Community Action in Integrated and Market Oriented Feed-Livestock Production in Central and South Asia

IFAD Technical Assistance Grant (TAG): ICARDA-816

Annual Progress Report

1 June 2006 - 30 June 2007

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Introduction

This report covers the initial year of implementation for the TAG ICARDA-816 project from June 2006 to June 2007.

The main programme goal is to improve the livelihoods of rural communities in Central and South Asia. In order to contribute to this goal the programme aims at developing and promoting community-based actions to support productive and sustainable livestock systems, access to market opportunities, and sustainable management of the natural resource base in the two regions. The project is based on the experience and findings from a previous IFAD funded project in Central Asia that covered four countries, namely Kazakhstan, Kyrgyzstan, Turkmenistan and Uzbekistan.

The grant of US$ 1,201,770 was approved by IFAD in May 2006. The effective starting date was 1 June 2006 and the closing date will be 31 December 2009. Preparations for launching the project started with a scouting mission of Luis Iñiguez and Mekhlis Suleimenov in May 2006 to pre-select project sites and meet with project stakeholders (national and international partners) in Central Asia.

The project was launched by start-up workshops in Central Asia and in Pakistan in September 2006, where modalities, procedures, and most suitable approaches to project implementation were discussed and approved (see below under regional activities). Outlines of the first workplan and budget (June 2006-June 2007) were set, and requirements and responsibilities for implementing the planned activities were assigned for ICARDA principal scientists at HQ and the two ICARDA offices (Tashkent and Islamabad), national and international stakeholders.

This project covers four integrated project themes, namely “Theme 1 Socioeconomics”, “Theme 2 Range and Forage Productivity”, “Theme 3 Livestock productivity”, and “Theme 4 Knowledge exchange and capacity building”. In Central Asia the emphasis of the project activities is on sheep meat/milk production in Kazakhstan; fine wool and meat production in Kyrgyzstan and meat/mohair production from sheep/goats in Tajikistan. In all countries forage-crop-range interactions are studied with a focus of increasing forage supply from improved crop rotations. Options for more efficient processing and marketing of livestock products are given special attention, for example the collaborator from the University of Wisconsin is developing strategies for processing and marketing of mohair, especially high-value crafts. In South Asia (Pakistan) the project focuses on introducing more productive forage cultivation to overcome periods of scarce feed supplies and subsequent testing of new feed rations for increased meat and milk production from cattle and buffalos. The socioeconomic research complements the feed and livestock related physical research by valuing the effects of the technological options on rural livelihoods and studying current and new marketing strategies and channels. A second research site in Central Tajikistan focusing on meat production from the famous Ghissar sheep breed was added in March 2007 following the recommendations of the National Focal Point Dr. Nabiev (consequently the related activities were not foreseen in the first annual workplan).

The first annual workplan for the period from 1 June 2006-30 June 2007 specified detailed activities for each region, each research theme and/or country. The subsequent section (II) on project implementation and achievements in this progress report is organized accordingly by region, themes and countries, where appropriate. Regional activities are reported separately. Section II gives a brief summary of the progress in each activity compared to the expected outcomes specified in the first annual workplan. The report is based on technical progress reports by the national teams that included some preliminary descriptive results. A technical report summarizing the results from the socioeconomic surveys undertaken in the first year is in preparation by Aden Aw-Hassan and Nariman Nishanov. In addition a detailed report on the initiation of “Value added local processing of goat fibres by women and assessing the characteristics of naturally coloured mohair and the potentials for its marketing” (Activity 16) has been prepared by Liba Brent (University of Madison, Wisconsin).

In brief the major activities in the first year included:

- Inception workshops on project planning and implementation in Central Asia and Pakistan in September 2006
- Teambuilding and recruitment of project staff
- Selecting and characterizing communities/villages (village profiles):
  - Kazakhstan: Akdala village, Arys District
  - Kyrgyzstan: Ak-Beket village and Alimseit farm in Kemin district, On bir jilga village and Kenesh farm in Chuy district
  - Tajikistan: Sogd province, Jamoat Ismoil, Korajingil, Takli, Ouyas, Kurgancha villages; Central Tajikistan, Vahdat district, Jamoat Dusti

  - Pakistan (Punjab Province) – rainfed site: Lodhay village, Tehsil Gujar Khan; irrigated site: Chak No. 74 SB & Chak No. 105 SB villages, Sarghoda
- Livelihood analysis in Central Asia as a basis for detailed household studies
- Market studies of sheep and goat products and value chain analysis
- Identifying and motivating participating farmers and building farmers' groups through informal meetings and farm visits
- Workshop on socioeconomic methodology and round table planning workshop on research on range and forage production in Central Asia
- In-depth planning of activities for Theme 2 and Theme 3 jointly with participating farmers
- Preparation and start of field experiments under Themes 2 and 3 in CA
- Baseline data on status of pasture productivity in participating households and farms in CA
- Demonstration/cultivation of summer crops in Kazakhstan, Kyrgyzstan and Central Tajikistan
- Preparation and initiation of livestock management interventions
- Baseline data (control) on goat and sheep production in participating households and farms
- First cultivation cycle of winter and summer crops (improved varieties and agronomic measures) in Pakistan
- Feeding experiments with cattle and buffalos in Pakistan

The second annual workplan and budget will cover the period July 2007 to December 2008 to plan activities and budgeting in line with the fiscal calendar year of both IFAD and ICARDA. Accordingly the next progress report will be prepared beginning 2008 and cover the period from July to December 2007.

I Project Implementation and Achievements

1 Central Asia

1.1 Teambuilding and recruitment of project staff

In each Central Asian country a principal partner institute and a national project coordinator was selected in agreement with the National Focal Points in the countries, ICARDA's regional coordinator and project coordinator at Tashkent office. The partner institutes are:

- Kazakhstan: South-West Center of Agriculture
- Tajikistan: Tajik Scientific Research Institute of Livestock Breeding (Dushanbe and Sogd branch)
- Kyrgyzstan: Kyrgyz Institute of Livestock, Veterinary and Rangelands

Originally it had been foreseen to establish a Project Technical Coordinator (PTC) position in Tashkent and three National Project Officer (NPO) positions in Kazakhstan, Kyrgyzstan and Tajikistan. After interviewing three candidates for the PTC and six candidates for the NPO positions in September 2007, Drs Suleimenov, Iñiguez, Larbi, Aw-Hassan and Piggin felt that the candidates for the NPO positions would not add resources or expertise as they were already involved in the project. It was then decided to request the National Project Coordinators to select their own support teams, with some small additional budget support, and that the funding foreseen for the NPO positions would be used to support three discipline Professional Officers (PO) in socioeconomics, forages and livestock production to be based at Tashkent office. It was agreed that the POs would work under the direct scientific supervision of ICARDA's principal investigators for each theme and the administrative guidance of Mekhlis Suleimenov and the regional coordinator. This was discussed and agreed with ICARDA's regional coordinator. One of the interviewees for the PTC position was selected as PO for socioeconomics (theme 1), while the other two positions were announced.

The national project coordinators selected principal investigators and built teams of researchers for each theme involving other institutes where additional expertise was required. For example, for theme 1 additional partner institutes are the South Kazakh State University, the Kyrgyz Agrarian University and the Khujand Technological University.

Table 1. Principal Investigators (PI) at ICARDA HQ and in the countries and Professional Officers (PO) in Tashkent by research theme

Themes	PI at HQ	PO	PIs in Countries
Project coordination	L. Iñiguez (till 12/2006) B. Rischkowsky	M. Suleimenov	Kazakhstan: A. Ombaev Kyrgyzstan: R. Nurgaziev Tajikistan: A. Karakulov
1: Socioeconomics	A. Aw-Hassan	N. Nishanov (since Oct. 2006)	Kazakhstan: A. Nurridin Kyrgyzstan: J. Isakov and U. Osmonaliev Tajikistan (Site 1): S. Makhmudov Tajikistan (Site 2): G. Safaraliev
2: Range & Forage Productivity	A. Larbi	A. Nurbekov (since 1 April 2007)	Kazakhstan: S. Abdraimov Kyrgyzstan: K. Joldoshev & I. Ponomarenko Tajikistan (Site 1): M. Bokiev Tajikistan (Site 2): A.A. Madaminov
3: Livestock productivity	B. Rischkowsky & L. Iñiguez	A. Atakurbanov (15 April-15 May 2007) H. Hamdamov 1 October 2007	Kazakhstan: M. Tuekbasov Kyrgyzstan: A. Ajibekov Tajikistan (Site 1): M. Kasimov Tajikistan (Site 2): F.M. Ikromov

1.2 Theme 1: Socioeconomics

1.2.1 Activity 1: Analysis of rural livelihoods in Kazakhstan, Kyrgyzstan and Tajikistan

Expected outcomes in the first year:

- Training of researchers on methods by February 2007
- Enumerators trained on data collection by February 2007
- Rapid rural appraisals (RRA) report by May 2007
- Stratification of rural communities by June 2007
- Questionnaire development and pre-testing by July 2007
- Sampling of households by July 2007
- Data collection by November 2007.

