

**FINAL TECHNICAL REPORT  
VILLAGE DECISION DRIVEN RESEARCH  
RALF 01-03**

---

**Executive Summary**

The Research in Alternative Livelihoods Fund (RALF) not only promoted economically viable alternatives to poppy production but assisted in restoring food security to Afghanistan. Working together, Washington State University (WSU) and the Danish Committee for Aid to Afghan Refugees (DACAAR) complemented each other in their strengths to implement both research and development issues pertaining to the livelihoods of rural farmers in Afghanistan. WSU is a major research university with experience in agricultural development in Afghanistan. DACAAR is one of the largest NGOs in Afghanistan with a strong agricultural program working at the village and farmer level. Together they have a commitment to support sustainable economic and social development in Afghanistan.

**Background**

Afghanistan is the world's largest supplier of opium, supplying approximately 85% of global production. Whereas the Afghan Transitional Administration (ATA) in its '5-year strategy for tackling illicit drug problems in Afghanistan' is committed to reducing poppy cultivation by 70% by 2008, developments over the past year have been discouraging. Poppy production has increased in terms of quantities but geographical spread has been reduced.

At the local level, opium production constitutes an attractive income source, especially in a situation where the asset base of the rural population has been depleted due to a prolonged drought and periods of political instability. Furthermore, it should be recognized that the 'profit motive' cannot be seen in isolation. Local power structures and patron-client relations may influence and determine the decision making process of the farmer, and in other instances opium production is the only way to access rural credit. Often there are no alternatives.

That is why there is an urgent need for external agencies to help the farmer identify alternative livelihood opportunities, which are based on the local resource base, but also have the potential to become sources of cash income. It is important to emphasize that alternative livelihoods should not just be considered experiments, but that initiatives are formed by an understanding of both the local situation and the ability to turn local produce into marketable products. There are two important aspects to this approach: the first is to analyze and identify the opportunities existing within a specific agro ecological zone in a dialogue with the local farmers and build up the capacity to carry out these analyses; the other constitutes an examination of the opportunities for marketing the products identified. It is very important that these two aspects go hand in hand; if there are no outlets for the identified alternatives, the farmer is more than likely to revert into poppy cultivation, and his situation might be even worse than before the 'experiment'.

There were several stakeholders in this process. The farmer who has an intimate

knowledge of his or her own resource base, but they have often not the knowledge, the resources, or the incentives to explore the new avenues in terms of products and markets; the businesses that support both infrastructure and knowledge base of commodities and services; DACAAR has been in the area for a number of years, but as opium cultivation has taken off, it has become difficult to operate, as support to agricultural development has been conditioned by the farmers refraining from poppy cultivation; The Ministries of Agriculture and Rural Development are attempting to build capacity at the local level in order to engage more efficiently with the needs and opportunities of the local farmers. Apart from these stakeholders, who are directly involved in the process to identify alternative livelihoods, it should be recognized that there is a direct correlation between the successful development of alternative livelihood strategies and an improved law and order situation.

DACAAR is best situated for eliciting information from farmers. They have established contacts locally and generally have good relationships at the local level. DACAAR also has relationships with ministry officials and at times even cooperative agreements to work within the ministries. In this way DACAAR is able to 'cut both ways', building long term relations with village communities while at the same time establishing linkages to government institutions that are still in the process of restructuring upon decades of instability and establishing legitimacy in the eyes of the rural population. This position, which DACAAR holds, as 'broker' between village and state is very important in the current process of nation-building, and this process – strengthening government institutions while working towards alternative livelihoods – constitutes the larger picture, which this proposal aims to support.

### **Drought**

From 1995 through 2002 much of Afghanistan was in a drought. Laghman province experienced a severe drought from 1997 through 2001 which had several impacts on farmers. The lack of rain first affected the uplands which are primarily used for grazing and are not irrigated. This limited the amount of food for animals and the herds were reduced. The continuation of the drought affected the main rivers that are used for irrigation which lowered the level of irrigation that could occur. This affected not only food production but also forage production for animals. Farmers are more apt to grow food crops for their own consumption than the forage crops when land is scarce. This reduced the herds even further. The first to go are those animals that have higher consumption and unable to live on less. The cows went first then the sheep then the goats. At the end of the drought farmers lost on an average 70% of their livestock.

### **Poppy**

In a report published in February 2003, The United Nation's International Narcotics Control Board (INCB) stated that Afghanistan was again the world's leading producer of opium poppy and that households rely on opium as their major source of rural credit.

In all three villages, many villagers gained the majority of their income from the sale of raw opium, which was selling for around \$200-300 per kg. Due to the sensitivity of the subject exactly what part the sale and trade of raw opium plays in livelihood strategies is unclear. It was clear farmers were replacing other grains such as wheat completely with poppy. In the spring of 2004 it was estimated that over 85% of Laghman province was planted to

poppy. In 2005 there were no poppies grown in Laghman province. The decision was made by local authorities to stop growing and farmers all joined together to ban the opium trade. The ban continued through 2008 with only fringe areas reporting that some poppies were grown.

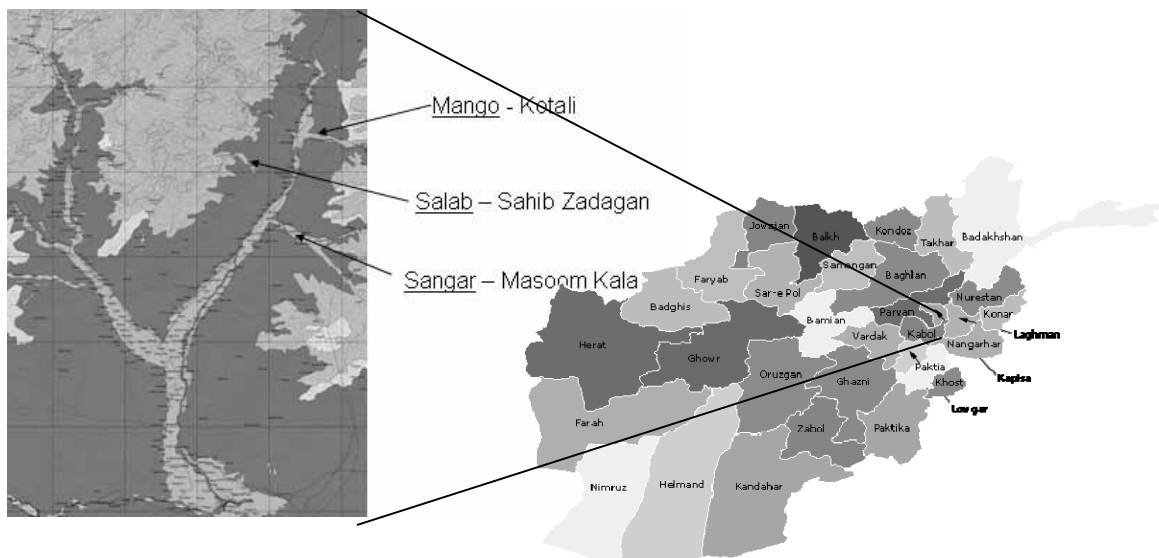
### Project Purpose

The overall goal is to assist farmers in identifying alternative livelihoods that would replace opium production.

The purpose of the proposed work was to create an approach that will solicit ideas from farmers for alternatives to poppy production, which could then be addressed through research and development. Then to develop a structure that integrates needs and opportunities defined by village organizations (VOs) with the research capacity of the Ministry of Agriculture and the implementation ability of The Danish Committee for Aid to Afghan Refugees. And then finally to examine in which ways the natural resource base can be turned into marketable commodities.

### Research Activities

The district of Alingar is located in the Eastern part of Laghman province. DACAAR is well-established in the district, it has worked in Alingar district since 1997, and 60 active VOs have been established, covering a total 70% of the district. Since that time opium production has increased considerably in Alingar, as well as the rest of Laghman, and by 2003 most landowners in the district were – according to field staff and research carried out in the area – were cultivating poppies on parts of their cultivable farmland.



Laghman is an area, which is agro ecologically different from the rest of Afghanistan. As such it could be assumed that the province has a comparative advantage, as it is possible to produce crops, which either are different from those produced in the rest of the country, or can be marketed in a different season. Located relatively near urban markets, it seems a reasonable assumption that farm products from Laghman can compete favorably with,

and perhaps even substitute, imports from Pakistan.

### **Criteria for Selection of Villages**

Villages were selected in the regions of Salab, Sangar and Mango in the district of Alingar in Laghman province based on differences in agronomic practices, social or ethnic differences, and access to markets. In addition it was decided that each village work with DACAAR directly with an established village organization, that the security has been assured for the working team, that the villages have not been previously studied, and that the size of the villages be similar.

In Salab, the village of Sahib Zadagan has approximately 125 family units in 20 households or compounds. The village is at a relatively high elevation of 1200 MASL. The high elevation limits the growth of some crops that are not frost tolerant however the later harvest often puts the farmers in unique opportunity to sell fresh produce to those at lower elevations after their crops have already been harvested. The farm fields are characteristically steep and thus terraced for proper irrigation. In the non-drought years, the farmers could grow two crops during the year starting with a fall crop such as wheat, harvesting it in May or June and then following up with a maize, potato or vegetable crop which is harvested in October or November. Access to water is from springs that are formed high in the mountains where there is also a large forest that the upper villages use for harvesting firewood. The ethnic group here is Pashai where women can generally work outside the home in the fields without men accompanying them. Access to markets is limited because of the distance to the main roads. Land holdings are the smallest of the three villages at about 0.1-1.5 jeribs per family.

In Mango, the village of Ziarat has approximately 145 family units in 37 households or compounds. The elevation of the village is approximately 1050 MASL where frost is less likely to occur than Salab but the threat is still apparent and frost intolerant plants are not common. Here the terrain is less steep however still terraced to control water which comes from springs. Two crops can be grown with a fall crop of wheat or vegetables followed in the spring by vegetables, maize or rice. Access to water is better than that of Salab where the springs are more dependable. The ethnic predominate group is Pashto but there are many Pashai. Access to markets is somewhat better with the main road to Mehterlam close by. The land holdings are larger than those in Salab and range from 0.53 jeribs per family.

In Sangar, the village of Masoom Kalay has approximately 115 families in 21 households or compounds. The elevation of the village is at 895 MASL where frost is rare. Here the cropping patterns are much the same as in Mango however the water from the springs is much less certain as was apparent in the last six years of drought. The terrain is less steep than the other two villages. The ethnic group is Pashto. Access to markets is much better only because they are closer to Mehterlam and the main road.█

### **The Village Survey**

The survey of village households is designed to learn more about the social, economic and political context of current livelihoods in order to better assess the feasibility of alternative livelihoods. (For complete results see appendix 1)

It is important to emphasize that alternative livelihoods should not just be considered experiments, but that initiatives are formed by an understanding of both the local situation and the ability to turn local produce and activities into marketable products. There are three important aspects to this approach:

1. To establish an understanding of how poppy cultivation is integrated in local livelihood strategies, both in terms of household economics, access to credit, and local power structures.
2. To analyze and identify the opportunities existing within a specific agro ecological zone in a dialogue with the local farmers, and build up the capacity to carry out these analyses.
3. To examine the opportunities for marketing the products or activities identified.

It is very important that these three aspects go hand in hand. Interventions have to build on a thorough understanding of the local situation, and if there are no outlets for the identified alternatives, the farmer is more than likely to revert to poppy cultivation, and his situation might be even worse than before the 'experiment'.

The results of the surveys identify the farming/production systems in place, the perceptions of the households and villages concerning alternative crops, marketing and other details necessary to define high potential alternatives. Benefits, incentives, and rewards must be identified to assist in the adoption of alternatives.

### **Household Selection**

The field work is undertaken by a team of DACAAR staff from each field management office in Salab, Mango, and Sangar. The first village organization meeting serves as an introduction of the survey as well as selecting six households to interview. The VO separates the households into three wealth groups (high, medium and low) and then randomly selects two from each wealth group to survey. Two DACAAR teams, one of men the other of women, will interview the households.

### **Marketing Analysis**

The general purpose of the marketing analysis is to find out what the best market opportunities are for goods that suit the local production possibilities, where the latter are those things that the local populations have an actual or potential capacity to produce and are interested in producing.

The purpose of the village survey, from the marketing point of view, establishes the production possibilities and the marketing constraints. The following questions were asked:

- What goods does the local population produce now?
- What goods do they sell now? To whom do they sell and where?
- If traders visit the village to buy from the local people, do the latter know what prices are in place where the traders sell? Why do the producers not transport the goods to the markets themselves?
- How are the prices the producers get determined?
- Which among the goods they sell are the most profitable?

- Are there any goods that they used to sell that they do not now? If so, why do they not sell them?
- What goods are they most interested in selling and why? If these are different from the goods they sell now, to whom would they sell? What prices would they expect to get and what prices would they have to get to make production and selling worthwhile?
- Is there any form of collaboration among producers when it comes to marketing? Would they be willing to collaborate, for example in transporting goods to market and, if they sell to traders, negotiating prices with them?

## Outputs

In each of the three villages, 6 households were selected for family representatives to be interviewed hence 18 households and 83 families are reported. Overall, the number of families in a household unit ranged from 2 to 9 with an average of 4 families in a household for the 18 total households. Mango had the largest number of family members, at 240 individuals comprised of 34 families that were interdependent. Salab had the smallest number of individuals with 149 interdependent family members in 21 families. Sangar had 182 interdependent individuals with 27 families.

## Survey Representation

	<i>Total Number of People Represented</i>	<i>Average Number Jeribs* Cultivated per Household</i>	<i>% of Households Growing Fruit</i>	<i>% of Farm in Grain</i>	<i>% of Households growing Nuts</i>	<i>% of Households Growing Vegetables</i>	<i>% of Households Raising Livestock</i>
<b>Salab</b>	149	1.45	100	95	43	100	100
<b>Sangar</b>	182	3.33	100	78	68	100	100
<b>Mango</b>	240	3.38	**	**	**	**	**
<b>TOTAL/AVERAGE</b>	<b>571</b>	<b>2.72</b>	<b>100</b>	<b>85</b>	<b>56</b>	<b>100</b>	<b>100</b>

\*One Jerib equals 2,000 m<sup>2</sup> (1/5 Hectare), \*\*missing data

All households in each village reported that the main crops were wheat, maize, rice vegetables and dry beans. Because they are able to double crop the sequence is to plant either wheat or vegetables in the autumn which are harvested in late spring and then planted to either, maize, rice or beans. These crops take up on average more than 85% of the irrigated land. There are many other crops grown in the three villages ranging from nuts and fruits to vegetables. An average of 17 different crops are grown by each household which indicates the diversity plant species and capability to produce for a market economy.

Irrigated land holdings are very small with an average of just over a half hectare per household. During the winter period nearly all households (85%) plant wheat and different vegetables that can withstand the cold. In the summer, after wheat harvest, generally maize and beans are planted but many other vegetables are also planted that can withstand the heat.

Walnuts, pistachios and almonds are grown by nearly 55% of all households. The majority of these are consumed and only a small percentage are traded or sold.

Over 15 different varieties of fruits are grown by all of those surveyed. Fruit trees are generally grown on land that can receive at least a little irrigation water during the summer months. On an average each household has five different kinds of fruit trees and almost all are for home consumption.

<b><i>Fruit Crop</i></b>	<b><i>Percentage of Households Currently Growing</i></b>
Mulberry	77
Grapes	54
Fig	44
Pomegranate	39
Orange	37
Apricot	35
Pears	29
Apple	25
Lemon	19
Persimmon	19
Plums	19
Guava	19
Peach	17
Quince	17
Loquat	14

Over 15 varieties of vegetables are grown by every household in the study area. Generally all are consumed within the home but some are taken to the local Friday market when there is an excess. Most common to sell outside the home are potatoes and onions because transportation is easy and storage is difficult.

<b><i>Vegetable Crop</i></b>	<b><i>Percentage of Households Currently Growing</i></b>
Ladyfinger	87
Onion	87
Tomato	85
Pumpkin	83
White Radish	73
Squash	73
Eggplant	71
Spinach	69
Potato	64
Turnip	64
Red Radish	64

Pepper	50
Carrot	6
Cauliflower	4
Other	33

Livestock are owned by every household interviewed but the variety varied greatly. The drought has had a negative impact on household livestock assets as a means for holding and preserving wealth, as a ready source of high quality protein for food (meat, milk, eggs), and

animal draft labor for transport and cultivating crops. The most valuable animal species a family can own and the most difficult to regain possession of are oxen, cattle, donkeys, goats, sheep, and turkeys, respectively. The livestock that represent the largest financial loss to families are oxen, cattle, and donkeys. Cattle are dual purpose animals and are highly prized since they provide multiple products to owners and most commonly this is draft labor and milk, and meat. For households to keep cattle requires having access to a necessary supply of feed. Feedstuffs are grazing land and pasture, or excess production of feedstuffs such as grain, hay, or ensiled fruits, vegetables or silage. Cattle also need an adequate water supply. Both of these requirements need to be in relative large supply and access to these needs to not be in direct competition with food and water for humans, in order to have extra supplies diverted to the support of cattle production.

<b>Livestock</b>	<b><i>Percentage of those Currently Owning Livestock</i></b>	<b><i>Percentage of those Owning Livestock before the Drought</i></b>
Chickens	81	68
Cattle	42	75
Goats	35	54
Sheep	23	35
Donkeys	12	14
Turkeys	10	14
Ducks	8	10
Oxen	0	23

In summary, households in these study villages have monumental losses of livestock and less diversified crops for food or for sale as a result of drought conditions. This places households in desperate need for food sources that have sufficient high quality protein. Plants as a source of dietary proteins need adequate variety to ensure that complementary combinations of amino acids are eaten at any meal to support human needs. Less livestock as a source for direct high quality protein from meat or milk, also places families at greater risk for disease and starvation. This has the most severe consequences for children and pregnant women that need protein to support growth and development. Activities that can increase production of protein, milk or meat with limited resources, will benefit families at the most basic level.

## **PILOT PROJECT SELECTION**

Priorities for the “Pilot Projects” were developed after discussing the results of the survey with the individual village organizations (VO) from Salab, Sangar and Mango. These priorities were then brought to a meeting of all leaders from the VOs to finalize a priority list for the project. Each VO discussed the results of this meeting to reaffirm that these activities were in agreement with them. This approach ensures that all stakeholders have adequate time and opportunity to voice their opinion and suggest any change. The priorities agreed upon by all villages are:

**1. Animal Husbandry**

- a. *Cow calf exchange*
- b. *Forage Production*
- c. Rangeland Improvement
- d. Meat and milk production

**2. Forest Management**

- a. *Woodlots*
- b. Nursery and expansion of improved varieties
- c. Forest production
- d. Walnut and almond production
- e. Sustainable harvesting

**3. Women’s Resource Centers**

- a. *Cheese Making*
- b. *Kitchen Gardens*
- c. Soap Making
- d. Continuing Education

**4. Sustainable Farm Improvement**

- a. Improved Varieties (wheat, maize, beans and vegetables)
- b. Management technique
- c. Cropping System livestock and cropping systems

**5. Poultry and Egg Production and Marketing**

- a. Improved varieties
- b. Raising techniques

**6. Fruit and Vegetable Processing – tomatoes, citrus, plum**

**7. Fisheries**

- a. Production
- b. Processing of fish and fish production

After several meetings with the VOs, DACAAR and WSU it was agreed that aspects of the Animal Husbandry, Forest and Women Resource Centers would be undertaken in a pilot project in all three villages. (for complete descriptions see appendix 2)

**Cow Calf Exchange and Forage Activity**

Increasing the quantity and developing the quality of cow herds for milk production is needed in areas especially affected by the drought. Cows were the first animals to be sold during the drought because of their high use of feed and water and they are the last to be replaced because of the high price of replacement. However, the benefits of cows in the household providing income from dairy products and calf production are great. Of course the initial outlay for a farmer to purchase a cow (30,000 af) is too high for a single farmer or household. The key to the success in this project was the formation of an association that selects needy families (widows or handicapped headed households) first to donate the cows to who in return donate the offspring of these cows to the association who repeat the cycle. The recipients of the cows must maintain high quality and quantity of feed which will be developed into a training and demonstration of fodder production. The other key to the success of this project is to develop women's resource centers for milk processing (yogurt or cheese) activity. These centers will also operate on other activities that will have training and demonstrations associated.

### **Woodlot Activity**

The practice of planting small woodlots is becoming a popular farm enterprise because of its ease of management due to its proximity to villages and households. The most common forms include planting trees in woodlots, on boundaries and around homesteads using a variety of exotic and indigenous species for different uses: fuel wood, building material, timber, fruits, shade, medicines, oils, animal fodder and income. These practices allow crops to be inter-planted during the first and second growing seasons to maximize use of available land. A key focus is to promote enterprises at the village and household levels to sell a range of products in local markets and to private sector industries.

### **Women's Resource Centers**

The importance of the Women's Resource Center (WRC) is to provide a place where women can meet, be trained in certain activities and develop resources for livelihood development. Increasing communication between women will decrease their isolation, increase their respect in the community and improve their management skills. The survey indicated that there were many who made cheese in the villages before the drought. When this activity was suggested it became apparent that new techniques would not only ensure quantity but quality control as well. There has been a shortage of milk and cheese in the villages in the last ten years and a demand both at the household level as well as the village. Cheese keeps longer than milk, is a high protein food with many vitamins essential to diets. The training on cheese making will also include food safety issues such as hygiene, storage, cooking and diet. The trainings raise awareness for improvement in other areas amongst the women.

## **PROJECT IMPLEMENTATION**

### **Animal Husbandry**

#### Cow-calf exchange

During the project a total of 41 cows were purchased for and distributed to farmers in June-September 2006. The cattle distribution was done and will be continued in accordance with the following criteria:

- The recipient must not have any cows

- The recipient must have 10% of the funds for purchasing the cow
- The recipient must be involved in or have experience with livestock management
- The recipient must be a cattle association member
- The recipient must have a small piece of land to cultivate forage
- The recipient must be able to sell dairy products generated

The cows provide the recipients with a number of benefits, including additional food sources and income generating possibilities. The milk is used to produce cheese, ghee, and sometimes yogurt and in the future some meat will also be produced. Furthermore, the cows provide manure (used as fuel for cooking and as fertilizer for the fields) and animal traction (for plowing).

#### Forage seeds

Improved varieties of clover, sorghum and oat seeds were distributed to each household from the three cattle associations, 20 of these were the same farmers who had received cows.

#### **Women's Resource Centers**

To establish a Women's Resource Center, the women from at least five villages must gather in one village, but in Alingar the men would not allow the women to engage in activities outside, and women were not willing to travel outside their villages. Instead, two women groups were formed in Sangar, one with 28 members from two villages, and the other with 83 members from three villages. Two activities were promoted in these associations, cheese making and soap making. There are no formal bylaws for the female groups.

#### Cheese making

Cheese making training was conducted where 13 women from Sangar were trained. Twenty sets of cheese making equipment were purchased and one set was provided to each of the trained women. For the training a business plan was developed, 21 kg milk and 42 kg firewood were purchased.

#### Kitchen Gardens

Training and seed distribution was accomplished in Alingar with more than 130 women receiving over 20 improved varieties of vegetable seed. Training on seed bed preparation, integrated pest management, harvesting, post harvest storage as well as food preparation, nutrition and food safety.

#### **Tree Planting**

45,370 *Populus nigra* cuttings were purchased locally and distributed in February 2007 through associations to 45 farmers in 18 villages in Salab, Sangar and Mango. 1.9 hectare were planted with poplar. DACAAR trained the farmers in poplar cultivation. Unlike

local poplar varieties, *Populus nigra* is resistant to stem borers. *Populus nigra* cuttings have shown good growth rates and are appreciated by the farmers. Poplars are mainly used to produce poles, sticks, and firewood. There is a good market for poles, both within Afghanistan and in Pakistan. The *Populus nigra* start yielding in the 4<sup>th</sup> year.

