efficient processing methods

Initial discussions were held with women beneficiaries regarding dehairing, processing and making yarn. For the first time in many years Cashmere fibre was dehaired and test samples of yarns were produced with spindles. Five yarns samples and two fleece samples were collected and sent to Tajikistan for evaluation by the Tajik team. The yarn samples by the women clearly have to be improved in terms of homogeneity and dehairing.

5.2.3 Introducing new processing methods and designs in responding to market designs

Local handicrafts are currently mainly made from wool; Cashmere processing is not common. Thus, new handicraft products to be made from cashmere fibers have to be developed. A shawl made from Cashmere was sent together with the other samples to Tajikistan. Ms. Mousapour from Baft city agreed to weave a carpet with a size of 40 x 40 cm from cashmere fiber for test purposes.

5.3 Component 5. Forge linkages (business, scientific and cultural) between the pilot site communities of producers, processors and consumers of fiber and fiber products

5.3.1 Stakeholder meeting to introduce the project to the nomad community with exhibition of handicrafts

On 9 May 2010 a Cashmere Production Stakeholder meeting and handicrafts exhibition was held in Baft city. In total 240 cashmere producers from different nomadic communities of Baft city participated in the meeting. One third of he participants were women interested to join the cashmere processing program. All participants expressed great appreciation for the project goals and planned activities. Introductory speeches were given by the Baft religious Friday prayer leader who explained the need for cooperation of authorities to work together and for a more efficient implementation of the Cashmere project program. The City Governor was the second introductory speaker who indicated the great potential for nomadic communities of Baft city in producing cashmere and handicrafts. The Head of Agricultural office welcomed the participants and wished success for the project. Eng. Alipour the Head of Animal production Department of Agriculture Organization then announced the program of the Festival. Dr. Ansari-Renani gave a presentation on Cashmere production in Kerman Province. Dr. Rischkowsky introduced the project concept by showing the value chain for Mohair established by the previous IFAD project in Northern Tajikistan and explained the case of Cashmere production in Badakhshan. Dr. Mueller explained the breeding structures established in the two project sites in Tajikistan (see Annex 2).

In the afternoon the project team visited two flocks that were part of the governmental AI program.

Invitation to the stakeholder meeting and participants in the City hall of Baft city

6 Problems during the reporting period and steps taken to remedy these problems

The difficulty in obtaining an Iranian visa for Dr. Liba Brent has been underestimated by ICARDA's project office in Iran. It is uncertain when this situation will change. Therefore, the project is now planning to train two Iranian women master trainers in Northern Tajikistan. The two women are members of a large Nomad women group in Baft city that is already involved in making handicraft from wool. Samples for quality and market-testing will be sent to Liba Brent.

Because of the insecure situation in Kyrgyzstan Docey Lewis could not include it in the supervision mission. When the situation in the country has stabilized, she will continue the supervision mission in Kyrgyzstan. Another option to be discussed is to complete the supervision through a desk study including testing of felt product samples in the US.
It is also not advisable to hold the regional workshop and steering committee meeting in Kyrgyzstan as planned; therefore it was decided to hold the meetings in Tashkent.

Annex 1. Itinerary of Docey Lewis' supervision mission in May 2010 in Tajikistan

Date		Activity
15 May	Sa	Travel
16 May	Su	Travel
17 May	Mo	Arrival in Tashkent; work on Tajik Visa; meet ICARDA staff
18 May	Tu	Drive to Tajikistan; visit Charuh with Liba & Mataziz
19 May	We	Visit Oshoba, Marhamat (spinning); Gulshan (knitting)
20 May	Th	Visit carpet weavers Khojand; spinners' training Charuh; visit Terakli spinners
21 May	Fr	Visit Khojand yarn and fleece market; discuss marketing strategies with Liba
22 May	Sa	Work on export plan; sort fleeces in Khojand (Matazim's warehouse)
23 May	Su	Travel to Dushanbe
24 May	Mo	Meet with Hafiz and Ministry Agriculture representatives; meet with DHL representative; meet with NGO "ACTED"
25 May	Tu	Fly to Khojand; car to Tashkent; overnight Tashkent
26 May	We	Fly to Istanbul; overnight in Istanbul
27 May	Th	Fly back to US

Annex 2. International and national participants of the Stakeholder meeting in Baft City in May 2010

Mr. Hojatoleslam Hassani, Baft city Friday prayer leader
Dr. Behrooz, Governor of Baft City
Dr. Barbara Rischkowsky, small ruminant specialist and project manager (ICARDA)
Dr. Joaquin Mueller, community based breeding specialist, INTA, Bariloche (ICARDA)
Dr. Roozitalab, Head of ICARDA office in Tehran.
Dr. Panahi, Head of Agriculture and Natural Resources Research Center of Kerman province
Eng. Broumand, Head of Baft Agriculture Organization.
Dr. Hamid Reza Ansari-Renani, national Cashmere project coordinator and Head of fibre and milk quality Dept., Animal Science Research Institute, Karaj, Iran
Eng. Alipour. Head of Livestock Department, Baft Agricultural Organization
Scientists of ANRRC and members of Baft Agricultural Organization