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

Workplan Year 1

ICARDA and NARS of Kazakhstan, Kyrgyzstan, Tajikistan and Pakistan

Index

I General Introduction to the Programme..... 3

1 Programme background and goals..... 3
2 Programme approach..... 4
3 Target group and beneficiaries..... 4
4 Programme management..... 5
5 Institutional linkages..... 5

II Research Sites, Problematic and Research Focus..... 7

1 Central Asia..... 7
Kazakhstan – Akdala site..... 7
Kyrgyzstan – Alymseit (Akbeket) site in Kemin District..... 8
Tajikistan – Jamoat (Somgar) site..... 9

2 South Asia-Pakistan..... 10

III Country Activities..... 11

1 Central Asia..... 11

Theme 1: Socioeconomics..... 11
Theme 2: Range and Forage Productivity..... 13
Theme 3: Improvement of livestock productivity..... 15
Theme 4: Knowledge exchange..... 22

2 South Asia-Pakistan..... 23

Theme 1: Socioeconomics..... 23
Theme 2: Range and Forage Productivity..... 24
Theme 3: Improvement of livestock productivity..... 25
Theme 4: Knowledge exchange..... 26

IV Regional Activities..... 27

1 Background..... 27

2 Activities..... 27

Improvement of skills: discipline-specific training..... 27
Regional workshops..... 27
Project management and supervision..... 28

I General introduction to the programme

1 Programme background and goals

Programme background

This Programme is based on the findings and experiences gained in the Technical Assistance Programme, TAG ICARDA-425 *Integrated Feed-Livestock Production in the Steppes of Central Asia*, which was conducted by ICARDA from 1999 to 2003.

TAG ICARDA-425 targeted the development of productive and sustainable livestock-based systems in Central Asia, through the integration of range, livestock and crop production, with a view to improving the incomes and welfare of smallholders, and conserving the natural resource base. The Programme, which concluded in 2003, initiated an integrated adaptive research framework with active participation of farmers and the direct involvement of the national agricultural research systems (NARS). The research approach linked farmers to researchers in a process of assessment of problems and market opportunities simultaneously with the testing of suitable technologies in accordance with identified bottlenecks and market options. This approach can be regarded as one of the first effective R&D interventions benefiting farmers and research in Central Asia after the end of the Soviet Union.

TAG ICARDA-425 created a regional network of on-farm adaptive research representative sites, where participating farmers and researchers implemented a research strategy focusing on three areas: (i) socioeconomic studies to characterize production systems and identify market problems and opportunities, (ii) assessment of the status of rangelands and severity of fodder shortages and the testing of technologies to improve fodder availability through improved range management and fodder cultivation/management, as the basis of a suitable feed-feeding chain, and (iii) assessments of production problems and potential for production diversification options considering obvious market opportunities, concurrently with the testing of integrated production technologies involving breeding, nutrition and health management. Gaps in knowledge were filled and promising integrated feed-livestock production technologies for production reorientation and livelihood improvement were identified and tested on-farm. Some have already been adopted by participating farmers and are generating marked interest among other farmers.

The new Programme aims to capitalize on the lessons learned and to transfer the experiences gained during TAG ICARDA-425. It is also of direct relevance to neighbouring countries with similar agroecologies and production constraints, including Afghanistan and highland Pakistan. Thus, the Programme will:

- consolidate research on promising options in Kazakhstan and Kyrgyzstan in Central Asia and expand activities to Tajikistan,
- initiate a new programme of research in Pakistan,
- develop linkages with other countries in South Asia, namely Afghanistan,
- strengthen national research institutions, and
- link with key development projects for more rapid achievement of goals.

Programme goals

The Programme goal is to improve the livelihoods of rural communities in Central and South Asia.

The Programme purpose is to develop and promote community-based actions to support productive and sustainable livestock systems, access to market opportunities, and sustainable management of the natural resource base in the region

2 Programme approach

The Programme strategy is to develop productivity enhancing and market oriented technologies and community-based strategies for the management of integrated crop (fodder)/rangeland/livestock production.

The Programme will focus on the community level with the full participation of livestock producers, as well as national programme scientists. It will test available technologies and production options together with farmers, evaluate their impact on farmers' livelihoods, and assess the need for support services and institutions, including those governing common property (rangeland) access and management, to support the adoption of these technologies.

The project activities are structured according to three major themes, each coordinated by a Principal Investigator (PI) from ICARDA:
Theme 1: Socioeconomics; PI: Aden Aw-Hassan,
Theme 2: Range and forage productivity; PI: Asamoah Larbi
Theme 3: Improvement of livestock productivity; PIs: B. Rischkowsky and L. Iñiguez

The Programme targets two regions Central and South Asia with two ecoregional intervention nodes:

- "Node I" includes Kazakhstan and Kyrgyzstan where the focus will be on the priorities emerging from TAG-425 and the consolidation of achievements.
- "Node II" includes the new participating countries of Tajikistan and Pakistan, where the focus will be on identifying constraints, defining priorities and transferring available technologies developed in TAG-425 or elsewhere.

In Node I (Kazakhstan and Kyrgyzstan), representative communities in "pilot" sites were selected based on the information and results from TAG-425. Selection was based on criteria that will enable the project to address the priorities identified in TAG-425, including (a) the development of integrated production systems that include the entire production chain: fodder crops, rangeland and livestock; (b) interactions among different farm types; (c) community action for sustainable rangeland management; (d) identification of opportunities for cooperation in production diversification and marketing enterprises.

In Tajikistan, representative communities were selected by collaborating partners. Initially work on characterization of production systems, constraint analysis and assessment of market opportunities is being undertaken, building on the experience gained in the other countries under TAG-425. This work is vital to the design of appropriate technology development. It is expected that advances made in Node I (identified options) can then be rapidly transferred to Tajikistan for further adaptive research and testing.

In Pakistan, two major sites representing two different farming systems, rainfed and irrigated crop-livestock systems, have been selected. This allows testing different ways to include forage into the crop rotation and allows a wider applicability of results in Pakistan. Two multi-disciplinary teams have been formed for each of the selected sites. A part-time coordinator will supervise and link the research and development activities of the teams.

3 Target group and beneficiaries

In general, the project targets one to two communities at strategically selected research sites in each country and individual farmers through on farm experiments.
The number of direct beneficiaries varies with the nature of the activity. In the case of adapting proven technologies to on farm conditions in the country, more farmers can be included into the activities than if new technologies are to be tested. For most of the activities an approximate number of beneficiaries is given in the description of the activities.

4 Programme management

Monitoring, evaluation and coordination

Annual national work plans and budgets will be developed in the Annual National Coordination Meetings. In Central Asia, the results of the annual coordination meetings will be brought forward to a regional coordination meeting, where the work plans will be presented, discussed and harmonized.

In Central Asia, the Tashkent office through Dr. Suleimenov, the assistant regional coordinator, will be responsible for the overall coordination and administration of funds. For each research theme a project officer is being employed, who is supervised by the respective PI and will be trained at ICARDA HQ. The project officers will coordinate the activities in the three countries for each theme.

In Pakistan two team leaders have been identified, one for each of the selected research sites: Dr. Sartaj Khan for the rainfed site and Dr. Aktar Ali for the irrigated site. A temporary consultant Dr. Ghulam Habib (Animal Nutrition and production) will provide technical assistance and scientific coordination of the field activities. The research teams assigned to each site will meet every month to exchange experiences and hold an annual coordination meeting with presence of the Project Coordinator and if possible the PIs.

A Programme Steering Committee will meet once a year after the regional coordination meeting to review progress in the implementation of the annual work plans. It will also amend and approve the future annual work plans and budgets developed during the regional annual coordination meetings. The Project Steering Committee will include a representative from each country, the three principal investigators and the project coordinator from ICARDA, a representative from the funding agency and ICARDA's Country representative from Pakistan and the assistant regional coordinator from CA as observers. The country representatives will be nominated in February 2007 following discussions during the visits to both regions.

A mid-term and a final seminar of project achievements will be held in alternating country locations to provide the opportunity for the participating national scientists, ICARDA and other collaborating institutions to exchange research results, technological developments and information, as well as to discuss, in the case of the mid-term plan, issues that require further regional attention. Inter-country cooperation will also be facilitated by the information network to be established by the programme, exchange visits between countries and travelling workshops.

Administration of funds

The budget has been split into five parts, one assigned to ICARDA and one for each of the four countries. Different budget codes have been assigned to each of the five budgets. Each country will receive an equal share of funds foreseen for national activities carried out through the collaborating institutions. The ICARDA funds will be used to employ staff for regional coordination, and cover costs for graduate students and honorariums for partners and consultants. Major equipment and supplies for the project offices will be also bought from ICARDA budget. The remaining budget will be shared between the PIs.

