Report on ICARDA Project
"Community Action in Integrated and Market Oriented Feed-Livestock Production in Central and South Asia."

Women producing samples of mohair yarn, Katarbulak village, April 2007.

Activity #16:
"Value added local processing of goat fibers by women and assessing the characteristics of naturally colored mohair and the potentials for its marketing."

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Abstract:
Tajikistan is the poorest of the Central Asian republics, with income per capita just $330. Tajik families and especially women are in need of development assistance to improve living standards. The ICARDA project "Community Action in Integrated and Market Oriented Feed-Livestock Production in Central and South Asia" works to improve livelihoods of rural families in the Sugd oblast through research on production and marketing of agricultural products and the development of new market chains that would link producers with urban markets. The project activity #16 "Value added local processing of goat fibers by women and assessing the characteristics of naturally colored mohair and the potentials for its marketing" is focused on establishing a market chain for mohair yarn which is one of the key export products produced by women in the pilot region. During the first project year research was conducted on the production and marketing of Tajik mohair and mohair yarn and a promising new market for kid mohair yarn in the United States was identified. In April 2007 ICARDA researchers worked with Tajik women to make yarn samples for the US market. The preliminary tests of the samples by American knitters confirmed that the Tajik artisans have the raw materials and skills to produce high quality, handspun yarns that could be sold in yarn stores in the United States. Selling luxury, kid mohair yarns in the United States as a Fair Trade product would allow the women to earn much higher incomes than by producing coarse yarns for the Russian market which is currently their main outlet. The project team continues to work on developing all the necessary components of the mohair yarn market chain with the objective of successfully linking the Tajik women spinners with American consumers. This report offers a summary of activities undertaken during the first project year.

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1. Economic and Social Challenges Facing Tajik Women.
According to the United Nations Office for the Coordination of Humanitarian Affairs (OCHA) "Tajikistan faces greater constraints to development than opportunities. The picture is that of a vulnerable country that still needs international humanitarian assistance" (OCHA, Nov 19, 2002). Statistical data published by the United Nations support this statement. In 2002 infant mortality rate was 89 per 1000 and under-five mortality rate was 126 per 1000. Nearly one third of children were stunted because of the cumulative effects of malnutrition. Based on statistics provided by the State Statistical Committee of Tajikistan, the average salary in 2007 was 148.59 somoni or $43. In industry the average salary was 276.14 somoni or $81 and in agriculture 37.15 somoni or $11. In 2007 nearly 60% of the population was employed in agriculture and nearly 30% of the people's income was obtained from "a personal subsidiary plot." (State Statistical Committee of Tajikistan, http://www.stat.tj/english/home.htm).

The Tajik society is highly gender-segregated and men and women have faced different types of challenges while trying to secure livelihoods in the post-Soviet era. The hardships endured by Tajik women after the dissolution of the Soviet Union include not only war, unemployment and poverty but also poor political representation, decline in state-enforced women's rights and the revival of conservative cultural norms that increased the inequality of women in the society in the last decade. Shortly after gaining independence in 1991, Tajikistan became engaged in five years of civil war and periods of instability and unrest. During the war women suffered violence and 50,000 men had died. Their wives, often young women with small children, became the sole breadwinners for their families. According to UN report there are estimated 55,000 orphans and 25,000 widows as a direct result of the war (Women in Tajikistan, Country Gender Assessments, ADB, 2000).

In 1997 a peace accord was signed between the government and the United Tajik Opposition (UTO) and the country belatedly began the transition from a planned, Soviet-run economy to markets. In spite of greater security, the lives of most Tajik women and their families remained difficult under the peaceful conditions. The market transition was accompanied by the breakdown of basic social services and the collapse of Tajikistan's state-run economy that was already damaged by the war. The vast majority of Soviet-built industries proved to be noncompetitive under the market system. Enterprises in a variety of sectors either closed down or continue to operate at a fraction of their former capacity. This includes enterprises in textiles, food-processing, manufacturing and agriculture that traditionally employed a large percentage of women. Domestic capital for economic restructuring has been scarce and most foreign investors found Tajikistan too risky to invest in due to the dismal state of the post-Soviet industrial base, poor physical infrastructure such as roads and power supply, high levels of corruption and fear of political turmoil. Tajikistan's challenging geo-political location and the conflict-ridden relationship with Uzbekistan, its more powerful Central Asian neighbor, contributes to the perceived investment risks[1].

[1] The long–lasting political friction between Tajikistan and Uzbekistan led to the closing of the Uzbek and Tajik border in 2007. In the winter of 2007 Uzbekistan refused to sell electricity to Tajikistan which left the northern part of the country without power, further jeopardizing the restructuring of the country's faltering industrial base[1].

The lack of investment and economic growth during the post-civil war period resulted in severe unemployment, reaching 60% in some regions based on unofficial statistics. Unemployment in turn has led to a mass labor migration. Each year a large percentage of Tajik men (one million men out of seven million people) depart for Kazakhstan or Russia in search of employment early in the spring and return late in the fall. They leave their wives to take care of the households, the children and the elderly relatives. Some of those men marry again in Russia and never return, leaving their families without any form of support. A UN Report on Tajik women stated that women headed 18% of all households in 2000 (Women in Tajikistan, Country Gender Assessments, ADB, 2000). However, during spring, summer and fall when the majority of men of working age leave for work abroad such percentage is undoubtedly 50% or even higher especially in some regions. The shortage of jobs and income has been paralleled by shortages of state budgetary funds to maintain social services. Especially in rural areas, many kindergartens, schools and hospitals closed down due to the lack of state funding. Families that received generous social subsidies during the Soviet period now receive little or no support. This placed additional pressure on women who are responsible for the welfare of the children and the elderly but cannot provide them with adequate nutrition, healthcare and schooling.

Although both urban and rural women suffer from joblessness, rural women experience a greater challenge to secure livelihoods because of their isolation from business centers, poor access to education and training and fewer job opportunities. Social services and infrastructure are even scarcer in rural areas. Most rural families do not have access to natural gas, drinking water and electricity which makes it challenging to perform household chores such as washing and cooking. (In the Matchinski region near the Uzbek border, the author saw women washing dishes in puddles of rainwater on the village road).