Profiles of the selected research villages have been established for all research sites (including Central Tajikistan).

The key socioeconomic scientists were trained in March 2007 (see Activity 3 under 3 Regional Activities). In Kazakhstan and Kyrgyzstan formal questionnaires were used to conduct the rapid rural appraisals, and enumerators and students were trained in January/February 2007.

Rapid rural appraisals (RRA) were conducted in spring/summer 2007 in all three countries. In Kazakhstan 150 households were interviewed in May 2007 in Akdala village, of which 100 households owning 10 and more sheep were included into the analysis. In Kyrgyzstan 100 households were interviewed from February to May 2007. In Tajikistan (Khujand site) informal interviews were conducted with about 50 informants in Ujas and Karochingil village including householders, producers, processors, sellers, middlemen (procurers), and buyers of the angora mohair. The RRA were used to define socioeconomic indicators including access to resources, assets' distribution, marketing constraints, demography, and employment. In Kyrgyzstan and Tajikistan (Khujand site), indicators of poverty as perceived by the communities were developed. The preliminary results from the RRA are available in a crude format in technical progress reports from Kazakhstan, Kyrgyzstan and Tajikistan.

The in-depth household study based on the results of the RRA is under preparation (development of questionnaire and sampling frame including stratification of households). The expectation that the in-

depth study could be completed at the end of the first year had to be corrected as the preparation has taken much longer than anticipated due to the lack of training and experience with socioeconomic research in Central Asia and because of the resources required for the market surveys. A full technical report on rural livelihoods comprising the results from RRA and the in-depth household study expected to be finalized July 2008.

1.2.2 Activity 2: Ex ante valuation of the technological options on rural livelihoods in Kazakhstan and Kyrgyzstan

Expected outcomes in the first year:

- Farmers' perceptions of the technologies by April 2007
- Compilation completed of economic and other indicators such labor requirement, suitability in the cropping system, etc. by May 2007.

The title of the activity is misleading as ex ante evaluations are supposed to be carried out before interventions take place, for which it is too late as interventions are being implemented. However, the aim of this activity is to develop and test the usefulness of indicators for the valuation of technological options that can be used for ex ante assessments of comparable technologies in other projects.

As the sheep and goat production cycle and forage production are seasonal, most livestock related interventions have to be initiated in May/June/July. Thus, in the first project year the planning and required preparations were done but interventions can only be implemented in the second project year. Consequently, farmers' perceptions of interventions have not yet been recorded and the required biophysical data under Themes 2 and 3 for economic valuation will only be available in summer 2008 after the fist full livestock production cycle. Multidisciplinary discussions with the collaborators from Theme 2 and 3 are required to discuss the methodology and to develop indicators for measuring impact. Furthermore, an across region discussion with the socioeconomic researchers from Pakistan is planned for year 2 to discuss and further develop a methodological framework for impact assessment that has been developed in Pakistan.

The data for a more simple economic evaluation (cost/benefit analysis) of each intervention is being collected as part of the data collected or Theme 2 and 3 with guidance from the socioeconomic team. For example, in Kazakhstan costs of winter feeding of livestock and cost/benefits of lamb fattening in the winter period have been collected and summarized from a medium scale farm and three households. In Kyrgyzstan a preliminary cost/benefit analysis (excluding labor and capital costs) of lamb fattening and for a flock of 10 coarse wool ewes over one year was carried out. A similar analysis was done for 10 Angora goats in Tajikistan (Khojand) that was complemented by monitoring forage and feed prices at the markets of the province.

1.2.3 Activity 3: Analysis of lamb markets and farmers market access in Kazakhstan (Lambs), Kyrgyzstan (lambs), and Tajikistan (Mohair goat fiber)

Expected outcomes in the first year:

Kazakhstan and Kyrgyzstan:

- Training of research teams by March 2007
- Participatory survey of markets: description of different lamb markets (local, district and provincial); different marketing channels and prices and marketing margins by May 2007
- Price trends; prices at different points along the supply chain by May 2007
- Market survey (with the livelihood survey) by October 2007

Tajikistan:

- Production information and farmer's marketing strategies covered in the livelihood survey by May 2007
- Price data collection at different market points, price trend analysis over time, by season and by location for different types of fibers by July 2007
- Methods for determining fiber quality and standards for marketing: introduced (Liba Brent); by November 2007
- Development of e-marketing website (Liba Brent) by November 2007.

In the regional workshop on socioeconomic methods in March 2007 (see Activity 3 under 3 Regional Activities) the focus of the market studies was discussed and it was agreed that in Kazakhstan and Kyrgyzstan and n Central Tajikistan the focus would be on sheep meat, in particular lambs, and in the Sogd Province/Tajikistan on Mohair goat fiber. The market surveys in all countries started with a description of the main markets and marketing channels (including export of Mohair) and training of team members on data collection methods in January 2007. Prices at different market places were recorded each month and are available for the period from January to August 2007. In the second site in Tajikistan the survey started later, but the same information is being collected. The market surveys will be completed in October 2007. The analysis of the market channels, market chain and seasonal price fluctuations is in progress, first results were presented at the regional meeting at Lake Issyk Kul in September 2007. A full technical report of the market analysis is in preparation and will be finalized latest end 2007.

Methods for determining fiber quality and the development of new standards in Tajikistan are being pursued in Activity 14 under the lead of Matazim Kasimov. The development of a new standard will require more time and be completed before December 2008.

A database and a feed back system of marketing potential yarn produced by Tajik artisans has been established by Liba Brent and will be continued in the second project year. The launching of the website requires more work and is now planned for July/August 2008 (Activity 16 under Theme3).

1.3 Theme 2: Range and Forage Productivity

1.3.1 Activity 4: Participatory evaluation and dissemination of improved fodder crops and agronomic packages to increase the feed resource base

Expected outcomes in the first year:

- Workshops held with farmers in 2-3 communities by March 2007
- Fodder production systems documented by June 2007
- Demonstration plots for summer forages established by May 2007
- Germplasm of fodder species assembled for screening by June 2007

This activity was pursued less systematically in Central Asia than planned in first annual workplan. No formal workshops were held in the three countries instead informal meetings with village leaders and neighboring farmers took place to identify interested farmers and to explain the planned activities.

Fodder production systems including rangelands and feeding practices (activity 5) have not been systematically documented. Some basic data were collected in informal interviews from participating farmers. In Kyrgyzstan a feed balance (supply and demand) was calculated for two medium size farms (Alymseit and Kenesh). A questionnaire for a comprehensive survey was developed and interviews with all participating and some neighboring farms will be conducted.

Three types of interventions to increase forage production and to improve the carrying capacity of degraded rangelands around villages are being pursued:

Integration of forages in cropping systems

In Kazakhstan: in the medium scale farm “Kasymbay” and in three household farms alfalfa and maize were planted in irrigated fields according to farmers’ practices. While the Kasymbay farm uses optimized planting and irrigation techniques, the communities have suboptimal cropping practices. In the irrigated fields of the Kasymbay farm an improved variety of alfalfa “Semirenchenskiy siniy" was planted on 5 April 2007 with CU-24 planter at the rate 10-11 kg per hectare. Seed depth was 1.0-1.5 cm. Its plant density was 300 plants per square meter. The field was irrigated three times. Also 10 hectare of corn were planted at 25 kg per ha. The farm “Kojanov Yusup” planted 0.3 hectare of land with corn on 15th of April with a seed rate of 20 kg per ha. The plant density with 7-9 plants was not optimal because of improper tillage. In the farm “Ibragimov Oraz” alfalfa and corn were planted on 0.15 hectare of land. In the farm “Arynbayev Orinkhan” 0.6 ha of land was planted with fruits and alfalfa. Seed rate, plant densities, corn yields and biomass per cut will be measured on all fields. The plots on Kasymbay farm will be used as demonstration fields to convince small farmer to improve their cropping practices.

In Kyrgyzstan alfalfa was planted in standing winter wheat and barley in two medium scale farms and alfalfa yields from previous years were recorded.

In Khojand/Tajikistan a demonstration plot with maize was planted in an irrigated area in summer and yield of alfalfa planted in the previous year was recorded on farmers' fields. Forage crops to be considered in the experiments in the second year were identified and will include alfalfa, sainfoin, vetch, maize, triticale and perennial sorghum.

In Dusti jamoat/Tajikistan first experiments have been established on farmers' fields after harvesting the winter crops: an early maturing variety of maize is being compared with local maize variety, and sainfoin with alfalfa.

Rehabilitation of hayfields and pastures

In Kazakhstan sites in the ephemeral and wormwood-ephemeral types of the pastures of two medium scale farms were selected and baseline data on the status of the vegetation were collected. Replanting with local native rangeland species will be done in December.

In Kyrgyzstan 5 ha of haymaking fields in natural ranges will be improved by reseeding with sainfoin and 5 ha by fertilization with 50 kg ha-1 ammonium nitrate and compared to control natural hayfields. The experiment will be carried out the medium scale farm "Alymseit" to be demonstrated to the surrounding household farms.