In Central Asia, the Tashkent office will be responsible for the administration of funds. In South Asia Project funds will be disbursed through the Pakistan office.

5 Institutional linkages

The Programme will be implemented in partnership with national programs.
Under Node I, the Programme will continue working through the partnerships established under TAG-425:

- in Kazakhstan: the Ministry of Agriculture of the Republic of Kazakhstan
- in Kyrgyzstan: Kyrgyz Center of Agrarian Science and Consultative Services

Under Node II, national partners include

- in Tajikistan: Tajik Academy of Agrarian Sciences
- in Pakistan: Fodder Research Institute in Sargodha and NARC Fodder Program, Islamabad

The Programme will also involve the expertise and comparative advantages of collaborating international research institutes and projects.

In Central Asia: The University of Wisconsin-Madison (Liba Brent) will contribute to production diversification through the follow up of processing and marketing of fibre, especially high value crafts from mohair and cashmere in Tajikistan.
It is foreseen that the Macauly Institute with a team led by Robert Orskov will contribute to feeding systems improvement. However their involvement was postponed in the first planning meeting to a later stage of the project as no clear role could be assigned in the first year.

In Pakistan: The project will collaborate with the Barani Village Development Project (BVDP) in north-west Punjab Province, for which ICARDA is already implementing the Applied Research Component. It will also exchange experiences with a USAID funded project in neighbouring Balochistan - "GCP/PAK/095/USA Food Security/Poverty Alleviation in Arid Agriculture Balochistan - Pilot Project Phase", for which ICARDA has been sub-contracted by FAO to implement the Applied Research Component. This project also applies a community approach and includes activities in rangeland and livestock (small ruminant) management. At the same time the Programme will develop new links with the proposed future Microfinance Innovation and Outreach Programme (MIOP), undertaking adaptive research with the MIOP beneficiaries, and will holding annual workshops with MIOP and BVDP partner organizations to ensure learning links. Efficient ways for knowledge exchange are currently being discussed and have to be implemented.
The project will join the knowledge exchange meetings organized among all IFAD funded projects in the country.

II Research Sites, Production constraints and Research Focus

1 Central Asia

Kazakhstan – Akdala site

General description

Akdala village is located in the Arys district, in South West Kazakhstan, at 90 km from the City of Shymkent, the main population center and market of the region. The population amounts to 4,776 people and 462 households which concentrate most of the livestock population however having each small numbers of animals. There are 712 families having 2,270 cattle, 40,827 sheep, 568 horses, 294 camels, and 9,530 chickens.

The village occupies 133,760 ha of land, including 90.8 thousand ha dedicated to agriculture. Rangelands cover most of the area (76.8 ha) ands a small portion is dedicated to hayfields (3 ha) and cultivated forages (3 ha), while crops occupy 8 ha.

Most of the territory includes semi desert hilly plains alternating with sand ridges, low hills and depressions forming canals and valleys. The soils are sierozem type, half of them semi-loam and low-saline sierozems.

The climate is harsh and continental, with relatively mild and short winters and long hot summers.

The vegetation is typical of semi-desert steppes. Ephemerals are the main components of the herbaceous stratum including the desert sedge (rang), bulbous bluegrass and others, which provide excellent fodder, in green and as standing dry vegetation, during all year, particularly well utilized by sheep. The herbaceous stratum remains green for no more than 50-60 days. The dominant species include Artemisia, a shrub consumed by sheep year-round, except during the hot summer, and Alhagi (Jantak or camel grass). These pastures yield 4 centners DM /ha.

Water is pumped from wells and partially obtained from the Arys and Syrdarya rivers. Main source of water for cattle are mineshafts 5 to 56 m deep. Water in these shafts varies from low-saline to bitter.

The village is accessible from Shymkent by paved roads and also by train, as Arys Railway Station is located 10 km from the village. Farmers are connected by dirt roads difficult to be used in during winter and spring.

Main production systems and production constraints

Farm operations interact with householders in this area which have limited number of animals and are poor. Seasonal ranges are overgrazed and require management. Main production constraint is winter feeding and access to remote ranges. Enhanced production of fodder is needed to cover the feed gaps particularly during winter feeding. This could be done by simultaneously accessing remote ranges during the summer period which will release overgrazed seasonal winter and spring ranges nearby the villages, and thus would provide more feed during the critical periods. An enhanced feed base could give place to suitable community-based market targeting.

The markets of the region offer important opportunities for all type of livestock products, however householders do not have the means and technologies to access these opportunities and benefit from.

Main research focus

The focus will be on meat production, targeting on the management of range systems and substantial improvement of forage production for winter feeding. Options will consider several alternatives for needed additional income among household community members and medium size farmers.

By considering all livestock components of the production systems, as forage production will be enhanced it is expected that milk processing of cows could provide an additional source of income in addition to milk obtained from sheep.

Kyrgyzstan – Alymseit (Akbeket) site in Kemin District

General description

Ak-Beket is part of the Kyzyl-Oktyabr ayil (village) of Kemin district and located at 5 km of Kemin centre at 35 km of Tokmok city and at 100 of Bishkek. The area borders with the Kochkor district on the south, Issyk-Kul on the east, Issyk-Ata on the west and the Republic of Kazakhstan on the north. The total area involves 26.7 thousand ha, including mostly ranges (22.7 thousand ha, or 85%), irrigated areas (3.2 thousand ha or 12%) and the rest is distributed among rainfed land for cropping (393 ha), hayfields (452 ha) and perennial plantations (11 ha).

The irrigation system is closed and makes 42 km in length, including 13.8 km of chutes and 28.2 km of on-land ditches, this giving potential to the production of crops and cultivated fodder.

This village has 827 households and a population of 3,752 people out of which 1,013 are farmers and peasants engaged in crop cultivation and livestock breeding. There are 1,124 cattle, including 529 cows; 204 horses; 3,406 sheep; 739 goats; 77 heads of pigs and 5,100 chickens.

During the summer, all animals except dairy cows are taken to mountain summer ranges. Animals return for the rest of the year to graze in seasonal ranges and be housed during the winter in barns. Winter is the most critical period of the year for which a good supply of fodder is required. Forage is prepared by hand. Few farmers bail hay, which they often sell if in surplus at the rate of 30-40 soms per bail. Payments for transportation services vary from cash to barters. The village is supplied with transportation means privately owned.

The main source of income is livestock production (80%), followed by crop production and services. Despite these indicators, people are pure and family income is below 600 soms per month. Some families are limited to selling milk during the summer season. The main part of income is generated in autumn, during the harvest of grains and other crops and the sale of fattened animals.

In Kyrgyzstan an alternative site with similar characteristics has been also considered, the Kenesh (Onberjylgy) site in the Chu district.

Main production systems and production constraints

Most of livestock is owned by householders coexisting with small- and medium-size farmers. Householders however, as it happens in the rest of the country, have few numbers of animals and are poor. Seasonal ranges are overgrazed and require management. Main production constraint for all farmers is winter feeding in addition for householders a severe constraint is the access to remote ranges which leads to degradation of nearby season ranges. Enhanced production of fodder is needed to cover the feed gaps particularly during winter feeding. In the case of households this will also lead to less overgrazing of seasonal ranges nearby the villages. An enhanced feed base could give place to suitable community-based market targeting.

The markets of the region offer important opportunities for lamb and mutton meat and milk products, however householders do not have the means and technologies to access these opportunities and benefit from. As the market of the wool is depressed there is a need for diversification of production.

Main research focus

Meat production targeting based on the management of range systems with better potential to improved feeding systems in the region and substantial improvement of forage production for winter feeding.

Options will consider several alternatives for needed additional income among household community members and medium size farmers. As forage production will be enhanced it is expected that milk processing of householders cows could provide an additional source of income

Tajikistan – Jamoat (Somgar) site

General description

The Jamoat area of the Bobojon Gafurov district of Soghd province is located on the right shore of the Syrdarya river at the foothills of Kuramin ridge and in the Syrdarya arid rangelands. It is located 32 km of the city of Khojend, and has a common border with the Tashkent province of Uzbekistan in the north. Jamoat involves 22 villages (kishlaks) and 4,063 households. The population amounts to 21,535 people including 11,091 women. The total area of irrigated land is 5,979 ha while ranges occupy 33,396 ha. The total area of Jamoat is 68.6 thousand ha. The region is poorly developed and displays high poverty. The main activity is agriculture involving the interaction of different types of farms: there are 3 production cooperatives, 27 private farms and the already indicated 4,063 households. Access to markets is often affected by lack of adequate roads.