Pilot Project Activities	Impact
Animal Husbandry	
Cow calf exchange/milking cow revolving fund	Organized 3 livestock associations and provided fund for the procurement of 41 milking cows for distribution to the vulnerable members of the association on a favourable loan terms. At the end of the project, all cows distributed were producing milk with milk production that ranges from 4 – 5 kg day depending on the age of the calf. At least 22 of the cows have given birth and the rest are pregnant or getting pregnant. The recipient of the cow loan are able to pay the monthly due of 400 – 500 Afs to the association. From the payment collection, the association was able to buy 3 additional milking cows for distribution to qualified members.
Forage seeds	A total of 120 kg of improved forage seeds (3 varieties) were distributed to selected members of the livestock associations. These were planted to an area of about 2.8 hectares. This now serves as source of seeds of improve forage to other members of the association.
Women Resource Center	
Chees making	The project had provided training and set of equipment on cheese making to a total of 25 women from Alingar and Alishing Districts. These women are now producing cheese for sale to their neighbors or in the local market. One kilo of cheese cost about 150 Afs.
Soap Making	The project had provided the training and set of equipment to a total of 30 women members of the small group. The group was also assisted in preparing their business plan and they are now producing soap for sale in the local market.
Kitchen Garden	A total of 438 women from 28 villages in Alingar and Alishing District benefited from this activity. Seeds of more than 6 improved varieties of vegetables and training on cultivation of these vegetable varieties were provided to the beneficiaries. Given all factors are favorable, the kitchen garden activity serves as source of food to the family of the participating women, additional source of income from any excess production and source of improved vegetable seeds for the next planting season.
Tree Planting	The project distributed a total of 105,370 cuttings of <i>Populus nigra</i> to a total of 156 members of the

	<p>association. Cuttings are planted in approximate total area of 4.4 hectares. The survival rate of the cuttings ranges from 85 to 95%. At the end of the project, trees planted in 2007 have already reached the diameter of 3 – 4 cm and height of 2 – 3 meters. Farmers in Alingar who have first received the cuttings started to expand their plantation as they already have the source of cuttings. With the local market available for poles and cuttings, this activity will potentially provide income to the farmers. Poplar pole of average size costs as much as 300 Afs (US\$ 6) and cuttings costs 1 Afs.</p>
--	---

### Contribution of Outputs

The Village Decision Driven Research Project has been successfully concluded. Overall, it has achieved its objectives. Based on the results of the surveys and the acceptance of the activities this project has been hailed by the stakeholders as a model for addressing the needs of farmers. WSU and DACAAR have used an appropriate participatory approach which ensured the knowledge transfer and inputs would have a sustainable impact in Alingar district in Laghman province.

Several Lessons were learned during the past five years in relation to the implementation and coordination with partners. The following are some of the key lessons:

- Involvement of all partners and farmers in planning yields better respect from farmers. Activities coming from the top are normally given lip service by the community as they view these with suspicion.
- Survey implementation and enumerators need to be trained in key approaches to best elicit the information needed. They also need to be trained in sensitivity to farmers' willingness to share information. Much information can be gathered but only if asked in a way the farmers feel comfortable in sharing information.
- Follow up survey questions have to be made immediately after the results are determined from the first set of questions. Village organization meetings are crucial to share results and encourage further discussion within the village about what the results of the survey meant.
- Market analysis has to be done if not before the village survey but at least during. Without knowing what the "buyer" wants it is futile determining what the farmers are able to produce, process and sell.
- Consensus much be reached between all stakeholders on activities to be implemented. This requires as much work as the survey where meetings with men and women need to occur at various levels.
- Clear and concise strategies have to be developed for associations to create a structure to work from. By-laws and procedures detailing how the association functions are crucial for everyone either as members or a contributing organization.
- Focusing the extension system of DACAAR in the first year to support the associations developed is crucial. After the first year these experienced associations can then play a critical role as local extension and training agents to meet the demand created by other villagers. This system allows the adoption to

expand naturally from farmer to farmer which frees up the limited number of government and NGO extension workers to expand their area of influence with new associations.

### ***Contribution to Developing the Capacity of the National Institutions***

The Ministry of Agriculture and Animal Husbandry (now called the Ministry of Agriculture, Irrigation and Livestock) assisted in the development of the proposal, the initial workshop and several subsequent trainings in Laghman province. Their engagement during the first year especially at the survey development and implementation was quite high. At the stage where we were developing pilot activities MAIL was asked to develop their own research agenda at the village level where they could work with DACAAR. (RFA for MAIL in appendix 3) After several attempts by WSU, DACAAR and ICARDA to communicate the objectives and solicit response it was determined that they were not able or had the capacity to respond. This left them out of the engagement and it was then requested by WSU to ICARDA to transfer funds initially set aside to MAAH to be diverted to the pilot projects implemented by DACAAR.

WSU approached the United States Department of Agriculture to host fellows from Nanganhar University in Jalalabad. This request was granted and we hosted two faculty from Livestock and Horticulture to work with International Programs at WSU and work directly with WSU faculty. The program lasted 8 weeks were the two fellows shadowed mentors at WSU and returned to Nanganhar. (appendix 4)

### ***Case Studies***

#### ***Women make a difference***

Khanem-Jan and her 17 year old daughter, Nargas, host a house full of women on a Thursday afternoon at their house in Darwish Kala village in Alingar district of Laghman province. The women have come with buckets full of milk and are keeping Khanem-Jan company as she gets out her cheese making equipment. The equipment is simple consisting of large pots, sieves of different shapes, containers and a small stove and rotates between the women present at the house who are members of a cheese making group. Each woman keeps the equipment for a week and is given all the milk that the group collects during that week. This helps each woman to make a substantial amount of cheese for one week and use the earning throughout the month.

The women are cheerful and good-humored as they explain the process, pointing to a small bag of citric acid: "This white powder has changed the way we make cheese. We did not know about it until a group of women from DACAAR told us that there is an easier and healthier way to make cheese. When we heard this we became eager to learn." But the female residents of Darwish Kala had to go through a process to be selected as beneficiaries for this project. A female association (called Majlis-e-Zana in Dari) selected women with access to milking cows who needed help to meet their basic needs. Every four or five of these women, living in the same neighborhood, formed a group and were trained by a DACAAR staff in cheese making. Each group was given a set of cheese making equipment and a small bag of citric acid to jumpstart their business.

“We have made cheese in our village from as long as I remember,” says Khanem-Jan “but our traditional method took a long time and was not hygienic.” Traditionally, Darwish Kala, like many other villages in Afghanistan made cheese using the lining of cow stomach. They would dry the lining first and then soak pieces of it in fresh milk for days in order to make cheese. Now these women are able to make one kilo of cheese in one hour by adding a bit of citric acid powder to a large pot of milk heating on the stove. Stirring it occasionally until the milk curdles, they strain it through a piece of cheese cloth and then put it in a container with some salt water. “We collect the cheese we make daily and sell at the market once a week or to our neighbors when they need it. We make Afs 150 (USD 3) per kilo which is a good income for us,” says one of Khanem-Jan’s group members.

Now that she has a regular income, Khanem-Jan is able to meet the basic needs of her family. She thinks that if her business continues to do well, she will be able to start saving for her daughter’s wedding. “I will only marry her to a guy who allows her to continue being a member of our cheese making group; I want her to have an income so that she can make some decisions about her household.”

### **Rebuilding a community one shelter at a time**

In the district of Alishing in Laghman province (just northeast of Kabul) sits the green and serene village of Qala-Khan where its residents continue to battle severe poverty caused by years of conflict and drought. Despite the fortune of being located on the path of Alishing river, Qala-Khan is surrounded by mountains which make large scale farming a challenge. Inefficient and old farming techniques coupled with poor quality of seeds and trees have resulted in limited return from the land. Years of war has left the entire district inept in income generation activities and the once-young fighters are now desperately in search of resources and skills to support their families.

Ghulam-Qadir is one such resident. He and his 16 family members have suffered years of poverty and despair. Since the fall of the Taliban, Ghulam-Qadir has been supporting his family through farming. The crops feed his family directly or provide for their other basic needs through exchange. Now, at nearly 70 years of age, Ghulam-Qadir has only a small piece of arable land and is considered one of the poorest residents in the village.

Despite his poverty, Ghulam-Qadir has a good reputation for paying back loans which is why he was selected by his Village Association to become a beneficiary of Research in Alternative Livelihoods Fund (RALF) project. Through RALF, Ghulam-Qadir received training and 500 poplar cuttings to start his own poplar farm. The poplar he received is of the fast-growing type which is not found in the local market and which can grow to its full size in three years. Poplar cuttings, which are currently brought from Pakistan, are commonly used to build homes and shelters in the area.

In the spirit of a true entrepreneur, Ghulam-Qadir has gone even a step further to get the most out of his land. Pointing to his land covered with poplar and vegetables he says: “I figured why waste land when I can grow things in between the trees. They taught me that poplar trees can’t be planted too close to each other so I decided to plant onions, alfalfa and some other vegetables in between so while I wait for the trees to grow I can continue

to feed my family.” Ghulam-Qadir’s innovation works and has been able to harvest vegetables while caring for his young trees.

When asked what he will do with the cuttings once his trees are big enough to cut, Ghulam-Qadir points to his surrounding and says “look around you; my village has lost many homes in the past two and half decades and we have never had the right material to build proper homes. So when I have my wood, I will first support my neighbors and community to re-build their homes by giving them a good deal on the wood. After that I will sell the wood in the market where I can earn up to Afs 800 (USD16) per stick which is a good income for me and my family. I really couldn’t ask for anything more; poplar will probably help us for years to come.”

**Cost Effectiveness of Funds Spent:**

Approximately 25% of the total budget was used by DACAAR. Another 5% was offered to MAAH but later given to DACAAR for the pilot projects. WSU travel and salaries accounted for the main portion but all funds for them were travel to Afghanistan for training and monitoring as well as salaries were for when they were in country on the project. 26% of the WSU portion \$285K were in overhead collected by WSU administration.

**Successful Themes Emerging out of the Project which Merit Scale-out/up**

All activities are worth scaling up. The markets are sure and the business plans in appendix 2 could be used in other parts of Afghanistan.

**Number of Beneficiaries Reached:**

300 women received vegetable seed in Alishing, and 138 women received vegetable seedling in Alingar
71 farmers received 45000 poplar cutting in Alingar and 40 farmers received 15000 poplar cuttings in Alishing
17 milking cows distributed to the farmers of Alingar association, and 14 milking cows distributed to the farmers of Alishing associations.
10 women in the Women’ Resource Center of Alishing trained regarding soap making and now the process of soap making is in progress
in Alingar 6 women and in Alishing 6 women trained .
3 field days in Alishing, and 2 field days in Alingar conducted
4 farmer to farmer exchange visit in Alingar, and one in Alishing conducted.
3 Vos conferances in alishing,,and 2 in alingar conducted

1 new WRC established in alishing, and the new one in alishing  
and one old one in aligar supported for shopping.

one shop in alingar WRC, and one shop in alinshing WRC

### **Constraints that affected the implementation or uptake of the results of your Project**

Several project managers at DACAAR were involved in this project due to high turnover of expatriate personnel. This led to constant education of new program managers and much data and continuity lost.

Security concerns occurred regularly. Appendix 5 is an example of the many letters we received from DACAAR about travel to Laghman. Also there were many trips and trainings planned where we were in Afghanistan but unable to travel to Laghman.

### ***Publications***

See summary report

**DRAFT**

**VILLAGE DECISION DRIVEN RESEARCH IN ALINGAR DISTRICT,  
LAGHMAN PROVINCE, AFGHANISTAN: Promoting Economically  
Viable Alternative Livelihoods in Afghanistan**

**Research in Alternative Livelihoods Fund (RALF)**

In partnership with  
DACAAR, MAAH and  
Washington State University

Winter 2006



# **Village Decision Driven Research in Alingar District, Laghman Province, Afghanistan: Promoting Economically Viable Alternative Livelihoods in Afghanistan**

## **Introduction**

The Rural Alternative Livelihoods Fund (RALF) with a budget of £3 million (5,257,485.34 USD) over three years, was established to provide support to the Government of Afghanistan. The stated goal of the initiative is to undertake applied research projects focused on developing and promoting innovative, sustainable alternative livelihood options for natural resource-based livelihoods, including crops, livestock, natural products, post-harvest processing and rural services leading to an increase in RALF's research activities are also designed to be explicitly aimed at developing opportunities for both men and women.

In 2004, Washington State University (WSU) partnered with The Danish Committee for Aid to Afghan Refugees (DACAAR) to undertake the construction and administration of a livelihood survey of three villages in the project's target area in Alingar District in the Laghman Province. DACAAR field staff, Ministry of Agriculture and Animal Husbandry (MAAH) staff participated in all phases of this study, including survey design, construction and administration. The objective was to obtain a clearer understanding of the families/residents of household compounds (which are comprised of multiple family units) within the three villages of interest. In each of the three village areas, 6 households, each consisting of multiple families living within the same compound, were selected for family representatives to be interviewed. For this study 18 households and 83 families are reported. (Village Three) had the largest number of family members, at 240 individuals comprised of 34 families. Salab had the smallest number of individuals with 149 family members in 21 families. Sangar was in-between in size, with 182 individuals organized in 27 families.

The survey results were to aid in the identification of the needs of the various stakeholders in Laghman Province. The project also aims to facilitate the MAAH's efforts to address these needs, by training researchers at the MAAH on potential viable alternative agricultural enterprises in the target area.<sup>1</sup>

In addition to technical and administrative competence, this research will increase understanding of the context (in relation to the local opium economy) and decision-making of farmers to better facilitate the adoption of new technologies to improve livelihood opportunities.

## **Background - Research in Alternative Livelihoods Fund (RALF)**

The Research in Alternative Livelihoods Fund (RALF) promotes crop diversification,

---

<sup>1</sup> A goal of RALF is to provide capacity building and improved research and development skills for local Afghan NGO implementation partners and MAAHF staff through workshops or on-the-job training.

post-harvest value addition, and improvement of agricultural technology with the ultimate goal of enhancing farmer incomes and increasing food security. Working together, Washington State University (WSU) and the Danish Committee for Aid to Afghan Refugees (DACAAR) complement each other in their strengths to implement both research and development pertaining to the livelihoods of rural farmers in Afghanistan. WSU is a major research university with recent experience in agricultural development in Afghanistan. DACAAR is one of the largest NGOs in Afghanistan with a strong agricultural program working at the village. Together they have a commitment to support sustainable economic and social development in Afghanistan.

There is an urgent need for external agencies to help the farmer identify alternative livelihood opportunities, which are based on the local resource base, but also have the potential to become sources of cash income. It is important to emphasize that alternative livelihoods should not just be considered academic exercises, but that initiatives are informed by an understanding of both the local situation and the ability to turn local produce into marketable products. There are three important aspects to this approach:

4. To establish an understanding of the potential of alternative livelihoods to increase prosperity in local livelihood strategies, both in terms of household economics, access to credit, and local power structures.
5. To analyze and identify the opportunities existing within a specific agro ecological zone in a dialogue with the local farmers, and build up the capacity to carry out these analyses.
6. To examine the opportunities for marketing the products identified.

It is very important that these three aspects go hand in hand. Interventions have to build on a thorough understanding of the local situation, and if there are no outlets for the identified alternatives, the farmer is more than likely to revert to poppy cultivation, and the situation might be even worse than before the 'experiment'.

### ***Geography and Population***

Afghanistan is a landlocked country in Central Asia with a total area of about 652,000 km<sup>2</sup>. It is bordered by Turkmenistan, Uzbekistan and Tajikistan to the north, China to the north-east, Pakistan to the east and south and Iran to the west. It is characterized by its rugged terrain and an average elevation of 1,100 meters above sea level, ranging from 150 to 8,000 meters. About three quarters of the territory consist of mountains and hills, while lowlands include river valleys in the northern part, and desert regions in the southern and south-eastern part. The cultivable area has been estimated at 8 million ha, which is 12% of the total area.

In 1991, the area cultivated with annual crops was estimated at 3.2 million hectares, which is only 82% of the area cultivated in 1978. In addition, about 144,000 ha were estimated to consist of permanent crops in 1990.

The total population is 20.1 million (1995), of which 80% is rural. Up to 6 million Afghans, perhaps one third of Afghanistan's 1978 population are estimated to have fled the country because of the war. Another 800,000 to 1 million people are thought to have been displaced by the fighting to the more remote, mountainous regions of the country or to the relative security of the country's few towns and cities. In 1991, 67% of the labor force was employed in the agricultural sector and agriculture accounted for almost 46% of GDP.

## Household structure

Villages are comprised of multiple compounds, each of which is a structure larger than a family or household unit. In order to more fully understand alternative livelihoods, more needs to be known about how compounds influence and determine current livelihoods. On this basis then, the villages were studied at the both the household level and then the family level within households.

## Climate

Afghanistan is characterized by a continental climate, though the presence of mountains causes many local variations. Temperatures vary from -10°C in winter to 34°C in summer. The annual distribution of rainfall shows a picture of an essentially arid country, with more than 50% of the territory receiving less than 300 mm of rain. With the exception of the eastern border regions, which are at the far edges of monsoon influence, about 50% of the precipitation occurs in winter (January to March), much of which falls in the form of snow in the central mountainous regions. A further 30% falls in spring (April to June). The runoff from snow melt, in the spring and summer months when day temperatures are high, is the lifeblood of Afghan agriculture.

## The Opium Poppy Economy (OPE)

At the local level, opium production constitutes an attractive income source, especially in a situation where the asset base of the rural population has been depleted due to a prolonged drought and periods of political instability.<sup>2</sup> The cultivation of opium poppy is illegal in Afghanistan and its cultivation, processing and trafficking is outlawed by the new constitution and contravenes international law. The recent UNODC survey indicated that more than 95 percent of farmers knew poppy cultivation was illegal; a fact many had only recently learned from radio broadcasts.

The findings of the UNODC survey indicated that "two out of three farmers interviewed [69 percent] stated they intended to increase significantly their opium production in 2004." In respect of the impact of on-going alternative livelihood efforts, the report said "economic aid provided so far has had little or no overall impact on farmers' intentions to grow or not grow opium" (IRIN (2005) Bitter-Sweet Harvest: Afghanistan's New War, IRIN Web Special on the threat of opium to Afghanistan and the region.

By 2003 Afghanistan was the world's largest supplier of opium, and supplied approximately 75% of the total global production. By 2003, poppy production had increased in terms of both the quantity and the geographical spread of production. The Afghan Transitional Administration is committed to reducing poppy cultivation, but recognizes that the development of alternative livelihood opportunities should go hand-in-hand with efficient law and order enforcement in the target areas. -

---

<sup>2</sup> A recent report by IRIN argued that "Alternative livelihood projects can only work as part of a wider multi-sector alternative development package, requiring massive investment and commitment throughout Afghanistan. Anthony Fitz-Herbert, senior advisor on alternative livelihoods to the Ministry of Rural Rehabilitation and Development, told IRIN: "There is no magic bullet, alternative livelihoods is not a rabbit that can be pulled out of a hat. It requires long-term holistic rural development and nothing less".

## Objective

In order to design and promote viable livelihoods, more needs to be learned about the current and potential livelihoods within villages and specifically about how families within the economic unit of production or “compound” (or household structures) work together to make a living and to take an inventory of current livelihoods at the individual family level. In the three selected villages in the Alingar District of Laghman Province in Afghanistan, group interviews were conducted with families who comprise a compound or household structure. Then interviews were conducted with each family within each compound. Men and women were interviewed separately in both household and family level settings, due to prevailing cultural norms requiring segregation of the men and women. Men were interviewed by male interviewers and women by women interviewers.

## METHODOLOGY

### Survey Design

In February, 2005, the first meeting between WSU, DACAAR and MAAH took place in Kabul, Afghanistan to discuss the scoping phase of the study and to take part in the Phase 1 of a training workshop in survey research methods. An important aspect of the study was the utilization of DACAAR staff members to design, construct and administer surveys. These staff members had an established relationship and rapport with the village leaders in the three villages of interest in the Alingar district of the Laghman province. Participants made in-person contact with village leaders-arranging meeting times with male and female heads of families per compound/household. The participants for this project were selected from the DACAAR field staff working in the areas where the three villages are located. DACAAR staff were proficient and fluent in the local language(s) and familiar with village and household circumstances. The RALF Project team consisted of 16 DACAAR staff, (12 men and 4 women) and 2 men from MAAH.

### [PHOTO Workshop]

Phase 1 consisted of a two-day participatory training workshop in which participants engaged in stakeholder identification, gender analysis and small group activities that resulted in the development of an interview protocol for exploratory interviews prior to survey construction in phase 2.

### [PHOTO Interviews]

Because the interviews were to be conducted in the native language in the three villages, questionnaires were translated and reformatted into Dari. In each village, exploratory interviews were conducted at household level and family level during March 2005. Because of cultural norms in Afghanistan, it was not possible to interview men and women together. Therefore, men and women were interviewed in separate groups, with male DACAAR and MAAH staff participating for the men’s interviews and a female staff from DACAAR for the women’s interviews. WSU faculty attended all interviews and debriefed participants at the conclusion of interviews.

Phase 2 of the survey methods training took place over three days in Jalalabad in Eastern Afghanistan and consisted of lectures and interactive activities on basic survey methodology, design, construction and administration. The goal was to develop the

questions and response sets based on findings from the exploratory interviews and staff knowledge of the local context. DACAAR and MAAH staff participated fully in this phase, taking the lead in producing the final content of the survey on alternative livelihoods. By taking this active role, participants were better able to understand the process of developing methodologically sound measurement of attitudes and behaviors.

### **The Study Unit of Analysis**

Villages are comprised of multiple compounds, each of which is a structure larger than a family or household unit.<sup>3</sup> In order to more fully understand alternative livelihoods, more needs to be known about how compounds influence or determine current livelihoods. On this basis then, three villages at the household level and then the family level were included in the study.

A first version of the survey was prepared based on DACAAR and MAAH staff input resulting from the survey training. A pre-test of the instrument was to have taken place in the field before final administration but this was not done. This resulted in the need for considerable recoding of the final data by the Social and Economic Survey Research Center (SESRC) staff at WSU. The final survey instruments consisted of separate questionnaires for household level and family level.

Prior to the start of interviewing, the SESRC submitted the study design, procedures, and survey instruments to the Washington State University Institutional Review Board for review of human subjects procedures and compliance with federal regulations. The materials were submitted and approved March 25, 2005 (WSU IRB # 8473).

### **Site Selection**

With input from DACAAR management and DACAAR staff survey participants, criteria for selection of the three villages for this study included differentiation based on access to water resources, their overall resource base, their major income generating activities, and in terms of their position in relation to the valley floor and slope.

#### Village Salab

To reach Salab you turn left away from the river before reaching the Alingar *wuliswali* and follow the road eight kilometers up the valley. The road travels past the DACAAR Field Project Office and a clinic under construction by DACAAR and WFP, and ends at a wood bazaar. From the wood bazaar, Salab is a 20 minute walk up a narrow path between terraced field. It is a beautiful place, about 1450 meters above sea level, where houses jostle against each other on narrow mountain shelves.

Salab is the poorest of the three villages with most households owning less than a jerib of land, although many households, even landless households, have walnut trees with nuts and wood they trade. Wheat is the main crop grown in the village, while a little maize is grown when there is enough water in the tributary river.

Salab is a Pashaie village, where young men loll around on the sides of pathways, their eyes rimmed with kohl, hair dyed bright orange with henna. Kalashnikovs decorated with flowers can be seen in the village and highlight the presence of local commanders. Women with handmade beaded necklaces and bright colored, tatty dresses, are seen

---

<sup>3</sup> The National Surveillance System (NSS) defines a household as “a group of individuals sharing income and expenditure and that are living within the same compound.”

outside working in the field and carrying heavy baskets of wood down from the mountain forests to the wood bazaar. Gender relations in Salab are different from elsewhere in rural Afghanistan. For example, if a woman leaves her husband for another man, the new man has to pay the husband twice the bride-price for the woman in the first place. Women can also move freely within the village from house to house, although women need the permission of male relatives to travel outside the village.

### Village Mango

To reach Mango you travel back to the Alingar River and follow the road up the Alinger *waliswali*. At the *waliswali* a narrow bridge leads over the Alingar River. After crossing the river you turn left and drive another 30 minutes over small hills and dry riverbeds to reach the village.

Mango is situated close to the river on the valley floor and only about 1,000 meters above sea level. Mango is the wealthiest of the three villages surveyed. It is easily accessible as it is next to both the road and the DACAAR FPO. At the entrance to the village there is a small shop owned by one of the more wealthy villagers, while wheat, rice and maize can be seen growing in large parcels of land. In addition to privately owned land, there is about 200 jeribs of commonly owned pastureland. The land around Mango is irrigated with water from the Alingar River and a tributary stream called Nuruliam.

Villagers live in compounds, where households from the same family live in separate rooms within the compound. In some families, income and expenditures are shared between all members, while in others it is only shared within households. Unlike Salab, the women of Mango belong primarily to the private world of compounds and are responsible for housework and childcare. The men, on the other hand, belong to the public world and are involved in agricultural activities, fishing, running shops, and collecting wood. Some men from Salab also migrate to Pakistan for casual labor. It is predominantly Pashtun village, although there are a few Pashaie households.

### Village Sangar

Sangar is on the same side of the river as Mango, but thirty minutes away in the direction of Mehterlam. The village sits on a mountain slope in a side valley. The people in the village seem more desperate and unhappy than in the other villages, as the village has been seriously affected by drought. Land in the village is irrigated by spring water and in normal conditions rice, mulberries, and apples are grown. However, because of the drought orchards are bare and there is not enough water to grow much rice. According to the villagers, the lack of water has meant they have had to grow alternative crops, including cotton and poppy.

Like the other two villages, some men spend long hours going to far away mountains to collect wood, while due to lack of available work in the village others travel to Pakistan or Iran for casual labor. As a result, the Pakistani rupee supplements the Afghani as the currency for many transactions. Women in Sangar do not collect wood but do take part in agricultural activities alongside their male relatives. Some women also accompany their male relatives to Pakistan and work as agricultural labors or do *piecework*, such as putting together factory toy cars, at home.