In addition to "structural" challenges, traditional values and gender roles shape the life experiences of rural women to a greater degree than those of city women. Based on traditional gender perceptions and cultural norms that predominate in the countryside, women are respected as mothers and homemakers but have relatively little economic power and social status outside of these social spheres. By the virtue of traditional norms, woman's domain is within the household. In some cases, women are restrained from leaving their homes without a male relative and from socializing and communicating with non-family members. This leads to the isolation of women from the public sphere and restricts their opportunity to earn a living, obtain education, job training, information, know-how and not lastly to communicate and form friendships with men and women outside of the family circle. These cultural constraints are exacerbated by the limited mobility of rural women many of whom rarely leave their homes and villages. The lack of such opportunities and experiences further jeopardizes women's capacity to assume positions of leadership in the family, community and society and makes them completely dependent on their husbands for livelihood. In a society characterized by such high unemployment as Tajikistan, this places a great burden on the male breadwinner without whose support the wife and children can easily fall into

poverty. This burden often leads to stress that contributes to domestic violence against women (Women in Tajikistan, Country Gender Assessments, ADB, 2000).

The hardships faced by Tajik rural women and their families have been documented by a number of studies. According to a survey conducted by the UN Economic and Social Commission for Asia and the Pacific in two villages in the Leninabad oblast in the Khudzhand and the Nan districts, around 90% of rural families live below poverty line. Most families earn livelihood through subsistence agriculture and livestock production - producing farm animals (71%), growing vegetables and fruit (50%), borrowing money (30%), selling retail (30%), doing day labor (20%), living out of previous savings (10%), selling their belongings and home-made manufacturers (20%), providing services or preparing food for sale (5%), sending men to look for jobs in Russia (12%), getting help from relatives (5%), eating less often (70%), eating less (54%) and preparing food for sale (32%). The survey report states that female poverty is widespread and many women have less earnings than the minimum subsistence level (UN Economic and Social Commission for Asia and the Pacific, Report on the Expert Group Meeting on Strengthening Income-Generating Opportunities for Rural Women in Selected Central Asian Republics, Almaty, Kazakhstan, 3-5 May 1999).

The studies conclude with a number of recommendations of how to improve women's economic wellbeing and their social and family status. The recommendations of the UN Economic and Social Commission for Asia and the Pacific study include supporting and strengthening micro-enterprises that create jobs for women in rural areas, creating conditions that allow women to maintain sustainable sources of income and means of subsistence, providing women with technical support, advice and training in matters of transition to a market economy and promoting women's economic independence in the family and society. The ICARDA project seeks to move beyond recommendations and promote these goals by an action-oriented research that focuses on the development of value chains that link Tajik women producers to markets.

2. Improving Women's Livelihoods through Linkages to Markets.

The basic goal of the ICARDA project is to study socio-economic conditions in the pilot region with the objective of using this data to develop new mechanisms of generating livelihood through linking rural producers, especially women, to markets that provide sustainable outlets for their production. The initial phase of the project involves research on production systems used by rural families in the pilot region to secure livelihoods, on the types of agricultural production produced by men and women and on domestic and international markets for this production. The information is then used as the basis for developing a new value chain by the means of:

1) Evaluating local production on the basis of international market criteria and identifying alternative market niches for specific products;
2) Producing and testing product samples for alternative markets;
3) Providing market feedback to producers;
4) Facilitating the development of marketable products through the assistance with product design, improvements in production technology and development of marketing practices;
5) Collaborating with producers and consumers to develop all necessary components

of the new production and market chain to supply a competitive product and increase producers' incomes.

These activities are being undertaken through the collaboration among the ICARDA research team, Tajik rural women, NGOs and other local collaborators and focus on the production of kid mohair yarn for export. The following section offers an overview of the activities and the results to date.

2.1 Research on Production and Marketing Systems to Identify Opportunities for Value Chains.

The project activities began in April 2007 by collecting data on the livelihoods of rural families in three regions of the Sugd oblast – the Asht region, the Ghafurov region and the Matchinsk region. Project researchers and local collaborators traveled throughout the region and conducted informal interviews with rural families, farmers, NGOs, governmental officials, directors of cooperative farms and managers of processing enterprises in a number of villages and farming settlements and in Khudzhand, the oblast center. The researchers also visited local markets and interviewed producers and traders of agricultural production. Their objective was to learn about the means of livelihood men and women in the pilot regions use to support the family[2]. This included the assessment of resources, skills and technologies used in production, processing and marketing of agricultural products and the analysis of constraints and opportunities that affect these processes. The following discussion presents a brief overview of the research results and explains how the collected information was used to identify a new area of development – the production of handspun mohair yarn for the US market.

The pilot regions are located northeast of the city of Khudzhand, on the west bank of the Syrdaria river, at the foothills of the Kuramin mountain range. The climate is dry and hot, with an average rainfall of 300-400 mm. The average winter temperature is –3 to –5 C, with snow cover of 3-7cm. The average summer temperature is 27 C but can reach up to 40 C. During the Soviet period the majority of the population in the pilot regions worked for the state farms or in local industries. The industrial base in northern Tajikistan was relatively well developed. Enterprises in Khudzhand included the largest silk-making factory in the former Soviet Union, a large meat processing plant that processed locally produced and imported meat, carpet-making and wool processing factories, a number of mines for silver, gold and uranium and an underground nuclear factory that was built to produce Soviet nuclear bombs. The state farms in the regions produced cotton, silk, fruits, nuts, grains and livestock. After the breakdown of the Soviet Union the majority of the enterprises closed down or operate at a low capacity. The former state farms restructured into cooperatives, decreased the volume of

[2] Gaining local knowledge about the livelihoods of women in rural Tajikistan has been challenging partially as a result of religious and cultural traditions that help to confine women in their homes and restrict their interaction with strangers. During visits to the families homes women would often take the back stage while the men in the family tried to answer questions about all family members. The most effective way of getting women to directly participate in the interviews was to include a female interviewer and ask questions that are pertinent to women's livelihood and that men consider outside of their domain of knowledge and interest. It was also important to visit the family more than once to achieve a greater familiarity with its members. This led to more trust, openness and opportunities to interact with the women.

production and shed much of their labor force and social infrastructure. The salaries paid to the remaining cooperative workers are negligible and cannot sustain even a small family. Based on governmental statistics obtained by the research team, the average monthly salary of workers of agricultural cooperatives in 2007 was 40.27 somoni or $11.70 (Shamsi Makhmudov, ICARDA project report, 2007). This data is similar to national-level statistics and confirm that the salaries in agriculture are considerably lower than in other sectors.