Angora goat breeding is the main activity in foothill areas along with the breeding of Jaidara sheep, Jaidara goats and cattle. It was estimated that by 2005 there were 14.6 thousand goats, 6.5 thousand sheep and 4 thousand cattle. Farmers also crop wheat and barley for own consumption and to feed their animals. Fodder crops include sorghum, maize and alfalfa. Some households grow for family consumption horticultural crops and fruit trees such as apricot, almond and walnuts.

The climate is dry and moderately hot, suitable for Mohair goats. Winter temperatures in the plains could be as low as -3 to -5 ^{o}C. Snow cover is usually 3-7 cm. Sharp frosts are observed once in 3-5 years when night temperatures fall down to -25 ^{o}C. In these occasions the snow cover could be 20-30 cm. Average annual rainfall is 300-400 mm.

Main production systems and production constraints

The general crisis that affected the region at the end of the Soviet Union impacted severely the livestock production sector that observed a sharp decline. Overgrazing reduced the productivity of ranges and shortage of fodder is critical in particular during winter. There is minimal if any technical assistance to farmers so that animal management involving feeding and reproduction is poor. Animal health also deteriorated progressively with a great need to improve epidemiological systems. Costs of transportation could be high and there is not access to credit. Moreover, locust plagues are annually infringing not only on traditional crops but also on fodder availability.

In recent years farmers started to reorient their production systems in accordance to market opportunities aiming at improving their income levels. Though poorly organized, there is a market for angora fiber and pelts. However, farmers sell their product with contaminated fibers, without following a classification process and thus without taking full advantage of the opportunities. Most fiber is sold to Russia and little is processed by family members. Main markets for export are those in Khojend and Gafurov.

Main outlets for milk and meat include the cities of Khojend, Chkalovsk, Kayrakkoum and B. Gafurov district. Livestock animals are usually sold when the family is in the need of cash.

Main research focus

Targeting fiber production of white Angora goats based on the management of range systems and substantial improvement of forage production for winter feeding. Options will consider several alternatives for needed additional income among household community members and medium size farmers. Research also will target the development of a participatory breeding plan to improve goats.

2 South Asia-Pakistan

Sites: Gujar Khan (rainfed or Barani site) and Sargohda (irrigated sites)

General description

The project activities will be implemented with communities at two pilot sites representative of the rainfed (Barani) and irrigated small-scale fodder/crop-livestock farming systems in Pakistan. The rainfed site will be at Gujar Khan/Talagan and the irrigated sites will be in Sargodha. Gujar Khan and Sargodha are about 100 and 200 km respectively from Islamabad, and are accessible by road during all year. Annual rainfall in Gujar Khan ranges between 400 – 600 mm. Sargodha has a similar range of annual rainfall, and access to canal and tube well irrigation.

Main production systems and production constraints

Small-scale crop-livestock farming systems predominate at both sites. The average farm size per household is about 5.6 ha of which about 3 ha are arable. About 67% of the total arable land per household is devoted to food crop production, 23% to fodder crops, and 10% to cash crops. Nearly 20 - 30% of the arable land is left fallow each year. The primary crops are wheat, corn, barley, rice, oil crops, fruit trees, fodder crops and pulses. Wheat, rice and maize are the major dual-purpose cereal crops. Chickpea, mungbean, groundnut and guar are the important grain legumes. Planting of wheat after wheat or maize/sorghum after wheat which could result in reduced grain yield and soil nitrogen is common.

Fodder production is an important part of the cropping systems at both sites. In the irrigated site, fodder production for sale to urban and peri-urban livestock producers is well established. The major winter fodder crops are berseem (*Trifolium alexandrianum*), Lucerne (*Medicago sativa*), mustard (*Brassica* spp.). Maize (*Zea mays*), sorghum (*Sorghum bicolor*), millet (*Pennisetum americanum*), cowpeas (*Vignia unquiculata*) and guar (*Cymopsis tetragonoloba*) are the important summer crops. Weak linkages between civil societies and research/development staff, low adoption of improved varieties and agronomic packages, lack of quality seed, poor soil fertility and water management practices, low integration of fodder legumes into the cropping systems to increase fodder availability and improve soil fertility are the major constraints for improving fodder production.

About 90-95% of farmers in the target communities own livestock. The average number of livestock per household is about 4 cattle, 1 buffalos, 3 sheep and 4 goats in the rainfed sites. Livestock rearing provides opportunities for improved human nutrition, cash income, asset building, and employment, raw materials for agro-based industries and manure for soil fertility improvement. Cattle and buffalos are fed farm produced fodder crops and crop residues. Sheep and goats depend almost entirely on grazing degraded rangelands. In winter, all animals are fed indoors on mostly low-quality crop residues and/or conserved fodder supplemented with farm-grown or purchased concentrates. May-June and November-January are critical periods when feed deficits are high. Productivity of the rural livestock industry is low partly due to poor feeding management, inadequate housing, animal diseases, poor market access, and lack of policy support.

Main research focus

The main focus will be the establishment of multi-stakeholder alliances to promote improved options for integrated and market-oriented feed and livestock production. The emphasis will be on community-based action research on improving the feed resource base through dissemination of improved packages to increase fodder production and conservation; improving the quality and efficient use of crop and agro-industrial by products for meet and milk production; and value addition to target market niches.

III Country Activities

1 Central Asia

Theme 1: Socioeconomics

The principal investigator to lead in this theme on behalf of ICARDA will be Dr. Aden Aw-Hassan

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

Kazakhstan collaborators: PIs: Dr. Alibaev Nuriddin, Director Deputy, SWKSPC; Research team: Dr. Sabirkhanov Darkhon, Director of Agro of Institute of South Kazakh State University. 2 students (4 year students)
Kyrgyzstan collaborators: Principal Investigator: Ajibekov Bilimbek, Bishkek State University of Economics and Business; Research team: Isakov Jaik, Kyrgyz Agrarian University
Tajikistan collaborators: Principal investigator: Dr. Makhmudov, NGO; Research team: Akhmedov Usmon, Economist, Khodjan Technological University. Four students

Background. The livelihoods of many households in rural Central Asia depend on livestock production, particularly for those living in marginal dry areas, mountain regions and in the agricultural areas affected by land degradation. The importance of livestock in the economies of these communities is increasing after the collapse of the former Soviet Block. Improved agricultural technological, policy and institutional options can increase the returns from livestock production and improve rural livelihoods. This component aims to provide in-depth understanding of rural livelihoods through livelihood surveys and analyses. This understanding provides insights into how poor rural households can be better-targeted with research and development interventions, increasing to returns to investment in R&D.

Methodology. In this activity Rapid Rural Appraisal (RRA) will be applied to gather information essential for understanding productions systems, production constrains, livelihoods strategies and the needs of rural people. The RRA will be conducted by a multi-disciplinary team of researchers aiming at helping the design of the adaptive research program. Surveys will be carried out using stratified random sampling to ensure that all types of communities are represented and where households will be selected randomly avoiding narrow and unrepresentative sample. Data base will be developed for further analysis and development. Quantitative methods such as econometric analysis, cluster analysis will be used to determine typologies of households based on livelihood status and strategies.

Expected outcome:

- Training of researchers on methods by February 2007
- Enumerators trained on data collection by February 2007
- 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.

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

Kazakhstan collaborators: Principal investigator: Dr. Alibaev Nuriddin, Director Deputy, SWKSPC; Research team: Dr. Oserbai Janibai, Senior Economist, SWKSPC. 2 students (4- year students)
Kyrgyzstan collaborators: Principal Investigator: Isakov Jaik, Kyrgyz Agrarian University; Research team: Osmonaliev Ulan, Kyrgyz Agrarian University

Background. The suitability of agricultural technological options can only be assessed when they adopted by farmers. Adoption will occur if the proposed technologies are appropriate to farmers' conditions and will meet the farmers' needs. In this process it is also important that farmers can afford the technologies and that these technologies will not create unnecessary externalities that offset their benefits. This activity

aims to evaluate ex ante the feasibility of technological options that the project is testing so that there will be a high degree of certainty about their potential success and impact and this will support large scale development programs for the benefit of the target population.

Methodology. The ex ante technology evaluation will be done through a very strong dialogue between bio-physical scientists who are developing these technologies and the socio-economists who are using social science techniques. In addition, farmers' views and assessment will constitute a pillar in evaluating the proposed technologies so that potential constraints can be addressed very early. Baseline data on current farming practices will constitute the basis for later evaluation of technological options. Partial budgets will be applied to compute financial indicators such as, gross margins and marginal rate of return. Other indicators such as labor requirement, suitability of the cropping system, will be compiled from producers, researchers and other stakeholders. Constraints to adoption will be then analyzed. Farmers' perceptions of the technologies and constraints analysis will be analyzed using participatory tools such as scoring, ranking and SWOT analysis (SWOT- strengths, weaknesses, opportunities and threats).

Expected outcomes in 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.