## **Respondents**

In each of the three village areas, 6 households were selected for family representatives to be interviewed. For this study 18 households and 83 families are reported. Overall, the number of families in a household unit ranged from 2 to 9 families and there is an average of 4 families in a household for the 18 total households. (Village Three) had the largest number of family members, at 240 individuals comprised of 34 families that were interdependent. Salab had the smallest number of individuals with 149 interdependent family members in 21 families. Sangar was in-between in size, with 182 interdependent individuals organized in 27 families, and had about 22 percent more individuals to be supported than the smallest village---Salab.

Before the start of this process the villagers and the field staff discussed the different characteristics according to which the villagers put different households into different wealth groups. The names of the household heads were listed in different categories identified by the men in the Shura and then the names were written down on the pieces of paper for each of categories and were folded up and put in a cap or Pakul (traditional hat). After shuffling one person was asked to pick up as many pieces of papers as needed for that particular category. The same process was repeated for each of these categories. The following table shows the characteristics of the wealth groups:

**Table 1. Wealth ranking and selected characteristics of the wealth groups**

Village name	Characteristics	Wealth Rank
Salab	Livestock (1-2 cows and 20-25 goats) Land holding (0.25-0.50 jeribs) Have cars Bringing wood from the mountains Trading wood Trading walnuts Selling livestock products like cheese, hides etc Migration to Pakistan and Iran	1
	Livestock (1-2 cows and 8-10 goats) Bringing wood from the mountains Migration to Pakistan and Iran Bringing walnuts from the mountains	2
	Bringing wood from the mountains	3
	Sangar	Land holding (2-3 jeribs if it is not distributed among the sons) Government servants Migration Shop keeping Own trucks or cars Influential Livestock (1-2 cows and 3-5 goats)

	Less land Government servants Due to family problems can't go to Pakistan or Iran to earn a living Less influential	2
	Little land or no land at all Don't have bread earners The villagers help them by providing alms Little casual labor, no livestock	
Mango	Trade of walnuts, pinecones, wood, mushroom for medicine Shop keeping Land holding (2-3 jeribs) Livestock (1-2 cows and 5-6 goats and a donkey) Government servants	1
	Livestock (1 cow and 2-3 goats and a donkey) Skilled as tailors, carpenters and masons Government servants Sharecropping Migration Bringing wood from the mountains	2
	Little or no land Disabled Some casual labor Migration to Pakistan and Iran and other places inside the country Livestock (1 cow, 1-2 goats)	3

## Interviews

In the three selected villages, group interviews were conducted with families who comprised a household structure. Then interviews were conducted with each family within each compound. Men and women were interviewed separately in both household and family level settings, due to prevailing cultural norms requiring segregation of the men and women. Men were interviewed by male interviewers and females by women.

## Data Entry and Management

Data entry began in May 2005, and ended in December, 2005. Data entry is a stepwise process that included: (1) hand coding of questionnaires for special circumstances that deviated from the question format, and (2) initial data entry input. At the family level, male and female questionnaires were consolidated for data entry since there were only minor differences between questionnaires associated with the unit of analysis. In addition, there was a final data validation step that occurred after all questionnaires had been data entered. Due to some missing data a few questions were deleted and a few response options were added on specific questions to improve data entry efficiency. The household data were entered first and had a total of 34 completed questionnaires. One household had all data missing. The family level data had a total of 48 cases entered with 21 families in Salab and 28 families in Sangar. Due to some problems in the data collected in Mango, only the data collected in Salab and Sangar were entered into the database.

The first step of data entry was the process of writing coding(s) onto each questionnaire to handle specific types of problems found on questions where interviewers deviated from the question format or precoded response choices. Coding consisted of trained SESRC staff reviewing each questionnaire to make sure each answer was eligible and conformed to a set of specifications (for example how to deal with multiple or missing responses). Once coded, questionnaires were ready for entry into a database.

A final data validation step occurs at the data management level and consists primarily of accounting for all cases in the project, ensuring that a data record exists for every completed questionnaire received, and reviewing individual cases and variables for errors. Data records are passed through a SPSS program to ensure that all data fields are readable, and that all responses are read in the format specified for that variable. The final SPSS data set for both Household and Family levels were saved to CD and archived on SESRC's internal network.

### **Limitations**

Training workshops and the exploratory village interviews in which WSU staff participated were conducted in English with DACAAR staff serving as translators. Because these staff members were not professional translators much of the information conveyed may have been interpreted rather than translated. Probing for more in-depth information through open-ended questions was emphasized during Phase 2 of the workshop. However, when the questionnaires were received, many of these open-ended questions were left blank or the same response was cut and pasted so that many respondents appeared to give verbatim answers. This greatly reduced the value of the qualitative data for informing this study.

Though many of the usual caveats apply to this survey as have been noted in other surveys done in Afghanistan, the DACAAR staff is to be commended for accomplishing the task. Their involvement in the survey design workshop resulted in a data base of household members' attitudes and knowledge from which useful information about livelihoods was obtained.

One of the issues with this type of research is the level of expectations that subjects have regarding benefits they will receive. During the training workshop this was discussed as a potential problem because people would depict themselves as poorer than they were in order to obtain more benefits. Interviewers reported that people had a lot of expectations and often didn't have a lot of knowledge. This was particularly true of women members of households. Other problems reported included that subjects were too busy and that the survey was very long. The interviewers reported that they tried to solicit information by prompting for further ideas and thoughts, but believed that because subjects had a lot of expectations and they would repeat the same answer over again.

Asked what they would do differently next time, interviewers reported that they would choose different families from different households because families within the same household are quite similar. They would also make the survey short to spend less time on it and make easier for the interviewees.

Anonymity and confidentiality were important and interviewers reported that respondents did understand that their names would be kept private. Further, they reported that the men did not mind if their names are not kept private, however they did object to women's names being mentioned in the documents. (No respondents will be identified in any document.) Another problem interviewers reported were that respondents' answers

sometimes presented a general view or hypothetical view about different crops, answering what they would like to be doing rather than what was currently done.

Another weakness of this study is the small sample size and the resulting lack of generalizability. Due to some problems in the data collected in Mango, only the data collected in Salab and Sangar were entered into the database. Also, gender disaggregation is essential to fully understand intra-household and within-family dynamics. For the most part, disaggregation was not possible in this data set. At the family level, the data set does not include women's responses due to coding problems. At the household level, for which gender disaggregated data was available, it was found that men and women respondents frequently reported different information for the same household. For example, females underreported cultivation or aspects of land ownership compared to men. Which reporter was more correct was not determined at time of data collection. In qualitative comments in the household survey, there were more "Don't know" and blank responses for women, than men. Only male reported land ownership characteristics were reported in the land tenure section of this report. The main reason for this choice is that men were described as the predominant decision makers for the household. This also eliminated confusion by trying to summarize two sets of discrepant data that are reporting for the same unit of analysis.

Finally, WSU staff did not attend or supervise the final data collection interviews and a pre-test wasn't done. One way of avoiding problems in data compilation and analysis would be through the use of pre-tested survey administration. This must be carefully supervised by a trained survey researcher who will follow-up with a debrief to the staff who administered the pre-test. This will help to increase validity and reliability of the survey and to pinpoint problems that interviewers have with the administration of them. It is critical that this takes place prior to full data collection.

## Results

### **What is the socio-economic structure of Afghan rural family dependency?**

#### Household and family characteristics

Overall, the relationships and economic structure of living arrangements was evaluated for 571 interdependent individuals living in distinct family-household arrangements in three different villages. **Table 1.1 and Table 1.2** describe the composition of household and family members. In each of the three village areas, 6 households were selected for family representatives to be interviewed. For this study 18 households and 83 families are reported. Between the villages, the number of households was the same but the number of families and the number of people in a family that needed to be supported by family and household resources varied greatly. Aspects identified as important for village and household stability, sustainability, and long term independence are: percentage of adult males and percentage of adult females available for labor, income generation, and/or care for others. Factors limiting or impacting family sustainability are the number of under school age children and disabled adults that require significant care taking by other family members. **Table 1.3 and Table 1.4** show the structural relationship of households and families, family sizes, family member ages, and other dependency characteristics.

Overall, the number of families in a household unit ranged from 2 to 9 families with an average of 4.6 families in a household for the 18 total households. Mango had the largest number of family members, at 240 individuals comprised of 34 families. Salab had the smallest number of individuals with 149 family members in 21 families. Sangar was in-

between in size , with 182 individuals organized in 28 families, and had about 22 percent more individuals to be supported than the smallest village---Salab.

**Table 1.1: Village Demographic Profile: Survey Representation**

	<i>Total Number of People Represented</i>	<i>Number of Adult Men</i>	<i>Number of Adult Women</i>	<i>Number of Children under school age</i>	<i>Number of school age children</i>	<i>Number of Widows</i>	<i>Number of disabled</i>
Salab	149	37	34	44	34	1	6
Sangar	182	44	50	38	50	2	3
Mango	240	46	51	58	85	2	3
<b>TOTAL</b>	<b>571</b>	<b>127</b>	<b>135</b>	<b>140</b>	<b>169</b>	<b>5</b>	<b>12</b>

**Table 1.2: Village Demographic Profile: Household to Family Structure**

	<i>Number of Surveyed Households</i>	<i>Number of Families in the Household</i>	<i>Number of Surveyed Families</i>	<i>Mean Number of Families per Household</i>	<i>Range: Number of Families per Household</i>
Salab	6	21	21	3.5	2-6
Sangar	6	28	27	4.6	3-6
Mango	6	34	25	5.6	5-9
<b>TOTAL</b>	<b>18</b>	<b>83</b>	<b>73</b>	<b>4.6</b>	<b>2-9</b>

**Table 1.3: Village Demographic Profile: Family Size and Age Structure**

	<i>Mean Family Size</i>	<i>Range: Family Size</i>	<i>Mean Number of Children per family</i>	<i>Mean Number of Children under school age per Family</i>	<i>Mean Number of Children school age per Family</i>
Salab	7.1	2-12	3.7	2.1	1.6
Sangar	6.5	2-14	3.1	1.4	1.8
Mango	7.0	2-11	4.2	1.7	2.5
<b>TOTAL</b>	<b>7.2</b>	<b>2-14</b>	<b>3.7</b>	<b>1.7</b>	<b>2.0</b>

**Table 1.4: Village Demographic Profile: Family Dependency Structure**

	<i>Number of families in household</i>	<i>Number of Surveyed Families</i>	<i>Number of Families without Children</i>	<i>Number of Families with Widow(s)</i>	<i>Number of Families with a Disabled person(s)</i>	<i>Number of Families with person(s) away for work</i>
Salab	21	21	4	1	5	3
Sangar	28	27	4	2	3	5
Mango	34	25	3	2	3	0
<b>TOTAL</b>	<b>83</b>	<b>73</b>	<b>11</b>	<b>5</b>	<b>11</b>	<b>8</b>

Over these three village areas, the number of children under school age ranged from 21% to 30% of household members and the number of disabled individuals ranged from 1% to 4% of household members. The number of widows was also identified when present in any household or family. However, it should be noted that widows even though they may have lost or limited ownership/control of family level assets, they are not totally dependent on others for care or food assistance. They are most likely still able to contribute to family and household well-being by providing an exchange of labor or care for other more dependent household members in return for basic necessities of food, clothing and shelter.<sup>4</sup> It is important to consider household family members that are significantly dependent on others for care---the severely disabled (physically or mentally) and those who are very young. Under school age children require differing degrees of food preparation, help eating, help with dressing and personal hygiene, and supervision depending on their age and development. The same is also true for disabled and elderly adults, but varies depending on the extent of disability. Personal caretaking is an obligation and family role that is expected mostly from self-sufficient adult women. It is important to note, that some children of school age can be utilized to care for children and family members, but this was not documented during family interviews and is only known from ad hoc observation. School age children may also be available for livestock and animal care and some cultivation activities. When children are in school they can not be taking care of other family members, or animals, as they are not available. When women fulfill personal caretaking roles for children or disabled

<sup>4</sup> A more in-depth analysis of widows' roles within families and households was beyond the scope of this study.

adults, they are not available for other types of household and family labor such as crop or livestock activities, wood gathering, or other livelihood activities that provide an income stream or food into the household and family. Overall households and families, the ratio of children plus disabled adults to adult women is 2.38. The ratio of underage children plus disabled members to adult women is 1.13. This can be interpreted as 1 woman is available to provide caretaking for more than 1 other significantly dependent child or disabled persons in the family or household.<sup>5</sup>

### Salab

In Salab there were 6 households surveyed. Each of these households was comprised of multiple families. The number of families per household ranged for two families in the smallest households up to 6 families in the largest household. The mean number of families per household in this village was 3.5 families. Overall, these 6 households supported 21 families made up of 149 people. Of these 149 interdependent family members, approximately 25% (37) were adult men, 23% (34) were adult women, 30% (44) were children under school age (5 years of age) and 23% (34) were of school age. Of the adult women, one woman was a widow. This village, Salab, had the highest reported number of individuals dependent on others with 6 (4%) disabled members. This village also had the largest number of children under school age with 44 or 30% that need care. The ratio of adult women to underage children and disabled individuals is 1:18. The ratio of adult women to all children plus disabled individuals is 2:47 (Table 1.5). In Salab, each adult woman is providing significant care taking activities to almost 3 people.

### Sangar

In Sangar there were also 6 households selected. These 6 households were comprised of 28 families with 182 individual family members. The number of family members per household in this area ranged from 3 to 6 individuals with a slightly higher average of 4.6 families in the household. More than 52% of family members were adults with 24% adult men and 27% adult women. Of the three villages evaluated, Sangar, had the largest percentage of adult woman. Children under school age were 21% and 27% were school age. Approximately, 2% of the family members were disabled and 1% widows. The ratio of underage children plus disabled individuals to adult women is 0.82. The ratio of adult women to all children plus disabled adults is 1.82. This means that most adult women are caring for more school age children rather than younger children and disabled adults. Some adult women are not completely needed to provide significant care activities for others and are available for other labor activities that can generate income or improve family and household livelihood.

### Mango

Mango had the largest number of people in 6 households—240 persons organized into 34 families. The numbers of families in a household ranged from 2 to 9

---

<sup>5</sup> For further discussion see Grace, J. and Pain, A., (2004) Rethinking Rural Livelihoods in Afghanistan, Synthesis Paper Series, Afghanistan Research and Evaluation Unit, Kabul, Afghanistan; Grace, J. (2004) Gender Roles in Agriculture: Case Studies of Five Villages in Northern Afghanistan, Case Study Series, Afghanistan Research and Evaluation Unit, Kabul, Afghanistan; Pound, B., (2004) The Development of Sustainable Livelihoods in the Eastern Hazarajat, Afghanistan, Methods for Sustainable Livelihoods Analysis, Food and Agricultural Organization of the United Nations.

families. The average number of families in a household is 5.6 and the average family size is 7.0 persons and had a mean of 4.2 children per family which is the largest average number of children per family of the three villages. The ratio of all children plus disabled adults is 1.52 which indicates village three has the highest level of dependency amongst the three villages.

**Table 1.5 Ratio of the number of children and disabled persons to the number of adult women and total adults.**

	<b># children and disabled / adult women</b>	<b># children and disabled /adults</b>
Salab	2.47	1.17
Sangar	1.82	1.1
Mango	2.86	1.52

The village with the most inter-family and inter-household dependency is Mango. It has the highest level of inter-household and inter-family dependency with more persons and families dependent on others for support and significant care taking. The following characteristics define this dependency:

- 3 of 35 (9%) of families had members with disability.
- 1% disabled persons.
- 1% widow(s).
- 4.2 children on average per family.
- 1.52 is a much larger ratio of young children and disabled persons to the number of adult women available for care taking in this village compared to the other two villages.

Given the household and family demographic characteristics it could be concluded that, Mango would have less resiliency and sustainable activities associated with its households and families. The prime characteristic defining dependency in Mango households is the larger number of children per family on average. The households and families of Mango have less adult labor available for activities towards increasing village livelihoods thus making this village more vulnerable and less able to sustain through difficult times and circumstances. The other choice for households and families are to have older school age children stay out of school and supervise children or care take disabled members. We would expect to find this situation more in Mango. In the long-term, children staying out of school reduces the future resources and abilities of families and households.

#### Children and School Attendance

Education for children is most likely dependent upon the availability of adult labor for households and families agricultural and income generating activities. Adult labor is in short supply for household and family needs when adults are employed outside of the household or outside of the village. Adult labor needed for the family or household is not available for family member care taking, if it is alternatively allocated to crop production,

livestock production or other livelihood activities such as wood gathering. Thus, child labor is most often needed and used when adult labor is otherwise allocated or not available. For all three villages, the majority (73% to 100%) of school-age children were reported by families as attending school. (Mango) and (Sangar) had the largest percentages (27% and 28%) of female school age children not in school. (Sangar) also had the largest percentage of male school age children not in school at 24%.

It should be noted, however, that open-ended questions in the household-level survey (including data from females) revealed aspects of school attendance not captured in the quantitative responses. In Salab, both men and women stated that the school is so far away that girls can't or are not allowed to go there, and that it is not the tradition to send girls to school. It was reported that boys are busy with collecting wood and grazing livestock. Responses in Sangar, which reported 100% attendance by girls, indicated that there was no school for girls, that girls are too old to attend, that no decision had yet been taken about allowing daughters to attend, and that it is not the tradition to allow girls to go to school. One household reported that boys would attend school next year. In another household, male respondents stated that all boys are in school and the females reported that they don't have such possibilities. In Mango, reasons for not allowing school attendance was that there was no security and no transportation, and the families' poor economic conditions don't allow school age children, particularly girls, to attend. One female respondent from Mango stated "From security point of view it is difficult for girls to go to school. It means weapons have not yet been collected. Also, the school for girls is only up to class 6."

Because women and children are primarily responsible for caretaking, if they are to have access to income generating activities that require them to be away from home, childcare must be available. That, in itself, with appropriate training, could become an income generating activity, notwithstanding the cultural norms that currently prevail in Afghanistan. However, more opportunities to engage in activities outside of the compound, at Women's Resource Centers, for example, are emerging in rural areas. In the study conducted here, men voiced support for women's participation as long as the trainers were female. School age children may be more able to attend school, if accessible, additionally increasing future resources and abilities of families and households.

**Table 1.6 Percentage of School-age children currently attending school in study villages**

	<i>Percentage of Female School-age Children Attending School.</i>	<i>Percentage of Male School-age Children Attending School.</i>
Salab	73%	84%
Sangar	100%	76%
Mango	72%	100%

Respondents from households were also asked questions about family members who were away for work. The number of persons in the household that were currently reported as "away for work" was 0% to 2% for all three villages. In Salab, two households and three families reported 3 individuals as away for work. Sangar had two

households and five families where 5 individuals were away for work. No families in Mango reported at the family level that someone was away for work.

## **Access to Land as a Resource for Crop, Tree, and Livestock Production**

### Land Tenure

All households in the three villages reported cultivating land. At the village level, the 6 households interviewed reported cultivating 5.83 Jeribs<sup>6</sup> for Salab, 30 Jeribs in Sangar, and 30.25 Jeribs in Mango. Table 2.0 shows reporting of land ownership characteristics by males respondents in families and households. And, Table 1.8 reports the same household and family land ownership characteristics, but this is a summary of interviews with female family respondents. Informants for households, female and male are reporting on the same family and household. As can be seen by comparing the tables at the household level information is significantly different with females underreporting by comparison for most households that reported cultivation or aspects of land ownership. Which reporter is more correct was not determined at time of data collection.

For the remainder of this section land ownership characteristics reported by males is summarized. The main reason for this choice is that men were described as the predominant decision makers for the household. This also eliminates confusion by trying to summarize two sets of data that are reporting for the same unit of analysis that are discrepant.

Table 2.0 displays the characteristics of land use and ownership for the three village household clusters.

### Salab

Of the three villages and their respective clusters of 6 households, Salab, has the least amount of land under current cultivation, with a mean of .97 Jeribs per household and a total of 5.825 Jeribs for all 6 households and 21 families. This averages about .28 Jeribs per family in Salab. All households showed some land ownership. Salab households own slightly more land than they cultivate. These households report owning a total 8.7 Jeribs with 7 Jeribs owned by lenders located within their household. Approximately 0.25 Jeribs were sharecropped for a landlord within the household and 1.3 jeribs were sharecropped for a landlord located outside of their household. Another 1.3 Jeribs were sharecropped by one household from a landlord outside of the household. Two households reported renting land, 4.3 Jeribs, from a landlord within the household.

### Sangar

In Sangar, by comparison has 30 Jeribs under cultivation for it's 6 households or 28 families. This averages 1.11 Jeribs per family. For households, the amount of land reported for cultivation ranged from a low of 2 Jeribs to a high of 9 Jeribs. This is approximately almost 4 times as much land available under cultivation as compared to Salab. For these 6 households, 18.5 Jeribs or 61% is reported as owned and not under mortgages. Four households have mortgages for a total of 3 Jeribs with a lender within the household and about 2.5 Jeribs are sharecropped for a landlord outside of the household.

---

<sup>6</sup> A jerib is 2,000 square meters, the equivalent of approximately one-fifth of a hectare.

## Mango

The 6 household cluster in Mango also cultivates 30.25 Jeribs of land (Table 2.0). All of these households also report some level of land ownership with the 1 Jerib as the smallest amount owned and 6.75 Jeribs the largest land parcel owned. On average, there is .89 Jeribs per family (34 families). About 67% of the land is reported as owned without a mortgage and 4 Jeribs is reported as mortgaged with a lender within the household by 1 household. Two Jeribs are sharecropped for a landlord within the household and 11.5 Jeribs are sharecropped with a landlord outside of the household.

For all three village households, the most common arrangement, when land is needed beyond what the family owns, is to rent from a landlord within the household. Share cropping was the predominant arrangement for land use with landowners outside of the household.

All 18 households in all three village areas, reported cultivating land, approximately 66.075 Jeribs in total.<sup>7</sup>

## Salab

- All 6 households cultivated land with 5.825 Jeribs cultivated in total (Females reported a total of 1.975 Jeribs.)
- On average .97 Jeribs were cultivated per Household (range from .5 to 2 Jeribs per household).
- 8.7 Jeribs were owned with 2.68 Jeribs owned on average per household (range from .25 to 4.5. Females reported 1.725 Jeribs owned.)..
- Less land was cultivated than was owned 5.825 Jeribs versus 15.7 Jeribs owned.
- Approximately 55% of land owned was not mortgaged and 44.5% was mortgaged with a lender within the household.
- Two households reported sharecropping (26.6% of all cultivated land) arrangements with landlords, one with a landlord within the household and one with a lender outside of the household.
- 73.8% (4.3 Jeribs) of cultivated land was reported by one household as rented from a landlord within the household

## Sangar

- All households cultivated land, totaling 30 Jeribs with 1.11 Jeribs cultivated per household on average (range from 3 to 9 Jeribs. Females reported 31 Jeribs total).
- 18.5 Jeribs total was reported owned with a range from 1 to 6.75 Jeribs. Females reported 18 Jeribs total.
- 66% of land cultivated was land mortgaged with a lender within the household.
- 2.5 Jeribs of land cultivated was sharecropped with landlords outside of the household.
- No land was sharecropped from landowner within the family and no land was rented from landlord either inside or outside of household.

## Mango

---

<sup>7</sup> Why the difference between male and female reporting of land tenure could not be answered with this data set.

- All households cultivated land, totaling 30.25 Jeribs with 5.04 Jeribs were cultivated per household on average (Range 2 to 11.5 Jeribs. Females reported 26.5 Jeribs total).
- 20.25 Jeribs were reported owned 4.05 Jeribs owned per household on average. (Range from 1 to 6.75 Jeribs. Females reported a total of 18.1 Jeribs owned.).
- More land was cultivated than was owned---67% of cultivated land was owned by Households.
- 13% of land cultivated was land mortgaged with a lender within the household.
- 45% of land cultivated was sharecropped with landlords both inside and outside of the household.
- Households sharecropped mostly with landlords outside of the household

Both men and women in all villages were asked about the total percentage of land that is irrigated and on what percentage of land two crops are grown per year.<sup>8</sup> In Salab, most families reported 100% of land is irrigated and two crops are grown. Sangar reported less land irrigated with 7 families from 6 households indicating 50% of land is irrigated, 2 families reported 20% – 25% irrigated and 4 families reporting 100% irrigated. All irrigated land grows two crops per year. In Mango 17 families (out of 34 families) reported 100% of land is irrigated. Of these, 6 (35%) grow two crops per year on irrigated land, 3 families (6%) grow two crops on 60% to 75%, 4 families (35%) grow two crops and 6 families (34%) grow two crops on only 20% to 25% of irrigated land. Of course, the availability of water for irrigation is the limiting factor on number of crops grown. When plentiful, it would be possible to grow two crops on all cultivated land according to respondents.

---

<sup>8</sup> Presumably, families reporting on percent irrigated are those that own the land. Within households, some families will own and others will not. See Table XXX.