Rotational grazing on rangelands

In Kazakhstan a rotational grazing system is being tested in the two medium scale farms "Kasymbay" and "Duysen". In each farm two areas of 300 ha were selected based on an analysis of botanical composition of the rangelands and soil characteristics. Each plot was divided into four plots of 75 ha. The sheep rotate each season from one plot to the next. In the unsystematic grazing scheme the sheep will graze the entire 75 ha during the respective season, while in the rotational grazing system each of the four plots was subdivided in three subplots and the sheep change the subplot each month. The grazing trial was started in May 2007 and biomass and botanical composition was recorded from May-July 2007. It is planned to continue the experiment for two years.

In Kyrgyzstan a grazing management plan was developed for two medium scale farms with seasonal use of natural rangelands (spring, summer, and winter); the botanical composition and biomass will be compared with the baseline data collected in the first year.

In Khojand/Tajikistan rotational grazing and pasture rehabilitation will be tested on communal winter ranges. In the winter 2006/2007 the users of the ranges in Korajingil and Takli community were identified and a rotational system developed. In addition around 1-3 ha of rangelands located close to the village were selected which will be split in two parts. One half will be rehabilitated using seeds of wild grasses, local fodder grasses, herbaceous legume species (sainfoin, sweet clover) and fodder shrubs (forage kochia, saltwort, etc.). The other half will serve as a control.

In Dusti community rotational grazing between winter and summer ranges is being propagated and small farmers are encouraged to build collective flocks and send them to the distant summer ranges. Data from participating smallholder flocks were collected in April 2007 and joined for summer grazing.

1.3.2 Activity 5: Promoting efficient use of fodder crops, crop residues and agro-industrial by-products for increased meat and milk

Expected outcomes in the first year:

- Informal surveys on feeding systems completed in 2-3 communities by June 2007
- At least 2 farms selected to demonstrate improved feeding by June 2007
- Fodder crops for feeding trials established during January to June 2007

Regarding informal surveys on feeding systems the same applies as for fodder production systems (activity 4).

Improved feeding is part of testing improved management practices. Feed rations will be based on the forages presently available on farm including those from experiments under activity 4 and use additional supplements where appropriate (activities 9, 13 &17).

1.4 Theme 3: Improvement livestock productivity

Kazakhstan

1.4.1 Activity 6: Early lambing for targeting lamb sale during Navruz (March) involving a genotype comparison in household flocks

Expected outcomes in the first year:

- Participating households will be identified by April 2007
- Training of farmers in new management strategies by June 2007
- Setting up of experiments in August-September 2007
- Evaluation of the differential income due to early lambing vs. traditional by August 2008
- First report available by July 2008.

Participating farmers were identified and baseline data in the traditional system recorded during 2006/2007 (weights of ewes and lambs, physiological status and body conformation of ewes). The ewes were separated into control and improved group. The ewes in the improved group were prepared for the experiment through weaning of lambs in June to ensure a good body condition at mating.

1.4.2 Activity 7: Early weaning and fattening (Nagul) of lambs for lamb marketing and milking of early weaned ewes for value addition in household flocks

Expected outcomes:

- Participating households will be identified by March 2007
- First on-farm experiment to be set-up by June-July 2007
- Full evaluation of differential income due to early weaning vs. traditional weaning by December 2008
- Report available by February 2009.

Activity 7 is a direct continuation of early lambing. The lambs born from the ewes in the improved group will be used for testing early weaning and fattening.

The growth rates of male lambs were recorded before and after weaning from June to November 2006 in the four participating farms. The data showed a steep decrease in growth rates in the first month after weaning (September 2006) when the lambs were brought to the pastures in two farms and a smaller decrease in the two other farms. The nutritional value of the available feed resources (forage from rangelands, barley grain, concentrates) was analyzed. The daily weight gains and body measurements of lambs born in spring 2007 and raised in the traditional way in the farms were recorded from March to July 2007 as well as the milk yields and liveweights of Karakul and fat tail ewes.

1.4.3 Activity 8: Community-based household cow and sheep milk processing improvement and sausage making for value addition and income increasing.

Expected outcomes in the first year:
This activity will evolve during the lifespan of the project.

- Report of local knowledge by May 2007
- Participatory workshops to be conducted by June 2007
- Processing of milk under improved methods to be started according to decisions taken in the workshop by July 2007
- Analysis of impact of results due to the technological intervention by the end of 2008

To support the success of sheep milk production (activity 7) possibilities for marketing sheep milk products are being explored. It is planned to prepare home made butter, ayran, kurt, chechil and brynza with the farmers. Local processing methods for these dairy products, in particular chechil and brynza that are most popular, were studied and the methods described.

Sheep milking and Brienza production were tested on farm. Time required for milking 20 Karakul ewes in the morning and the evening was compared between hand and machine milking. Milk composition

and milk yields of the ewes were recorded by age group. Then the milk was used for Brynza preparation under farm conditions. The preparation is relatively simple and does not require modern equipment. The nutritive quality of Brienza was again compared by age group of the ewes.

Furthermore, methods for preparing home made sausages were developed and will be tested with interested farmers in the winter period.

Kyrgyzstan

1.4.4 Activity 9: Household improvement of livestock management for improved productivity: integrating management of lambing period, animal health, feeding system, lamb management

Expected outcomes in the first year:

- Identify participating farmers (improved and control farmers) by April 2007
- Set up comparative experiments by August 2007
- Evaluation of comparative productivity and cost-benefits by July 2008.

In the first year the national team in Kyrgyzstan focused on two typical medium scale farms “Alimseyit” in Kemin district and “Kenesh” in Chuy district. The following activities were carried out on the farms:

- Recording of flock structure and breed composition
- Monitoring animal movement during the period
- Recording of reproductive performance, live weight and wool yields
- Monitoring of traditional husbandry practices
- Analysis of veterinary practices in the farms
- Monitoring of disease status and recommended vaccination and disease prevention programme

In spring 2007 participating farmers and control farmers from the surrounding communities were identified, 9 households in "Akbeket" village and 10 households in “Donaryk". Plans for improved husbandry practices were developed based on the analysis of constraints in the medium scale farms and based on discussions with the households. The interventions will be implemented in 2007/2008.

1.4.5 Activity 10: Production diversification: Improvement of milk productivity in sheep (with the potential to include a multi breed comparison by a regional activity)

Expected outcomes in the first year:

- First evaluation of milk production and lamb growth by December 2007
- First assessment of income generated by milk production.

This experiment is being carried out on a medium size pilot farm “Kenesh” in Chuy district. The farmer was interested in testing sheep milk production as a possibility to diversify his production and brought a young Awassi ram to Kyrgyzstan in 2002 to start a crossbreeding programme with his local fat-tailed sheep. The performance and economics of dairy Awassi sheep farming is being assessed on this farm before it will be promoted to smallholders. Marketing options for the dairy products from sheep have also to be explored before this intervention can be further promoted. There is a milk processing unit in Tokmak town, in 18 km distance from the farm. However, the owner of the unit did not agree to process sheep milk because of the low quantity produced.

The following activities were carried out during the first project year:

- Monitoring breed composition in the flock”
- Justification of crossing scheme of Awassi rams with local ewes population
- Phenotypical and productive traits of the crossbred and local sheep were recorded
- Lambs were weaned in July and milk production of ewes of different genotypes was recorded as well as milkability
- Sheep milk was processed into ayran and organoleptic characteristics were compared to ayran from cow’s milk

1.4.6 Activity 11: Set the basis for a decentralized and participatory breeding plan for farmers to access improved animals

Expected outputs in the first year:

- Implementation of the community-based system in a pilot community by August-September 2007.

Discussions with the households in “Akbeket” village in Kemin district and in “Donarik” in Chuy district showed that the farmers are interested to create an agricultural community/farmers’ association not only for the purpose of a joint breeding programme but also for shared herding to achieve a more efficient use of winter and summer pastures, and to organize milk processing, joint sales of products, and disease prevention programmes.

At each site collaborative units of 9 and 10 households were created. The production system of the member households is being monitored, e.g. breed composition, productivity, animal care, livestock products as well as farm size and crops cultivated. To start the implementation of a breed improvement programme, highly-productive 1-year and 2-year old rams from special breeding farms will be jointly selected by the farmers and scientists and then shared among the community members.

1.4.7 Activity 12: Community-based household cow and sheep milk processing improvement for value addition and income increasing

Expected outcomes in the first year:

- Report of local knowledge by April 2007
- Participatory workshops to be conducted by June 2007
- Processing of milk under improved methods to be started according to decisions taken in the workshop by July 2007
- Analysis of impact of results due to the technological intervention by the end of 2008.