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

Kazakhstan collaborators: Principal investigator: Dr. Alibaev Nuriddin, Director Deputy, SWKSPC; Research team: Dr. Uskenov Makulbai, Head of Accountancy and Audit Faculty, International Kazakh-Turkish University 2 students (4- year students)
Kyrgyzstan collaborators: Principal Investigator: Osmonaliev Ulan, Kyrgyz Agrarian University; Research team: Isakov Jaik, Kyrgyz Agrarian University Research team: Osmonaliev Ulan, Kyrgyz Agrarian University
Tajikistan collaborators: Tajikistan: Principal investigator: Dr. Makhmudov, NGO; Research team: Akhmedov Usmon, Economist, Khodjant Technological University. Saidaliev Iskander, Tajik State University Economics Faculty.

Background. The failure of major trade networks due to the collapse of former Soviet System, the emergence a new governments with new rules and regulations on trade, and the increasing isolation of rural communities observing a decline of services including marketing services affected severely livestock marketing. At times livestock has been used as barter in cashless economies to acquire other needed household items or farm inputs. This is now changing and livestock value has increased. Hover, marketing still remains a major problem for small scale livestock producers who lack the capacity to negotiate better prices due to their weak economic position or to their pressing needs. Producers often lack information on product characteristics that the market needs, on different markets where they can target, or on the ways to access demanding markets. This activity aims to provide analysis of farmers' access to market information, their strategies and how market information can be better provided or better organization can be developed for attaining stronger market position and capture more efficiently the benefits.

Methodology. This activity will apply participatory survey of markets involving producers and traders. Literature search and internet search will allow describing domestic and exporting markets, the value of lamb and mohair goat fiber at different market points will be determined. Survey of traders will provide information of the destination of mohair goat fiber, the costs from farm-gate to destination points, buyers, processing and final retailers. Price data from different points in the market will be collected to show the marketing margins and assess market efficiency. Farmers' perceptions and knowledge of what market demand is in terms of commodity characteristics will be assessed.

Expected outcomes:
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 for fiber quality and standards for marketing: introduced (**Liba Brent**); by November 2007
- Development of e-marketing website **(Liba Brent**) by November 2007.

Theme 2: Range and Forage Productivity

The principal investigator to lead in this theme on behalf of ICARDA will be Dr. Asamoah Larbi

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

Kazakhstan collaborators: Abdraimov S, Alimbekov S, Ibragimov T, Seitkarmov, Yeskaraev N, Sartaev Y, Shabanoba L B.
Kyrgyzstan collaborators: Joldoshev K, Attokurov T, Asanakunov B, Pohomapehko I N, Djoldoshev K D, Attokurov T A, Asanakunov
Tajikistan collaborators: Kosimov M (Research Center, Naou), Soliev A (Tajik SRI Livestock Production, Soghd), Bokiev M (Tajik University of Technology, Khodjend) and Mavlon M (Khodjend State University)

Background. Small-scale mixed crop-livestock farmers are emerging in Central Asia on the basis of few animals (10-20 sheep and 1-3 cattle) and the production of a variety of food and fodder crops. Livestock production in the emerging systems is limited by lack of quality fodder in winter. Traditionally, sheep and cattle graze distant rangelands in summer, and rangelands near settlements in fall and spring. In winter, livestock are stall-fed crop residues and hay from cultivated fodder crops and/or natural grasslands. Due to their small flock/herd size, the small-scale resource-poor farmers cannot send their animals to distant rangelands for summer grazing. As a result, rangelands near settlements are overgrazed and degraded. In addition, fodder production from rainfed and irrigated arable land is constrained by: weak linkages between the rural farming communities and research/development staff, limited land area, low adoption of improved fodder crop varieties and agronomic packages, lack of quality seed, poor soil fertility and water management practices, low integration of fodder legumes into the cropping/fallow systems to increase fodder availability and improve soil fertility.

The resource-poor crop-livestock farmers have two options to increase their feed resource base, and consequently increase outputs of livestock products. First is to rehabilitate and manage the degraded rangelands around the homesteads and/or access distant rangelands. This option may be difficult to achieve within the project period because it requires long-term investment coupled with policy and institutional changes. The second is to increase fodder production from rainfed arable land through adoption of improved cultivars of fodder crops and agronomic packages; and better integration of the crop and livestock enterprises. This option is more likely to improve the feed resource base within the project period because the thriving fodder markets in most peri-urban and urban centers in each country provide opportunities for farmers to produce fodder to generate income and improve their livelihoods. Also, it allows farmers to cultivate and conserve fodder to fill the winter feed gap. The focus will be on establishing multi-stakeholder partnerships to disseminate technologies aimed at improving fodder production from arable land under rainfed and irrigated conditions in the small-scale crop-livestock systems. Emphasis will also be given to fodder conservation for winter feeding; and improved feeding systems for meat and milk production based on complementary use of natural grassland, cultivated fodder, and by-products from crops production and agro-industries.

Methodology:

1) Assessment of current status of fodder crop production: Literature on types, production and use of fodder crops will be reviewed. Rapid rural/participatory appraisals will be conducted within selected communities with special emphasis on fodder crops – species of fodder crops sown by farmers, production and conservation methods, marketing channels, their use in the feeding systems, feeding calendar, and farmer preferences/perceptions about fodder crop production. Data will be analyzed and published.

2) *Integration of fodder crops into cropping and fallow systems:* In all countries, Improved cultivars of fodder crops currently used by small-scale mixed farmers (e.g. alfalfa and sainfoin) and improved agronomic packages will be demonstrated on-farms using current farmers' varieties and practices as controls under rainfed and irrigated conditions. In Kazakhstan and Kyrgyzstan fodder/food legumes will be integrated into the traditional wheat/wheat and wheat-fallow systems to increase the availability of fodder and to improve soil fertility. The productivity of pure and mixed stands of fodder legumes and cereals under different mono-cropping or/and multiple cropping systems will be compared on selected farms. In these two countries, each system will be established on 5-7 farms using recommended agronomic practices, harvested and conserved (hay or silage) for feeding to growing or lactating small ruminants or for sale. Selected farmers will be trained in fodder/seed production and value addition through processing, storage, and marketing. In all countries germplasm of existing and potential fodder crops not yet tried will be acquired from regional , and international gene banks (e.g. ICARDA, ILRI), and screened to identify the best-bet accessions. Species to be considered include alfalfa, sainfoin, vetch, lathyrus, berseem, oats, triticale, multi-cut sorghum and in Kazakhstan and Tajikistan plants with potential to produce oil. For all activities, field days and travel workshops will be organized for farmers and policy makers during the cropping cycle to promote information exchange and encourage adoption. Data on crop and soil productivity will be recorded. Farmers' perceptions and preference will be monitored. Economic impact of the traditional and improved technologies will be assessed.

3) Community action for improving carrying capacity of degraded rangelands around settlements and pest management in Tajikistan: About 2-4 ha of degraded rangelands near settlements in Tajikistan will be identified in 2-3 communities or villages. The land will be divided into two parts. One half will be rehabilitated with native and/or exotic grasses, herbaceous and fodder shrubs (*Kochia prostrata, Agropyron pectinatum, Bromopsis inermis, Dactylis glomerata, Ceratoides papposa, Salsola orientalis*) – to establish a fodder or protein bank. The other half will serve as control. Yield and botanical composition of both plots will be monitored. Performance of lambs grazing the improved and non-improved rangelands will be monitored. Low-cost methods for controlling locust will be demonstrated to farmers. Farmers will be trained in control of locust.

Expected outcome 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.

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

Kazakhstan collaborators: Abdraimov S, Alimbekov S, Ibragimov T, Seitkarmov, Yeskaraev N, Sartaev Y, Shabanoba L. B.

Kyrgyzstan collaborators: Ponomarenko I, Ajibekov A, Razzakov I, Joldoshev K, Attokurov T, Asanakunov B, Pohomapehko I N, Djoldoshev K D, Attokurov T A, Asanakunov.

Tajikistan collaborators: Kosimov M (Research Center, Naou), Botir K, Rajaboy M, Farhod K, Soliev A (Tajik SRI Livestock Production, Soghd), Bokiev M (Tajik University of Technology, Khojend) and Mavlon M (Khodjend State University)

Background: Seasonal shortages in quality feed constraint increased livestock production in smallholder crop-livestock systems. Feeding systems for small ruminants in the target communities are based on low-quality residues of cereal crops as the main basal diet for most part of the year; supplemented with by-products of food legumes and agro-industrial by-products. Livestock production is generally low because the traditional feeding systems usually do not meet the nutritional requirements of the growing and milking sheep and goats. This activity aims at increasing meat and milk production through dissemination of technologies to improve the feeding systems based on the complementary use of natural pastures, cultivated fodder, and by-products of crop production and agro-industries; and non-conventional feed resources.