Given the low salaries and lack of other employment opportunities, the rural population in the pilot regions engages in subsistence agriculture and livestock production to sustain themselves. The opportunities for agriculture vary in different parts of the regions. In the lowlands with access to irrigation rural households, private farmers and agricultural cooperatives produce fruits, nuts, vegetables, cotton, silk, rice, grains, fodder, angora goats and sheep, cows and occasionally horses. The foothills of the Matchinski mountain range are more sparsely populated and offer limited opportunities for agriculture due to the dry and rocky soil, insufficient rainfall and limited water sources. The majority of farmers at the foothills focus on the production of livestock, mainly angora goats and sheep of the Dzhaidara breed. The production of angora goats is important for residents of the pilot regions because mohair fiber is a valuable export commodity and an important source of income for local producers.

The Karadzhingil village at the foothills of the Matchinskii Mountains, April 2007.

2.2 Angora Goat Production – An Important Source of Revenue for Rural Families.
The production of angora goats was established during the Soviet period to supply Russian textile factories with mohair. Mohair and wool fabrics were used to make winter coats, soldiers' uniforms and other clothing. Prior to the reforms, the Tajik Soviet Republic produced around 370,000 angora goats. The current number of angoras is estimated to be around 300,000. Out of that, approximately 270,000 angoras are produced in two pilot regions of the Soughdiskaia oblast. In the Bobodzhan Gafurov region there are around 150,000 goats and in the Asht region there are around 120,000 goats. The Matchinsk region has a much smaller number.

The largest herds of angora goats are produced by cooperative farms which are the descendants of the former state farms[3]. Based on the estimates of Tajik project collaborators, in the Gafurov region there are three large cooperatives focused on breeding angora goats: the Urunkhudzhaev cooperative (25,000 heads), the Kushatov cooperative (15,000) and the Nabiev cooperative (6,500). In addition there are four medium cooperatives that have anywhere between 3,500 and 5,000 goats. The goats are produced in herds of 250-300 animals and each heard is tended by a shepherd and his family. The shepherd's family also owns their own goats, usually 50 – 100 that graze together with the cooperative flocks. During interviews several shepherds who work for the cooperatives claimed that they would prefer to work independently but do not have access to pastures which currently belong to the cooperatives. For example, 78% of pastures of the "Ismoil" country are owned by the Kushatov cooperative (Shamsi Makhmudov, ICARDA report, 2007). The shepherds hope to privatize pastureland and set up private farms in the future.

In addition to the cooperatives there are around five to seven large private farms in the two regions that have around 500 – 1,000 goats, thirty medium farms that have over 100 goats and approximately one hundred small farms with 50 to 100 goats. Many village households also have small herds of goats, usually less than 50. Rural families and small farmers raise goats as a source of food and capital and sell animals only when they need money to buy household goods and food, pay for schooling or medicine or to raise money for family events such as weddings or funerals.

Although private farmers and households own much smaller numbers of goats than the cooperatives the small owners are so numerous that they account for approximately 50% of angora goat production in the region (Shamsi Makhmudov, ICARDA project report, 2007). It is likely that the share of households and private farms in angora goat production will increase further after the cooperatives are privatized. Similar trends can be observed in Central Asian countries that had undergone market reforms several years prior to Tajikistan. In Kazakhstan and Kyrgyzstan, for example, most cooperatives and former state farms had dissolved and 95% of livestock is now produced by households and private farms. It is likely that similar processes will take place in Tajikistan where market reforms were delayed as a result of the civil war.

[3] Although in most other Central Asian republics cooperatives have been dissolved, in Tajikistan market reforms were delayed by the war and privatization of the cooperatives is only in its infancy.

Shepherd with his angora goats, Gafurov region, April 2007.

Angora goats provide an important source of livelihood for all types of producers for several reasons. First, these goats are the only ruminants well adapted to the extreme conditions of the local eco-system, especially the foothill areas. They graze on pastures that are too poor to support other livestock and can move on rocky slopes that are not accessible to cows or even sheep. The goats are also more resilient to diseases and parasites than sheep and require less veterinary care. Secondly, goats provide a variety of products including milk, meat, mohair, skins and also horns, hoofs and manure. All these products can be consumed or locally processed to make value-added products. Thirdly, mohair is the most valuable local product that rural households can produce, store, process and sell throughout the year on domestic market or export it to neighboring Russia.

Goat farmer and his family, Takli settlement, April 2007.

Based on the calculations of ICARDA researchers, goat production is profitable even for families who hire a shepherd to graze their goats.

Yearly production cost for one angora goat is $18.40. This includes:
Shepherd's yearly fee for one goat: 5 somoni ($1.50)
Fees for pasture use: 3.5 somoni ($1)
Feed: 50 somoni ($14.60)
Veterinary care: 1 somoni ($0.3)
Medication: 3.5 somoni ($1)

One goat brings one kid that can be sold for 30 somoni ($8.70) and 1.5kg of mohair that sells for 45 somoni ($13) - $21.70 total. This represents a profit of $3.30 per head for a family that pays a shepherd to graze their goats. Many families graze their livestock themselves, increasing the profitability by $1.50 to $4.80 per head. A shepherd who works for one of the cooperatives claimed that a single family can live relatively comfortably if it owns 100 goats.

2.3 Goat Products and Markets: The Export Value of Mohair.
The main angora products are meat and mohair. Goat meat is consumed locally and the demand for it depends largely on the buying power of the population which is currently very low. For example, a $40 goat is 1/2 of the $81 average salary of an industrial worker. An agricultural laborer who makes $11 would have to save for several months to

afford such a purchase. However, many Tajik men bring or send home savings from their earnings in Russia. These funds undoubtedly play an important role in allowing the certain households to purchase goat and other meat. In practice, most rural families produce goats and sheep for their own consumption and rarely purchase meat.