**Table 2.0 Household Level- Male Reported Land Tenure (Questionnaire Page 4**

	How much total land does each household cultivate?	How many jeribs do you Own (not mortgaged)?	How many jeribs do you own (mortgaged – lender within household)?	How many jeribs do you own (mortgaged – lender outside household)?	How much many jeribs do you Sharecrop (landlord within household)?	How much many jeribs do you Sharecrop (landlord outside household) ?	How many jeribs do you Rent (landlord inside household) ?	How many jeribs do you Rent (landlord outside household) ?	
Salab	Household 1	1.5	4.5	3	0	0	0	0	
	Household 2	2	2	0	0	0	0	0	
	Household 3	0.95	0.95	4	0	0	1.3	0.3	
	Household 4	0.75	0.5	0	0	0	0	0	
	Household 5	0.5	0.5	0	0	0	0	0	
	Household 6	0.125	0.25	0	0	0.25	0	4	
	<b>Total</b>	<b>5.825</b>	<b>8.7</b>	<b>7</b>	<b>0</b>	<b>0.25</b>	<b>1.3</b>	<b>4.3</b>	<b>0</b>
Sangar	Household 1	4	4	0	0	0	0	0	
	Household 2	2	2	0.3	0	0	0	0	
	Household 3	4	3	1	0	0	0	0	
	Household 4	4	2	2	0	0	0	0	
	Household 5	7	0.5	0	0	0	2.5	0	
	Household 6	9	7	0	0	0	0	0	
	<b>Total</b>	<b>30</b>	<b>18.5</b>	<b>3.3</b>	<b>0</b>	<b>0</b>	<b>2.5</b>	<b>0</b>	<b>0</b>
Mango	Household 1	1.5	4.5	3	0	0	0	0	
	Household 2	11.5	6	0	0	0	5	0.5	
	Household 3	10.75	6.75	0	0	1	3	0	
	Household 4	2	2	0	0	0	0	0	
	Household 6	4.5	1	1	0	1	3.5	0	
	<b>Total</b>	<b>30.25</b>	<b>20.25</b>	<b>4</b>	<b>0</b>	<b>2</b>	<b>11.5</b>	<b>0</b>	<b>0.5</b>
	<b>Sum</b>	<b>66.075</b>	<b>47.45</b>	<b>14.3</b>	<b>0</b>	<b>2.25</b>	<b>15.3</b>	<b>4.3</b>	<b>0.5</b>

Table 2.1 --Household Level- Female Reporting of Land Tenure (Questionnaire Page 4)

		How much total land does each household cultivate?	How many jeribs do you Own (not mortgaged) ?	How many jeribs do you own (mortgaged – lender within household) ?	How many jeribs do you own (mortgaged – lender outside household) ?	How much many jeribs do you Sharecrop (landlord within household) ?	How much many jeribs do you Sharecrop (landlord outside household) ?	How many jeribs do you Rent (landlord inside household) ?	How many jeribs do you Rent (landlord outside household) ?
	Household 1	0.225	0.225	0	0	0	0	0	0
	Household 2	1	1	0	0	0	0	0	0
	Household 3	0	0	0	0	0	0	0	0
	Household 4	0.5	0.5	0	0	0	0	0	0
	Household 5	0	0	0	0	0	0	0	0
	Household 6	0.25	0	0	0.125	0	4	0	0
Salab	Total	<b>1.975</b>	<b>1.725</b>	<b>0</b>	<b>0.125</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>
	Household 1	4	4	0	0	0	0	0	0
	Household 2	3	2	0.3	0	0	0	0	0
	Household 3	4	3	1	0	0	0	0	0
	Household 4	4	2	2	0	0	0	0	0
	Household 5	7	0	0	0	0	2.5	0	0
	Household 6	9	7	0	0	0	2	0	0
Sangar	Total	<b>31</b>	<b>18</b>	<b>3.3</b>	<b>0</b>	<b>0</b>	<b>4.5</b>	<b>0</b>	<b>0</b>
	Household 1	1.5	3	0	0	0	0	0	0
	Household 2	11.5	6	0	0	0	5	0	0.5
	Household 3	7.1	6.1	0	0	0.5	3	0	0
	Household 4	2	2	0	0	0	0	0	0
	Household 6	4.5	1	1	0	1	0	0	0
Mango	Total	<b>26.6</b>	<b>18.1</b>	<b>1</b>	<b>0</b>	<b>1.5</b>	<b>8</b>	<b>0</b>	<b>0.5</b>
	Sum	<b>59.575</b>	<b>37.825</b>	<b>4.3</b>	<b>0.125</b>	<b>1.5</b>	<b>16.5</b>	<b>0</b>	<b>0.5</b>

## **Crop Production**

### **Has crop and livestock production and food sustainability changed since the drought for rural Afghan villagers?**

Families were asked a series of questions regarding crops grown including which fruits, vegetables, nuts, and grains.<sup>9</sup> For some crops, fruits and nuts in particular, families may be “gathering” from an existing tree(s) in their area rather than tending to trees in terms of cultivated orchard production. This distinction between “gathering from” and cultivation was not recorded in the interviews, but qualitatively this difference was noted in the overall survey process.

In addition to determining which crops families have, respondents were first asked “who has primary responsibility” for the a range of tasks associated with growing various crops including land ownership, planting, irrigation, weeding, harvesting, fertilizing, selling and transporting. Second, families were asked their main use for each of the crops, whether it was for home use only, for selling, or for both home use and selling. Third, for those crops which are sold, families were asked where they mainly sell the crop: to other household members, in the village, in other villages, to traders, etc; and how they transport the produce that is sold. Finally families were asked how the amount of land planted or the number of trees grown change since the drought.

In the crop production section then, more can be learned about livelihood potential based on present crop production and what was being done before the drought. The division of labor information, in light on the demographic composition of families and land tenure discussed earlier, will enhance understanding the viability of developing various livelihoods and increasing food security. The current marketing and means of transportation will also be important for the development of various livelihoods.

## **Crop diversification**

Families in both villages appear to be growing a diversity of crops across crop areas including fruits, vegetables, nuts, and grains. In Salab, the mean number of different crops grown is 14 with a range of -26 crops. In Sangar, there is a greater diversity in the crops grown with a mean of 19 and a range of 0-35 different crops grown by each family. The overall mean across the two villages is 17 crops grown per family with a median of 18 and a mode of 19 (Table 3.3.0). In the two villages combined there are 4 families that are not growing any crops across the four crop categories, one in Salab and three in Sangar. One of these four families consists of a man and women and no children in the home. It is possible that members of this family are elderly and less able to provide for themselves and instead depend on other families in their household to provide for them. Among the other three families that do not grow crops, all of them have school age children at home and have livestock (chickens and/or goats) which may represent their means of making a living. Their reasons for not growing any crops were not reported. Future research should explore the reasons for the variation in crops grown.

---

<sup>9</sup> Recall that Village Three data are not included in the family level data.

**Table 3.3.0. Number of Crops per Family**

<b>Number of Crops Grown</b>	<b>Combined (Salab/Sangar)</b>	<b>Village One Salab</b>	<b>Village Two Sangar</b>
Mean	17	14	19
None (number of families)	4 (8%)	1 (5%)	3 (11%)
Median	18	15	20
Range	0-35	0-26	0-35
Mode	19	16, 18	19

### Fruits

The top three most frequently grown fruit crops by families across the two villages are mulberry (77% of families,<sup>10</sup> grapes (54% of families), and fig (44% of families). Another three fruits are grown by at least a third of families across the two villages: pomegranate (39%), oranges (37%), and apricot (35%). In terms of differences across the two villages, it appears there is more diversity in the fruits grown in Sangar in comparison to Salab. In Salab only two fruits were grown by a third or more of families, mulberry (95%) and grapes (38%). In contrast, in Sangar there were nine fruits grown by a third or more of families, grapes and figs (both with 67%), mulberry (63%), oranges (55%), pomegranate and apricot (both with 52%), pears (48%), and persimmon and plums (both with 33%). (Table 3.3.1A). The mean number of fruits grown in Salab is 3 and in Sangar it is 6. Overall the mean number of fruits grown is 5. Across both villages there are 6 families that have no fruits, 1 family in Salab and 5 in Sangar (Table 3.3.1B).

In terms of who is responsible for the tasks associated with growing the fruit crops, men are most often reported to have primary responsibility for ownership, planting, irrigation, fertilizing, and weeding. In terms of irrigation, fertilizing, and weeding, for another proportion of families “men and children combined” had responsibility for these tasks. It is not known whether this includes both male and female children or whether it is mainly older male children helping the men. For harvesting, men, women, and children were all involved across families. This involvement of both men and women, as well as children, is not surprising considering the harvesting depends on when the fruit is ripe and may have a smaller time frame in which to accomplish the task. When selling and transporting fruit are involved, again the men have primary responsibility in most families (Table 3.3.5).

Across the two villages the vast majority of families are growing fruits for home use only (Table 3.3.1C). Only four fruit crops are being grown for both home use and to sell. Of these, all of the families who are selling the fruit are from Salab, Village One. All fruit crops in Sangar are being grown for home use only, and no fruits are being sold. In Salab, while the vast majority of the families are growing fruit for home use only, a small number of families are growing some fruits to sell. Five families are selling mulberry, 2 families are selling grapes, one family is selling loquat and one family is

<sup>10</sup> Respondents reported that mulberry is not sold because it cannot fulfill even the needs of the families. For home use only should not be interpreted to mean that there is enough production to meet family needs.

selling pomegranate. As far as where the fruit is being sold, it is being sold in a variety of places. Families who are selling their fruit indicated they are selling in the village, at the Friday Bazaar, in other villages in Alingar and/or to traders from Mehtarlam or traders outside of Laghman. The primary means of transportation fruit to market within the village was to carry it. For selling at the Friday Bazaar, the men either hand carry it or use a vehicle. For selling outside the district or to traders, the majority use a vehicle.<sup>11</sup> For three fruits, orange, peach and pear, one family reported the fruits are for some other use than at home or to sell. The “other” use was not specified. Families were asked if the number of fruit trees for each fruit crop grown has increased, decreased or stay the same since the drought (Table 3.3.1D). For a majority of families who grow grapes, apricots, persimmons, figs, and/or mulberry, the number of trees has decreased since the drought. The lack of land and the drought were listed as the main reasons for the decreases in grapes, apricots, figs and mulberry. For persimmons, besides the drought, lack of labor was also identified as a reason for the decrease. .

For eight other fruit crops, a majority of families with those fruits reported that their number of trees has either stayed the same or increased since the drought. This is true for apple, lemon, loquat, orange, peach, pomegranate, quince, and pears. The main reason given for an increased number of trees for these fruits is “family consumption.” When asked what fruits were being grown before the drought that are different than what being grown now, nine families each said they used to grow grapes and/or quince but don’t currently (Table 3.3.1E). It was reported that quince was grown previously but production had decreased due to disease and subsequent decrease in demand.

Seven families used to grow pomegranate and six families indicated they used to grow peach, loquat, and/or fig; five families who don’t currently grow mulberry indicated they used to grow mulberry; and four families who don’t currently, used to grow oranges. For the remaining fruits, 3 or fewer families used to grow them before drought, but don’t currently: plum, apple, lemon, apricot, persimmon and pears.

Before drought fruit production can guide decisions about potential seed and plant nurseries. As reported here, the decrease has been seen primarily for grapes, persimmon and apricot. Lack of seed was mentioned as a reason for decrease in apricots but it was also reported to have high value because it can be sold fresh as well as dried. While most fruits are grown for family consumption, respondents reported that they want to expand to higher priced fruits and vegetables, but would probably grow whatever crop has the highest value. Several respondents mentioned their interest in growing saffron for its high value. Currently, western Afghanistan is where production of saffron is taking place.

**Table 3.3.1A. Number of Families with Fruit Crops Currently Grown**

<i>Fruit Crop</i>	<i>Combined (Salab/Sangar) N=48 % (n)</i>	<i>Village One Salab N=21 % (n)</i>	<i>Village Two Sangar N=27 % (n)</i>

<sup>11</sup> Vehicles were most likely rented or borrowed.

Mulberry	77 (37)	95 (20)	63 (17)
Grapes	54 (26)	38 (8)	67 (18)
Fig	44 (21)	14 (3)	67 (18)
Pomegranate	39 (19)	24 (5)	52 (14)
Orange	37 (18)	14 (3)	55 (15)
Apricot	35 (17)	14 (3)	52 (14)
Pears	29 (14)	5 (1)	48 (13)
Apple	25 (12)	19 (4)	30 (8)
Lemon	19 (9)	5 (1)	30 (8)
Persimmon	19 (9)	0 (0)	33 (9)
Plums	19 (9)	0 (0)	33 (9)
Guava	19 (9)	5 (1)	30 (8)
Peach	17 (8)	14 (3)	18 (5)
Quince	17 (8)	9 (2)	22 (6)
Loquat	14 (7)	9 (2)	18 (5)
Other	8 (4)	0 (0)	15 (4)

**Table 3.3.1B. Numbers of Fruit Crops per Family**

<b>Number of Fruits Grown</b>	<b>Combined (Salab/Sangar ) (48 families)</b>	<b>Village One Salab (21 families)</b>	<b>Village Two Sangar (27 families)</b>
Mean	5	3	6
None	6 (12%)	1 (5%)	5 (18%)
Range	0-16	0-10	0-16
Median	3	2	6
Mode	1	1	0

**Table 3.3.1C. Use of Fruit Crop Grown: Percent of Families (Combined: Salab/Sangar)**

<b>Fruit Crop</b>	<b>Percent of Families who Grow the Crop for Home use only</b>	<b>Number of Families who Sell Fruit</b>
Apricot	100%	0
Persimmon	100%	0
Fig	100%	0
Apple	100%	0
Lemon	100%	0
Quince	100%	0
Plums	100%	0
Guava	100%	0
Orange	94%	--
Pomegranate	94%	1

Grapes	92%	2
Pears	92%	--
Mulberry	86%	5
Loquat	86%	1
Peach	86%	--

Where sold:	<i>In the Village</i>	<i>Other Villages in Alingar</i>	<i>Friday Bazaar</i>	<i>Traders in or from Mehtarlam</i>	<i>Traders in outside Laghman</i>
<b>Mulberry</b>	Yes	Yes	Yes	Yes	Yes
<b>Grapes</b>	Yes	Yes	Yes	Yes	
<b>Loquat</b>					Yes

*Pomegranate: no data on where sold.*

**Table 3.3.1D. Changes in Amount of Fruit Crop Grown since before the Drought: Percent of families with change (Combined: Salab/Sangar)**

<i>Fruit Crop</i>	<i>Majority of Families who grow the crop have:</i>		
	<i>Decreasing number of trees</i>	<i>No change or Increasing number of trees</i>	<i>Equal number of families with decreasing and no change/increasing</i>
Grapes	65%		
Apricot	65%		
Persimmon	62%		
Fig	57%		
Mulberry	52%		
Apple		80%	
Lemon		78%	
Loquat		71%	
Orange		70%	
Peach		67%	
Pomegranate		65%	
Quince		62%	
Pears		58%	
Plums			50%
Guava			50%

**Table 3.3.1E Fruits Grown before drought different than what is currently grown**

<b>Fruits</b>	<b># of Families</b>
Grape	9
Quince	9
Pomegranate	7

Peach	6
Loquat	6
Fig	6
Mulberry	5
Orange	4
Plum	3
Apple	3
Lemon	2
graven	2
Apricot	2
Persimmon	1
Pears	1

## Vegetables

Eleven different vegetable crops are grown by over half of the families across the two villages. Of those eleven vegetables, four are grown by over 80% or four-fifths of the families: ladyfinger, onion, tomato, and pumpkin. Four more vegetables are grown by about 70% of families, or approximately 33-35 of the 48 families: white radish, squash, eggplant, and spinach. Potato, turnip and red radish are grown by 31 of 48 families (or 64% each). When comparing across the two villages, ladyfinger, onion, tomato, and pumpkin were grown by the overwhelming majority of families in both villages. The main differences in the top crops grown when comparing the two villages are in squash, eggplant, spinach and pepper each of which were grown by a much higher proportion of families in Sangar; and in potato and turnip which are grown by a higher proportion of families in Salab. (Table 3.3.2A) The potential to expand production in Village One is limited by the terrain and availability of cultivable land.

Similar to fruits grown, families in Sangar are growing a slightly more diverse number of vegetables in comparison to what families are growing in Salab. In Sangar families grew an average of 10 vegetable crops whereas in Salab families grew an average of 8 vegetable crops. The highest number of vegetables grown is 13 in Salab and 15 in Sangar. And similar to fruits, 1 family in Salab and 5 families in Sangar do not grow any vegetables.

In terms of who is responsible for various tasks associated with growing vegetables, men have ownership, similar to fruits. However, in contrast to fruit production tasks, more families report that both men and women are involved with planting, irrigation, and weeding the vegetables. Men have primary responsibility for fertilizing, and when vegetables are sold men have primary responsibility for the transporting and selling the vegetables. Similar to fruit production, men, women and children are more likely to all be involved with the harvesting of vegetables (Table 3.3.5). Many vegetable crops are grown within the compound walls where women are able to take responsibility. Increasing home vegetable gardens should be considered an important livelihood focus for both income generation, food security and capacity building for women.

Across all the vegetable crops, the majority of those families growing various vegetables report that they are growing the vegetables for home use only. Furthermore, all but five of the specific vegetables are used exclusively for home use by 90% or more of the families growing each. (Table 3.3.2C). Tomato, pumpkin, potato, carrot and cauliflower are being sold by about 15% or more of the families who grow each (Table 3.3.2C). Other vegetable types are being sold by 5 or fewer families. In terms of differences between the two villages, up to 5 families in Salab are selling a variety of vegetables outside the home including pumpkin, tomato, ladyfinger, potato, onion, eggplant, red radish, white radish turnip, spinach, carrot, and squash. In contrast, only one family in Sangar reports selling vegetables outside the home, cauliflower and/or pumpkin.<sup>12</sup>

All of the different vegetables that are being sold are being sold in the village. Tomato and onion are also being sold in other villages in Alingar. Ladyfinger and white

---

<sup>12</sup> In terms of livelihood, food security must be a component of activities undertaken so that production doesn't increase food insecurity for the sake of income generation.

radish are being sold at the Friday Bazaar (in addition to “in the village”). Five vegetables are being sold to traders in Mehtarlam: tomato, onion, ladyfinger, white radish and eggplant (Table 3.3.2C). For vegetables sold in the village, they are either carried by hand or transported on donkey or in a vehicle. When sold at the Friday bazaar, being carried by hand or by vehicle is the most common transportation method. When vegetables are sold in other villages or to traders, they are most commonly transported in a vehicle; however, for 5-7 families the vegetables are being carried by hand.

A majority of families across both villages who grow specific vegetables reported they have increased the amount planted since the drought; this is true for seven vegetable crops: tomato, onion, ladyfinger, potato, pumpkin, carrot, and cauliflower. For the remaining vegetable crop, a majority of those who currently grow them indicated there is no change in the amount planted since the drought. None of the vegetables had a majority or more indicating they have decreased the amount planted. For those families increasing the amount of specific vegetables planted indicated the increase is for family consumption and/or due to government limitations on other specific crops that can and cannot be grown. For three vegetable crops—ladyfinger, onion, and pumpkin—“the need for forage” was also listed at a reason for increasing the amount planted. Several respondents reported a decrease in pepper production due to disease. In open-ended comments, spearmint and oregano were suggested as having potential production value in Salab. Because herbs and other plants may require less land for production, Salab livelihoods could benefit from a scaling up of production and processing of these.

**Table 3.3.2A. Number of Families with Vegetable Crops Currently Grown**

<b>Vegetable Crop</b>	<b>Total N=48 % (n)</b>	<b>Village One N=21 % (n)</b>	<b>Village Two N=27 % (n)</b>
Ladyfinger	87 (42)	95 (20)	81 (22)
Onion	87 (42)	95 (20)	81 (22)
Tomato	85 (41)	95 (20)	78 (21)
Pumpkin	83 (40)	90 (19)	78 (21)
White Radish	73 (35)	67 (14)	78 (21)
Squash	73 (35)	62 (13)	81 (22)
Eggplant	71 (34)	57 (12)	81 (22)
Spinach	69 (33)	52 (11)	81 (22)
Potato	64 (31)	71 (15)	59 (16)
Turnip	64 (31)	71 (15)	59 (16)
Red Radish	64 (31)	62 (13)	67 (18)
Pepper	50 (24)	14 (3)	78 (21)
Other	33 (16)	5 (1)	56 (15)
Carrot	6 (3)	0 (0)	11 (3)
Cauliflower	4 (2)	0 (0)	7 (2)

**Table 3.3.2B. Number Vegetable Crops per Family**

<b>Number of Vegetables Grown</b>	<b>Combined (Salab/Sangar)</b>	<b>Village One Salab</b>	<b>Village Two Sangar</b>
-----------------------------------	--------------------------------	--------------------------	---------------------------

Mean	9	8	10
None	6 (12%)	1 (5%)	5 (18%)
Median	11	10	12
Range	0-15	0-13	0-15
Mode	11	11	13

**Table 3.3.2C. Use of Vegetable Crop Grown: Percent of families (Combined: Salab/Sangar)**

<b>Vegetable Crop</b>	<b>Percent of Families who Grow the Crop for Home use only</b>	<b>Number of families who sell vegetable</b>
Pepper	100%	0
Squash	97%	1
White Radish	94%	2
Spinach	94%	2
Turnip	93%	2
Eggplant	91%	3
Ladyfinger	90%	4
Onion	90%	4
Red Radish	90%	3
Tomato	88%	5
Pumpkin	85%	6
Potato	84%	5
Carrot	75%	1
Cauliflower	67%	1

<b>Where sold:</b>	<b>In the Village</b>	<b>Other Villages in Alingar</b>	<b>Friday Bazaar</b>	<b>Traders in or from Mehtarlam</b>
<b>Onion:</b>	Yes	Yes		Yes
<b>Tomato:</b>	Yes	Yes	Yes	Yes
<b>Ladyfinger:</b>	Yes		Yes	Yes
<b>White Radish</b>	Yes			Yes
<b>Eggplant:</b>	Yes			Yes
<b>Red Radish</b>	Yes			
<b>Squash:</b>	Yes			
<b>Pumpkin:</b>	Yes			
<b>Spinach:</b>	Yes			
<b>Turnip</b>	Yes			

*Cauliflower and Carrot: no data on where sold*

**Table 3.3.2D. Changes in Amount of Vegetable Crop Grown since before the Drought: Percent of families with change (Combined: Salab/Sangar)**

<b>Vegetable Crop</b>	<b>Majority of Families who grow the crop have:</b>	
	<b>Increasing amount of land planted</b>	<b>No change in amount of land planted</b>
Cauliflower	100%	
Carrot	67%	
Tomato	61%	
Ladyfinger	60%	
Onion	58%	
Potato	52%	
Pumpkin	51%	
Pepper		75%
Red Radish		58%
Spinach		56%
White Radish		54%
Eggplant		54%
Turnip		50%
Squash		50%

**Table 3.3.2E. Vegetables Grown before drought different than what is currently grown**

<b>Vegetables</b>	<b># of Families</b>
Tomato	2
Onion	2
Squash	1
Potato	1
Ladyfinger	1
Turnip	1
Pumpkin	1

### Nuts

Less than half of the families across both villages grow nuts of any kind. About one third of families, 9 out of 21 in Salab and 8 out of 27 in Sangar, grow walnuts. Less than a fifth across both villages, or 7 out of 48 families, grow almonds. Only one family in Sangar grew any other type of nuts including pine nuts and pistachios. The most number of nut crops grown in any one family is 4, occurring in one family in Sangar. The majority of families across both villages do not have any nut crops, 57% in Salab and 67% in Sangar (Tables 3.3.3A and B).

In terms of who have responsibility for the range of tasks associated with growing nuts, not surprisingly men have ownership. When it comes to irrigation, both men and women are involved. For fertilization it is both men and children and then for weeding, and harvesting men and women and children are all involved. And in those very few cases where nuts are sold, men take responsibility for transporting and selling the nuts.

The majority of families who grow nuts are using the nuts for home use only. Only 3 families are selling some of their walnuts, 1 family is selling almonds, and/or pine

nuts. Among those families who do sell, carrying the nuts by hand or using a vehicle are the reported means of transporting the nuts.

A majority of families with almonds or pine nuts have either experienced no change or an increased number of trees since the drought. Among families growing walnuts, 7 of 13 families have experienced a decrease in the number of trees since the drought, while three families experienced no change and three other families had an increase in the number of walnut trees. The drought and lack of land are reasons expressed for decreases in nut trees. Before the drought, five additional families grew walnuts and three additional families each grew almonds or pistachios.

Most respondents reported during interviews that they would like to grow almonds, walnuts and pistachios. In Salab, though land is a scarce commodity, it was reported that nut trees have good production in the area. There may be a good baseline knowledge of cultivation that could be build upon. Processing of nuts for home use and for trade could be scaled up for women's income generation.