In “Akbeket” and “Donaryk” village the following activities were carried out:

- Study of the production status, marketing and processing of cow and sheep milk in the selected farms and households
- Assessment of marketing possibilities of milk and of transportation from the sites to the Tokmak market by producers
- Discussion with farmers and households on plans to milk processing into salable products
- Evaluation farmers’ and households’ knowledge on milk processing

Tokmak town market is in a distance of 20-25 km to the producers. Milk marketing in the district centers Kemin and village Chuy is not possible, because each family has dairy cows and satisfies their own needs. Surplus milk is sold through middleman for 5 soms per liter. Farmers and households process milk into ayran (kefir) for home consumption, surplus ayran will be sold as heavy ayran and “kurut”. Their knowledge and capacity of processing milk is limited. Some producers have homemade separators to process milk into sour cream and subsequent processing to butter; the leftover is used for degreased kefir. The capacity of the hand made separator is 10 l/s. During the evaluation of milk processing, training on pasteurization of milk with subsequent processing was provided to producers.

Tajikistan, Sogd Province, Khujand site

1.4.8 Activity 13: Household improvement of goat management for improved productivity [management of the flock, feeding, selection and culling]

Expected outcomes in the first year:

- Identify participating farmers (improved and control farmers) by April 2007
- Set up comparative experiments by August 2007
- Evaluation of comparative productivity and cost-benefits by July 2008.

In the reporting period the farm/households in the four research villages were visited during March-April and farmers assigned to two groups, one group with improved management and the other one with traditional management, taking into account location, flock size and structure, fiber quality of and animal productivity .

Baseline data on flock structure and fiber yields in April were taken from these farmers. The implementation of the planned management interventions (weaning, individual assessment of the breeding animal, culling, substitution of the unproductive by improved bucks, preparing for mating) will start in September/October 2007 when the animals are back from the summer pastures

1.4.9 Activity 14: Improvement of shearing and classing of fiber, standardizing on the basis of international standards in accordance to quality, contamination and age

Expected outcomes in the first year:

- The first evaluation of the technologies of improved fiber management will be started in April-May 2007 and finalized by December 2007
- Fibers will be collected, analyzed and characterized in the shearing seasons of 2007 and 2008
- A report and standards for Tajik mohair goats will be produced by December 2008.

In April 2007 the shearing process was monitored on participating farms. Farmers started with shearing of kids, because the quality of their wool deteriorates quickly with warmer temperatures and the change in feeds. All the farmers sheared goats with simple equipment, i.e. shears. Shearing goats was done by the farmer and his family (family 3-4 people); some farmers had help from relatives or friends. During the shearing researchers discussed with the farmers on how to arrive at a higher quality of wool.

Fiber yields were recorded for different sex-age groups in the goat flocks. 200 fiber samples were collected and analyzed in the Tajik Livestock Research Institute, out of which 70 fiber samples were tested in a specialized fiber laboratory Almaty. The results will be used to encourage the farmers to divide raw material in quality classes after shearing the goats to achieve more uniform quality and higher market prices. The laboratory results will also be used to determine trait variability in the flocks and to support the selection of breeding animals with more desirable fiber characteristics.

The current selection standards for Angora goats do not include fiber diameter and need to be changed to reach improved Mohair quality that can compete on the international market.

1.4.10 Activity 15: Set the basis for a decentralized and participatory breeding plan for farmers to access improved animals

Expected outputs in the first year:

- Implementation of the community-based system in a pilot community by June 2007 to start improved breeding strategies in the breeding season of 2007.

In the reporting period meetings with farmers were conducted to identify farmers willing to participate in a nucleus breeding flock. Inter alia a training course was provided on “Significance of creation of pedigree flock for further improvement of the goat flocks in the farms”. In the beginning many farmers were interested in using improved males, in particular to use imported semen from abroad. However, when the requirements from the side of the farmers were explained (marking all animals, data recording, applying agreed selection criteria) the number of interested farmers rapidly decreased. At the moment four candidate farmers with relatively large flocks have been identified (Kilichov Turgunboy, Mamatqulov Abduvokhid, Kanaev Abdumalik, Tojiev Asad).

1.4.11 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

Expected outcomes in the first year:

- Laboratory and market evaluation of colored fibers and report will be started in April-May 2007 and finalized by December 2007.
- Women farmers will be organized and start processing in June-July 2007

This activity is implemented under the guidance of Dr. Liba Brent (University of Madison, Wisconsin). It started with a market survey of mohair of different colors and processed products that was conducted jointly with the socioeconomic team. The following observations were made:

- Raw material has satisfactory marketability
- Prices for colored fiber is 30 % higher than for white color
- Part of the Mohair fiber is processed further (yarn and some final products are marketed)
- Contrary to the world market the price for crude fiber is higher than for thin fiber on the local markets
- The main customer for Tajik Mohair fiber is still the Russian Federation.

Target groups of women-processors were organized in the research villages. To assess the quality of yarn prepared by each woman a special recording system was created. This system allows recording of all relevant traits (color, type, thinness, compactness or degree of curling) of yarn prepared by each woman. A competition for producing “best yarn” was organized to encourage production of high quality yarn among target groups’ women. The winner was awarded with a mechanical spinning wheel for yarn production.

This activity is awarded with great enthusiasm by target group women. Many of them produced very good yarns with a good market potential. Taking into account the demands of US consumers Dr. Liba Brent demonstrated the requirements for high quality yarn to the women. She then took samples to the US and explored their marketing potential. A detailed report on the initiation of this activity was prepared by Liba Brent.

Tajikistan, Vahdat district, Dushanbe site

1.4.12 Activity 17: Evaluation and improvement of sheep breeding in households flocks, aspects of feeding, reproduction and selection of sheep

This new research site in Central Tajikistan focuses on meat production from the famous Gissar sheep breed. In Dusti community keeping Gissar sheep is the main base for producing high quality meat and fat and they are in high demand in markets. Gissar sheep is a highly productive breed and shows best performance kept as pure bred animals. Organized rotational grazing between winter and summer pastures provides.

The objective of this activity is to determine and implement the most effective management strategies for Gissar sheep based on an evaluation of the current management practices used by farms and households.

Activities realized from March to July 2007:

- The livestock production system (sheep husbandry practices, in particular the grazing system, products from sheep) in the community was studied and three general types of sheep management was revealed:
  - System I: Year-round grazing of sheep. In winter and spring (December to April) sheep are grazed on winter rangelands (restricted access for some farmers, Garauty-Kizil Ariktov), and in summer (June to September) on high mountain rangelands (Ramit ravine). For summer grazing the farmers form a flock of sheep (500-600 heads) and arrange their grazing with a shepherd.
  - System II: Summer mountain grazing-winter stall-fed system. Small farmers organize a flock of sheep that are taken in summer to the high mountain range, and during winter sheep are kept at home using rangelands around village.
  - System III: Stall-fed system. These farmers do not take their livestock to remote rangelands and keep them near their home and graze them all year on rangelands around the village.
- Ten households and farmers from each group were selected with a total of about 80-100 ewes per group to compare flock productivity in spring and summer. Lambing took place in the first half of February 2007. The sheep in the first group showed better performance in all measured traits, namely fertility, liveweight and survival rate of lambs and ewes in March and May. The results show that system I is the preferred and most productive system. The access to winter rangelands is, however, limited so that this option is not open for all farmers. The project encourages the farmers to form joint flocks and send their sheep to summer grazing.
- Improved management interventions will be mainly tested in systems I and II because system III is not seen as a sustainable way to manage the sheep. An initial training course with representatives of households and farmers was held on methods of rational breeding, especially

the use of highly productive and improved rams, efficient flock structure, preparation (feeding) of ewes and rams for mating, disease prevention, improved housing, and marketing of products.

1.5 Theme 4: Knowledge exchange and capacity building

Activity 18 (Activity 17 in the first annual workplan): Enhancing knowledge exchange for increased feed and livestock production

Expected outcomes in the first year:

- Inception workshops organized in Central Asia and South Asia in September 2006
- Graduate students identified by May 2007
- Annual project report written in June 2007.

Inception workshops in 2006 were held as planned (see Activity 4 under 3 Regional Activities).

Graduate students that should carry out their field research in the project can only be recruited at the universities in September each year as this is the period when they decide about their research topics. This first occasion was missed by our project partners in 2006. A list of graduate and post graduate students that will be actively involved in the research activities is now in preparation.

During the supervision visit of the project coordinator in May 2007 it was agreed that the workplans for the second year would be ready 1 July 2007 and the progress reports 1 August 2007; formats for the workplans and progress report were prepared and distributed in Russian. However, the workplans and progress reports were received from the countries end of August in Russian and had to be translated in a rush to be available for the national workshops (national workshop in Shymkent on 26 August, in Dushanbe with both Tajik teams on 30 August and in Bishkek on 9 September).

2 South Asia – Pakistan

2.1 Teambuilding and recruitment of project staff

In Pakistan it was agreed to test feed-livestock production systems under rainfed and irrigated conditions. Accordingly two research sites were selected by Asamoah Larbi jointly with ICARDA's staff in the country office in Isamabad. The two man partner institutes are the National Agricultural Research Centre (NARC) in Islamabad and the Fodder Research Institute (FRI) in Sarghoda. The latter is only fodder research institute in Pakistan.