Mohair represents an important source of income because of its export value. Mohair was never industrially processed in Tajikistan but was exported to factories in Russia for processing. The same situation exists today. Based on interviews with mohair traders, although countries such as India and Turkey occasionally purchase Tajik mohair, the greatest share of mohair production goes to Russia. A relatively stable demand for Tajik mohair, mohair yarn and knitted goods in Russia provides an important source of earning for rural families in the pilot regions.

Mohair market in Khudzhand, April 2007.

The mohair season begins in April and lasts until the end of May. During this time the goats are sheared and the mohair markets are most vibrant. Small farmers and household producers bring mohair either to a market nearest to their settlement or to the market in the regional capital of Khudzhan where prices are slightly higher. They sell their mohair

to middlemen who collect several tons of mohair each season for export to Russia. Larger producers who own several hundred heads of goats store mohair after shearing and sell it to buyers who come to the farm. The highest quality mohair sold for 35-40 somoni per kg or $10.17- $11.62 in April 2007. Most mohair sold for 25-30 somoni or $7.26 – $8.72. Naturally colored mohair is slightly more expensive (by 2-3 somoni/kg) than white mohair. One adult goat gives approximately 1.5 kg of mohair.

This trader collects approximately 15 tons of mohair for sale each season, Khudzhand market, April 2007.

The price of mohair fluctuates based on the demand for mohair by the world fashion industry. There have been relatively sharp price jumps, including in 2005, 2006 and 2007, triggered by a short supply of mohair on the world market and current fashion demands. The price peaks are followed by slow declines over 4 to 7 years before another price spike occurs. Based on price figures obtained by the research team, mohair sold on the Australian market (Figure 1) has been approximately twice as expensive compared to mohair sold on the Tajik market (Figure 2). The reasons for these differences are likely to include the poor organization of the Tajik mohair market, isolation of Tajikistan from the world market, lack of international marketing standards including objective fiber testing, insufficient quality guarantees, export difficulties due to legal barriers, corruption and poor infrastructure and also the quality of Tajik mohair. However, objective testing of mohair samples needs to be conducted to determine the mohair quality prior to estimating its effect on local prices.

Figure 1. Australian mohair production 1999-2006.

YEAR	TOTAL KGS	Ave Price/kg ($)
1999	285,884	8.06
2000	313,054	12.76
2001	263,630	8.74
2002	278,228	7.67
2003	228,227	7.62
2004	219,843	7.90
2005	208,978	11.06
2006	197,459	12.71

Figure 2. The price of the Tadjik mohair in 2000-2007 (Matazim Kosimov).

Year	Price ($/kg)						
	Non-uniform mohair	Female Goats 1 - 1,5 years	Male Goats 1-1,5 years	Female Goats 2 – 2,5 years	Male Goats 2-2,5 years	Female Adult Goats	Male Adult Goats
2000	1,5	2	2	2,1	2,1	3,1	3,2
2001	1,6	2	2,1	2	2	3,2	3,2
2002	1,6	2,3	2	2,3	2,3	3,4	3,5
2003	1,4	2	2	2	1,9	2,9	3
2004	1,6	2	2	2	2	2,9	3
2005	1	1,25	1,2	1,26	1,3	2,1	2,1
2006	3	5,2	5,2	5,2	5,2	7,7	7,8
2007	2,8	4,9	5,1	5,1	5,2	6,5	7,8

2.4 Women's Involvement in Mohair Processing and Marketing.

Mohair can be sold either as a fleece or as a value added product such as handspun yarn or knitted clothing. All these products can be found at the weekly market in the city of Khudzhand and at several other markets in the pilot regions. Small and medium producers bring several kilos of mohair to the market when they need money and sell it to middlemen who work as buyers for larger traders. The other customers are rural women who process mohair into handspun yarn or make socks, shawls, pullovers and other clothing. The women sell the yarn and knitted products at the market and use the money they make to buy food and household items and to purchase small amounts of angora fiber to spin more yarn. This way they can make a small amount of income every week.

The sale of yarn and knitted clothing represents the single greatest source of income for rural women in the pilot regions and a large percentage of rural women are involved in spinning and knitting. According to one informant, she spins around 50 kg of mohair yarn in the course of the year and sells it for 35 somoni per kg or $10.17, for $508.50 total. It takes approximately 55 kg of mohair to produce 50 kg of mohair yarn. The woman buys most of the mohair for 20 somoni per kg or $5.81. This means it will cost her 1,100 somoni or $319.76 in raw material and she will earn $188.74 (508.50 – 319.76) annually for spinning 50 kg of yarn, or $15.72 per month. Her earnings will be larger

than the $11.70 per month salary paid to workers of the cooperative farms.

Farmer selling his mohair to spinners, Khudzhand market, April 2007.

Mohair yarn and clothing is also purchased by traders who export it to Russia. According to information obtained at the market in Khudzhand, the price of yarn on the local market is 25-35 somoni ($7.27 - $10.17). In Russia it sells for 500 – 1000 rubles ($19.23 - $38.46). According to a woman informant, middlemen purchase up to 10,000 pairs of mohair socks on the local market for resale in Russia (Shamsi Makhmudov, ICARDA project report, 2007).

Mohair socks sold at the Khudzhand market, April 2007.

Mohair yarn sold at the Khudzhand market for 30-35 somoni/kg (approx $10) April 2007.

In some cases, the women artisans themselves export the yarn and knitted products to Russia. For example, Ms. Tilloeva Gulbibi is a mother of four children whose husband left to work for Russia and never returned. Her brother produces colored mohair goats in the Matchinski mountains and she uses the mohair to make yarn and knitted goods for sale in Russia. Every fall she and her children travel for a month to Russia where they sell mohair yarn, socks and shawls at the market. The income the family makes from mohair sales in Khudzhand and in Russia is their main source of livelihood.

Ms. Tilloeva and her family, Adrasman village with colored mohair fleeces, April 2007.