It was also reported during interviews that no initiative had been taken to establish orchards and to plant fruit trees, no technical extension services were available and that during planting season, no saplings were available. Upscaling the nursery capability is clearly one priority for respondents. There is potential to create income generation and expansion of livelihood activities for both men and women if nurseries were developed in such a way that training and labor could be separated. Though local cultural norms prevail, some household members, particularly younger members, may be willing to discuss capacity building initiatives that would involve both men and women working together. People who are open to this should be recruited to participate in pilot projects that can be showcased to other villagers in the region. This could be done at farm fairs, for example, where processes and products are displayed. Cooking new foods using locally grown produce and efficient cooking methods could be a key part of the educational and cultural design of the fairs.

**Table 3.3.3A. Number of Families with Nut Crops Currently Grown**

<b><i>Nut Crop</i></b>	<b><i>Total N=48 % (n)</i></b>	<b><i>Village One N=21 % (n)</i></b>	<b><i>Village Two N=27 % (n)</i></b>
Walnuts	35 (17)	43 (9)	30 (8)
Almonds	14 (7)	0 (0)	26 (7)
Pine Nuts	2 (1)	0 (0)	4 (1)
Pistachio	2 (1)	0 (0)	4 (1)
Other	2 (1)	0 (0)	4 (1)

**Table 3.3.3B. Number of Nut Crops per Family**

<b><i>Number of Nut Crops Grown</i></b>	<b><i>Combined (Salab/Sangar)</i></b>	<b><i>Village One Salab</i></b>	<b><i>Village Two Sangar</i></b>
Mean	0.6	0.4	0.7
None	30 (62%)	12 (57%)	18 (67%)
Median	0	0	0
Range	0-4	0-1	0-4
Mode	0	0	0

**Table 3.3.3C. Use of Nut Crop Grown: Percent of Families (Combined: Salab/Sangar)**

<b>Nut Crop</b>	<b>Percent of Families who Grow the Crop for Home use only</b>	<b>Number of families who sell nuts</b>
Walnuts	76%	3
Almonds	87%	1
Pine Nuts	33%	2
Pistachio	(missing)	

<b>Where sold:</b>	<b>In the Village</b>	<b>Other Villages in Alingar</b>	<b>Friday Bazaar</b>	<b>Traders in or from Mehtarlam</b>	<b>Traders outside Laghman</b>
Walnuts	Yes	Yes	Yes	Yes	Yes
Almonds	Yes		Yes		

*Pine Nuts: no data on where sold*

**Table 3.3.3D. Changes in Amount of Nut Crop Grown since before the Drought: Percent of families with change (Combined: Salab/Sangar)**

<b>Nut Crop</b>	<b>Majority of Families who grow the crop have:</b>	
	<b>Decreasing number of trees</b>	<b>No change or Increasing number of trees</b>
Walnuts	54%	
Almonds		80%
Pine Nuts		100%

*Pine Nuts: no data on changes*

**Table 3.3.3E. Nuts Grown before drought different than what is currently grown**

<b>Nuts</b>	<b># of families who used to grow</b>
Walnut	5
Almond	3
Pistachio	3

### Grains

Wheat and maize are two grain crops grown by nearly all families across the two villages; in Salab all but one family are growing both wheat and maize and in Sangar 21 out of 27 are growing wheat and maize. Barley is grown by about half of families

across both villages at 48%, with a considerably higher proportion of these being from Sangar, or 18 of the 23 families across both villages. Beans are grown by about one third of families across both villages at 35%, with a considerably higher proportion of these being from Salab; or 15 out of 18 families across both villages (Table 3.3.4A).

The average number of different grains being grown by families is 3, the same across both villages. The highest number of different grains being grown for any one family is 4 in both villages. One family in Salab and 6 families in Sangar are not growing any grains. (Table 3.3.4B)

Men have primary ownership of the grain while the planting, irrigation and the weeding are tasks shared by the men and women and for some families, children help the men with the irrigation. Men and children are most involved with the fertilizing, but the harvest is shared by men, women, and children. And for families where grain is being sold, men take responsibility for the transportation and the selling.

Nearly all the grain is grown for home use across both villages. In fact, only one family from Salab sells wheat and maize and these are sold in the village only and is carried primarily by hand.

Since the drought, the amount of grain planted is increasing for wheat, maize, barley and beans. The reasons for the increase are for family consumption, for forage, and because of government restrictions on what can and cannot be grown. Forage will become more important if livestock holdings increase among households and families. Respondents reported that both lack of forage and lack of income prevents them from increasing their livestock.

In terms of additional families growing grains before the drought, the most noticeable change is that there were 17 families growing paddy rice before and none now. Also, 5 additional families grew barley before the drought.

During interviews, based on comments to open-ended questions, respondents in both villages indicated that kidney beans, peanuts, green peas, chick peas, vetch and cotton were grown. In Village Two, paddy rice was reported and more would be grown if irrigation systems were improved. Whether up scaling of cotton and paddy rice is feasible given current conditions in the villages should be explored. One problem denitrified for selling grains was the lack of markets. Imported grain is available cheaply cutting into any potential for income generation for local producers. Governmental policy regarding imports will be key to improving market access for local producers.

**Table 3.3.4A. Number of Families with Grain Crops Currently Grown**

<b>Grain Crop</b>	<b>Total N=48 % (n)</b>	<b>Village One N=21 % (n)</b>	<b>Village Two N=27 % (n)</b>
Wheat	85 (41)	95 (20)	78 (21)
Maize	85 (41)	95 (20)	78 (21)
Barley	48 (23)	24 (5)	67 (18)
Beans	35 (17)	71 (15)	7 (2)
Other	8 (4)	0 (0)	15 (4)
Peanuts	2 (1)	5 (1)	0 (0)
Paddy Rice	0 (0)	0 (0)	0 (0)
Peas	0 (0)	0 (0)	0 (0)

**Table 3.3.4B. Number of Grain Crops per Family**

<b><i>Number of Grain Crops Grown</i></b>	<b><i>Combined (Salab/Sangar)</i></b>	<b><i>Village One Salab</i></b>	<b><i>Village Two Sangar</i></b>
Mean	3	3	2
None	7 (14%)	1 (5%)	6 (22%)
Median	3	3	3
Range	0-4	0-4	0-4
Mode	3	3	3

**Table 3.3.4C. Use of Grain Crop Grown: Percent of Families (Combined: Salab/Sangar)**

<b>Grain Crop</b>	<b>Percent of Families who Grow the Crop for Home use only</b>	<b>Number of families who sell</b>
Wheat	97%	1
Maize	97%	1
Barley	100%	0
Beans	100%	0
Peas	100%	0
Peanuts	None grown	--
Paddy Rice	None grown	--

<b>Where sold:</b>	<b>In the Village</b>	<b>Other Villages in Alingar</b>	<b>Friday Bazaar</b>	<b>Traders in or from Mehtarlam</b>	<b>Traders outside Laghman</b>
Wheat	Yes				
Maize	Yes				

**Table 3.3.4D. Changes in Amount of Grain Crop Grown since before the Drought: Percent of families with change (Combined: Salab/Sangar)**

<b>Grain Crop</b>	<b>Majority of Families who grow the crop have Increasing</b>
Wheat	80%
Maize	67%
Barley	65%
Beans	100%

**Peas:** not information

**Table 3.3.4E. Grains Grown before drought different than what is currently grown**

<b>Grains</b>	<b># of families</b>
Paddy rice	17
Barley	5
Vetch	1
Maize	1
Cotton	1

<b>Table 3.3.5.</b>	<b>Fruits</b>			<b>Vegetables</b>			<b>Nuts</b>			<b>Grains</b>		
<b>Responsibility</b>	<b>Combine</b>	<b>Salab</b>	<b>Sangar</b>	<b>Combine</b>	<b>Salab</b>	<b>Sangar</b>	<b>Combine</b>	<b>Salab</b>	<b>Sangar</b>	<b>Combine</b>	<b>Salab</b>	<b>Sangar</b>
<b>Crop Tasks:</b>	<b>d</b>			<b>d</b>			<b>d</b>			<b>d</b>		
<b>Ownership</b>	% n	% n	% n	% n	% n	% n	% n	% n	% n	% n	% n	% n
No Activity	0	0	0	0	0	0	0	0	0	0	0	0
Women	0	0	0	0	0	0	0	0	0	0	0	0
Men	100% 42	100% 20	100% 22	90% 37	95% 18	85% 19	100% 17	100% 8	100% 9	100% 40	100% 20	100% 20
Both men and women	0	0	0	3% 1	5% 1	0	0	0	0	0	0	0
Children	0	0	0	0	0	0	0	0	0	0	0	0
Women and children	0	0	0	0	0	0	0	0	0	0	0	0
Men and children	0	0	0	7% 3	0	15% 3	0	0	0	0	0	0
All	0	0	0	0	0	0	0	0	0	0	0	0
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
<b>Planting</b>	% n	% n	% n	% n	% n	% n	% n	% n	% n	% n	% n	% n
No Activity	0	0	0	0	0	0	0	0	0	0	0	0
Women	0	0	0	0	0	0	0	0	0	0	0	0
Men	83% 35	85% 17	82% 18	38% 16	2% 5	50% 11	82% 14	75% 6	89% 8	50% 21	40% 8	65% 13
Both men and women	5% 2	10% 2	0	33% 14	70% 14	0	6% 1	12% 1	0	30% 12	60% 12	0
Children	0	0	0	2% 1	0	5% 1	0	0	0	3% 1	0	5% 1
Women and children	0	0	0	0	0	0	0	0	0	0	0	0
Men and children	7% 3	0	14% 3	19% 8	0	36% 8	6% 1	0	11% 1	12% 5	0	25% 5
All	5% 2	5% 1	4% 1	7% 3	5% 1	9% 2	6% 1	12% 1	0	3% 1	0	5% 1
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
<b>Irrigation</b>	% n	% n	% n	% n	% n	% n	% n	% n	% n	% n	% n	% n
No Activity	0	0	0	0	0	0	0	0	0	0	0	0
Women	0	0	0	0	0	0	0	0	0	0	0	0
Men	62% 26	55% 11	68% 15	24% 10	21% 4	27% 6	47% 8	62% 5	33% 3	27% 11	14% 3	40% 8
Both men and women	19% 8	40% 8	0	36% 15	79% 15	0	18% 3	38% 3	0	32% 13	65% 13	0
Children	10% 4	0	18% 4	5% 2	0	9% 2	12% 2	0	22% 2	3% 1	0	5% 1

Women and children	0	0	0	5% 2	0	9% 2	0	0	0	0	0	0
Men and children	7% 3	5% 1	9% 2	20% 8	0	36% 8	12% 2	0	22% 2	35% 14	20% 4	50% 10
All	2% 1	0	5% 1	10% 4	0	18% 4	12% 2	0	22% 2	3% 1	0	5% 1
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
<b>Task</b>	<b>Fruits</b>			<b>Vegetables</b>			<b>Nuts</b>			<b>Grains</b>		
	Combine d	Salab	Sangar	Combined	Salab	Sangar	Combine d	Salab	Sangar	Combine d	Salab	Sangar
<b>Weeding</b>	% n	% n	% n	% n	% n	% n	% n	% n	% n	% n	% n	% n
No Activity	24% 10	50% 10	0	2% 1	5% 1	0	35% 6	75% 6	0	0	0	0
Women	2 1	5% 1	0	7% 3	5% 1	9% 2	6% 1	12% 1	0	5% 2	5% 1	5% 1
Men	36% 15	25% 5	45% 10	7% 3	10% 2	5% 1	6% 1	0	11% 1	10% 4	15% 3	5% 1
Both men and women	10% 4	20% 4	0	38% 16	75% 15	5% 1	6% 1	12% 1	0	42% 17	80% 16	5% 1
Children	7% 3	0	14% 3	0	0	0	0	0	0	2% 1	0	5% 1
Women and children	0	0	0	0	0	0	0	0	0	0	0	0
Men and children	14% 6	0	27% 6	26% 11	0	50% 11	18% 3	0	33% 3	22% 9	0	45% 9
All	7% 3	0	14% 3	19% 8	5% 1	32% 7	29% 5	0	56% 5	18% 7	0	35% 7
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
<b>Harvesting</b>	% n	% n	% n	% n	% n	% n	% n	% n	% n	% n	% n	% n
No Activity	0	0	0	0	0	0	0	0	0	0	0	0
Women	5% 2	10% 2	0	5% 2	0	9% 2	0	0	0	0	0	0
Men	21% 9	25% 5	18% 4	10% 4	15% 3	5% 1	6% 1	0	11% 1	7% 3	15% 3	0
Both men and women	5% 2	10% 2	0	33% 14	65% 13	5% 1	29% 5	62% 5	0	22% 9	40% 8	5% 1
Children	5% 2	0	9% 2	2% 1	0	5% 1	0	0	0	2% 1	0	5% 1
Women and children	12% 5	25% 5	0	0	0	0	0	0	0	0	0	0
Men and children	19% 8	5% 1	32% 7	26% 11	0	50% 11	6% 1	0	11% 1	33% 13	20% 4	45% 9
All	33% 14	25% 5	41% 9	24% 10	20% 4	26% 6	59% 10	38% 3	78% 7	35% 14	25% 5	45% 9
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
<b>Fertilizing</b>	% n	% n	% n	% n	% n	% n	% n	% n	% n	% n	% n	% n

No Activity	21% 9	45% 9	0	5% 2	0	9% 2	41% 7	87% 7	0	0	0	0
Women	0	0	0	0	0	0	0	0	0	0	0	0
Men	45% 19	50% 10	41% 9	57% 24	85% 17	32% 7	12% 2	0	22% 2	65% 26	90% 18	40% 8
Both men and women	2% 1	5% 1	0	10% 4	15% 3	5% 1	0	0		2% 1	5% 1	0
Children	5% 2	0	9% 2	2% 1	0	5% 1	6% 1	0	11% 1	0	0	0
Women and children	0	0	0	0	0	0	0	0	0	0	0	0
Men and children	24% 10	0	45% 10	26% 11	0	50% 11	24% 4	13% 1	33% 3	33% 13	5% 1	60% 12
All	2% 1	0	5% 1	0	0	0	18% 3	0	33% 3	0	0	0
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Task	Fruits			Vegetables			Nuts			Grains		
	Combined	Salab	Sangar	Combined	Salab	Sangar	Combined	Salab	Sangar	Combined	Salab	Sangar
<b>Selling</b>	% n	% n	% n	% n	% n	% n	% n	% n	% n	% n	% n	% n
No Activity	76% 31	50% 10	100% 21	71% 30	45% 9	95% 21	70% 17	50% 4	89% 8	80% 32	60% 12	100% 20
Women	0	0	0	0	0	0	0	0	0	0	0	0
Men	24% 10	50% 10	0	29% 12	55% 11	5% 1	24% 4	50% 4	0	20% 8	40% 8	0
Both men and women	0		0	0	0	0	0	0	0	0	0	0
Children	0	0	0	0	0	0	0	0	0	0	0	0
Women and children	0	0	0	0	0	0	0	0	0	0	0	0
Men and children	0	0	0	0	0	0	0	0	0	0	0	0
All	0	0	0	0	0	0	6% 1	0	11% 1	0	0	0
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
<b>Transporting</b>	% n	% n	% n	% n	% n	% n	% n	% n	% n	% n	% n	% n
No Activity	54% 22	20% 4	86% 18	71% 30	10% 2	54% 12	53% 9	37% 3	67% 6	28% 11	5% 1	50% 10
Women	0	0	0	0	0	5% 1	0	0	0	0	0	0
Men	37% 15	70% 14	5% 1	29% 12	60% 12	5% 1	18% 3	37% 3	0	36% 14	68% 13	5% 1
Both men and women	2% 1	5% 1	0	0	25% 5	0	6% 1	13% 1	0	0	0	0
Children	0	0	0	0	0	0	0	0	0	0	0	0
Women and children	0	0	0	0	0	0	0	0	0	0	0	0
Men and children	0	0	0	0	5% 1	0	6% 1	13% 1	0	13% 5	26% 5	0
All	7% 3	5% 1	9% 2	0	0	36% 8	18% 3	0	33% 3	26% 9	0	45% 9
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

## Livestock

Currently 81% of families, or 39 out of 48 across the two villages, have chickens. A higher proportion, 92% of families in Sangar have chickens in comparison to two-thirds, or 67%, of families in Salab. Only families in Sangar have livestock in other poultry categories: 5 families have turkeys and 4 families have ducks; these families represent less than 20% of families in their own village and 10% or less of families across both villages. (Table 3.3.6A).

Less than half of the families in both villages, or 42%, have cattle and only a third of families in both villages have goats (35%). Eleven families in Sangar have sheep whereas no families in Salab have sheep. In terms of draft animals, three families in each village, or 6 out of 48 families overall, have donkeys. No families in either village have oxen. (Table 3.3.6A)

Since the drought there are slightly more families with chickens in both villages and no change in the number of families with turkeys and ducks in Salab; however there are slightly fewer families with turkeys and ducks in Sangar since the drought. Before the drought in both villages more families had cattle, especially in Salab. The number of families with cattle in Salab was cut in half after the drought, declining from 16 families to 8. The number of families with goats in Salab was also cut in half after the drought, declining from 16 to 7. In Sangar number of families with cattle was nearly cut in half after the drought, but the number of families with goats remained stable. In terms of draft animals, the number of families with donkeys and oxen in did not change from before the drought to the present. In Sangar, the number of families with donkeys remained relatively stable. (Table 3.3.6B).

**Table 3.3.6A. Number of Families with Livestock, Currently Owned**

<b>Livestock</b>	<b>Total N=48 % (n)</b>	<b>Village One Salab N=21 % (n)</b>	<b>Village Two Sangar N=27 % (n)</b>
Chickens	81 (39)	67 (14)	92 (25)
Cattle	42 (20)	38 (8)	44 (12)
Goats	35 (17)	33 (7)	37 (10)
Sheep	23 (11)	0 (0)	40 (11)
Donkeys	12 (6)	14 (3)	11 (3)
Turkeys	10 (5)	0 (0)	18 (5)
Ducks	8 (4)	0 (0)	15 (4)
Oxen	0 (0)	0 (0)	0 (0)
Other	0 (0)	0 (0)	0 (0)

**Table 3.3.6B. Number of Families with Livestock, Owned before the Drought**

<b>Livestock</b>	<b>Total N=48 % (n)</b>	<b>Village One N=21 % (n)</b>	<b>Village Two N=27 % (n)</b>
Chickens	68 (33)	57 (12)	78 (21)
Cattle	75 (36)	76 (16)	74 (20)
Goats	54 (26)	76 (16)	37 (10)
Sheep	35 (17)	0 (0)	63 (17)
Donkeys	14 (7)	14 (3)	15 (4)
Turkeys	14 (7)	0 (0)	26 (7)

Ducks	10	(5)	0	(0)	18	(5)
Oxen	23	(11)	0	(0)	41	(11)
Other	0	(0)	0	(0)	0	(0)

### What are the Impacts of Drought on Livestock?

Table 3.3.7 shows the impact that the drought conditions have had on livestock ownership. For the most part, the drought has had a negative impact on household and family livestock assets as a means for holding and preserving wealth, as ready source of high quality protein for food (meat, milk, eggs), and animal draft labor for transport and cultivating crops. The most valuable animal species a family can own and the most difficult to regain possession of, these are: oxen, cattle, donkeys, goats, sheep, and turkeys, respectively. Chicken and ducks, however, are much less in value, and they are fairly equal in value and reproductive capacity.

#### Oxen, cattle, donkeys-dual purpose livestock

The livestock categories that represent the largest financial loss to families are oxen, cattle, and donkeys. Oxen and cattle are the livestock most often thought of as dual purpose animals especially in lesser developed countries. Dual purpose animals are highly prized since they provide multiple products to owners and most commonly this is draft labor and milk, and as a last resort meat. For families or households to keep cattle, oxen, or donkeys requires having access to a necessary supply of feed. Feedstuffs for ruminant animals are grazing land and pasture, or excess production of feedstuffs such as grain, hay, or ensiled fruits, vegetables or silage. Large animals also need an adequate water supply. Both of these requirements need to be in relative large supply in a geographical area and access to these needs to not be in direct competition with food and water for humans, in order to have extra supplies diverted to the support of animal production.

Since the drought no families in either village (Salab or Sangar) reported owning oxen. In Sangar, before the drought, 40% of families owned 18 oxen. On the other hand, Salab families, currently do not own oxen, but unlike Sangar this is not a change, as these families did not own oxen before the drought (Table 3.3.7). Oxen are primarily draft animals used to pull carts, plows or other equipment. Oxen are used by owners for their own labor needs or can be rented or leant to others. Oxen can also provide meat once slaughtered. Unless oxen or cattle are plentiful in supply, slaughter or sale of dual purpose animals is a drastic measure for families. Cattle, depending on the breed, can provide milk, calves for breeding and herd replacement, money from sale, or meat, once slaughtered. Cattle can also be used as draft animals but are not as muscular and strong as oxen. Cattle (depending on the breed) are not as behaviorally adapted to draft labor for the purpose of packing or carrying items that need to be transported or pulled. Cattle in general are not used in this capacity as often as oxen. Cattle are most often kept for producing meat or milk or for herd replacement and often for selling. Oxen and cattle are easily kept because they can graze on grasses, converting this to milk, meat, and fat. Oxen, cattle, and donkeys do not compete directly with humans for food.

In Salab, before the drought, 16 of 21 families, 76%, owned cattle. Even though 5 of 6 households in both villages still have cattle ownership, the impact on individual families is more dramatic. The number of Salab families currently owning cattle has significantly declined with less than half, or 9 of 21 (42%) families now having cattle. Sangar households and families also experienced large losses in cattle ownership with the drought. Before the drought, 20 of 27 families or 74% had cattle and now only 12 of 27 families, (44%) have cattle. It should be noted that once oxen or cattle are slaughtered or sold, replacing or reassuming this investment is a slow process since it takes approximately 3 years for cattle to mature from birth to reproduction.

Both Salab and Sangar have had serious losses of cattle ownership from the drought. For Salab the total number of cattle has decreased by more than half since before the drought. The 6 households and 21 families, previous to the drought owned 39 head and since the drought own 14 head of cattle. The net loss of cattle due to the drought is 25 head (64%). In Sangar, 5 households and 12 families currently own 19 head of cattle, whereas before the drought they owned 58 head of cattle. Sangar's 6 households experienced a net loss of 39 head or 67% of their cattle herd.

Most families in the two villages do not own donkeys and there has been little change in the level of donkey ownership since before the drought. On average, in both villages, about 12% of families and less than half of the households reported owning donkeys. Donkeys are most often kept for labor such as riding or pulling or for producing foals that can be sold. Donkey meat is edible but it is not often thought of as a meat animal. Like oxen and cattle, donkeys require at least 3 years from birth to reach maturity which is the appropriate age for draft labor, riding, or reproduction. In the activities documented for households no families reported milking donkeys.

### Goats and sheep

In Salab (Village One), sheep ownership did not change after the drought, as no sheep were owned either before or after the drought. In contrast, goat ownership in Salab was cut in half after the drought declined from 16 families owning goats before drought and just 7 families owning goats after drought. In Sangar, the comparison of sheep and goats was different. Before drought, 17 families had sheep and that reduced to 11 after the drought representing a 33% decline. The number of families owning goats before and after the drought did not change, 10 families.

### Poultry

While there were no ducks or turkeys in Salab either before or after the drought, the number of families with ducks and turkeys changed slightly in Sangar, with 5 families owning ducks before and only 4 families owning ducks after the drought; and 7 families owning turkeys before and 5 families owning turkeys after the drought. The impact of the drought on chicken ownership was the opposite in that the number of families with chickens after the drought increased in both villages. In Salab, the number of families increased from 13 families to 14 families owning chickens. In Sangar the number of families with chickens increased from 22 to 25 families after the drought. (Table 3.3.8).

Though the number of households currently hasn't changed significantly from before the drought, two other ways of looking at this information should be considered. 1) The percent of families currently reported to *not* have ownership of livestock and poultry compared to ownership before the drought. 2) For those families currently reporting ownership, what is the percent difference in numbers compared to before drought.

### Gendered Responsibility for Livestock Activities.

In Table 3.3.10 the one family reporting family level gender assignment to responsibilities for oxen, showed women responsible for oxen grazing and milking. Men were responsible for oxen selling and decisions about oxen use.

Men and women are fairly equal in the assignment of primary responsibilities associated with cattle. In both villages, 6 families reported women only, 7 reported men only, and 6 families reported men and women. All family members (men, women, children) are involved in activities associated with raising and holding cattle as an asset. Cattle grazing as a responsibility falls more to children (10 families), and men and children (10 families). Cow milking is the responsibility of women in both villages. Cattle ownership and selling is exclusively a male activity for families. Decisions about cattle use are mostly

associated with men. However, in Salab men and women (6 families) and all family members (4 families) make decisions about cattle use.