Akhtar Ali, the director of FRI, is the team leader for the irrigated site. Sartaj Khan, the national forage coordinator of NARC, is the team leader for the rainfed site and the National Coordinator for Pakistan. In the latter function he is supported by Abdul Majid, the coordinator of ICARDA's country office. Azeem Khan, former staff of ICARDA's country office, now Pakistan Agricultural Research Council, coordinates theme 1 in Pakistan in collaboration with Aden Aw-Hassan.

The two team leaders selected researchers for each theme involving other institutes where additional expertise was required.

<u>Team at the rainfed site in Gujar Khan:</u>

- Team leader: Sartaj Khan, Forage Specialist, NARC, Islamabad
- Muhammad Zubair, Social Scientist, NARC, Islamabad
- Muhammad Ansar, Crop Scientist, Arid Agriculture University, Rawalpindi
- Imdad Hussain, Animal Nutritionist , NARC, Islamabad
- Tariq Aziz, Dairy Technologist, NARC Islamabad

<u>Team at the irrigated site in Sargodha:</u>

- Team leader: Akhtar Ali, Forage specialist, Fodder Research Institute, Sarghoda
- Muhammad Sadique Javed, Agricultural Economist, University. of Agriculture, Faisalabad
- Ghulam Mohy Ud Din, Plant Scientist, Fodder Research Institute, Sarghoda
- Qurban Hussain, Animal Nutritionist, Livestock Dept. Sargodha,
- Nuzhat Huma, Dairy Technologist, University of Agriculture, Faisalabad

2.2 Theme 1: Socioeconomics

2.2.1 Activity 1: Characterization of smallholder feed-livestock production systems

Expected outcomes:

- Rapid rural/participatory rural appraisals conducted by July 2007
- Databases produced on production systems in target areas by August 2007
- *Constraints and opportunities for feed and livestock improvement assessed by October 2007*
- Inventory of proven technologies documented by December 2007.

Village selection:

The basic data collection for the selection of project villages was organized as informal rapid rural appraisals. The approach taken for village selection differed between the two research sites. In the rainfed area in Punjab the Barani village development project had been conducted and the National Rural Support Programme (NRSP) is very active, therefore the Assistant Director Barani Village Development Project (Gujar Khan) and Professionals of NRSP were consulted and the activities of the project were discussed with them in detail. Four villages were proposed to select the project village from. The main criteria for the selection of project village were:

- Concentration of livestock (small and large)
- Fodder Production in the village
- Availability of farmland in the village
- Farmers' intentions and interest in project activities

After visiting the four project potential villages, Lodhay village was selected. The main reason of selection of this village was the "enterprising" nature of the participating communities.

In Sarghoda district thirty-five villages were visited, out of which two villages Chak No. 74/SB and 105/SB were selected based on the following criteria.

- Small landholdings/ smaller herd size
- Dairy and meat production
- Presence of large and small ruminants
- Low income of the farmers
- Farmers' willingness to adopt technologies in crop-livestock systems
- Willingness of women to participate in the project
- Accessibility to market

For both sites village profiles and basic information on marketing was collected during the selection process.

Farm typologies and selection of farmers:

In both sites farm typologies were used to then work with a stratified sample of farmers. The required data from the farms were collected in formal surveys.

In Lodhay village the farmers were stratified according to their main business, namely dairy production, meat production, and fodder selling or forage seed production.

In Chak No. 74/SB, Chak No.105/SB basic socioeconomic characteristics, such as land tenancy, farm size, market orientation, labour use, education of farm manager, etc., were used to arrive at four farm typologies using cluster analysis. Thirty farmers in each village were then selected representing all farm types.

Characterization of feed livestock production systems:

The resource situation and socioeconomic characteristics of the participating farms were recorded and are being analyzed b farm type. Preliminary results were shown in a presentation by A. Khan in SCM meeting.

Expected outcome 3 should have been better placed under Activity 2 and was moved there.

Expected outcome no 4: the scientists participating in this project had been working in previous development projects and chose best-bet interventions for testing. After harvesting the summer crops a first assessment (inventory) of the forages and feeding practices tested in the first year can be completed and the next year testing will be based on this experience.

2.2.2 Activity 2: Adoption and impact assessment of feed and livestock management technologies

Expected outcomes in the first year:

- Databases on fodder production and feeding technologies by July 2007
- Ex ante assessment of feeding and livestock management technologies by November 2007.
- *Constraints and opportunities for feed and livestock improvement assessed by October 2007 (originally under Activity 1)*

Database on fodder production and feeding technologies:
Data has been recorded, but well structured databases still need to be developed.

Assessment of feeding and livestock management technologies:
As explained for Activity 2 under Central Asia no ex ante assessment in the classical sense will be done instead methodologies will be developed and tested. However, this analysis requires at least another full cycle of technology testing and additional data on labor and capital requirements.

Farmers' assessments (perceptions) of the feed-livestock technologies tested in the winter and summer season 2006/2007 in the three villages were documented; for example farmers' assessment of rabi season technologies and about standing summer fodders; farmers' perceptions about fodder seed production and on supplementation for milk production.

For some activities, e.g. for fodder selling and seed production enterprises, first cost/benefit calculations have been done based on the biophysical data, these need to be refined and revised with the socioeconomists.

An analytical framework for impact assessment that had been developed in other projects has been refined and will be used in our project. It was presented at the SCM and will be discussed with the CA researchers in November.

Constraints and opportunities for feed and livestock improvement:
The description of the feed and livestock production system has been used to identify the main constraints including marketing and prices. Particular attention was given to feed availability. The importance of livestock for farmers' income was also analyzed.

2.3 Theme 2: Range and Forage Productivity

Activity 3: Participatory on-farm evaluation and dissemination of fodder crops and technologies in crop-livestock systems

Expected outcomes:

- 2-3 communities identified in October 2006
- Workshops held with farmers in 2-3 communities in October 2006
- Demonstration plots of winter forages established on 3-4 farms in October-November 2006
- Farmers organized into interest groups for market-oriented fodder by March 2007
- Field day on winter fodder crops organized by March 2007
- Fodder presser purchased to start market-oriented fodder production by February 2007
- Demonstration plots for summer forages established by May 2007

All expected outcomes with the exception of field days that were postponed to the second winter and summer cropping period so that more information on yields and forage quality would be available. Also the fodder press has not yet been purchased as the price turned out to be much higher than expected and now different options are being compared to make a final decision.

Farmers' interest groups and workshops:
In all villages male and female farmers have built interest groups that meet and discuss planned interventions with the scientists. Facilitators have been chosen who assist the scientists in the field work and data collection. In addition it is planned to train community members in animal health

interventions and link them to the animal health service. The main work on the fields and with the large livestock is done by men; therefore, women will be mainly involved in activity 5.

Testing and demonstration of high yielding fodder crop species/varieties and introduction of cereal-legume mixtures:

Improving the available feed resources from cropping systems can be achieved through

- selection of high-yielding fodder crops (new options).
- selection of high yielding fodder varieties of crops already in use
- promotion of cereal-legume mixed cropping for high yield and quality.

The fodder production activities were started during the winter season 2006.

In Lodhay twelve dairy farmers planted a mix of improved varieties of oats (Cv PD2-LV65) and vetch (Cv Langue dock). The green fodder yields were compared to the local fodder crops planted by farmers, i.e. local wheat, barley and oats. The improved fodder crop mixture (oats + vetch) produced nearly twice the yield of green fodder than the local fodder crops. In the same period comparisons of improved varieties of winter cereal crops were done at NARC experimental station to confirm the selection of oats for the on-farm experiments. Indeed oats produced the highest green fodder yields. Pure oats and pure vetch stands were compared with a mix of 50:50 of oats and vetch in a field experiment at the University of Arid Agriculture at Rawalpindi. Pure oats produced the highest dry matter yields followed closely by the oat/vetch mixture. Given the higher nutritive quality of the mixture the experiment supported the use of the mixture for the on-farm experiments.

At the irrigated site berseem, a legume, variety “Pachaiti berseem” and oats, variety “S-2000”, a high yielding winter cereal fodder, were sown on 21 farmers’ fields in Chak 74/SB and on 16 in Chak 105/SB, in each village about 15 acres. Three combinations were tested, namely (1) berseem sole, (2) oats sole, and (3) berseem & oats (mixed) using improved varieties and improved production technology. The area sown on each farm depended on the available land. The rest of the farmers planted local berseem and oats using traditional agronomic practices. Green fodder yields were recorded. In berseem five cuts of green fodder were harvested, whereas in oats green fodder was harvested when the crop was at 50% heading stage, while in mixed crops the oats and berseem were harvested at first cut and second cut, later-on oats mixed with berseem did not sprout and berseem alone was harvested in three more cuts during the growing season. The wide range of average green fodder yields of improved varieties revealed that there was variation in soil and crop management from farmer to farmer at both villages Chak No. 74 SB and 105 SB. Improved berseem versus local berseem grown at both the villages gave 33.7 and 30.5% higher green fodder yield yields as compared to local berseem in villages’ 74/SB and 105/SB, respectively. Improved oats gave 72.7 and 85.7% higher yields as compared to local oats in village’s 74/SB and 105/SB respectively. The increase in green fodder yield through planning improved oats in Chak No. 105/SB was higher because some of the control farmers planted wild oats. The mix of improved berseem and improved oats gave 2.5 and 2.4% higher yield as compared to improved berseem sole at villages 74/SB, 105/SB, respectively. Furthermore, the increase in income from increased yields of green fodder was estimated. The average income per ha from improved fodder was higher in the village 74 SB than in village 105 SB because of a higher market price due to the presence of more landless livestock holders in Chak No.74 SB.