Methodology

1) Assessment of feed resources and feeding calendar: Types, amounts and seasonal availability of crop residues and agro-industrial by-products will be assessed on-farm. The nutritive value of non-conventional or little-known feed resources will be characterized.

2) Strategic supplementation to improve meat and milk production (in the case of Tajikistan supplementation of goats to also improve fiber and milk production): A series of on-farm strategic supplementation feeding trails will be conducted in case study areas using farmer-managed growing or milking sheep and goats. Animals on low-quality cereal straw diets will be supplemented with residues of feed/food legumes and agro-industrial by-products. Economic rations varying in cost will be formulated and compared. Growth of small ruminants grazing native pastures with or without protein and energy supplements will be assessed. In Kazakhstan and Kyrgyzstan, the use of non-conventional feed resources in fattening diets of sheep and goats will be demonstrated. Improving the quality of cereal straw and fibrous residues through spraying with urea-molasses mixture, and storage of wheat straw after urea treatment will be demonstrated in all countries. In all countries, for all on-farm trials, two treatments will be used - farmer practice (control) and the improved feeding system. About 3-5 farms will be assigned to each treatment. Feeding trials will last between 30 – 90 days. Farmers will be trained to record live weight changes every week and daily milk off-take. Farmers' perceptions and preferences will be monitored. Economic analysis of the feeding systems will be conducted. On-farm feeding trials will be complemented by on-station feeding trials in pens or under grazing when needed.

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.

Theme 3: Improvement of livestock productivity

The principal investigator will be Dr. Barbara Rischkowsky and Dr. Luis Iñiguez in particular in the issues concerning crossbreeding and improvement of goats.

Kazakhstan

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

Collaborators: Marat Tuekbasov, Aydar Koshkarov, and one PhD student, South-West Research Center of Agriculture (SWRCA); G. Kylychbaeva and two students from South-Kazakhstan State University after Auezov (SKSU).

Background: Opportunities to market lambs at high price exist during Navruz. The targeting of this market is possible by shifting the traditional lambing period (March) to January. It is expected that by March early lambed lambs will acquire desirable marketing weights with direct benefit to farmers and also releasing the pressure of grazing seasonal ranges near villages. This strategy will require special feeding management during winter.

Methodology: Experience learned in Uzbekistan during the development of the first phase of this project will be followed. Ewes in each of at least 5 households (having 50-60 sheep) will be divided into two groups each having similar numbers of ear-tagged Karakul and fat-tailed sheep from the region. Each subgroup should not have less than 12-15 ewes. One group will be managed for early lambing and the second group according to the traditional management. Ewes in the first group will be fed during the last 50 days of the gestation with support during the first days of lactation until sufficient fodder is available in the spring ranges so that the ewe body reserves and milk production are guaranteed. Production will be monitored and weights and body scores taken both on mothers and lambs every 2 weeks until marketing time. Participatory research tools will be used during the course of the experiment and due training of farmers will be conducted by participatory workshops. Data concerning all costs will be collected for an economic evaluation with the community.

Expected outcomes:

- 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.

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

Collaborators: J. Parzhanov, B. Baytashov, SWRCA; and two Master students, SKSU.

Background: During September-October the market of weaned lambs is promising in Kazakhstan. This could be targeted by early weaning of lambs (at 60 days) following the Nagul system (raising lambs in the summer ranges) in combination with extra feeding for sustaining rapid growth. It is expected that by September and October the lambs will reach marketable weights. In addition early weaned ewes will be milked to add needed additional source of income to farmers or improve the diet of the family.

Methodology: At least the flock of five households (having each 50-60 ewes) and two medium size farmers will be split in two groups to produce under early weaning (60 days after lambing) and the traditional weaning system. The early weaned lambs will be creep-fed from the age of 20 days so that their grazing will be complemented by supplementation to guarantee sufficient growth rates. The possibility to use ammoniated straw and available byproducts will be tested, incorporating experiences gained in a former project. Ewes will be milked after weaning for at least additional 40-50 days or until milk production is less than 350 mm per animal. Milk records will be taken each week while weaned lambs and ewes will be weighed and their body scores assessed each 10 days. An improved low-cost milk parlor tested in the former phase will also be introduced for milk collection. Participatory research tools will be used during the course of the experiment and due training of farmers will be conducted by participatory workshops. Data concerning all costs will be collected for an economic evaluation with the community.

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

Collaborators: A. Ombaev, B. Norbuta, and A. Saniyazova (PhD student), SWRCA and K. Abdukalyk, farmer, Ak-Dala

Background: An enhanced fodder base pursued by the project will be associated with an enhanced milk production of cows in the household production system, in addition to the milk produced by the weaned ewes in activity 2. This has the potential to generate additional income to farmers if the milk is well processed in to fresh cheese and yogurt which are demanded in the markets. The project proposed to train farmers in the elaboration of milk products and promote community action for efficient processing and eventually marketing of products.

Methodology: The project will gather householders including those participating in the program of fodder improvement into participatory workshops to discuss a plan of processing milk under improved methods to produce products with market demand. The alternative to create a community-based milk processing center will be considered and discussed and according to farmers decisions individual or community-based processing will be organized. A quick assessment of local knowledge will be made following ICARDA's methods by ICARDA staff, until February 2006. Problems found will be solved under standard conditions at ICARDA to then be re-introduced into the production systems. Farmers will be trained practically on methods involving milk pasteurization for fresh cheese and yogurt making. Participatory research tools will be used during the course of the experiment and due training of farmers will be conducted by participatory workshops. A baseline assessment of the productivity of these householders will be conducted in order to evaluate the impact on farmers' income of milk processing for market targeting.

Expected outcomes:
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

Kyrgyzstan

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

Collaborators: A. Ajibekov, Ministry of Agriculture (MA), I. Razzakov, T. Katosheva, D. Nazarbekov, Kyrgyz Agrarian University (KAU), R. Nurgaziev, K. Abdykerimov, N. Abdykerimov, Kyrgyz Research Institute of Livestock, Veterinary, and Pastures (KRILVP)

Background: Unlike medium to large size farmers, Householders in Kyrgyzstan have minimal skills in appropriate rearing of animals and little access to technologies that could improve the productivity of their flocks. They kept excessive number of animals. Do not have a correct management of rams which often are in surplus in the flock. Without accounting for animals that are productive they tend to keep ewes that are not productive with obvious incidence in the costs of feeding and overgrazing. In addition their breeding strategies are erratic and often the flocks include a mix of fat-tailed as well as wool producing animals. Organized grazing accessing remote ranges will provide with a good feeding base. It is required to train farmers in the management of their flocks more efficiently so that they could benefit better from better feeding conditions and market animals under a more productive flock.

Methodology: Two groups of farmers having each at least similar flocks with 50-80 ewes will be conformed to follow a participatory comparison trial. The first group of farmers will integrate a series of low-cost management arrangements as opposed to the second group to follow the traditional system that is assumed inappropriate. In the first group there will be a rational management of rams in accordance to adequate ram:ewe ratios (1:25). Rams for this purpose will be checked to make sure that they are appropriate and fertile. Ewes will be exposed to rams during the period of maximum reproductive activity. If the flocks are not too close, the effect of ram will be tested to synchronize the ewes to lamb over a shorter lambing period. Under a special agreement to be made with farmers, unproductive ewes will be culled based on information proportioned by the farmers on their last lambing. Improved winter feeding will be provided, integrating the use of ammoniated straw and byproducts if available so that a desirable lambing crop and good growth rates of animals will be obtained. Weights of ewes and lambs produced, fertility (ewes lambed/ewes exposed to rams), prolificacy (lambs born/ewes lambed) and survival of lambs until weaning (lambs weaned/lambs born), and total lamb weight weaned per ewe, will be recorded. Comparisons of productivity performance per ewe and lamb growth and survival will be made with the flocks managed traditionally. The differences in management and outputs produced will be evaluated economically. Intense participatory training will take place with emphasis on the young generation of farmers.

Expected outcomes:

- 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.

The trial will be continued for another season (August 2008-June 2009).

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

Collaborators: A. Ajibekov, MA, I. Razzakov, T. Katosheva, D. Nazarbekov, KAU, and A. Abdurasulov, KRILVP

Background: Crossbreeding with Awassi sheep already was started in Kyrgyzstan as a mean to diversify production for new income opportunities in view of depressed prices of wool and low return obtained by householders from small flocks. In addition to milk production the Awassi sheep has excellent growth rates that further could benefit some farmers of the country with faster growing lambs. There is a need to evaluate the genotypes produced and eventually enhance the comparisons in areas with suitable supply of fodder production and productive ranges.