The technology for mohair processing is very simple. The women use handmade carding boards and spindles to produce mohair yarn and knit clothing by hand only. Some women use electric, homemade spinning machines but such tools are limited to families that have electricity. None of the women have dyes for mohair and do not dye the yarn or knitted products. There are no high-quality, industrial carding machines available in the pilot regions that could card mohair for spinning, which is the most time-consuming

part of the process[4].

2.5 The Peculiarities of the Russian Mohair Market.

The export of Tajik mohair to Russia presents a multitude of risks. Firstly, mohair can be legally exported only in a scoured form. However, there are no scouring facilities in Tajikistan. Therefore, Tajik traders have to bribe Tajik and Russian customs officials to ship the unscoured mohair out of the country. If they are caught inside of Russia they have to pay additional bribes or are in danger of losing the entire shipment. The marketing of mohair, yarn and knitted clothing by the Tajik men and women in Russia was further complicated in 2007 by a newly adopted Russian law that prohibits non-Russian citizens from acquiring a sales permit to work at a market. This leaves the Tajiks with the option to sell their mohair to a Russian salesperson, hire a Russian seller or try to obtain a Russian citizenship. In fact, many Tajik mohair traders already obtained Russian citizenship to gain more legal protection and to make it easier to bring mohair to Russia and sell it.

Tajik mohair traders had limited information about how the mohair is processed in Russia. Traders interviewed at the market in Khudzhand reported that they saw Japanese-made knitting machines which sell for approximately $10,000 in Russia that are used to produce knitted clothing out of mohair. There is no similar technology for industrial mohair processing in Tajikistan

The Russian mohair market has distinct characteristics that influence the pricing of mohair in Tajikistan in a surprising manner that contradicts international pricing standards. According to an article by Bruce McGregor prepared for the international textile industry that buys Australian mohair, only a small number of attributes affect 98% of the variation in greasy mohair price: mean fiber diameter, length, style, kemp, stain, cotting, selling period and agent and vegetable matter. Among those variables, mean fiber diameter was the most important factor influencing price and accounted for 59% of the variation in the price of mohair (B.A. McGregor, 2007, Premium Quality Mohair, (http://www.dpi.vic.gov.au/dpi/nreninf.nsf/LinkView/F7ED8DF37A2E3404CA256FFE0003F17220F21D8BF56C9D51CA257011001A5F0F).

[4] In order to card mohair for spinning, quality carding machines that do not tear the fiber need to be used. Such machines were previously produced in Russia in the city of Orlov. However, no information is available on the current state of the production. It is likely that the Orlov enterprise is no longer producing this equipment.

Figure 3. Relative contribution to the variance in greasy mohair price accounted for by mean fiber diameter, vegetable matter, visual grades and selling period and agent combinations (McGregor, 2007).

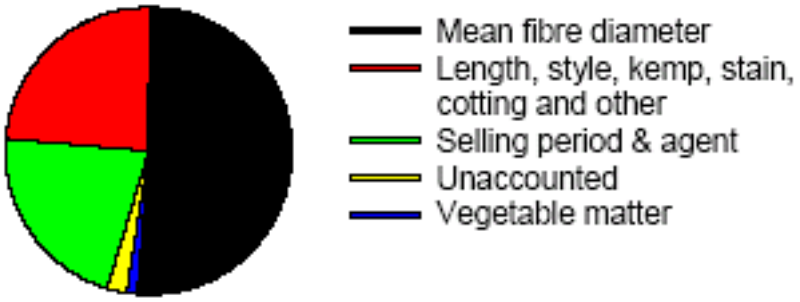
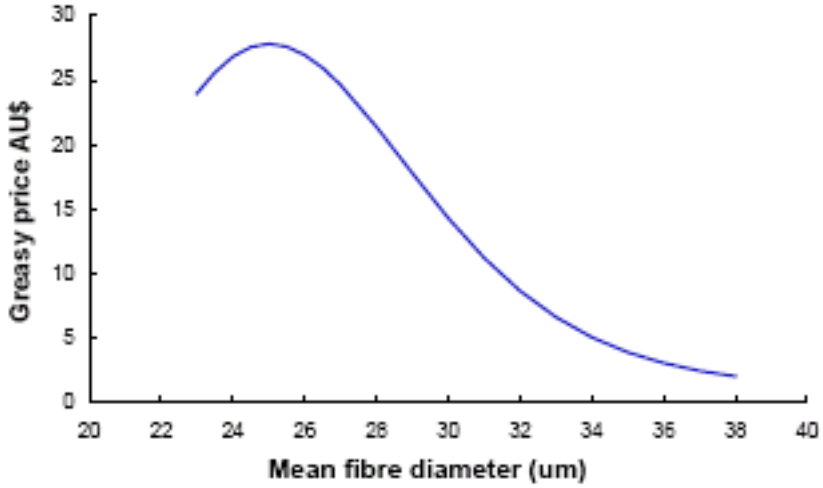


Figure 4. The baseline response of greasy mohair price to the mean fiber diameter, for A length of average style, without fault, 0.5% vegetable matter (McGregor, 2007).



As shown in figure 4, the relationship between fiber diameter and price of mohair, as well as wool and cashmere on the world market is that of negative correlation – the larger the FD, the lower the price. The maximum price was for mohair of 25 micron[5]. The reason for the high value of fine mohair is that mohair has been used for lightweight, luxury clothing valued for comfort properties, namely the lack of prickle. Only mohair of fiber diameter under 30 micron[6] can be processed into yarn and fabrics that do not irritate the human skin (i.e. cause the sensation of prickle). 45% of world production of mohair is greater than 34 micron and therefore the price of coarse mohair is heavily discounted on the world market. The finest mohair is produced by angora kids and kid mohair is most

[5] The decline in price at below 25 micron may be explained by noting that most fiber below 24 micron was shorter and AB and B length kid mohair discounted for various faults such as poorer style, length, kemp and vegetable matter.

[6] When fiber diameter exceeds 30 micron, the skin "prickle" sensation begins to be felt.

highly priced on the world market.