A variety of summer crops were being tested at both sites. At the rainfed site the cereals maize, millet, and sorghum and the legumes guar and cowpeas were sown, at the irrigated site sorghum and maize in pure stands and mixed stands of sorghum and pearl millet and sorghum and cowpeas were planted. The experimental details and results will be reported in the next progress report (1 July -31 December 2007) as the crops were not harvested at the end of the reporting period.

Green fodder selling enterprise in the project area.

In Lodhay village some farmers are already selling green fodder from land under dug-well irrigation. Three farm enterprises tested selling a high yielding oat variety as green fodder during the winter period (till April 2007). A preliminary analysis showed that an income of 21000 Rs could be achieved per acre.

Increasing availability of fodder seeds in the villages through village-based fodder seed enterprises

In Lodhay seed production of an improved variety of oats (PD2-LV65) was tested in the winter period with five farmers. The seed production varied greatly between the farmers.

At the irrigated sites the income from harvesting green fodder and seeds in berseem and oats was compared to harvesting only green fodder in both villages. In Chak No. 74 SB the results showed that the income received from harvesting fodder and seeds in berseem was 44.9% higher than harvesting

only green fodder and in the case of oats the income was 82.3% higher. In Chak No. 105 SB the income received from fodder and seed of berseem was 58.2% higher than for green fodder, similarly the income for oats was 39.3% higher. The income from seed production of berseem and oats was higher in Chak No.74 SB than in Chak No. 105 SB because of better land and farm management conditions.

This activity needs to be supported by an analysis of the marketing opportunities and the price that can be achieved for farmers' seed production. At present the farmers an easily sell their produce to neighbors but the options for marketing larger amounts have o be carefully assessed.

Fodder conservation options (hay production) for feeding during lean periods

Severe green fodder shortages occur during May-June and December-January in the project area. During these months livestock rely on feeds which are of very low quality such as wheat straw and dry stalks of maize, sorghum and millet with only 3% crude protein. Therefore the preparation of hay from the oats and vetch mixture planted in the winter period was tested jointly with some of the dairy farmers fro March to May 2007. The nutritive value of the hay was compared with wheat straw. The hay was used in feeding experiments (see Activity 4).

2.4 Theme 3: Improvement of livestock productivity

Activity 4: Promoting efficient use of crop residues and agro-industrial by-products in ruminant diets for increased meat and milk

Expected outcomes in the first year:

- Informal surveys on livestock production completed in 2-3 communities by April 2007
- At least 3-4 farms selected to demonstrate improved feeding in October 2006 and in February 2007
- Winter fodder for feeding trials established on-farm in October 2006.
- Summer fodder for feeding trials established on-farm in February 2007.
- Demonstration trials for meat and milk production started in June 2007

The informal survey on livestock production was done together with the socioeconomic scientists and is reported under activity 1. Winter and summer fodder was established on farms as planned The winter fodder produced was used for feeding trials as planned. The experiments need to be revised and experimental animal more carefully selected as a high variation was observed. It will be difficult to test the fodder adequately on farms as herd sizes are small, animals differ in age, lactation stage and even breeds, in particular breeds of diary cows used differ in the villages.

Rainfed site – Lodhay:

Balanced feeding of livestock with the improved forage mix (oats and vetch) supplemented with a concentrate produced by the University of Faisalabad (UAF) was compared with feeding local forages plus local concentrates (mix of cotton seed cake, wheat bran, ground wheat). 18 cows were used in the experiment for two months. The milk yields obtained from three feeding regimes, namely improved fodder plus UAF concentrate, improved fodder plus local concentrate local fodder plus local concentrates were compared. The forage was fed as green fodder to the animals. The treatment improved fodder and UAF concentrates produced the highest milk yield, while local fodder plus local concentrates resulted in the lowest milk yield. The same experien wascnuctd with the same number of buffalos. The results were similar although he increase in milk yield achieved by the concentrate was higher in cows than in he buffalos.

Oats/vetch hay was tested with 24 buffaloes for one month. Three improved feeding rations, namely hay plus UAF concentrates, hay plus 2 kg cotton seed cake and hay plus 1 kg cotton seed cake were compared with the local ration (i.e. wheat straw plus 2 kg cotton seed cake). It was shown that improved hay plus UAF concentrates resulted in the highest milk production, followed by the treatment improved hay plus 2 kg cotton seed cake, while the local ration showed the lowest milk production.

Irrigated site – Sarghoda:

Three feeding regimes were tested in dairy animals (buffalos and cows) in the winter period two villages.

Table 2. Feeding experiments with diary animals at the irrigated research site

Feeding regimes	Description of feeding regime	Number of experimental animals	
		Chak No. 74/SB	Chak No. 105/SB
Group 1	green fodder from improved varieties (mix of oats and berseem) with concentrates in a balanced ration	14 buffaloes 8 cows	13 buffaloes 3 cows
Group 2	green fodder from improved varieties with/without cotton seed cakes	12 buffaloes 5 cows	12 buffaloes 4 cows
Group 3	green fodder from local varieties with/without cotton seed cake	10 buffaloes 4 cows	4 buffaloes 1 cow

The preliminary analysis showed that buffalo milk yields gradually decreased with the advancement of the feeding period from January to May because of lactation stage, increasing temperature and decreasing availability of fodder. This decrease was found in all three feeding regimes. There was also a large variability in buffalo milk production among the different farmers with the same feeding regime. The average milk production of buffalos and of cows did not differ between the villages, thus the production was pooled for comparison of the feeding regimes. The results showed that improved fodder plus concentrate gave the highest average buffalo milk production of 5.7 liters per animal per day followed by an average milk production of 4.7 liters with improved fodders with/without cotton seed cake. The lowest milk production of 4 liter per day per animal was produced with local fodder with/without cotton seed cake. A similar difference in milk yields between the three feeding regimes was found in cattle milk production. The average milk fat percentage increased by 2% percent when buffalo were fed with improved fodder supplemented with 2 kg of concentrates compared to buffalos fed with traditional fodders without supplementation. The milk with increased fat percentage fetched a higher price at Nestle milk collection centre.

A rough analysis of costs and benefits not considering labor, capital and transport costs related to the use of concentrates showed that there was a net benefit of about Rs. 40 per animal and day under the improved feeding regime (improved fodder plus concentrates in a balanced ration) as compared to local fodder without supplements.

Furthermore, buffalo and cow calves in Chak No. 74 and 105 /SB were fed with three different rations as farm demonstration trials. The first group of calves was fed with green fodder of improved varieties supplemented with concentrates (balanced ration), the second group with green fodder of improved varieties and the third group with local fodder. These demonstration trials will be repeated as field experiments in the coming project year.

Activity 5: Adding value to livestock products through processing and preservation

Expected outcomes in the first year:

- Farmers' interest group established for fattening and milk processing by March 2007
- Traditional fattening and dairy production methods documented by May 2007
- Women facilitators hired and women's interest group formed by June 2007.
- Linkages between farmers' interest group and Nestle initiated by June 2007

Feeding options for fattening will be tested with interested farmers under activity 4. Cooperative marketing may e considered at a later stage.

Activity 5 will focus on dairy processing. Women interest groups were formed in the three villages at both research sites. The reaction of the women was very positive and they are willing to test improved processing methods for home consumption and some women for market production. However, the active work with the women starting with studying and improving their traditional methods of producing yoghurt, butter and butter oil mainly for home consumption had to be postponed to the second project year due to unavailability of the two dairy technologists. The female dairy technologist from the University of Faisalabad was not available in the first project year and the dairy technologist from NARC was not permitted to join the project during part of the first year (see IV problems encountered).

Nestle Company is only active in one village at the irrigated site; their collection center supported the milk analysis during the feeding trial and they are interested in the project activities. At the rainfed site private middlemen collect the surplus milk and pay a good price due to a high demand and a relatively low supply.

At the irrigated site a female facilitator was hired to work with the women associations in Chak No. 74 and 105 SB. The preparation of cheddar, mozarella, yogurt and cheese were demonstrated to the 15 female members of each female association at the villages. The market demand for other products like flavored milk or yogurt, and condensed milk is being explored. In Lodhay milk yields and sale prices were recorded by interviewing farmers.