Oxen and donkeys are not as prevalent of a livestock asset for Afghan families in both villages. For the one family in Sangar reporting on oxen, the men have responsibility for all tasks (Table 3.3.11). And for the 4 families reporting on donkeys, all of the tasks were the men's responsibility (Table 3.3.12).

Men, women, and children all have responsibility for grazing the goats; but women have primary responsibility for milking the goats. For all the other tasks including ownership, decision-making, slaughter, and selling goats, the men have primary responsibility (Table 3.3.12).

For sheep men, women, and children all have responsibility for grazing. Women are reported to have responsibility for milking, slaughtering and selling the sheep. And men have responsibility for ownership and decisions about the sheep (Table 3.3.13).

For chickens women have more responsibilities overall. They are primarily responsible for ownership, decisions about, grazing, and egg collection. All are responsible—women, men, and children—for tasks associated with selling. But men have primary responsibility for the slaughter of chicken (Table 3.3.15).

For ducks and for turkeys women have primary responsibility for ownership, decisions about, grazing, egg collection and selling. Men have primary responsibility for slaughter only (Table 3.3.16 and Table 3.3.17).

An observation about the quantitative data on gendered responsibility reveals that the number of activities for which both men and women are responsible is much higher in Village One than Village Two. It may be the case that the question was interpreted differently by interviewers and the responses reflect a different understanding of the information desired. However, it would be useful to explore whether Salab may be the site more amenable to introducing activities and capacity building to mixed groups of men and women.

**Table 3.3.7. Livestock-Number of households and families owning livestock currently and before the drought**

Livestock Owned		Salab		Sangar		Combined	
		Number of Households	Number of Families	Number of Households	Number of Families	Number of Households	Number of Families
<b>Cattle</b>	Own Now	5	9	5	12	10	21
	Owned Before Drought	6	16	6	20	12	36
<b>Sheep</b>	Own Now	0	0	5	11	5	11
	Owned Before Drought	0	0	5	17	5	17
<b>Goats</b>	Own Now	5	7	5	10	10	17
	Owned Before Drought	6	16	5	10	11	26
<b>Donkey</b>	Own Now	3	3	2	3	5	6
	Owned Before Drought	3	3	3	4	6	7
<b>Oxen</b>	Own Now	0	0	0	0	0	0
	Owned Before Drought	0	0	5	11	5	11

**Table 3.3.8. Poultry-Number of Households and families owning poultry currently and before the drought**

Poultry Owned		Salab		Sangar		Combined	
		Number of Households	Number of Families	Number of Households	Number of Families	Number of Households	Number of Families
<b>Chicken</b>	Own Now	6	14	6	25	12	39
	Owned Before Drought	6	13	6	22	12	35
<b>Duck</b>	Own Now	0	0	1	4	1	4
	Owned Before Drought	0	0	2	5	2	5
<b>Turkey</b>	Own Now	0	0	3	5	3	5
	Owned Before Drought	0	0	3	7	3	7

### Concern with Loss of Food Sources that Provide High Quality Protein

In summary, families in these study villages have monumental losses of livestock and less diversified crops for food or for sale as a result of drought conditions. This places families in desperate need for food sources that have sufficient high quality protein. Plants as a source of dietary proteins need adequate variety to ensure that complementary combinations of amino acids are eaten at any meal to support human needs. Less livestock as a source for direct high quality protein from meat or milk, also places families at greater risk for disease and starvation. This has the most severe consequences for children and pregnant women that need protein to support growth and development. Any recommended activities, should be evaluated as to how they can alleviate these conditions. Activities that can increase production of protein, milk or meat with limited resources, will benefit families at the most basic level.

### Other Sources of Income

Table 4.0 shows a rank order of all of the different types of work village families undertake<sup>13</sup>. These sources of work or livelihoods generate income or exchange for village families. In Salab, the leading activities indicated, by the largest percentage of families are farm labor (71% of families) and wood gathering (67%). In Sangar it is farm labor (53%) and migrant labor (46%). In Mango, it is farm labor (73%) and wood gathering (70%). For the category of "Other", this represents mostly casual labor and farm labor. Casual labor suggests informal arrangements for working on behalf of another family in exchange for something else, other than money that might be valued by the family. Masonry, trading, and migrant labor are the 4<sup>th</sup>, 5<sup>th</sup> and 6<sup>th</sup> leading work activities.

**Table 4.0 Other Sources of Income**

Job Type	Salab N=21		Sangar N=28		Mango N=34		% Sum
	%	# of families	%	# of families	%	# of families	
Farm Labor	71%	15	53%	15	73%	25	55
Wood Gathering	67%	14	0%	0	70%	24	38
Other	28%	6	5%	2	73%	25	33
Masonry	10%	2	36%	10	35%	12	24
trader	19%	4	4%	1	41%	14	19
Migrant Labor	19%	4	46%	13	3%	1	18
Shopkeeper	19%	4	0%	0	32%	11	15
Government Worker	0%	0	5%	2	32%	11	13
Teacher	0%	0	21%	6	15%	5	11
Fishing	10%	2	0%	0	9%	3	5
Driver	0%	0	0%	0	6%	2	2
Tailoring	10%	1	0%	0	3%	1	2
Carpentry	0%	0	0%	0	3%	1	1

### **Other source list**

Job Type	Salab	Sangar	Mango	Sum
Casual labor	6	0	19	25
Farm labor	0	0	5	5
Doctor	0	1	2	3
Jobless	0	1	0	1
Animal husbandry	1	0	0	1

<sup>13</sup> It cannot be ascertained from this data whether the work occurs within the village, region or Kabul or whether it takes place out of country.

Some families reported remittances from people working away from the village<sup>14</sup>. It is interesting to note that male respondents from families within a household were much more likely than female members of the same family to report that money was sent to the family by people away from work. In only two families who resided in the same household in Village One did women respondents report money being sent from family members working away. They reported percent annual remittances to the family of 30 percent and 70% respectively. All other reports of outside income were reported by males. Interestingly, in the same household one family reported a difference in the number of male school age children and those who go to school with females reporting twice as many boys in both categories as males. However, no clarification for this difference was included in interviewer comments.

In Village One, while wood gathering was a main source of income, it was reported in open-ended comments that one woman in one household who could sew but no machine was available. Another female reported that women don't have any knowledge about non-agricultural income sources. This indicates the need to work with women to expand their understanding of potential activities and to build capacity for them to implement their ideas. Currently, beauty parlors are being proposed as the single activity in which women want to take part. Interviews indicated carpet weaving and embroidery<sup>15</sup>, again, likely because they don't have an awareness of other opportunities.

Casual labor is also a source of income for families and is reported to be available only one or two days per week, thus leading working age males to go away for work.

When asked to discuss other possibilities for income generation, In both villages, the most common answer was that the family had no skilled people in the family, household or village. Existing skills, which some respondents wanted to build upon, included the usual carpet weaving, embroidery, and tailoring (by women), as well as raising poultry. Heater making was another skill mentioned. One male respondent said, "If courses for tailoring, carpet weaving, embroidery and poultry are established and markets are found, we would like to use these skills to produce something." Men and women, it was reported, could both be involved in carpet weaving if the raw materials and markets were available. It is beyond the scope of this study to provide an analysis of the potential for carpet weaving as a source of livelihood for the village. (See Pain, Adam and Moharram Ali (2004) *Understanding Markets in Afghanistan: A case study of carpets and the Andkhoy Carpet Market.*)<sup>16</sup> However, while believed to be a viable option among

---

<sup>14</sup> The most frequent places mentioned for off-farm work were Pakistan and Iran.

<sup>15</sup> Embroidery skills were learned in Pakistan by women. One male stated that they used those skills there but because there is no market in Afghanistan, they can no longer do it.

In their summary discussion Pain and Ali (2004) report, "All the evidence is that growth is taking place in the market place of Andkhoy. However this is largely being driven by a re-location of big traders back into Afghanistan and their linkage to an international carpet market. This market appears to be largely geared to a product that is based more on Western consumer culture, style perceptions and marketing strategy than a tradition that draws on the creativity and materials of the Turkmen weavers. The benefits from the growth in the Chob Rang market have largely flowed to the big traders, not by accident but by design given their dominance and tactics within the market place.

Where might opportunities lie to broaden the benefits of growth and secure a future for traditional carpet production that draws and develops the skills of the producers? Without deliberate action producers may be progressively relegated to rote wage labour that in the long run will result in an erosion of the traditional artisanal skills of both design and execution.

Two interlinked actions are required. The first relates to interventions to support the development of traditional designs and materials. The establishment and application of quality standards through perhaps labelling and certification could assist this, both with respect to the raw materials (the use of hand spun qaraqul wool, for example) and the final product. This could be linked with a strategy that deliberately positions a product in relation to a niche in the upper market segment in international markets where a price premium can be commanded. However if the benefits of such a connection are to be realised by the producer then this production and marketing strategy has to be linked with mechanisms that improve returns to the producers. This could be based on efforts to build producer associations, linked to access to and provision of credit, but with connections to trade systems build on fair trade principles.

Central to this must be an explicit recognition of the role that women play in carpet production and their current position of power. While gender relations as currently constructed will remain pervasive, this is no excuse to ignore and fail to address market

respondents, the impediments to the establishment of this industry in Afghanistan must be clearly understood.

Clearly, women's skills are included in villagers understanding of expanding livelihood options. During household level interviews, males were asked the following question, "Considering village traditions, culture and values, how willing would you be to involve women in working for an income?" The responses generated showed agreement with the idea of women engaging in waged labor but it was very explicit that any training would have to be done with women trainers. It was only in Village Three that male respondents said that women are not permitted to work. "As we are religious people, we don't allow our women to work," was one respondent's comment. Another said "We don't allow women to participate in the income generation activities. They should do household activities," said another.

Women respondents during household level interviews were asked, "Considering village traditions, culture and values, how willing are you to be involved in working for income?" Activities such as tailoring, carpet weaving, poultry production and animal husbandry were all seen as potential activities. Any skills training would have to be done by women trainers. One woman from Salab said, "If there is any type of income opportunities available for us inside our houses we can be involved in income generating activities." In Mango, two women, from the same two households as the men mentioned above, agree that, due to religious reasons they do not participate. "We are very much religious and our men don't allow us to take part in income generating activities," one of these women said. However, indicating a variation in attitudes, another woman from Village Three stated, "With taking courses for poultry, carpet weaving, tailoring, etc., women can play a very good role in the economic development and improve the standards of living of the household." These points of view provide some support for the introduction of greater participation of women in income generation. DACAAR has established Women's Resource Centers in some of the areas in which they work, so the social infrastructure has already begun for these activities and should be built upon.

## Other Plants

After talking about the crops grown, both men and women respondents were asked to discuss other plants that hadn't been mentioned that are also used, perhaps for medicine and/or cosmetics. The number of families using these plants were reported for each household. Across the three villages, men reported a total of 206 families using them, women reported a total of 171 using them. Men discussed 26 plants and uses. Women discussed 29. The following is a list of names and uses of plants and the total number of families using them as reported by males and females. No information was gathered on how abundant these were, how they were gathered processed and used, who had responsibility for collecting and using them, and how effective they were. A botanic

---

structures that may reinforce or deepen the inequalities. Deliberate action is required to address gender inequalities in the development of the product.

The second dimension would be to aim to help support the smaller traders, through mechanisms that would give them access to external markets. Part of this would be through access to formal credit. However, it would also mean working with them, possibly through support for associational activities, to build linkages with potential outside parties and opportunities. There are potential synergies between providing support for the traditional carpet product and supporting small traders. Responding to the opportunities of niche markets will require local level action and strong connections between producers and traders which will have fairly high transaction costs which large traders may be unwilling to invest in.

While there are certainly opportunities and entry points, a degree of realism is required. Existing social structures that have a strong tendency towards promoting non-competitive market behaviour are unlikely to wither, or remain passive if under attack. A broader agenda of building accountability of the market to the state (and of the state to a wider Afghan society) will be a precondition to interventions in the carpet market delivering pro-poor benefits" (pp. 33-34).

survey of medicinal and herbal plants, as well as interviews, observation and a gender analysis of use would help to determine the potential and scope for up scaling use of these for income generation.

**Table 5.0 Total families reporting using plants by village**

Families using	Village One	Village Two	Village Three	Total
Males reporting	63	108	35	206
Females reporting	38	99	34	171

**Table 5.1. Plant names and uses by number of families/gender**

Plant Name			# of families (total)	
			M	F
<b>Males</b>	<b>Females</b>	<b>Uses</b>		
	Arhanda	Stomach problems		1
Badyaan	Badyaan	Stomachache	16	14
Bandaki	Bandaki	Asthma and to clean teeth	13	7
Bar Tang	Bar Tang	Pneumonia and food for the flavor	9	13
Barg-e-Baid/Barg Baid	Barg-e-Baid/Barg Baid	Sunstroke	16	14
Cumin	Cumin	For the flavor of food	11	10
Da hindo Sabun	Da hindo Sabun	Diabetes	1	1
		Pneumonia and food for the children and coughing	7	6
Dana-e-Zauf	Dana-e-Zauf	Put on the pimples	1	0
Gazak Poni	Gazak Poni		4	4
Gul-e-Khairo/Gul Khairo	Gul-e-Khairo/Gul Khairo	Cough, chest ache		
Gul-e-Lala	Gul-e-Lala	Jaundice/ecter	1	0
Khaksheer	Khaksheer	Pneumonia, constipation	14	14
Khamazura/Khamazuri	Khamazura/Khamazuri	Diabetes and pneumonia	16	10
Kora	Kora	Hemorrhoid	9	5
Lerab	Lerab	To keep away insects from wheat	8	5
Marghobi	Marghobi/Marghubi	Stomachache	1	1
Marghuni	Marghuni	For stomachache	3	3
Mustard	Mustard	Hair oil and skin care	15	12
	Parhar Pana	Put on the pimples	na	1
	Perota	Pneumonia	na	1
Podina-e-Wahshi	Podina-e-Wahshi	Eating	2	1
Reedi Gul	Reedi Gul	Measles	5	3
Shamaki	Shamaki	Malaria fever	15	13
Sharkha	Sharkha	To remove tiredness	7	6
Sperza	Sperza	Diarrhea, sunstroke	12	10
Terkha	Terkha	To remove tiredness	5	3
Wild spearmint	Wild spearmint	Fragrance of food	8	7
Zeera	Zeera	Diarrhea and sunstroke	0	0
Zool	Zool	For the treatment of camel	0	6

## **Production and Trade**

In order to obtain an understanding about how households engage in trading of their production, a series of open-ended questions were asked.<sup>17</sup> The first question asked was how decisions are made about what to produce. Here again, government policy played a substantial role in production decisions. Often decisions centered on household consumption needs, with decisions discussed within families or males taking them. Other factors were market demand and prices. “We see the price of the product, if it has a high price we will cultivate it. Otherwise, not. Sometimes the government policy also influences our decisions,” said one male respondent. Another said, “As we have little land the decision of what to grow on the land depends on what we need. However, sometimes government policy and the decisions of the village also affect the decision of what to grow on our land.”

When there is enough production to sell to traders, male respondents said they negotiate to sell to the trader who offers the highest price and they do not always sell to the same trader. Males reported that they determine what prices to sell their product for based on prices at the Friday Bazaar (in the villages) and then negotiate with traders. “We see the prices in the bazaar and then decide what price to sell for,” said one man from Salab. Respondents in Salab and Sangar reported that it isn’t difficult to find traders, saying that traders either come to the villages to buy and sometimes farmers go to the traders. However, Village Three showed an indication that traders were less easily accessible. One man from Salab said, “Most of the time traders come to the village and if they don’t come we will take the product to the traders. If we take the product to the traders ourselves, the profit will be more,” From Village Three, a few respondents said traders sometimes do not come, or that they can be difficult to find.

In a preliminary market survey done as part of this project, it was found that while much of the produce in Jalalabad and Mehtarlam markets is from Pakistan, large amounts also come from Afghanistan. Traders express interest in Afghan produce, saying it is better quality and fetches higher prices. If the Afghan produce were there, traders say they would buy it. The problem is off-season availability. One severe deficiency in distribution mentioned at every opportunity is lack of storage. Much of the produce in the Mehtarlam market now, and some of it in Jalalabad, comes from Laghman. Other products from Afghanistan in the markets now include green coriander and radishes. At other times of year Laghman farmers sell onions, potatoes, tomatoes, and deciduous and citrus fruits. An additional possibility is village chickens. As in many countries, consumers in Afghanistan prefer village-raised chickens to those from large scale broiler producers.

A non-food possibility is wood. In other countries fast growing leguminous trees such as *Leucaena leucocephala* are grown on field boundaries. Wood can be harvested every year or two, the leaves can be used for fodder and the nitrogen fixing effect can have a modest impact on yield. When asked about the prices of Afghan as opposed to Pakistan produce, traders invariably said that the prices for the former would be as high or considerably higher than the latter, due to better quality. In the case of potatoes, for example, traders said that while Pakistan produce was priced at around 75 to 80 Afs, the price local produce – if it were available – would be around 110 to 130 Afs. The retailer selling chickens said that village chickens would fetch over twice as much as broilers from Pakistan. Whether these kinds of price differentials would really hold in practice would have to be tested (a survey recently carried out by Altai casts doubt on this), but for current indications to be well on the positive side is a very good start.

Another point to make about prices is that, as far as we could judge, farmers are aware of what market prices are. This is important, as it means both that traders would have difficulty taking advantage of them and that farmers can judge for themselves

---

<sup>17</sup> Almost all responses to the Trade and Production section were by men. Very few responses were entered for women respondents. Whether this is because women don’t have the knowledge to answer, or whether interviewers didn’t record responses isn’t known. The lack of female response occurred in all three villages surveyed.

whether production of one item or another would be profitable. This is not to say that no education regarding market prices will be necessary for any pilot project undertaken as a result of RALF research. It does mean that there is a base on which to build.

Since households are comprised of multiple families, questions were asked at both the household and family levels about within household dynamics. Many resources are shared among families including loans of money, food, labor and other household goods. Help is usually received from family members. Neighbors and friends were less frequently mentioned. Repayment of money loans appears not to be expected when small amounts are involved, One respondent said, “If the amount of money is little, they don’t ask to pay it back. The amount could be 10-15 Afghanis (US\$.20 – \$1.00). If repayment is required, it appears usually to be interest free. [Find out about taboos against charging interest in Afghan culture.....] Food and other types of help are not expected to be repayed. One respondent claimed, “It is in our culture that we should share food with each other. It is also our Islamic obligation that we should share food with our neighbors and relatives.” Labor is shared through Asher (collective work). “We do Asher for the most difficult work, for example, house maintenance, harvesting, etc.” said one male respondent. A woman responded that they help each other in wood gathering. Land sharing is provided to families to grow vegetables, according to respondents from all villages. Many families reported that they receive help when they lack food. Other than that they receive help when they have guests, either invited or uninvited and when family members are sick (when wife is sick was frequently mentioned). Items shared include bread, milk, yogurt, pots, carpets when urgently needed, tea leaves, cheese, animal products, meat, eggs, cooked food, oil, butter, wheat, potato, vegetables, rice, sugar, salt, matches, spices, tools and other equipment, mattresses, draught power, twigs for fuel, and, “any other thing that we can afford to give.”

Finally, respondents were asked open-ended questions about the services available in their villages.

**Table 6 lists responses included services currently available and those needed.**

<b>Village</b>	<b>Current services</b>	<b>Needed services</b>	<b>Projects by NGOs and Government</b>	<b>Other respondent comments</b>
Salab	Channels, field turnouts, intakes, wells, Clinic, vet clinic, school, road,	Microfinance, improved irrigation channels and intakes, drinking water, long term loans, income sources, employment, livestock and poultry cooperatives, bet clinic in the village, literacy courses, courses for tailoring and carpet weaving,	National Solidarity Programme – One project of intake completed.  DACAAR – water supply, ongoing.  Not specified – Wells, channels, protection walls, field turnouts, clinic and school	We have school and clinic in the village but they are located far away and teak 30 minutes by foot to get there.
Sangar	Water channels, school, clinic.	Schools and clinic, small factories, improved water channels, safe drinking water, electricity, skills training, animal husbandry projects, poultry, nursery	National Solidarity Programme - Electricity project. (ongoing)  Not specified - 200 meters PCPL	There are problems of not having safe drinking water, not having improved seeds for grains, vegetables and

		pots, mattresses, tools and equipment.	lining, improvement of field turnouts, wells for drinking water, tailoring project, improved latrines, school, clinic.	saplings.
Mango		Farmers' cooperatives, microfinance, provision of fertilizer and seeds, school, clinics, dams for producing electricity.	National Solidarity Programme – One project of intake completed. One project of wash. One irrigation project. DACAAR – safe drinking water supply (ongoing). Irrigation structures (ongoing).  Not specified – electricity, irrigation structures.	There are no notable services available.

## Revised Animal Husbandry activity

Jahangir Khan, NRM Coordinator visited Sangar and Salab from 15-18 July, 2006 and discussed proposed activities with Association members and DACAAR field staff. Basic data about association members to create a livelihood profile of association was collected during the field visit. Moreover, the possibilities of implementing the proposed activities were researched in detail.

### Association development:

Associations have been established in both Sanagar and Salab on 13 June, 2006 and 02 June, 2006 respectively. Each association has representatives from five adjacent villages. Following table shows details of association.

Sanagar Association			Salab Association		
Represented villages	Total number of Households	No of people from each village	Represented villages	Total number of Households	No of people from each village
Kuz Miankhel	21	7	Sahibzadgan	20	4
Bar Miankhel	50	6	Toor Khundi	22	4
Wacha Qila	22	12	Salab-e-ulia	15	4
Masoom Qila	21	8	Ziarat	5	4
Azam Qila	20	5	Nanaga	11	5
<b>Total</b>	<b>134</b>	<b>38</b>		<b>73</b>	<b>21</b>

The membership to each association is open to anyone from the five represented villages in association. The entry fee to Association is 50 and 20 Afs for Sangar and Salab association respectively and a monthly fee of 10 Afs for both associations. Each association has elected a management committee which comprises of Chairman, deputy chairman, record keeper and treasurer. Both associations have monthly meeting attended by DACAAR staff in which different issues are discussed.

As both associations are in infancy stage, so DACAAR staff is trying its best to provide all its support for strengthening the associations. For this purpose DACAAR has arranged vocational training for six people nominated by Association from each Salab and Sanagar area.

### Cow-calf exchange

The cow calf exchange has been administered through Association under the supervision of DACAAR. The Association members identified the potential milking cows for sale and after checking the cows by DACAAR animal Husbandry officer, final purchase was made. All the cows are with calves and the Association in Sangar decided to distribute the cows among association members by putting all the names of the association members in a hat and picking up one random name. The distribution of cows among the association members in Salab is not very clear as what criteria was followed to distribute the cows. Five cows have been distributed in both Sangar and Salab.

During follow up visit individual interviews were made with all households that have received cows and all of them except 2 are extremely needy and poor. The people who

have received the cows will return the original price of the cow to association on monthly basis in 36 installments. A formal agreement has been made between DACAAR and each association and then between Association and each household who have received the cows for the repayment of the cow price. Some of the people who received the cows are planning to sell the calf when it is almost one year old to pay most of the money in one installment. When the Association receives the full amount of money after three year or maybe earlier, another cow will be bought from the same money and will be given to other needy households in the area.

The traditional cow calf exchange system "*Pandawachi*" is very strong in both Salab and Sangar. The Association members in Sangar reported that more than 30 % of the households in the area are involved in this system and more than 20% in Salab. The system involves that a household who cannot afford to keep cow due to some reason normally give a 2 year old cow to a household who can take care of the calf till its maturity. The households who receives the cow in *Panadawachi*, takes care of it until the first child of the cow is born and weaned. After weaning, the calf is retained by the one who received the cow in *Pandwachi* and the cow is returned to owner. The milk is used by household which receives cow in *Pandawachi*. The people in both areas are of the view that this system benefits both owner and the one who receives cow in *Pandawachi*. The owner in return of a young cow receives a full grown cow and the one who received the cow as *Pandwachi*, receives a calf after 2-3 years and also benefit from milk during the year.

Following the system of "*Pandawachi*", SERVE NGO has distributed 2 year old cows in all the five villages included in Sangar Association through the consensus of the association members. The criterion for distribution was that one cow was distributed per 50 families in each village. Three families each in Kuz Miankhel, Bar Miankhel, Azam Qila and Masoom Qila received one cow while seven families received cows in Wacha Qila.

DACAAR is in the process of establishing association in Mango area as it was not possible earlier due to conflicts among different villages. As Mango was one of the research sites for RALF-1, it is recommended that the cows should also be distributed to the association when it is established. For the purchase of cows an adjustment into already proposed budget by WSU is made.

DACAAR could not stick to the criteria fixed by WSU for cow calf exchange, possibly due to lack of communication. Moreover, discussion with association members revealed that it was not possible to pick a person from each village based on poverty criteria as all the people from the village are poor and needy. Moreover, DACAAR staff in future will ensure a proper mechanism for distribution of cows.