Methodology: In the milk season of 2007, F1 produced ewes will be evaluated for milk production and ewe productivity. Weaning will start when lambs reach the age of 9 weeks and the weaned ewes will be milked thereafter until the production is equal or less than 350 mm/ewe per day. Ewes will be milked twice a day and the milk processed. Milk controls will be made weekly and total milk production assessed by the procedures followed by ICARDA. In the breeding season of 2006, new rams will be introduced into the flock to cross local ewes as well as all F1 ewes to obtain a population of ¾ Awassi for further evaluation. A subset of rams produced by F1 ewes will be tested with the local breed to assess their growth potential after weaning by supplementing the Nagul system with some level of simple supplementation.

Expected outcomes:

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

The study will be continued till the end of the project.

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

Collaborators: A. Ajibekov, MA, I. Razzakov, T. Katosheva, D. Nazarbekov, KAU.

Background: After the breakdown of the Soviet Union all sheep breeding systems in Kyrgyzstan deteriorated. Large farms are still maintaining adequate breeding stock in contrast with householders that follow an erratic if not chaotic breeding management. The compounded effect of the lack of breeding plans accessed by householders and small farmers is a deterioration of the national breeding stock as these types of farmers concentrate most of the sheep in Kyrgyzstan. Farmers claim that they cannot access to improved animals and resource to whatever is available so that rams to be used for breeding purposes are mostly of inferior genetic quality. There is a need to set the basis for small farmers to access their own animals through decentralized breeding systems.

Methodology: Participatory methods leading the decentralization of the genetic improvement of the flocks, with community ownership, allowing the access by farmers to improved rams will be established so that producers will conduct their own definition of breeding goals and the application of the breeding plan that they could handle with the due assistance of researchers. The strategy will be flexible so that the complexity of the plan will be adjusted to the institutional arrangements of the community, the desire to assume this plan and the capacity to manage it from a simple exchange of rams to more sophisticated methods involving data recording. The successful experience of open nucleus breeding followed in Argentina by smallholders will be transferred. This activity will require of intense participatory work with the community and researchers.

Expected outputs:

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

The activity will be continued till the end of the project.

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

Collaborators: I. Razzakov, T. Katosheva, KAU

Background: An enhanced fodder base pursued by the project will be associated with an enhanced milk production of cows in the household production system. This has the potential to generate additional income to farmers if the milk is well processed in to fresh cheese and yogurt which are demanded in the markets. The project proposed to train farmers in the elaboration of milk products and promote community action for efficient processing and eventually marketing of products.

Methodology: The project will gather householders including those participating in the program of fodder improvement, into participatory workshops to discuss a plan of processing milk under improved methods to produce products with market demand. The alternative to create a community-based milk processing center will be considered and discussed and according to farmers decisions individual or community-based processing will be organized. A quick assessment of local knowledge will be made following ICARDA's methods by ICARDA staff, until April 2007. Problems found will be solved under standard conditions at ICARDA to then be re-introduced into the production systems. Farmers will be trained practically on methods involving milk pasteurization for fresh cheese and yogurt making. Participatory research tools will be used during the course of the experiment and due training of farmers will be conducted by participatory workshops. A baseline assessment of the productivity of these householders will be conducted in order to evaluate the impact of milk processing for market targeting in farmers' income.

Expected outcomes:

This activity will evolve during the lifespan of the project.

- 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.

Tajikistan

Activity 13. Household improvement of goat management for improved productivity [management of the flock, feeding, selection and culling] (training)

Collaborators: B. Khamzaev and M. Kasimov (Sogd Branch-Tajik Livestock Research Institute)

Background: Mohair goat producers in Tajikistan have minimal skills in appropriate rearing of animals and little access to technologies that could improve the productivity of their flocks. They kept excessive number of animals. Do not have a correct management of bucks which often are in surplus in the flock. Without accounting for animals that are productive they tend to keep does that are not productive with obvious incidence in the costs of feeding and overgrazing. In addition their breeding strategies are chaotic. The proposed enhanced feeding base will provide the basis for improvements in the flocks. It is required to train farmers in the management of their flocks more efficiently so that they could benefit better from better feeding conditions and market animals under a more productive flock.

Methodology: Two groups of farmers having each at least similar flocks with 50-80 ewes will be conformed to follow a participatory comparison trial. The first group will integrate a series of low-cost management arrangements as opposed to the second group to follow the traditional system that is assumed inappropriate. In the first group there will be a rational management of bucks in accordance to adequate back:doe ratios (1:25). Bucks for this purpose will be checked to make sure that they are appropriate and fertile. Does will be exposed to bucks during the period of maximum reproductive activity. If the flocks are not too close, the effect of buck will be tested to synchronize the does to kid over a shorter kidding period. Under a special agreement to be made with farmers, does will be culled based on information proportioned by the owners on the performance during the last kidding season. Improved winter feeding will be provided, integrating the use of ammoniated straw so that a desirable kidding crop and good growth rates of animals will be obtained. Weights of does and kids produced, fertility (does lambed/does exposed to bucks), prolificacy (kids born/kids lambed) and survival of kids until weaning (kids weaned/kids born), and total kid weight weaned per doe, will be recorded. Comparisons of productivity performance per doe and kid growth and survival will be made with the flocks managed traditionally. In addition the production of fleece cropped will be assessed. The differences in management and outputs produced will be evaluated economically. Intense participatory training will take place with emphasis on the young generation of farmers.

Expected outcomes:

- 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.

The trial will be continued for another season (August 2008-June 2009).

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

Collaborators: M. Kasimov (Sogd Branch-Tajik Livestock Research Institute)

Background: Goat producers in the region do not follow an appropriate management of their animals, shearing and fleeces. Fleeces are gathered together and marketed without classification, often

contaminated and mixing highly priced fiber from yearlings with the fiber produced by older animals. The lack of knowledge of farmers in these aspects have negative repercussions on their limited income.

Methodology: The experiences of management of fibers and shearing by small producers of angora from Patagonia based on the application of simple technologies will be transferred, with due classification of fibers for marketing. New standards will be established based on international trade. This will require the sampling and evaluation of fibers, its variability and quality in an internationally authorized laboratory (as the fiber laboratory of INTA-Argentina), in addition to an intensive training of farmers and scientists in the matter. For the introduction of improved fiber management, two groups of farmers will be formed, one group to follow the improved technology and the other group to follow the traditional system. An economic evaluation will take place of the results obtained after the marketing of the fiber. While this occurs also community-action will be promoted for the marketing of fiber on a type of associative basis

Expected outcomes:

- 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.

Activity 15. Set the basis for a decentralized and participatory breeding plan for farmers to access improved animals [consideration of importation of improved goats-Australia or South Africa via regional activity]

Collaborators: M. Kasimov (Sogd Branch-Tajik Livestock Research Institute)

After the breakdown of the Soviet Union all Mohair goat breeding systems in Tajikistan deteriorated. Householders follow an erratic if not chaotic breeding management. The compounded effect of the lack of breeding plans accessed by householders and small farmers is a deterioration of the national breeding stock as these types of farmers concentrate most of the goats in the country. Farmers claim that they cannot access to improved animals so that bucks used for breeding purposes are mostly of inferior genetic quality. There is a need to set the basis for small farmers to access their own animals through decentralized breeding systems.

Methodology: Participatory methods leading the decentralization of the genetic improvement of the flocks, with community ownership, allowing the access by farmers to improved bucks will be established so that producers will conduct their own definition of breeding goals and the application of the breeding plan that they could handle with the due assistance of researchers. The strategy will be flexible so that the complexity of the plan will be adjusted to the institutional arrangements of the community, the desire to assume this plan and the capacity to manage it from a simple exchange of bucks to more sophisticated methods involving data recording. The successful experience in open nucleus breeding followed in Argentina by smallholder angora producers will be transferred. This organization will require of intense participatory work with the community and researchers.

If the system is well organized the acquisition of semen of improved animals will be considered from Australia, so that the flow of an improved germplasm benefits the community directly.

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.

The activity will be continued till the end of 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

Collaborators: F. Kasimov (Sogd Branch-Tajik Livestock Research Institute), R. Mamatkulov, PhD student
PI: Liba Brent (University of Wisconsin)

Background: Urgent income is required to help overcome poverty levels in the country. There is a need also to incorporate the role of women in the production systems and their local knowledge in manufacturing and processing of products. Furthermore there is the potential in the region for naturally colored mohair, as a frequency of animals with these characteristics exists. It is felts that prices and markets for this type of fiber is promising, thus adding to the income possibilities for farmers.

Methodology: An evaluation of the physical characteristics of the colored angora fiber will be made in a recognized lab (as the fiber laboratory of INTA-Argentina) and a market evaluation made locally and outside the country (UW). Participatory work will be done with women from the villages Women will be then selected and trained in washing, managing fiber, dying, spinning yarn and eventually manufacturing handicrafts. This will be based on experience already developed in CA by UW. Experimental sales will be taken place in the USA market, in particular concerning colored fibers.