2.5 Theme 4: Knowledge exchange

Activity 6: Enhancing knowledge exchange for increased feed and livestock production

Expected outcomes in the first year:

- Inception workshop in September 2006
- Quarterly meetings throughout the first year
- Farmers' fields and exchange visits organized during the period from April to June 2007
- A graduate student identified by May 2007.
- Annual country project workshop organized and report written by June 2007.

Inception workshops were organized in 2006 as planned (see Activity 4 under 3 Regional Activities).

The team leaders collaborate very closely. Two project meetings took place in March and July 2007 during the supervision visits of Asamoah Larbi and B. Rischkowsky. During these visits meetings with male and female farmers' groups were organized in the three villages, where problems, achievements and expectations were discussed. It was felt that it was too early to organize field workshops during the first year as the first annual cycle of testing winter and summer crops should better be completed to enable more targeted experiments with more farmers in the second year. Field days are planned

At least three graduate students have been identified. A list of graduate and post graduate students that will be actively involved in the research activities is now in preparation.

The national workshop was held on 22-23 August 2007. The technical progress reports and workplans from both teams were available at the meeting and were finalized end August 2007.

3 Regional Activities

3.1 Improvement of skills: discipline-Specific Training

3.1.1 Activity 1: Training scientists in the area of integrated feed resources and livestock production at ICARDA

Expected outcome in the first year:

- Four scientists trained at ICARDA on crop-livestock issues

In the first year it was foreseen to conduct individual training of the Professional Officers, post-graduate students conducting their PhD research within the frame of the project, and/or young research staff from the partner institutes at ICARDA HQ. In the reporting period one Kazakh post graduate student from the South West Research Center took part in the training course on Integrated Crop-Livestock Production conduced by ICARDA in April 2007. The individual training at the HQ did not take place because only two Professional Officers could be recruited during this period, one of them only recently in May 2007. Furthermore, the partner research institutes have been very slow in actively searching for and involving young scientists as researchers in the project activities. In the

reporting period, most students were only assisting the senior staff but not actively pursuing field research for obtaining a degree.

Nariman Nishanov (theme 1) received training during the regional workshop in March 2007 and Aziz Nurbekov (theme 2) during the round table discussion in Tashkent in May 2007 (see below).

3.1.2 Activity 2: English training of scientists to improve the international scientific exchange

Expected outcome in the first year:

- At least 10 scientists trained in English language in Central Asia

An English training course for 14 scientists, namely four participants each from Kazakhstan and Kyrgyzstan and six from Tajikistan, will be conducted from 5 January-5 April 2008. A separate training course will be organized for the Tajik scientists in Dushanbe from 1 November to 1 February 2007, while the others will be trained in Tashkent.

It is seen as very important that participants are carefully selected by the national coordinators. Important criteria that were discussed with the partners are:

- Person to be expected to work in the next years in the partner institutes to ensure longer term benefits
- Preferably persons involved in project activities
- Preferably some basic knowledge of English
- At least one post-graduate student from each country team.

3.2 Regional workshops

3.2.1 Activity 3: Regional Workshop on participatory and socioeconomic research methodologies (Theme 1)

Expected outcome in the first year:

- At least 8 scientists (2 scientists from each country) trained in a Regional Workshop on research methodologies concerning adaptive and participatory research with communities.

The workshop was held at the South West Research Center (SWRC), Shymkent, Kazakhstan on 27 March 2007. A total 14 participants attended the workshop. These included two participants from Tajikistan, Kyrgyzstan and Kazakhstan. In addition to the participants from the project team three students from the Kazak-Turkish University attended the workshop. No researchers from Pakistan participated because it would have caused severe logistic problems (language, visa, etc.) and the knowledge, skills and expectations of the participants would have differed too much. The workshop was preceded by a field visit to Khojand (Tajikistan Site) and to research sites in Kazakhstan. The recorded observations from the communities visited at the research sites in Kazakhstan and in Tajikistan (Khojand) will be used in the project reports. The Director of the Center and Project National Coordinator for Kazakhstan, Abdurakhman Ombaev, provided the facilities for the workshop.

Nariman Nishanov (NPO, socio-economics, Tashkent Office) organized the workshop and supported the NARS during the workshop guided by Dr. Mekhlis Suleimenov, who also participated in the field visit. Denise Mainville from Virginia Tech University participated and provided support in market research and indicated the potential for a student exchange program which would allow students from developing countries to take full term courses in Virginia Tech with minimal costs. Dr. Liba Brent (sociologist, consultant) participated in the workshop and highlighted the role of women in Angora fiber processing work and their role in adding value to local products which is important for household income.

The main purpose of the workshop was to help NARs familiarize with the socio-economic research methods that will be used in the market and livelihood analysis, and that will address research questions relevant to the project goal and in line with the plan developed during the inception workshop.

The methodology for market driven research, value chain concept and livelihood analysis, role of gender in value-addition activities were presented and thoroughly discussed. The participants were able to internalize these methods and incorporate them into their research plans during group discussions. The teams presented their plans which were then discussed. The workshop helped NARS to sharpen the research focus on the specific problems with high priority for the project theme and goal, and to develop a strategy for qualitative research (as first step) including secondary data and literature review, to describe the household livelihood strategies, and to explain the market value chain. All NARS groups then presented their plans which were discussed. It was decided that the focus would be on:

- Analysis of sheep market (with focus on meat) and rural livelihoods in Kazakhstan (it is important to note that semi-industrial fattening sheep systems like in other parts of the world, for example in Syria, are emerging in Kazakhstan and the study will cover both the extensive as well as the intensive fattening systems and will analyze their integration).
- Analysis of marketing of sheep (meat and wool) and rural livelihoods depending heavily on sheep production systems in Kyrgyzstan,
- Market analysis of Angora goat systems and the livelihoods of rural communities relying heavily on Angora goat production in Tajikistan,
- Guidelines for the analysis of market value chain and rural livelihood using participatory rural appraisal methods were developed and being translated into Russian for the teams to apply in their research activities. These guidelines will be further refined after being applied in the first year and will be produced as IPG publication for application in similar research.

The workshop then focused on the data collection during the remaining period of the first year of the project:

- Description of livelihood strategies for households in the target areas;
- Detailed description of the market chain in a written and flow chart form;
- Enterprise budgets of representative households and production systems, and marketing costs and profit margins.

3.2.2 Additional activity: Round table planning workshop on Theme 2 “Pasture and Forage Productivity” in Central Asia

The workshop took place on 27 May 2007 under the lead of Asamoah Larbi assisted by Aziz Nurbekov with 12 participants, including the project coordinators from ICARDA and Tashkent office, Mr. Nishanov (PO Socioeconomics), the Principal Investigators from all research sites (Sogd province/Tajikistan was represented by a team member), two additional scientists from Kazakhstan and Kyrgyzstan and a medium scale farmer from Kazakhstan. The objectives of the workshop were to get to know each other, to review progress made so far, planning of year 2, to identify training needs and to agree on reporting.

First the national collaborators made presentations on the progress in Theme 2 on the basis of the quarterly progress report that had been submitted to ICARDA. The number of participating small and larger farmers was discussed and it was emphasized that the main target group are small farmers but that some interventions where more land areas and resources are required can be tested on medium scale farms.

The activities and the related experimental design under Theme 2 were then discussed in detail using examples that were presented by the national principal investigators. It was agreed that Drs. Larbi assisted by Dr. Nurbekov would develop a questionnaire for a systematic survey on fodder crops and feed resources (Activities 4.1 and 5.1 in the first annual workplan) and distribute it to the national principal investigators. It was further agreed that more emphasis would be given to forage production under activity 4. The two main areas of research would be: (1) Integration of forages into farming/cropping systems (evaluation of varieties and cropping management options) and (2) Improving carrying capacity of degraded rangelands around villages (enriching with forage plants, rotational use of pastures. Activity 5 should test strategic supplementation of productive animals using the newly available forages (activity 4) and alternative feed resources.

Finally training and the importance of including graduate students into the project was discussed. The research topics of the students should directly relate to project's research activities and have high relevance to the candidate's national agricultural research program. The deadlines for the second

annual workplans and annual progress reports were agreed. Dr. Larbi agreed to send a format for the workplan for Theme 2 within the next week to be translated by Dr. Nurbekov.

3.3 Project management and supervision

Activity 4: Project supervision and Regional and Steering Committee meeting

Expected outcomes during first year:

- Inception/Planning workshops held in CA and SA in September 2006
- At least one supervision visit of all PIs during the first year
- Regional and Steering Committee Meeting to be conducted in Shymkent, Kazakstan in August-September 2007.