### **Artificial insemination:**

The association members reported 104 and 164 cows in Sanagar and Salab respectively. In my meeting with Mr. Asif it was decided that DACAAR Animal Husbandry Officer, will go to Alingar to devise a strategy for artificial insemination. We agreed that DACAAR should coordinate artificial insemination through MADERA which has trained staff with clinics in the area. Mr. Asif in his earlier meeting with MADERA in Jalalabad discussed the activity and the MADERA informed that they have already trained a person in Alingar in artificial insemination. MADERA suggested that the equipments for Artificial Insemination which approximately cost 57,000 AFS should be provided through RALF 1.

According to my observation artificial insemination will not be feasible in Sangar as most of their households take their cows to summer pasture from April-September which is 3-4 hours from the represented villages in Association. During discussion with DACAAR Animal Husbandry Officer after the visit he proposed that AI is possible in Sangar before the cows move to the pastures.

The Animal Husbandry technician for Alingar has already been hired. The role of the animal husbandry technician need to be further clarified. My suggestion will be that his main role will be facilitating artificial insemination but this would not be a full time job and he would primarily need to be animal husbandry extensionist and trainer.

## Feed production

Most of the households in both Sanagar and Salab use mainly crop byproducts (wheat straw and maize straw). In Sangar, fodder like clover and sorghum are grown on small pieces of land (on average 0.25 jerib). Majority of the households reported that the fodder grown on their fields and the byproducts from crops are sufficient for their needs.

The households which have received cows from DACAAR reported that they have access to sufficient fodder now but they foresee it as a problem in winter. According to an estimate per day feed consumption (6Kg hay, 3 kg wheat or maize grain and 1.5 Kg cotton seed cake) for a cow costs 55 Pak Rs. The average milk production from cow is 5kg per day (rate for 1kg=22 Pak Rs). Based on this calculation he can even afford to buy fodder from outside. Wheat, rice and maize straw are locally available and mostly consumed during winter when green fodder is scarce

In Salab, majority of livestock go to summer pasture (March-September) and in winter maize straw supplemented by Quercus leaves are used as feed.

Sanagar			Salab		
Village name	Average land holding	Average area for fodder (clover and sorghum) production	Village name	Average land holding	Average area for fodder production
Kuz Miankhel	1.32 (n=7)	0.16	Sahibzadgan	0.44 (n=4)	0
Bar Miankhel	0.95 (n=7)	0.09	Toor Khundi	0.39 (n=4)	0
Wacha Qila	0.94(n=12)	0.23	Salab-e-ulia	0.44 (n=4)	0
Masoom Qila	3.29 (n=7)	0.54	Ziarat	0.66 (n=4)	0
Azam Qila	0.80 (n=5)	0.22	Nanaga	0.55 (n=5)	0
<b>Total</b>	<b>1.46 (n=38)</b>	<b>0.25</b>		<b>0.50 (n=21)</b>	<b>0</b>

Looking at the data collected and group discussion with villagers in Salab they are not interested in growing fodder on more than 0.25 jeribs of land due to small land holding size and scarcity of irrigation water. Irrigation water from springs is available till end of March and then people having access to private tube well can irrigate summer crops. Currently there are 31 private tube well in all the five villages. It will also be not cost effective to grow fodder irrigated by tube well since the running cost of tube well is 80 Afs/jerib. The people in the villages are growing seasonal fodder like sorghum and clover to free land for the following growing season. So introducing a perennial fodder crop also does not seem to be feasible on large scale.

So in my view new fodder species which are winter active should be tested on small scale. The new fodder crops should also be introduced in Salab to 31 farmers having tube wells on a smaller scale. The major focus should be testing perennial rainfed fodder crops,

combined with harvesting techniques to stabilize soil on slopes. According to an estimate US\$ 500 is proposed by DACAAR field staff to introduce new fodder crop varieties in Salab.

### **Women Resource Centre:**

Women resource centre has already been established in Sangar in the house of Haji Sher Afazal. During follow up visit of the DACAAR female staff the women prioritized the following three activities.

- Carpet weaving
- Shop for women
- A public call office for women

These activities were discussed with male Association and they approved the first two activities during the monthly meeting of Association on 15 July, 2006. The male association members are also interested in cheese production activity which is not on women priority.

The association members also discussed the site for WRC as some of them were not willing to send their women to the already selected site as it is not centrally located. They selected the house of Mr. Abdur Razaq in Masoom Qila as it is centrally located and have a safe access for women. The new WRC has four rooms with big compound and water and the owner is willing to give the house for WRC.

As decided in the meeting with Mr. Asif , Shakilla Asad will further pursue the establishment of WRC and proposed activities. The post for WRC coordinator has already been advertised and once recruited she will be trained to facilitate the running of WRC.

### **Cheese production**

The cheese production activity was also discussed with Association members in monthly meeting in Salab and Sanagar. In Sangar it was reported that only 24% of households reported sold cheese during past six month. Cheese making for sale is a seasonal activity which is done only in spring when enough fodder is available. The members reported that cheese production is carried out on small scale by almost every household for self consumption but there is not enough surplus milk to make cheese for sale.

In Salab cheese is also made during summer when the livestock are in summer pastures but again the association members stated that enough surplus milk is not available to make cheese for sale. However, they have established small groups (5 households) who give a specific amount of milk to each household weekly on rotation basis for cheese making which is sold to market.

Cheese marketing is not a problem in the area as there is demand within the villages from the people who do not own cows and it can also be sold easily in the Friday market at Sheikh Abad which is easily accessible from all the villages. Two types of cheese are produced i.e. Sheila and Khadag and the price varies depending on quality. Sheila which is of better quality is sold for Pak Rs. 1000/mond (1 mond is equal to 7 Kg) while Khadeg is sold for Pak Rs. 600/ mond. The household reported that the cheese quality is better in autumn compared to spring. From 7 kg milk 1.75 kg of cheese is made using locally available equipments.

During my visit with Shakilla Asad to Guzargah Milk Processing factory in Kabul, the staff informed us that cheese making do not require sophisticated equipments and locally made equipment is available which can be bought for approximately 20 US \$ per unit. The staff also informed us that they can train DACAAR staff in cheese making.

The linkage between WRC and cheese making is not very clear as cheese making is not a regular activity to be carried out by all households. It is also not very clear whether the equipments bought (how many) for cheese making will be placed at WRC or distributed among households. However, it is suggested that when WRC Coordinator is recruited she should be trained in cheese making at Kabul and then she can train other interested women at WRC.

### Budget:

Based on the above findings the following revised budget (US \$) is recommended.

	Approved	Spent	Proposed	Difference
<b>Salaries</b>				
Animal Husbandry technician	4.800	0	4.800	0
WRC Coordinator	4.800	0	4800	0
<b>Supplies</b>				
Cows	6.000	6.000	9.000	-3.000
Cheese equipment	3.000	0	1.000	+2.000
Forage seed ( plant material)	2.300	0	500	+1.800
<b>Services</b>				
Artificial insemination	1.200	0	1.200	0
<b>Travel</b>	650	Not known	650	0
<b>Communications</b>	500	Not known	500	0
<b>Training</b>	0	0	800	-400
<b>TOTAL</b>	<b>23250</b>	<b>6000</b>	<b>23250</b>	<b>0</b>

## Legume Demonstrations

The **purpose** of this demonstration is to show farmers how alternative legumes can both provide forage for livestock as well as increase yields to a subsequent winter wheat crop. The demonstration will also provide quantitative information to agronomists on the effect of adding nitrogen fertilizers to winter wheat after a legume has been introduced into a rotation.

The **method** for establishing the demonstration can be modified for unique field conditions however, certain elements must be followed. These are: at least three replications within the field; randomization of treatments in the field and; at least 60 m<sup>2</sup> per sub-plot. A sample schematic is shown in Figure 1. The demonstration is designed to last at least three years showing the benefits of the first year legume in rotation. This can be continued many years to demonstrate forage management, other legumes or grazing. In the first year each main plot is planted to a legume with one main plot sown to spring wheat. These main plots should be at least 6 meters by 30 meters or 180 m<sup>2</sup>. The next year the main plot should be divided by thirds to incorporate the treatment effect of nitrogen fertilizer where no fertilizer, half the recommended rate and the full rate are applied. Sowing depth and rate are given for each crop in Table 1.

Table 1. Crop sowing depth and rate.

<b>Crop</b>	<b>Sowing depth (cm)</b>	<b>Sowing rate (kg/ha)</b>
<b>Butterfly Pea</b>	2 - 3	60
<b>Burgandy Bean</b>	½ - 1	80
<b>Lab Lab</b>	4 -5	100
<b>Wheat</b>	5 -6	100

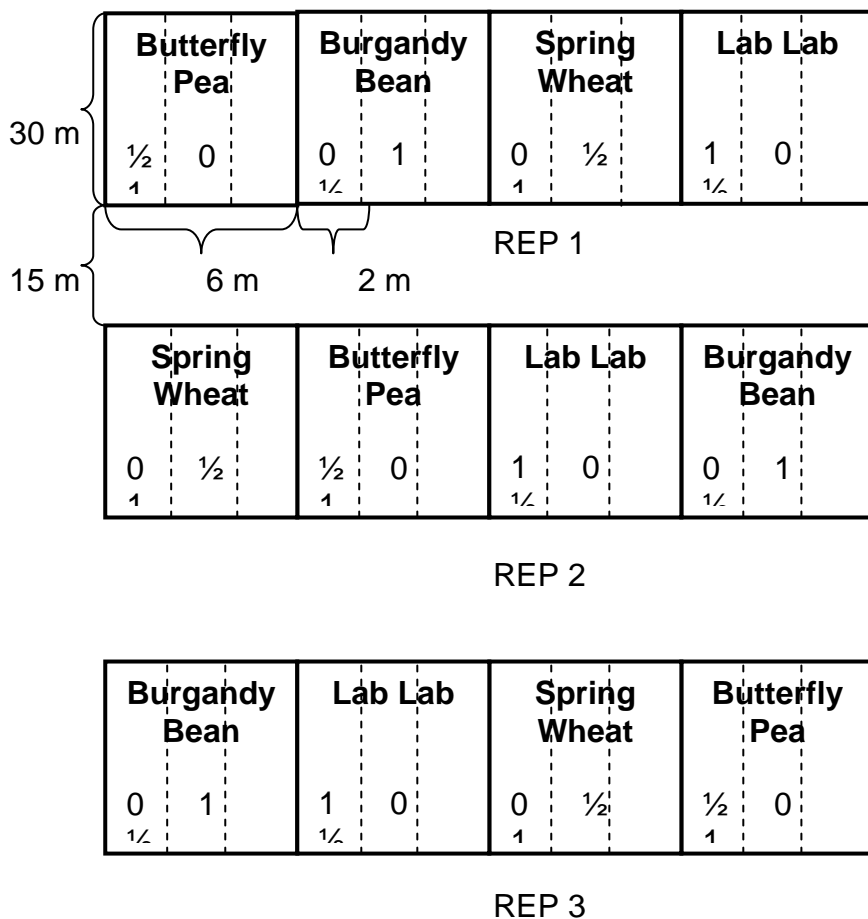
Preparation of the plots should be carried out in a similar manner representing local farm practices. Generally a primary tillage operation should be performed with a tractor, horse or cow using a cultivator no deeper than 20 cm creating a furrow the depth the seed should be planted. The legume seeds will have inoculants that need to be in the soil when the plants grow. The inoculants contain bacteria that have a symbiotic relationship with the legume and enable the plant to fix nitrogen from the atmosphere. Seed should be broadcast in a typical manner however if placement could be done in the furrow this would be insure it is planted at the depth indicated in Table 1. Secondary tillage or planking should be done immediately after sowing the seeds. During the second year when wheat is planted in the fall, each main plot should be divided into thirds and fertilizer applied. In dryland conditions with adequate moisture approximately 100 kg/ha N are applied to wheat crops. In Alingar the recommended rates are less, perhaps 80 kg/ha N. The ½ rate would then be 40 kg/ha N. The following year when a spring crop is planted, fertilizer rates should be those recommended or commonly practiced. No N fertilizer should be applied when planting legumes.

Weeding should be carried out in a timely manner and frequently so that competition is kept to a minimum.

When first noticing a blossom on the legume, dig up a plant from the side of the plot, not the middle, and check to make sure nodules have formed. If none are present check your notes to make sure the correct inoculants were applied. Harvest of both forage and seed should be at the same time. In other words, do not harvest forage until seed is dry in the pod and no other pods are being formed. This will be carried out the first year so that we can be sure that seed will be available for the next year. When harvesting for yield

determination be sure to collect all the material from the plot except for a 30 cm border adjoining the next plot. This is because of a border affect can occur from the treatment in the next plot. Yields should be calculated for each plot both grain/seed and biomass. The plants should not be uprooted and at least 10 cm of stem and leaf should be left on the soil surface.

Figure 1. Sample field design of demonstration plots.



## **Plant Nursery Activity**

### **Benefits**

Proper nursery management has become increasingly urgent in Afghanistan which is recovering from a long drought. Many villagers are looking for replacements of multi purpose trees, grasses and shrubs. The villagers are in a good position to supply seedlings for out planting in their own villages as well as neighboring villages. The goal is to promote the out planting of trees, shrubs and grasses by motivating villagers to become self sufficient in their gathering their own seed and raising seedlings. This will reduce the problems of centralized production and distribution of seedlings, the use of polyethylene pots, and the costs to farmers. With widespread adoption, germination and survival rates of nursery and planted seedlings will greatly improve.

Costs and returns for a half jerib nursery that produce 5,000 saplings per year show an average return of nearly 100,000 Afs. Improved seed varieties can be purchased for an average of 3,000 Afs in the major towns and markets. Polythene tubes can be purchased in major town markets for 850 Afs and potting soil components to fill them can be found locally and delivered to the nursery for 1,100. Small one half jerib nurseries can be established with local materials and labor costs under 14,000 Afs. Tree saplings, shrubs and grass plugs can be sold locally for an average of 20 Afs per sapling. Forest saplings will be sold for 5 Afs, shrubs for 4 and grass plugs for 3.

This activity would most affect the women and girls where they are the ones responsible for the collection of fuel and fodder they will also be in the position to gather seed. The nurseries can be established in areas close to the village where distance traveling will not be a problem and for privacy walls can be constructed.

### **Site Selection**

Nursery sites should be conveniently located for ease of management, protection, shade and near a water source. The size depends on the number of seedlings where half a jerib will adequately nurse 5,000 seedlings. Choose a site that is near to the village; remove vegetation retaining the top soil for the soil mix. Protect the area from the prevailing winds with a wall or natural fence break. A large tree or two in the corners will provide shade for the workers and protect the young seedlings from extreme weather conditions. Make a sketch of the nursery layout including: germination beds, potted seedlings, compost piles, pathways, storage, water sources and work areas.

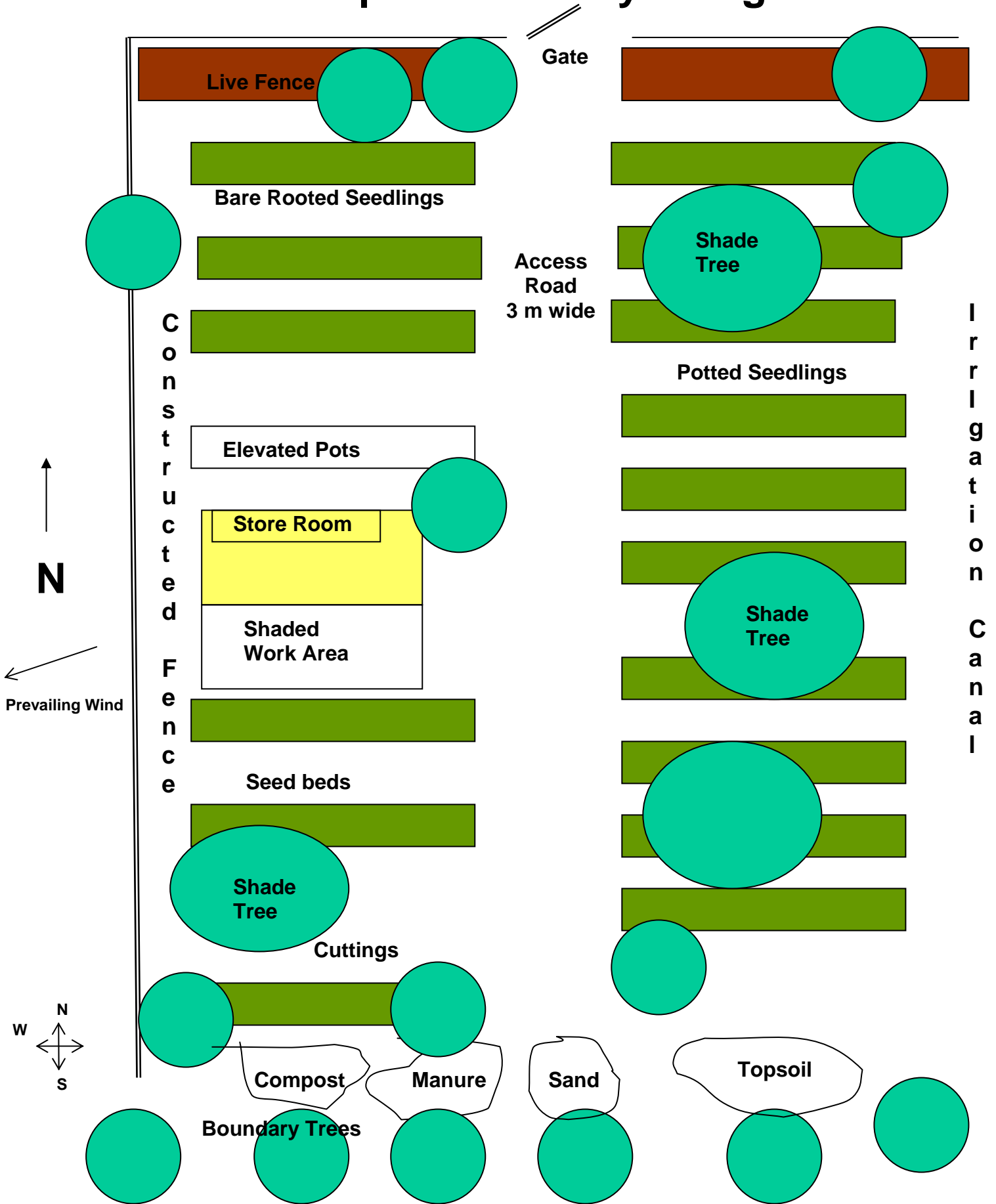
### **Site Preparation**

After selecting the site it is important to level the area if there is more than a 10 percent slope. Create terraces at least 5 meters wide allowing for at least 2 or more beds including pathways. Remove all stones and compact the soil prior to making the nursery beds. Plant some of the grasses intended for production on the terrace slope.

In general 5 square meters is needed to seed 1000 seedlings regardless of whether they will be grown bare root stock or in containers (double this area to allow for space to work). The width of each bed should not exceed 1 meter to allow access to each seedling. The walkways should be at least 60 centimeters wide. Arrange the beds in blocks of 500 or 1000 seedlings so that stock taking is easy. Align the beds east to west to give the trees more exposure to the sun.

Bare rooted stock simplifies nursery operations by eliminating the costs and labor involved with containers. They are especially convenient where the distances from the nursery to the planting sites are short. Therefore it is recommended that these be sold locally. Nursery containers are used when the seedlings will be transported long distances. They minimize the risk of disturbing the roots and drying out.

# Example of Nursery Design



## Planting and Spacing

A sandy loam soil is ideal for nursery beds and containers. If this is not available mix two parts topsoil with one part compost and one part sand.

An adequate supply of quality seed is essential for the success of the nursery. Since all seeds are a different size and weight the rate will vary accordingly. To illustrate the differences some examples are shown in the following table.

Name	Afs per Kg	Seeding rate (Kg/jerib)	Afs per jerib
Apricot	13	40	514
Almond	86	40	3429
Peach	14	90	1286
Apple	9000	2	18000

Seed treatment is needed for some tree species. The basic types are listed below and the corresponding table indicates which seed treatment is appropriate:

1. No treatment – plant fresh seed due to short viability
2. Soak in water at room temperature for two days – plant the same day
3. Soak in hot water (65°C) for 15-20 minutes remove and sun dry – plant the same day
4. Remove fleshy pulp – plant the same day
5. Crack the shell and remove the seed – plant the same day
6. Crack the shell – plant the shell and seed the same day
7. Cut off the end of the seed with nail clippers or knife – plant the same day
8. Budded onto seedling rootstocks
9. cuttings

## Sapling Varieties

Common Name	Seed treatment	Common Name	Seed treatment
Orange	4	Pine	2
Lemon	4	Luciana	3
Sour orange	4	Eucalyptus	1
Grapefruit	4	Juleflora	3
Apple	2	Acacia modesta	3
Loquat	2	Acacia	3
Guava	4	Popular	9
Pear	2&8	Ailanthus	1
Quince	2	Tamar ax	1
Fig	1	Cyprus	1
Mulberry	8		
Pomegranate	7		
Plum	5&8		
Apricot	5&8		
Peach	5&8		
Persimmon	2		
Grape	2		
Almond	5&8		

Leguminous trees, such as Luciana, require inoculation with the appropriate rhizobia to enable the plant to fix nitrogen from the atmosphere. Inoculants are available in larger town markets.

Bare rooted stock should be planted in a raised seedbed. The raised bed should be constructed on level ground with a wood, stone or brick to frame in the soil one meter by 60 cm and 20 cm high. Secure the sides with wooden pegs. Fill the frame with soil mixture keeping the soil surface level with the top of the frame. Allow this to settle for a couple days and add more soil if necessary. Water and allow to set for a week to allow weeds to germinate. Weed the plots before sowing. Use a small stick or finger to make furrows 10 cm apart the length of the seed bed. Tie a string across the seedbed as a guide for making furrows. This ensures proper spacing to reduce competition and makes extraction much easier. The furrow depth should be 2-3 times the smallest diameter of the seed. Sow at 5 cm apart with 2 – 5 seeds per hole depending on their viability. Cover with soil and slightly compress the surface. After germination thin out the seedlings to one per hole. The dimension should yield 100 seedlings.

Fill polythene tubes to the top with the soil mixture compressing slightly. Water and allow the pots to set for at least a week so that weeds will emerge and can be weeded. Plant 2-3 seeds per tube and press them in with your finger.

Some nut and stone fruits use rootstock where budding the desired cultivar onto them retains the desired fruit but has the vigor of the rootstock. Peach rootstock is often used for almond where they are more vigorous and bear fruit earlier.

### Watering

Sufficient water supply is essential for adequate growth. Seeds must be watered immediately twice daily until. After sowing it is a good idea to add mulch to the surface. This reduces the amount of watering necessary. When the seedlings have emerged remove the mulch for use later.

### Root Pruning

Root pruning involves the regular trimming of tap and side roots while the seedling are growing in the nursery. It reduces the development problems of taproots, “J” roots or corkscrew and encourages fibrous, lateral rooting systems. Root pruning will shock seedlings therefore it is necessary to have shade for at least two days after pruning. This should be done every two weeks and three days before out planting. It is best to water the day before pruning to soften the soil as well as ensure the plant is not already water stressed. Also it is best to prune either early in the day or later in the evening. For bare rooted seedlings a wire or long knife can be passed under the frame. Also it is important to cut with a long knife horizontally and vertically to form a cube for the seedling. Potted seedling also need pruning under the tube.

### Hardening Off

This is a gradual reduction in watering and shading with increased root pruning during the last three weeks in the nursery. Reduce watering from twice to once a day the first week then once every other day for the next two weeks. After three weeks in the nursery the shade can be cut back by half. Continue to gradually cut back all shade so that by two weeks prior to out planting the shade should be totally removed.

<b>COSTS</b>									
<b>Labor</b>	Apricot	Almond	Peach	Apple					
Leveling	800	800	800	800					
Bed construction	5,000	5,000	5,000	5,000					
Planting	1,600	1,600	1,600	1,600					
Irrigation	3,000	3,000	3,000	3,000					
Weeding	1,200	1,200	1,200	1,200					
Root Pruning	1,200	1,200	1,200	1,200					
Harvesting	600	600	600	600					
<b>Inputs</b>									
Seeds	300	1,700	650	9,000					
Soil mix	1,100	1,100	1,100	1,100					
Poly tubes	875	875	875	875					
Compost	1,000	1,000	1,000	1,000					

Tools	300	300	300	300				
<b>TOTAL COSTS</b>	<b>16,975</b>	<b>18,375</b>	<b>17,325</b>	<b>25,675</b>				
<b>INCOME</b>								
Sapling	125,000	100,000	100,000	150,000				
<b>TOTAL INCOME</b>	<b>125,000</b>	<b>100,000</b>	<b>100,000</b>	<b>150,000</b>				
<b>INCOME - COSTS</b>	<b>108,025</b>	<b>81,625</b>	<b>82,675</b>	<b>124,325</b>				

Cost and Income are based on Afs per one half jerib per season

### Returns

Confirmation of a sapling market should be identified before the project begins. It is possible that all or at least part of the production should be sold locally. The costs and income are based on a half jerib sized nursery where 5,000 seedlings can be sold each year. Average price per sapling is 20 afs.