However, as shown in figure 5 and 6, on the Tajik market the correlation between fiber diameter and price is positive. The finest, kid mohair is the cheapest and the most valuable fleeces are those of adult male goats that have the strongest but the longest fiber. These statistics were confirmed by interviews with traders at the mohair market in Khudzhand who claimed that the most valuable mohair is "strong" mohair.

Figure 5. Price of Tajik mohair relative to fiber diameter (M. Kosimov, F. Kosimov, 2007).

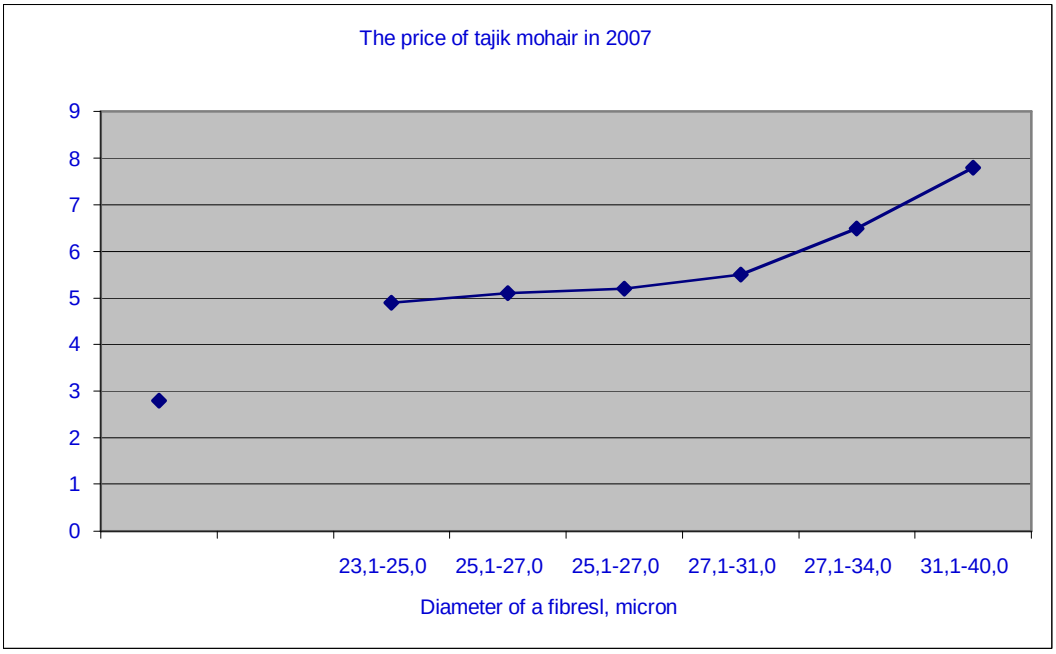


Figure 6. Price of Tajik mohair in 2007 (M. Kosimov, F. Kosimov, 2007).

Groups of goats (sex and Age)	Fiber Diameter	Fiber Diameter in Microns	Price of 1 kg of mohair in 2007 in USD
Non-uniform fiber – Kemp, vegetable matter, large CV			2,8
Female Goats 1 - 1,5 years	60 - 58	23,1-25,0	4,9
Male Goats 1-1,5 years	58 – 56	25,1-27,0	5,1
Female Goats 2 - 2,5 years	58 – 56	25,1-27,0	5,2
Male Goats 2-2,5 years	56 – 50	27,1-31,0	5,5
Female Goats adults	56 - 48	27,1-34,0	6,5
Male Goats adults	48 - 44	31,1-40,0	7,8

The answer to this puzzle is tied to the preferences of Russian consumers that are very different from those of other participants in the global mohair industry. The Russians, especially the residents of northern cities such as Omsk, Tomsk and Sverdlovsk where much of the Tajik mohair is sold, are not interested in luxury fibers but in warm sock,

shawls and pullovers that can protect them from the Siberian climate. These preferences have a long history. Pre-Soviet and especially Soviet Russia was not known for the production of luxury goods such as fine textiles. While the Italians have traditionally used Merino wool, cashmere and mohair to produce fine, luxury fabrics for the high fashion industry, Soviet factories made heavy wool coats and coarse, thick fabrics to clothe the military and the working classes. Their purpose was not to make fashion but to protect the population against the severe Russian winter. Mohair & wool fabric blends were used to make military coats and mohair yarn was knitted into thick socks and large shawls that the Siberians enjoy wearing even today. For these items, long mohair of adult animals was most suitable.

Thick, coarse mohair socks for export to Russia, Khudzhand market, April 2007.

The preferences of the Russian consumers continue to shape the value and price of Tajik mohair to this day. Russian women value mohair as a natural material but are not particularly concerned with its fineness. They enjoy wearing brushed mohair sweaters and shawls for warmth on top of other clothing which helps to moderate the prickle. In

order to produce brushed mohair yarn, longer fiber of the adult animals is required. Kid mohair has little use in industrial processing as well. Those few Russian textile factories that survived market reforms do not have machinery to produce fine, luxury fabrics but continue to focus on the production of utilitarian clothing for which there is local demand. Although the author did not research the Russian market for Tajik mohair and this theory is based mostly on anecdotal evidence, it provides the most plausible explanation for the "anomaly" in the pricing of Tajik mohair – the climatic, historical, cultural and technological characteristics of the Russian market.

3. Developing An Alternative Marketing Chain.

The ICARDA project chose to develop a value chain centered on the production and marketing of mohair yarn on the basis of key pieces of information revealed through the research on livelihoods in the pilot regions. Firstly, the research had shown that during market transition production and sale of mohair and mohair yarn provided an important means of livelihood for many rural households in the region. Especially households residing at the foothills of the Kuraminski mountains have few other options of generating income other than the production and sale of goats and mohair. These families also have an extensive experience in working with angora goats. Secondly, most rural women in the regions have skills in spinning mohair into yarn and in marketing value-added production. Women whose families do not produce angora goats still purchase mohair at the market for spinning and knitting. Thirdly, relative to processing other local agricultural products, adding value to mohair through spinning yarn and knitting clothing requires minimal investment in equipment and machinery – it can be done using a simple carding board, a spindle and knitting needles. This type of equipment can be found in most rural households in the region. Fourthly, kid mohair, which is most highly priced on the international market, is undervalued on the market in Tajikistan. The cheap prices of kid mohair and the processing skills of local women provide a unique opportunity for the development of a luxury, handspun mohair yarn for export to Europe and the United States. Such business activity could open a new, lucrative market for women in the pilot regions and provide them with additional income.