Inception workshops:

The two day inception workshop in Tashkent involved 19 participants, including ICARDA's Principal Investigators and the Programme Director of MP4, NARS from Kazakhstan, Kyrgyzstan, and Tajikistan, an NGO representative from Tajikistan, and faculty members of Kazakh, Kyrgyz, and US universities. It was opened with welcomes from ICARDA (Mekhils Suleimenov, Colin Piggin) and an outline of the project and meeting objectives by Luis Iñiguez. Meeting arrangements had been undertaken by a short-term consultant, Yerbol Yahshilikov, a socio-economist in Uzbekistan in Phase 1 of the project, who visited each country and encouraged and assisted with the preparation of workplans. Participants from Kazakhstan, Kyrgyzstan, and Tajikistan gave presentations of draft workplans in these three areas. These theme workplans for each country were then discussed and modified with the help of ICARDA scientists to ensure activities were addressing the highest priority issues and manageable and affordable according to the budget and time frame. Refined workplans were presented and discussed so all partners were aware of what was proposed across the region. A draft budget prepared by Dr Iñiguez was discussed and agreed to by all countries.

The Inception Workshop for Pakistan was held on 22 and 23 September 2006 in Islamabad involving 20 scientists from NARs, ICARDA's country coordinator and ICARDA staff, namely Asamaoah Larbi and Dr. Azeem Khan (ICARDA's socioeconomist in Pakistan). The workshop aimed at explaining the implementation strategies and at developing workplans. Teams from each site developed tentative workplans. Participants discussed management issues, and identified training needs.

The agreed workplans from both inception workshops were edited, collated and submitted to IFAD for approval and dispatch of funding in December 2007.

Supervision visits:

The project management and implementation is being shared among the Project Coordinator and the Principal Investigators (PI) for each theme, Aden Aw Hassan, Assamoah Larbi and Luis Iñiguez (for breeding). In the first project year all principal investigators visited the project sites at least once. All PIs were involved in the site selection in Central Asia. Asamoah Larbi jointly with ICARDA's staff in the country office decided on the sites in Pakistan. In May 2007 the new project coordinator visited all research sites jointly with Mekhlis Suleimenov. The project implementation was reviewed and dates for national and regional workshops and the SCM were agreed. Originally it had been planned that Luis Iñiguez would take part in this visit but a car accident on the road from Aleppo to Adana blighted this plan.

Regional meeting and SCM:

During the inception workshop in Tashkent, it had been agreed to hold a regional meeting and the first steering committee meeting (SCM) in Shymkent, Kazakhstan, to be hosted by the South-West Research Center of Agriculture. This decision was later revised because the South-West Research Center of Agriculture hosted the regional workshop on socioeconomic methodology in March 2007 and agreed in May 2007 in Dushanbe to host the next SCM for the entire CAC region in 2008. Kyrgyzstan then offered to host the regional meeting and the SCM for our project on 12-13 September 2007.

II Financial Summary

Audited financial reports are sent by the Finance Department of ICARDA to IFAD through the office of the ADG-IC by end of each calendar year. The financial summary of the 1st year of implementation (1June 2006-30 June 2007) in brief looks as follows:

Total funds received from IFAD, first year	429,710 USD
Audited report for 1 June-31 December 2006:	117,785 USD
Expenses reported in ICARDA HQ system 1 January-30 June 2007:	101,980 USD
Additional expenses to be considered (CA & Pakistan):	67,375 USD
Total expenditure till 30 June 2007	287,141 USD
Balance available by 30 June 2007	142,569 USD

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

1 Project coordination, progress reports and workplans

Change in project coordination:
Luis Iñiguez, who coordinated the previous Central Asian project, and proposed the current project, handed the project coordination over to Barbara Rischkowsky, the newly appointed Senior Livestock Scientist, on 1 January 2007. Although she has been working closely with the former project coordinator throughout the first year, some lessons had to be learnt. Furthermore, a sick leave of two months (February-March 2007) delayed her first visit to Central Asia considerably.

Financial administration and reporting:
In January 2007 it was decided to create separate budget codes for each country and for the Principal Investigators for Themes 2 and 3 for greater transparency and better budget control and to give the PIs more autonomy to lead their activities. The disadvantage is that the project now consists of seven budget codes to be controlled. Furthermore, the implications of this change had not been fully understood by the country office in Pakistan and the regional office in Tashkent. In the case of Pakistan the financial reports from the country office to the HQ did not differentiate between the expenses of the partners and ICARDA office and reported all expenses under the budget code assigned to ICARDA coordination and regional activities. This misunderstanding has been clarified and the expenses are being reassigned at HQ, but this is time-consuming. In Central Asia the expenses were booked under the right budget codes but for the partner countries expenses were not differentiated according to type of expenses but booked as bulk expenses under collaborator/partnership and material costs. Thus, the two first quarterly expense claims of the three partner countries have to be revisited and differentiated. Due to the lag time between the time of expenses, reporting and their appearance in the HQ system, which cannot be avoided, these problems were discovered relatively late. In the expenditure claim to be prepared for the next fund withdrawal and for the audited financial report at the end of the year these inaccuracies will have been corrected.

Reporting and workplans:
All communication with the Central Asian partners is in Russian and requires translation with the related delays, and complications due to incorrect translations. The quality of the first quarterly progress and budget reports received in April 2007 was very poor in Central Asia. During the supervision visit of the project coordinator in May 2007 this was discussed and the required changes explained. It was further agreed that the workplans for the second year would be ready 1 July 2007 and the progress reports 1 August 2007; formats for the workplans and progress report were prepared and distributed in Russian. However, in reality a last minute delivery of workplans and progress reports just before the national workshops took place in both regions (see Theme 4). The workplans from CA still required thorough editing and clarification. Then the time interval between national workshops and SCM was too short to prepare the consolidated reports, workplans and budgets. With more

experience this could have been anticipated. In the SCM it was agreed that the next national workshops will take place in October 2008 and the SCM in November 2008 in Islamabad.

2 Central Asia

Implementation of planned activities has been initiated with a delay of about six months in Central Asia due to several reasons:

- The first annual workplan budget approved by IFAD was translated mid January 2007; however, the workplans and budgets agreed by the inception workshop in September 2006 could have been used by the national teams for initiating the activities.
- Recruiting the discipline Professional Officers was extremely difficult due to a lack of applicants with suitable qualifications and experience, in particular an adequate proficiency in English. Exception was the PO for socioeconomic that was recruited in October 2006. The PO for range and forage productivity was employed in April 2007, although he did not fully match the profile He is a plant breeder and worked for ICARDA as an agronomist but has relatively little experience in forages and no experience in range. In April a PO for theme 3 with suitable qualifications and experience was employed, but after three weeks he resigned because of health reasons and lack of confidence. After a long search and active head hunting a new PO for theme 3 was employed in September 2007, a veterinarian not a livestock producer as would have been preferred.
- Due to the seasonality of livestock and forage production, for some interventions the entry point for implementation is in June/July, which was not possible in 2006.

In Kyrgyzstan and Kazakhstan a redirection of the research focus for some activities in Theme 2 and 3 from medium scale farms to household farms was required and agreed on in May 2007.

There is a strong need for guidance and support from the ICARDA's PI to reorientate the CA researchers from range to forage related research. The national principal investigators for theme 2 are range scientists and naturally focus on rangelands. It is difficult to find forage specialists in the national partner institutes.

The partner institutes have been very slow in actively searching for and involving young scientists as researchers in the project activities. In the reporting period, most students were assisting senior staff but not actively pursuing field research for obtaining a degree. Interventions from all PIs have led to a better understanding of the advantages of integrating young researchers.

In the case of Tajikistan our Uzbek staff need visa (with a waiting time of about one month each time) for visiting the research sites. This impedes rapid and frequent travels to Tajikistan.

3 Pakistan

In Pakistan the teams started their activities following the agreed workplan from the inception meeting in September 2006. However, as the budget for Pakistan had not been clarified, the activities in the winter period were started on a smaller scale.

At the end of 2006 the NARC administration intervened and did no longer permit the NARC scientists to take part in the project activities. This was due to an inadequate consultation process at the initiation of the project. Fortunately, ICARDA's country coordinator was able to solve the problem and to convince the NARC administration of the importance of this project. In the intermediate period Akhtar Ali, the team leader of the irrigated site, also coordinated the activities at the rainfed site and Sartaj Khan assisted in his free time so that the damage to the project activities was minimal.

Another problem in Pakistan concerned involving scientists from universities in the project activities where additional expertise was required. In Pakistan a large range of research and development projects compete for the available expertise and scientists are used to receive relatively large honorariums for their participation. Our project is not able to match this expectation and had to search for scientists who were willing to accept relatively little compensation for their time, which led to some disappointments and took some time.

IV Proposed programme of activities and progress expected during the following reporting period

The second workplan for the period from 1 July 2007 to 31 December 2008 is a continuation of the first annual workplan as many activities have to be implemented and tested on a longer term basis and some activities have only been prepared and initiated in the first year. In collaboration with the village communities and individual farmers and based on the experience from the first year, the activities have been outlined in more detail in the second annual workplan. Furthermore, a second research team studying the sheep production systems in Central Tajikistan has been added that widened the research scope in Tajikistan.

The next reporting period will be the key period for the implementation of the project. As the research teams are complete in both regions and administrative problems and uncertainties that occurred in the first year have been solved and clarified, smooth implementation is expected. However, the success of the project depends on the support and personal engagement of all involved scientists and support staff at ICARDA and at the national partner institutes.