Expected outcomes:

- 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

Theme 4: Knowledge exchange

The principal investigator will be Dr. Asamoah Larbi

Activity 17. Enhancing knowledge exchange for increased feed and livestock production

Collaborators: Abdraimov S, Alimbekov S, Ibragimov T, Joldoshev K, Attokurov T, Asanakunov B, Ponomarenko I N, Djoldoshev K D, Kosimov M, Soliev A, Bokiev M, Kyrgyz Agrarian University, *Tajik SRI Livestock Production, Khodjend State University, Tajik University of Technology.*

*Background***:** There is need for closer linkages between civil societies, research/development staff, and policy makers to exchange knowledge on the development and dissemination of sustainable integrated feed-livestock production systems to reduce food insecurity, poverty and environmental degradation in poor rural communities. Improving scientific and technical capabilities of research and development through training and their awareness of current research on feed-livestock interaction will improve research efficiency. The objectives of this activity are to establish a multi-stakeholder net-work of farmers, research/development staff and policy makers to promote adoption of sustainable feed-livestock systems; to improve the competence of scientists and technicians in research methodology, data analysis, and publication of results; to increase the awareness of civil societies, scientists, policy makers and developers through exchange and circulation of information and experience.

Methodology: Inception workshops involving key stakeholder will be organized to exchange information on project implementation. Quarterly meetings will be organized to discuss progress on implementation. Field days, and workshops will be organized for stakeholders to exchange knowledge. Graduate students will be encouraged to use some of the project activities for their dissertation research. Reports on project activities will be prepared each year.

Expected outcomes:

- 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.

2 South Asia-Pakistan

Theme 1: Socioeconomics

The principal investigator to lead in this theme on behalf of ICARDA will be Dr. Aden Aw-Hassan

Activity 1. Characterization of smallholder feed-livestock production systems

Collaborators: M K Azeem (ICARA Country Office, Islamabad, ICARDA-Pakistan), M A Sarfraz (University of Arid Agriculture, Rawalpindi, UAA), M K Fate (National Rural Support Programme, Islamabad, NRSP), S Khan, (National Agricultural Research Centre, Islamabad, NARC)/ Z Husain, M H Sial, K Riaz (University of Sargodha, Sargodha, UOS), A Ali (Fodder Research Institute, Sargodha, FRI)

Background: Market-oriented smallholder feed-livestock farming systems can contribute to increasing and stabilizing household incomes, improving food security and creating employment in Pakistan. There is lack of information on the nature and types of the integrated feed-livestock production systems, and technical and institutional risks associated with such systems. Such information is needed to design strategies and policies to improve the systems; and to assess impact of interventions on livelihoods of the target communities. The aim of this activity is to characterize the smallholder integrated feed-livestock production systems in the selected pilot sites.

*Methodology***:** Information on integrated feed-livestock systems will be reviewed. Rapid rural/participatory rural appraisals will be conducted with special emphasis on: needs assessment and gender and livelihoods analysis, systems productivity, income generation opportunities, market channels and opportunities for livestock and feeds, and use of feed resources in small/large ruminant feeding systems for meat and milk production. Data will be analyzed and published.

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.

Activity 2. Adoption and impact assessment of feed and livestock management technologies

Collaborators: M K Azeem (ICARDA-Pakistan), M A Sarfraz (UAA), S Khan (NARC)/Z Husain, M H Sial, K Riaz (UOS), A Ali (FRI)

*Background***:** Many feed and livestock technologies that could increase productivity and income of smallholder farmers if have either been developed or are being developed by national and private agencies. However, the factors affecting adoption of the technologies and their economic and environmental impact are not known. The economic evaluation of selected technologies will allow research/development staff to provide farmers with land use options and trade-offs of these options.

*Methodology***:** Factors contributing to farmer adoption of specific practices/technologies associated with market-oriented feed-livestock production within the mixed farming systems will be studied. Input/output data for selected fodder and livestock production technologies; and cost/benefit analysis of improved technologies in a whole farm resource context will be compiled. Changes in production practices in selected farms will be monitored. Policy and institutional factors that affect farmer's adoption of new technologies will be assessed. Ex ante and ex post impact analysis of selected technologies will be assessed.

Expected outcomes:

- Databases on fodder production and feeding technologies by July 2007
- Ex ante assessment of feeding and livestock management technologies by November 2007.

Theme 2: Range and Forage Productivity

The principal investigator to lead in this theme on behalf of ICARDA will be Dr. Asamoah Larbi

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

Collaborators: S Khan, A Hussain, T Aziz (NARC), M Ansar, Z I Ahmed (UAA), G Habib (NWFP Agriculture University, Peshawar, NWFPAU), S N Mirza (UAA), F K Khan (NRSP)/ A Ali, C Ahmad, G Mohaydin, M A Zaud (FRI), M Sarwar (Institute of Animal Nutrition & Feed Technology, University of Agriculture, Faisalabad, IANFT-UAF), S A Bhatti (IANFT-UAF)

Background: Thriving fodder markets in most peri-urban and urban centers provide opportunities for farmers to produce fodder to generate income and improve their livelihoods. Fodder production and conservation could also reduce the feed gaps in May-June and December-January. However, fodder production on-farm is low due to poor adoption of improved varieties and agronomic packages, shortage of quality seed, low nutrient and water management, poor integration of fodder legumes into the cropping and fallow systems, and lack of multi-stakeholder alliances to promote market-oriented fodder production and policies. This activity aims at increasing livestock production through community-based net-working and establishment of multi-stakeholder alliances to dissemination of improved fodder varieties, cropping systems and agronomic packages.

*Methodology***:** Newly developed fodder crop varieties and associated agronomic packages will be demonstrated on-farms using farmers' varieties as controls. Each variety or package will be demonstrated on 5-10 farms to enable statistical comparison of treatments. 1) Fodder/food legumes will be integrated into the traditional wheat/maize and wheat-fallow systems to increase the availability of fodder and to improve soil fertility. 2) Pure and mixed stands of fodder legumes (alfalfa, berseem, cowpea, vetch, lathyrus) and cereals (millet, sorghum and maize) will be integrated into citrus plantations to increase land productivity, reduce weeds and conserve the soil. 3) Fodder production from different cereal-legume (oat + vetch, wheat + brassica, sorghum + cowpea, millet + cowpea, millet + guar, sorghum + guar, sorghum + mungbean, millet + mungbean) cropping systems will be compared. Each system will be established on 5-7 farms using recommended agronomic practices, harvested at 50% flowering and fed as green or conserved fodder (hay or silage) to growing or lactating small and/or large ruminants for 30-60 days. 4) About 1-2 ha of degraded rangelands near settlements will be identified, fenced and oversown with grazing-tolerant pasture legumes for use as fodder/protein banks. The protein banks will be grazed for 1-2 hours per day by weaned lambs and goats to complement rangeland grazing. 5) Cropping systems based on multi-cut sorghum will be tested for their potential to reduce the May-June and November-December feed gap. 6) Conservation of fodder as hay and silage will be promoted. 7) Selected farmers will be trained in fodder/seed production and value addition through processing, storage, marketing, and integrated production of seed and honey. 8) Germplasm of existing and potential fodder crops will be acquired from gene banks (e.g. ICARDA, ILRI, IITA, CIAT), and screened to identify the best-bet accessions for future testing in crop-livestock farms and fodder improvement programs. Species to be considered include Mott grass, brassicas, berseem, barley, triticale, cowpea, lablab, etc. For all activities, field days and travel workshops will be organized for farmers and policy makers during the cropping cycle to promote information exchange and encourage adoption. Data on crop and soil productivity will be recorded. Farmers' perceptions and preference will be monitored. Economic impact of the traditional and improved technologies will be assessed.

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

Theme 3: Improvement of livestock productivity

The principal investigator will be Dr. Barbara Rischkowsky.

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

Collaborators: S Khan (NARC), G Habib (NWFPAU), S N Mirza (UAA)/ A Ali, (FRI), M Sarwar, S A Bhatti (IANFT-UAF)

Background: Seasonal shortages in quality feed constraint affect livestock production in smallholder crop-livestock systems. Feeding systems for ruminants in the target communities are based on low-quality residues of cereal crop (wheat and rice straw and stalks of maize, sorghum and millet) as the main basal diet for most part of the year; supplemented with by-products of food legumes (groundnut, mungbean, guar, cowpea) and agro-industrial by-products (wheat and maize bran, rape and mustard, cotton seed and groundnut cakes, guar meal, beet pulp and sesame meal). Livestock production is generally low because the traditional feeding systems usually do not meet the nutritional requirements of the growing and milking animals. This activity aims at increasing market-oriented meat and milk production through dissemination of technologies to improve conventional and non-conventional feed resources, and improved feeding systems based on efficient use of crop residues and agro-industrial by-products.