Tajik girls are taught yarn spinning at school, Katarbulak settlement, April 2007.

Similar to women in Tajikistan, many American and European women practice knitting and the market for handspun yarn in western countries is well developed. However, while many women in Central Asia often knit out of necessity – to generate income or make clothing for the family – for most western women knitting is a hobby. Given their much greater disposable income, they prefer yarns made of luxury fibers such as Merino wool or kid mohair. They use handspun, hand-dyed yarns to make unique items that combine luxurious natural fiber with fashionable design[7]. A number of small sheep and goat producers in America process their fiber and produce luxury yarns to sell to local knitters at craft fairs and sheep and wool festivals. They also sell yarns to stores and through their websites. Yarn producers from other countries have also successfully

[7] Such expensive yarns cannot be found in yarn stores in Central Asia. Based on an interview with a yarn storeowner in Kyrgyzstan, it does not make sense to sell yarns make of 100% wool or mohair because the local customers cannot afford them. Given their small incomes, Kyrgyz women prefer to purchase cheap acrylic yarns and that is what the local stores sell. In addition, the stores in Central Asia are unreliable when it comes to yarn content which would jeopardize the marketing of quality yarns made of natural fibers. The author purchased yarn in Kyrgyzstan that was labeled "made in Turkey" and supposedly contained 85% of kid mohair. The yarn was very cheap based on western prices for kid mohair yarns but expensive by local standards. However, a laboratory inspection revealed that the yarn did not contain any animal fiber but was 100% artificial.

tapped into the US yarn market. For example, South African Company "Be Sweet" produces handspun mohair yarn that retails for as much as $11 for 25grams, or $440 per kg in high-end yarn stores in the United States. On the other hand, one kilogram of handspun mohair sells on the market in Khudzhand for $10 per kg. These prices differences suggest that the Tajik women would greatly benefit from developing access to western markets and producing fine mohair yarn specifically for western buyers.

"Of the Beaten Path" yarn store, Madison, WI.

In order to establish a value chain that would connect Tajik women spinners with customers in the United States, it is important to develop all the necessary components of the production and marketing process and link them effectively to produce a sustainable business dynamic. This process begins by assisting producers with material, supplies, technology, training, product design and market information to enable them to produce samples of yarn for the US market. Once samples are produced, potential customers and yarn experts need to test the samples and provide feedback to the producers. The producers need to be able to respond to the feedback and produce competitive production of desired quality, quantity and price for the consumers. Specific market outlets for the production need to be identified as well as methods of quality control, ordering, distribution, shipping and payment. In the following paragraphs we discuss the process of assisting women in the pilot region to produce quality kid mohair yarn, starting with the production of samples for market testing.

3.1 Raw Material:

The first objective was to obtain quality kid mohair fiber that artisans could spin into high quality yarn. The research team visited mohair markets and angora goat producers in the

pilot regions to select and purchase quality white and colored kid mohair for sample production. Kid mohair is often sold first because it is less valuable and it was important to purchase the fiber at the beginning of the season in April before it was sold off to the traders.

Dr. Matazim Kosimov examining kid mohair, Taboshar settlement, April 2007.

In order to produce fine yarn, kid mohair is spun onto a base thread. The thread is most often made of nylon or rayon but can also be silk. Using silk in place of artificial fibers increases the quality and the value of the yarn. In addition, raw silk can be carded much like animal fiber and spun into yarn and colored. Silk yarn can be sold independently or spun together with mohair yarn to create another version of luxury yarn – a mohair/silk blend. The Tajik women rarely spin mohair on a base thread because the Russian market demands thick yarn that does not require it. The research team needed samples of fine, thin yarn and had to provide the spinners with a base thread for spinning.

To the benefit of Tajik yarn producers, silk is also produced in the pilot regions. Many rural families produce silk cocoons in April and May and sell them to the silk factory in Khudzhand that produces unspun silk thread for export to Vietnam. The research team

visited the factory, established a collaborative relationship with the management and obtained multiple samples of silk thread and silk batting to make fine mohair yarn, silk yarn and mohair/silk blends. The factory managers and the production technologist promised to assist the project with obtaining quality spun silk threads that are produced in neighboring Uzbekistan and collaborate on producing other types of silk fiber using silk waste products that could be used in the yarn-making process.

Silk cocoons produced in Tajikistan, Khudzhand Silk Factory, April 2007.

3.2 Technology:

The absence of industrial machinery for mohair processing and the women's reliance on simple, homemade equipment presents certain advantages. First, the women do not need electricity to produce yarn which is important especially for families in rural settlements that are off the grid. Secondly, having simple and relatively cheap carding and spinning tools at home gives the women the opportunity to work as independent producers and be in control of their work time and their earning as opposed to working as a cheap labor in a factory.

However, the homemade tools used by the Tajik spinners can be improved to increase productivity and product quality. For example, the spindles can be replaced by spinning wheels that are much easier to use and much more productive. In some cases families tried to produce such wheels, with moderate success, but most women had only spindles.

Homemade spinning wheel used by a family in Takli settlement, April 2007.

The team delivered to Tajikistan a wooden spinning wheel made by the Ashford Company based in New Zealand. The company makes quality tools for spinning and weaving that are used by spinners in the United States and Europe. However, importing such wheels to Tajikistan would not be economical given that each wheel costs around $300 and the shipping cost is $70 and higher. The team decided that it would be more efficient to try to produce the wheels in the pilot region. It left the Ashford wheel with a master craftsman in a village near Khudzhand who makes electrical spinning wheels for sale[8]. The master agreed to use the Ashford wheel as a model and produce similar wheels locally for approximately $100. In addition the team delivered to Tajikistan a $300 drum-carding machine also produced by Ashford that can be used to card together colored fibers and create unique blends of colored mohair yarn. This machine will also be produced in Tajikistan in the future.