## **Small Woodlot Planting Activity**

### **Benefits**

The practice of planting small woodlots is becoming a popular farm enterprise because of its ease of management due to its proximity to villages and households. The most common forms include planting trees in woodlots, on boundaries and around homesteads using a variety of exotic and indigenous species for different uses: fuel wood, building material, timber, fruits, shade, medicines, oils, animal fodder and income. These practices allow crops to be inter-planted during the first and second growing seasons to maximize use of available land. A key focus is to promote enterprises at the village and household levels to sell a range of products in local markets and to private sector industries.

For fuel wood, where a family uses at least 7kg/day or 2.6 tons/year, they spend 7Afs/kg or 18,200 Afs/year if purchased at the local market. A sustainable fuel woodlot planted to a fast growing poplar or eucalyptus can produce on average 10 tons per year per jerib (1 jerib = 0.2 ha) worth over 63,000 Afs with minimal input after three years. Wheat and maize systems will only give an annual income of 10,000 Afs after direct costs.

Because the practice takes place on small plots it is expected that individual farmers would engage in this activity. However, it is recommended to facilitate organization and planting so that a number of farmers could be involved in a joint effort. This would also have advantages later in marketing the fuel wood. Income will not be realized until the fourth year so farmers with a high income would be more likely to engage. Women and girls will most benefit from the time savings of walking far distances to gather fuel wood. This will increase time available for economically and socially productive activities such as farming, caring for families, attending school, leisure, and greater participation in decision-making at all levels.

### **Site Selection**

Woodlots grow best in fertile, productive agricultural soils. However they can be established almost anywhere and where a farmer feels he has sufficient land to plant to a non food crop. Young trees grow best where there is adequate moisture. Most poplar species do best in areas that receive over 400mm of precipitation a year or have access to irrigation water particularly in the first two years after planting. Poplars do not do well where the soil is saline and prefer a pH of 5.5 to 7.5. While it is not always possible to use the best site, the poorest sites should be avoided.

### **Site Preparation**

Proper site preparation is essential. Site preparation practices are similar to that used for wheat and maize crops. Autumn tillage left fallow through the winter follow by planking or leveling in the spring. Intensive site preparation is needed for land in pasture or forage crops to make sure that all perennial plants are controlled.

## Sapling Varieties

Poplar Variety	Source	Pedigree	Sex
OP 367	Europe	P. deltoides x nigra	Male
Eridano	Europe	P. deltoides x maximowiczii	Male
52-225	Univ. of Washington	P. trichocarpa x deltoides	Female

## Planting and Spacing

Growing conditions limit the suitability of planting unrooted cuttings. As a result, the currently recommended plant material is dormant rooted cuttings. The cost per cutting is 10 Afs and planting

1. Rooted cuttings should be planted in the spring before the shoots break bud and start new growth.
2. Before planting, the field should be marked to ensure uniform spacing.
3. Plant trees slightly deeper (2.5 cm) than the depth they grew in the nursery.

Spacing affects tree growth and health, maintenance and end use of the wood. Poplar is intolerant of shade and the more closely planted the less sun the tree will receive. Competition from neighboring trees will also affect tree growth. Dense plantings are more prone to disease because of reduced air circulation and high humidity. Widely spaced trees attain crown closure at a later age which means that an additional year or so of weed control may be necessary. Wider spacings result in faster growth, larger crowns and heavier branches. Choosing a spacing is generally a compromise depending on the poplar's optimum growth requirements. The recommended spacing for cuttings is 1 by 1 meter or a total of 20,000 cuttings per jerib.

A wheat crop may be planted the first year but expect yields to be reduced by 25% because of competition. The second year a legume crop such as alfalfa or medic may be planted for fodder crop but the yield will be at least 50% reduce. In the seventh year again a legume fodder crop may be planted between rows. This crop should only realize a reduction in yield of 25% and should benefit the tree crop.

## Thinning

Thinning should be done every year with the intent to leave 32 trees per jerib at the end of 9 years. Alternate direction thinning is accomplished by cutting from rows of trees alternating the direction every year. After two years with optimal growth the trees will be over six meters high and 28 trees can be harvested per jerib. In the following years, thinning will alternate between 21 and 24 trees thinned however, it is best to thin those trees that are dead and diseased first.

Diagram of suggested thinning where each number represents a tree planted one meter apart. (1 indicates the first year thinned, 2 the second etc. leaving 0 for the last tree to be harvested)

0	1	4	0	1	4	0	1	4	0	1	4	0	1	4	0	1	4	0	1
2	3	7	2	3	7	2	3	7	2	3	7	2	3	7	2	3	7	2	3
5	7	8	5	7	8	5	7	8	5	7	8	5	7	8	5	7	8	5	7
0	1	4	0	1	4	0	1	4	0	1	4	0	1	4	0	1	4	0	1
2	3	7	2	3	7	2	3	7	2	3	7	2	3	7	2	3	7	2	3
5	7	8	5	7	8	5	7	8	5	7	8	5	7	8	5	7	8	5	7
0	1	4	0	1	4	0	1	4	0	1	4	0	1	4	0	1	4	0	1
2	3	7	2	3	7	2	3	7	2	3	7	2	3	7	2	3	7	2	3
5	7	8	5	7	8	5	7	8	5	7	8	5	7	8	5	7	8	5	7
0	1	4	0	1	4	0	1	4	0	1	4	0	1	4	0	1	4	0	1

## Weed Control

Good weed control is absolutely essential. Most weeds have a more vigorous root system than trees and grow faster so they use soil moisture and nutrients and shade small trees. Weed control is important until trees are large enough to shade out the weeds. With the trees spaced at one meter apart this takes two to three years. Once the tree canopy is developed, its shade is very effective in reducing weed competition. In the first two years a row crop may be planted so long as it is not close to the tree. It is recommended that short stature crops such as legumes be planted and avoid the taller crops such as maize which will produce a canopy and compete for sunlight. Hoeing is the most effective means of controlling weeds and should be done before the weeds are 10 cm in height. This means that letting weeds grow for fodder harvest is not a good practice. Tillage must be shallow to avoid damaging the root system. Also, care must be taken to ensure the trees are not physically damaged. Three times through the growing season at a cost of one days labor per weeding.

## Irrigation

Sufficient water supply is essential for adequate growth. After planting the rooted cuttings it is necessary to irrigate at least 3cm of water. For the next four weeks it will be necessary to irrigate twice per week at a depth of at least 2cm. After this time soil moisture should be monitored and when the soil dries at 20 cm irrigation should be applied at a depth of at least 4 cm the first year and 5 cm the following years. Irrigation costs depend on the climatic conditions but it would generally cost a total of 1,000 Afs per year averaged.

## Fertilizing

Poplars respond well to nitrogen inputs. Where it is necessary to have fertile soil it is not always necessary to apply the recommended amount (100 kg/ha N, 40 kg/ha P and 10kg/ha Zn) however, best results are seen when fertilizer is applied.

## Pruning and Harvesting

It is often best to pollard or cut the branches from the poplar to ensure a straight trunk without knots. This can be done at any time but is best when the leaves are young and tender and can be used for fodder for animals.

Harvesting should be done by cutting the tree at ground level. Sprouts will emerge the next year and can either be removed or pruned further so that one tree grows back thus continuing the cycle of a woodlot.

COSTS	Year									
	1	2	3	4	5	6	7	8	9	10
<b>Labor</b>										
Plowing	400	400	400							
Planking	300									
Planting	1600	400					150	150	150	150
Irrigation	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Weeding	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200
Pruning				150	150	150	150	150	150	
Harvesting	600	600	600	600	600	600	600	600	600	600
<b>Inputs</b>										
Cuttings	18000									
Fertilizer	1100	1100	1100	1100	1100	1100	1100	1100		
Wheat	300									
Fodder crop		300					300	300	300	300
Tools	300			500						

<b>TOTAL COSTS</b>	<b>24800</b>	<b>5000</b>	<b>4300</b>	<b>4550</b>	<b>4050</b>	<b>4050</b>	<b>4500</b>	<b>4500</b>	<b>3400</b>	<b>3250</b>
<b>INCOME</b>										
Wheat	5000									
Legume fodder crop		4500	3500				3500	3500	4500	4500
Fuel wood			16000	31000	45000	50000	63000	79000	95000	110000
Fodder								1500	1500	1500
<b>TOTAL INCOME</b>	<b>5000</b>	<b>4500</b>	<b>19500</b>	<b>31000</b>	<b>45000</b>	<b>50000</b>	<b>66500</b>	<b>84000</b>	<b>101000</b>	<b>116000</b>
<b>INCOME - COSTS</b>	<b>-19800</b>	<b>-500</b>	<b>15200</b>	<b>26450</b>	<b>40950</b>	<b>45950</b>	<b>62000</b>	<b>79500</b>	<b>97600</b>	<b>112750</b>

Cost and Income are based on Afs per jerib

### Returns

Confirmation of a fuel wood market should be identified before the project begins. It is possible that all or at least part of the production should be sold locally to the bakeries or blacksmith. It is estimated that after two years there can be a harvest of nearly 2,300 kg per jerib of poles 7 cm in diameter and 6 meters long. The trees will continue to grow 3 meters in height and 2.5 cm in diameter every year. The estimated harvest will increase every year by 2,250 kg per jerib until year ten when 18,000 kg will be harvested per jerib. The first year will be an investment of nearly 20,000 afs which is a large investment for no return before the third year.

## **SECTION A – OBJECTIVE**

This is a request for a proposal under the Research on Alternative Livelihood Fund (RALF) to be administered by Washington State University (WSU). Where it is expected that the ceiling for this grant is \$15,000 we encourage you to elaborate on all needs.

The function of this RFA is to assist the Government of Afghanistan's Ministry of Agriculture and Animal Husbandry's (MAAH) capability to respond to farmer needs. Farmer needs have been identified through surveys of the villages by the staff of the Danish Committee for Aid to Afghan Refugees (DACAAR).

Please submit (1) written information that demonstrates the MAAH's capability in each of the activity areas and (2) a detailed cost/price proposal for building capabilities for each activity area.

## **SECTION B – ACTIVITIES**

The descriptions of the activities below were compiled by representatives from the villages of Sangar, Salab and Mango in the province of Laghman in the Alingar district. These meetings were the result of surveys conducted by DACAAR and the MAAH. Needs of the villagers were identified and grouped and prioritized into the following areas:

- 1. Livestock Management**
- 2. Forest Management**
- 3. Women's Resource Centers**
- 4. Sustainable Farm Improvement**
- 5. Poultry and Egg Production**
- 6. Fruit and Vegetable Processing**
- 7. Fisheries**

Under each area are sub areas of particular interest:

### **Livestock Management**

- 1. Cow calf exchange*
2. Rangeland Improvement
3. Forage Production
4. Meat and milk production

### **Forest Management**

- 1. Nursery and expansion of improved varieties*
2. Forest production
3. Walnut and almond production
4. Sustainable harvesting

### **Women's Resource Centers – to produce and market products**

#### **Sustainable Farm Improvement**

- 1. Improved Varieties (wheat, maize, beans and vegetables)*
2. Management technique
3. Cropping System livestock and cropping systems

#### **Poultry and Egg Production and Marketing**

- 1. Improved varieties*
2. Raising techniques

**Fruit and Vegetable Processing – tomatoes, citrus, plum**

**Fisheries**

1. *Production*
2. Processing of fish and fish production

Please submit your proposal to the DACAAR office in Mehterlam who will forward to WSU.

**Norman E. Borlaug International Science and Technology Fellowship Program  
Afghanistan at Washington State University  
September 1, 2006-March 31, 2007**

**Final Report**

**Summary**

The purpose of the Borlaug Fellows Program for Afghanistan at Washington State University (WSU) was to develop a partnership where we will be able to assist them in strengthening their agricultural practices through the transfer of new science and technology. Two scientists from Afghanistan came to WSU to work with faculty members in the fields of animal sciences and horticulture. The both came November 6 to December 15. With the guidance of their mentors each fellow developed a program here specifically designed to meet the fellows needs. During their six weeks they were exposed to the WSU campus where they could learn new research and extension techniques, access fully equipped libraries and learn about the public-private partnerships in Washington State. The fellows were fully immersed in their respective departments where they could attend classes, seminars, masters and PhD defenses, administrative meetings as well as meeting individually with other faculty members to discuss research. At the end of their program they were asked to give a seminar about Afghanistan and their research there as well as discuss next steps for the partnership between their research centers and WSU.

**The Fellows:**

Said Majood Raihan – Lecturer at Naghahar University in Jalalabad, Afghanistan is responsible for teaching at the university in the faculty of agriculture and has worked in this position since 2002. He holds a BSC in animal sciences.

Rashud Ahmad Hussain – Lecturer at Naghahar University in Jalalabad, Afghanistan is responsible for teaching at the university in the faculty of forestry and has worked in this position since 1997. He holds a BSC in horticulture.

**The Mentors:**

Dr. Jerry Reeves in the College of Agriculture specializes in the immunization against hormones to sterilize heifers and bulls, the evaluation of carriers and dosages for optimal effects in cattle and bulls and reproductive endocrinology

Dr. John Fellman is a professor/horticulturalist in the College of Agriculture specializing in the post harvest handling and storage of fruits and fruit biochemistry. Dr. Fellman also teaches post harvest biology and technology.

**Purpose:**

- Provide two Afghanistan scientists an opportunity to work with Washington State University scientists in the fields of animal husbandry and horticulture.
- Enable Afghanistan scientists to apply knowledge gained from this experience for their country's development and in their own research programs.
- Foster increased collaboration and networking between Afghanistan and Washington State University scientists.
- During a six week period of shadowing their faculty mentor, participants will learn new research techniques, access fully equipped libraries and learn about public-private partnerships in the US.
- Familiarize Afghanistan scientists with the linkages between US universities and the CGIAR international agricultural research centers.
- During the six weeks the Afghanistan scientists will have the opportunity to learn about the graduate curricula.

**Background:**

The Norman E. Borlaug International Agricultural Science and Technology Fellows Program helps developing countries strengthen sustainable agricultural practices by providing short-term scientific training and collaborative research opportunities to visiting researchers, policymakers and university faculty while they work with a mentor. The program targets developing countries and places participants at land-grant universities and 1890's colleges, government agencies, international research centers and other nonprofit institutions and private companies.

The Borlaug Fellowship Program was launched in March 2004 in honor of Dr. Norman E. Borlaug, who has often been hailed as the father of the Green Revolution. In 1970, Dr. Borlaug won the Nobel Peace Prize for his success in developing high-yielding wheat varieties and reversing severe food shortages that haunted India and Pakistan in the 1960's. Credited with saving millions of lives, his work virtually eliminated recurring famines in South Asia and helped global food production outpace population growth.

The program is open to participants worldwide, but focuses on African, South and Central American and Asian nations. The program is administered by USDA's Foreign Agricultural Service in cooperation with the U.S. Agency for International Development and the U.S. Department of State.

**Role of Washington State University:**

Two Afghanistan scientists came to Washington State University for six weeks in the fall semester of 2006. All applicants have been screened by USDA-FAS for minimum requirements:

- Good working knowledge of English
- Minimum of three years practical experience and a master's degree or five years experience with no master's degree.
- Current employment with a university, government or other research entity.
- Early stage of professional career.
- Demonstrated intention to continue working in the home country.

Washington State University's International Programs Research and Development reviewed the applications and forward to Washington State University faculty who will mentor the scientists. Washington State University developed a six-week program for the participants.

Washington State University requested DS2019 for J1 visas with Washington State University's International Students and Scholars Office. Academic appointments as visiting scholars were processed so that the scientists worked on project with faculty mentors and recognized as part of the academic community while at Washington State University. International Programs provided an orientation to acquaint the scholar with campus and community resources, assist with housing, settling in, and process living allowances for the participants covered by the attached budget.

**Role of USDA:**

Pre-select appropriate Afghanistan candidates for the Norman E. Borlaug International Science and Technology Fellowship Program, and share the applications with Washington State University.

USDA will certify that the applicants speak, read and write English proficiency and capable of academic research work during their training.

Approve the 6-week program Washington State University develops.

Provide funding as stated in the budget.

### **Fellows Agenda:**

#### **Wed., November 1**

2:30 PM Arrive Pullman, Washington, Alaska 2027  
Met by Chris Pannkuk, Director of International Programs/Research & Development (IP/R&D)

#### **Thurs., November 2**

10:45 Pick up at Chinook apartments by Chris Pannkuk  
11:00 Introductions and WSU/Pullman orientation  
Lance LeLoup, Assoc. Vice Provost of International Programs

12:00-2:00 Lunch – grocery and personal shopping

2:15 Escorted by Jennifer Southwick to obtain Cougar Card (WSU identification)  
Orientation to Pullman and WSU campus

6:30 PM Working dinner hosted by IP/R&D  
Attending: Chris Pannkuk, Jerry Reeves, John Fellman, Rafi Samizay, Peter Wyeth

#### **Fri., November 3**

10:00 AM Meet with John Felman and Jerry Reeves and faculty, escorted by Chris Pannkuk

12:30 PM Oumarou Badini will escort to mosque

1:00-5:00 PM Lunch and geological tour with Oumarou Badini

#### **Weekend November 4-5**

Tour local Idaho area with Chris Pannkuk

#### **November 6 - 9**

Develop work plans with mentors.

Rashud and Fellman – classes identified to observe in horticulture M-W-F at 8 to 10 and 2-3, T-Th lab from 1-4. Rashud will learn basic plant physiology of horticulture crops as well as observe Fellman's teaching technique. Time after each class to debrief on what was observed.

Rashud will also begin a basic study on simple techniques for storage of apples without refrigeration. The experiment will last four weeks where he can analyze data and prepare a report to both Fellman's staff as well as faculty in Afghanistan.

Said and Reeves – classes identified on basic animal health, artificial insemination techniques and lab class to monitor animals at the meat lab. M-W-F 7-9 AM and T-Th at 9-12. Said will learn basic animal health indicators as well as observe Reeve's teaching technique. Time after each class to debrief.

Said will also engage in a study with the students on analysis of blood and chart the animals health through the semester. His final report due before completion of fellowship.

Fri., November 10-12

Veteran's Day (campus holiday)  
Trip to Seattle and Portland  
Visit Portland State University, Wheat Marketing Center and the Food Innovation Center.  
Sightseeing in both cities and stops in between.

**November 13 - 17**

Continue coursework and experiments

**Weekend November 18-19**

Free

**November 20 - 22**

Continue coursework and experiments

**Thurs., November 23**

Thanksgiving – Rashud at Fellman family dinner and Said with Reeves family

**November 24-26**

Said to Montana to visit feed lots  
Rashud to Yakima to visit large apple storage

**November 27 - 30**

Continue coursework and experiments

**Fri., December 1**

Presentation to Horticulture, Animal Husbandry and International Programs  
Farewell dinner with mentors

**Weekend December 2-3**

Dinner at Pannkuk's and shopping

**Mon., December 4**

6:40 AM Leave Pullman,

**Evaluation:**

Both Rashud and Said arrived not only with little luggage but little knowledge of what to expect. Even though they were briefed in Afghanistan and there were several communications to orient them to the program they were both physically and mentally unprepared. Winter in the Pacific Northwest is cold. Neither came with a winter coat which was immediately rectified by our office purchasing them coats the first day as a present. Rashud had small check on bag and Said had only carry on for a five week stay.

It was obvious after our initial meetings that they would have difficulty keeping up even with our undergraduate students. Both of their language capabilities were poor but Rashud was not only shy but also very difficult to understand and when asked to repeat he would smile and say never mind. Their technical knowledge of general agriculture was also limited probably because of the training they received in Afghanistan.

We were prepared for this and thought that at least they could manage to observe during lectures and gain a sense of the question and answer relationship between students and teacher which is lacking in Afghanistan. Also they could be guided through simple experiments that the mentors staff could assist with.

Said and Reeves both worked up objectives for the period and developed the following:

- Introduce Said to laboratory and field research
- Take part in field studies on extension technique
- Provide the Said with an opportunity to work with Washington State University scientists in animal husbandry.
- Enable Said to apply knowledge gained from this experience for Afghanistan's development and in his own research programs.
- Foster increased collaboration and networking between Afghanistan and Washington State University scientists.
- During the four week period of shadowing his faculty mentors, Said will learn new research techniques, access fully equipped libraries and learn about public-private partnerships in the US.
- Familiarize Said with the linkages between US universities and the CGIAR international agricultural research centers.
- During the four weeks Said will have the opportunity to learn about the graduate curricula.

Said was to work with a lab class with 15 other students that began at 7 AM at the barns drawing blood from cows then taking these back to a lab and doing analysis for the four weeks he was there. He was provided with appropriate clothing including rubber boots and coveralls. He was given lab books to keep notes and an office with other graduate students to form a relationship with them.

Rashud and Fellman both worked up objectives for the period and developed the following:

- Introduce Rashud to laboratory and field research
- Take part in field studies on extension technique
- Provide the Rashud with an opportunity to work with other Washington State University scientists in horticulture.
- Enable Rashud to apply knowledge gained from this experience for Afghanistan's development and in his own research programs.
- Foster increased collaboration and networking between Afghanistan and Washington State University scientists.
- During the four week period of shadowing his faculty mentors, Rashud will learn new research techniques, access fully equipped libraries and learn about public-private partnerships in the US.
- Familiarize Rashud with the linkages between US universities and the CGIAR international agricultural research centers.
- During the four weeks Rashud will have the opportunity to learn about the graduate curricula.

Rashud had an experiment looking at the storage life of apples after they were treated with a gas that could be made anywhere. He was given an office and computer to work with and was told to ask a staff member if there was anything that he needed to use him as an assistant. Both of the experiments were shown to me by the mentors after the fellows arrived and I agreed that this was appropriate. Initial interchanges with fellows and mentors were very good and within a few days their agendas were agreed upon. However, the first week Said did not manage to get to the barns for the class and never did go to the barns. He showed up the first week to classes but following weeks he only attend a couple a week. Rashud never started his experiment and like Said only attended a couple classes.

This of course was brought to my attention and I spent a day with them talking about what they wanted from the program. Neither had taken advantage of the libraries on campus and they were both given \$20 copy cards to use the copy machines at the library (I collected these after they left and there was still the full amount on them). I introduced them to two librarians I know personally and they never saw them again. I lectured them both on the program and that they were to show some ownership and ask both me and the mentors what they wanted out of the program and we would be flexible. Some of their requests we could not accommodate to name a few was a ride from their apartment to their office (1/2 mile), computers for them both and more money for food. Other things we did accommodate were weekend trips to see the country side. This I did or some of my staff obliged. We sent them to Seattle and Portland which they were very pleased with but other than the visit to Portland State University where they met the president, the Wheat Marketing Center and the Food Innovation Center they were only tourists. We planned for them to accompany their mentors to Yakima, WA and Missoula, MT for a weekend field trip but both declined the invitation at the last minute.

All of this was a great disappointment to me and the mentors. I feel both Rashud and Said were not ready for this opportunity both in their maturity and their education. As you can see from their agendas we had a rigorous schedule but we were not demanding anything of them except a presentation at the end. The presentation they gave to my faculty consisted of them sitting and describing what they had done during their stay.

I don't want to leave this on a negative note because I believe that the Borlaug Fellowship is a worthwhile program. The potential for building relationships is very good and the training that the fellows receive can be invaluable. One way to avoid this experience would be to pair the fellows so that those with less motivation were at the same place with those highly motivated. I realize it would be difficult to see this during their interview and that placement is more dependent on programs at different universities. Another suggestion on selection of fellows would be to get some input from universities perhaps through NASULGC to get a list of candidates.

\\activities\Borlaug\Afghanistan\Borlaug fellows-afgh-wsu final report.doc

Christopher David Pannkuk  
Washington State University  
International Programmes

Kabul, 26.10.2004

Dear Chris,

**Subject: Ralf 1 – change of itinerary**

As discussed previously, the intention was that the survey team from Washington State University (WSU) should come out to Afghanistan after *ramazan* and *eid* in late November, arrange training with the DACAAR's field staff, and carry out the first, village-based survey in the district of Alingar, Laghman province.

However, developments on the ground force us to reconsider this itinerary. At present, the security situation in Laghman has forced us to reduce project activities. Recent events include an attack on one of our field project offices, explosives planted in a vehicle rented by DACAAR, and 'night letters' threatening our field staff.

While much of this activity can be attributed to the expected rise in tensions prior to the elections, there are other, more local problems in Laghman, which need to be dealt with in order to secure a more stable operating environment. These include power struggles between local commanders and different issues related to the National Solidarity Programme, where DACAAR is a facilitating partner. Discussions with local authorities, including the governor of Laghman, are ongoing, and we are confident that matters eventually will be resolved.

Given these developments, and based on discussions with RDP management, I will strongly recommend that the training and survey involving the WSU team be postponed to January 2005.

Best wishes

Ole Jensen,  
Livelihood advisor,  
DACAAR