Methodology: 1) Types, amounts and seasonal availability of crop residues and agro-industrial by-products will be assessed on-farm. The nutritive value of non-conventional or little-known feed resources will be characterized. 2) A series of on-farm strategic supplementation feeding trails will be conducted in case study areas using farmer-managed growing or milking small and/or large ruminants. Animals on low-quality cereal straw diets will be supplemented with residues of feed/food legumes and agro-industrial by-products. 3) Economic rations varying in cost will be formulated and compared. 4) Growth of small ruminants grazing native pastures with or without protein and energy supplements will be evaluated. 5) The use of non-conventional feed resources (e.g. citrus pulp, tree leaves) in fattening diets of sheep and goats will be demonstrated. 6) Improving the quality of cereal straw and fibrous residues through spraying with urea-molasses mixture, and storage of wheat straw after urea treatment will be demonstrated. For all on-farm trials, two treatments will be used - farmer practice (control) and the improved feeding system. About 5-10 farms will be assigned to each treatment. Feeding trials will last between 30 – 90 days. Farmers will be trained to record live weight changes every week and daily milk off-take. Farmers' perceptions and preferences will be monitored. Economic analysis of the feeding systems will be conducted. On-farm feeding trials will be complemented by on-station feeding trials in pens or under grazing when needed.

Expected outcomes

- 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

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

Collaborator: T Aziz (NARC), S Khan (NARC), G Habib (NWFPAU), S N Mirza (UAA)/ A Ali, (FRI), M Sarwar, S A Bhatti (IANFT-UAF)

Background: Sales of livestock and their products (milk and dairy products, meat, wool) are major sources of income for smallholder livestock producers in the target communities. But, most small-scale farmers do not add value to their products to capture potential markets niches. In a few cases where value addition is practiced, inefficient and labor-intensive traditional methods are used resulting in low-quality products. Helping farmers to add value to their products could improve household income and reduce rural poverty. This activity is aimed at presenting opportunities to poor livestock keepers in the target area to move from subsistence to market-oriented production systems in order to improve

household income. Specific objectives are to disseminate options for market-oriented milk processing and lamb fattening.

*Methodology***:** 1) Farmers' milk production, processing and marketing practices will be documented. Small-scale dairy farmers will be encouraged to form interest groups. The project will link the groups to milk companies such as Nestle to establish milk collection centers to sell their milk. Women will be trained in improved methods of milk processing. Traditional versus improved methods of processing milk to cheese and butter will be compared using 15 -20 household for each method. 2) Fattening of small and large ruminants to capture market niches during special holidays or festivals will be promoted. Medium and low cost fattening or economic rations will be formulated from on-farm feed resources and tested with farmer's ration as control. Each diet will be assigned to flocks of 5-10 farmers and fed for periods ranging from 60 – 120 days. Proven disease control strategies that will eliminate and/or reduce disease risk and boost animal productivity will be disseminated. This will include vaccinations and application of drugs to control external- (e.g. ticks) and internal parasites. Farmers will be encouraged to construct low-cost housing using locally available materials. Live weight gain and farmers' perceptions of livestock value and health and economic returns will be monitored.

Expected outcomes:

- 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

Theme 4: Knowledge exchange

The principal investigator will be Dr. Asamoah Larbi

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

Collaborators: M K Azeem (ICARDA-Pakistan), M A Sarfraz, M Ansar, S N Mizra (UAA), S Khan (NARC)/ Z Husain, M H Sial, K Riaz (UOS), A Ali (FRI), G Habib (NWFPAU)/ A Ali, (FRI), M Sarwar, S A Bhatti (IANFT-UAF)

*Background***:** There is need for closer linkages between civil societies, research/development staff, and policy makers to exchange knowledge on the development and dissemination of sustainable integrated feed-livestock production systems to reduce food insecurity, poverty and environmental degradation in poor rural communities. Improving scientific and technical capabilities of research and development through training and their awareness of current research on feed-livestock interaction will improve research efficiency. The objectives of this activity are to establish a multi-stakeholder net-work of farmers, research/development staff and policy makers to promote adoption of sustainable feed-livestock systems; to improve the competence of scientists and technicians in research methodology, data analysis, and publication of results; to increase the awareness of civil societies, scientists, policy makers and developers through exchange and circulation of information and experience.

Methodology: Inception workshops involving key stakeholder will be organized to exchange information on project implementation. Quarterly meetings will be organized to discuss progress on implementation. Field days, and workshops will be organized for stakeholders to exchange knowledge. Graduate students will be encouraged to use some of the project activities for their dissertation research. Reports on project activities will be prepared each year.

Expected outcomes:

- 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.

IV Regional Activities

1 Background

Scientific training and exchange of scientific information is somewhat limited in the region. In Central Asia, the relatively few opportunities for training of scientists, on the other hand, are usually unlinked to on-going research such that researchers returning from training stagnate and are not able to apply their learned experience on the ground. There are limited, if any, opportunities for farmers to get training in the use of technologies to improve production and in particular in participatory research approaches linking with development and the policy environment. The regional activities will channels training and scientific exchange via the development of targeted training at ICARDA or other appropriate institutions, in addition to the development of regional workshops concerning specific research methodologies so that the skills of scientists involved will be rapidly developed. The regional activities also will include the development of meetings regarding planning and supervision of the project (Steering Committee meeting).

2 Activities

Improvement of skills: discipline-Specific Training

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

Collaborators: PIs; Regional Coordination in Pakistan; National Coordinators of Kazakhstan, Kyrgyzstan and Tajikistan; and Project Coordinator.

A leading scientist from each country will be trained at ICARDA and WANA in the area of integrated feed resources and livestock production, for a period of 15 days. It is expected that the leading scientists will become leaders in the area of training organization within countries and contribute to training among the Central Asian countries. The areas proposed for training include: Range and forage production, management of flocks with a market-oriented direction, socioeconomics, and the use of modern computerized techniques such as GIS for the characterization of sites and application of research results.

Expected outcomes:

- Four scientists trained at ICARDA on crop-livestock issues

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

Collaborators: PIs; Regional Coordination in Central Asia; National Coordinators of Kazakhstan, Kyrgyzstan and Tajikistan; and Project Coordinator.

A limiting problem confronted by central Asian scientists is determined by their difficulty in communicating in English. This infringes negatively in the scientific exchange and determines isolation. Moreover, many training and funding opportunities are very often missed in view of this limitation. An English course for scientists engaged in the project will be offered to strengthening the research capabilities of the host institutions.

Expected outcomes:

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

Regional workshops

Activity 3. Regional Workshop on participatory and socioeconomic research methodologies

Collaborators: Socioeconomic PI; National Coordinators of Kazakhstan, Kyrgyzstan, Tajikistan and Pakistan; and Project Coordinator.

There is an urgent need to train scientists in modern methodologies to conduct socioeconomic research in order to identify production problems with farmer's participation, characterize production systems, assess and study markets and market potentials, and monitor production systems to evaluate impact. One component of the workshop will be training in gender analysis. In response to this need, a regional workshop will be conducted in Tajikistan to train researchers in modern approaches in participatory research and methodologies of surveying, Rapid Participatory Appraisal, and production monitoring. At least 2 scientists form each country other than the host country will participate in this event.

Expected outcomes:

- At least 8 scientists trained in a Regional Workshop on research methodologies concerning adaptive and participatory research with communities

The workshop is planned for 15-23 March 2007 at the University at Shimkent, South Kazakhstan.

Project management and supervision

Activity 4. Project supervision and Regional and Steering Committee meeting

Collaborators: Project coordinator, PI, and National Coordinators

This activity will be specifically linked to project coordination that will be shared among the Project Coordinator and the project's Pis, Aden Aw Hassan and Assamoah Larbi. A regional Meeting will be conducted prior to the Steering Committee Meeting (SCM) which will be held in one of the participants countries to review the progress of the work and approve financial and workplans issues. The first regional meeting will be held in the South-west Research Center in Shymkent, Kazakstanin July or August 2007 (Year 2).

Expected outcomes during first year:

- Inception/Planning workshops held in CA and SA in September 2006: in CA the 2 day inception workshop involved 19 participants including the Pis, the Director of MP4 from ICARDA, the assistant regional coordinator from Tashkent office, NARS from the three countries, a NGO respresentative from Tajikistan, faculty members of Kayakh, Kyrgyz and US universities; in SA-Pakistan the inception workshop involved 20 participants from scientists from NARs, ICARDA's country coordinator and ICARDA staff.
- 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