Finally, the team obtained samples of wool dyes made in Turkey that are used by artisans in Kyrgyzstan to dye wool and felt. These quality dyes of many different colors can be used to dye mohair and silk fiber to produce a variety of colored yarns. The dyes will be tested during the next phase of the project.

[8] Electrical spinning wheels cannot be used to produce high quality, thin yarn due to the lack of control the spinner has over the velocity.

Discussing the production of Ashford-type spinning wheels, April 2007.

3.3 Yarn Samples and Market Information for Tajik Spinners.

The Tajik women needed to see what kind of mohair is sold on Western markets and learn about the consumers they were trying to produce for. The researchers provided samples of mohair yarn from stores in the United States as well as photos of yarn shops and samples of knitting magazines. They spoke with the Tajik artisans about the US yarn market and about the preferences of the American consumers. Providing market information and samples has helped the Tajik women to overcome their isolation from the market they were trying to produce for. The researchers helped them to understand how the preferences of the American consumer differ from those of the Russian consumer whom they are much more familiar with and from whom they can receive feedback more directly.

Dr. Kosimov collecting yarn samples from spinner, Khudzhand market, April 2007.

Dr. Kosimov collecting samples in the Takli settlement, April 2007.

3.4 Selecting the Knitters and Creating a Registration System

Thirteen women from several villages and farming settlements were selected to produce yarn samples for the project. The women were distributed kid mohair, silk thread and silk batting and paid to produce several different types of yarn samples to be tested by American knitters. The samples were collected in a week and a registration system for the women and the samples was created by Matazim and Farhod Kosimov (Attachment 1). The Excel file included the names of the spinners, the names of their settlements and descriptions of the yarn samples each woman produced. A code was designed to identify the different types of samples. The registration system allows to insert feedback on specific samples produced by individual artisans into the database and deliver the information to each artisan. All women were very enthusiastic about the project and the prospect of marketing their yarn in the United States. They produced quality samples that were taken to a yarn store in Madison, Wisconsin to be examined by professional knitters and storeowners. In order to provide extra incentives to the Tajik spinners, the research team offered the Ashford spinning wheel as a price to the spinner who makes the best samples. After the evaluation of all the samples, the team came to the unanimous decision that Matluba Khanaeva of the Takli farm settlement produced the highest quality samples and won the Ashford wheel.

Ms. Matluba Khanaeva, Takli settlement, April 2007.

3.5 Testing the Yarn Samples.

A group of professional knitters who teach knitting classes in Madison and the owners of the yarn store agreed to participate in testing the samples and knitting patches from the mohair yarn. They were shown photographs and given background about the Tajik artisans and the objective of the project was explained to them. Each knitter received samples from two Tajik spinners and was asked to test the yarn by knitting swatches and provide feedback about the yarn to the project researcher. Although not all knitters finished sample testing prior to the submission of this report, a number of samples have been tested and the feedback will be added into the database. Samples of the prize-winning spinner Khanaeva Matluba were tested by a professional lace-maker Ann Varda who teaches classes at the yarn store and has worked with similar types of yarn for many years. Ms. Varda was very pleased with the quality of the samples and used them to create beautiful patterns. She and the store owner immediately ordered yarn from Ms. Khanaeva for the store.

Knitters in Madison, Wisconsin with the tested samples of Tajik yarn, June 2007.

Yarn 10BI made by Ms.Khanaeva and tested by Ms. Varda.

Yarn 1C made by Ms. Abdurakhmonova and tested by Ms. Varda, June 2007.

The yarn would be priced comparably to yarns that currently sell at the store and are most similar to the Tajik yarn in kind and quality. Some of those yarns in the store were selected as examples:

Retail Store Prices:
Fine Merino, 50 grams - $9.25
Alpaca & Silk, 3.5 ounces - $21
Angora Bunny, 50 grams - $18
Hand dyed (rainbow) Angora, 10 grams - $14.40
Pure Silk yarn, 50 grams, 125 meters – $14.50
Kid Angora yarn, 25 grams, 210 meters - $14.25

For comparison: 1kg of mohair yarn on the market in Khudzhand, Tajikistan costs $10/kg or $1 for 100 grams or $0.25 for 25 grams.

The closest yarn to some of the samples received from the Tajik spinners is the Kid Angora yarn that sells for a retail price of $14.25 for 25 grams. The wholesale price of the yarn is $7.12 for 25 grams, $28.48 for 100 grams and $284.8 for 1kg. Although the costs of shipping, customs and other marketing expenses have not been calculated, based on conservative calculations the women could receive at least $150 for their labor of producing 1kg of the sampled yarn. It is clear that this price would be attractive to Tajik spinners who currently sell yarn for $10 per kg on the local market. This comparison is not entirely appropriate, however, because the kid mohair yarn produced for the American market will not be comparable to the yarn the women currently make in terms of weight and yardage – the kid mohair yarn will be much thinner and lighter. This means that the women will have to spin a greater yardage of the thin yarn to produce 1kg. Prior to making the exact calculations, we estimate that the ratio may be 1:4 – one yard of the thick mohair will weigh as much as 4 yards of thin mohair. However, even in the case of comparing the yarns by yardage, the wholesale price of 200 yards of fine kid mohair on the American market will be many times higher than the price of 200 yards of strong mohair on the Tajik and Russian market.

4. Conclusion.
The research on livelihoods in the pilot regions showed that the production of mohair and the sale of mohair yarn represents an important means of livelihood for local families and offers an opportunity for rural women to generate income. The research also showed that an alternative market exists especially for kid mohair and fine, handspun yarns in the United States. Fine mohair is not in demand on the Russian market which is currently the greatest outlet for Tajik mohair and mohair yarn. The results of testing mohair yarn samples by American knitters verify that the Tajik spinners can produce attractive yarns that can successfully compete with similar yarns sold in American stores. Based on preliminary price calculations, producing mohair for US yarn shops would lead to much higher earnings for the Tajik women than they currently receive by selling mohair yarn to Russia. Because of their access to mohair and silk fibers, the Tajik producers could be assisted to develop a great variety of luxury yarns and establish successful, women-led

small businesses organized as Fair Trade. This would help them to generate income and retain the greatest portion of the revenue. The ICADRA project will continue to assist them in this effort.

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