

RALF PROJECT FINAL TECHNICAL REPORT

WESTERN AFGHANISTAN AGROENTERPRISE ACTION RESEARCH PROJECT	
Project Number	RALF - 01 - 16
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Organization	Catholic Relief Services, Afghanistan Program
Collaborator	Centro Internacional para Agricultura Tropical (CIAT)
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FINAL REPORT NARRATIVE

Catholic Relief Services (CRS) carried an action-research project from August 2004 to May 2007 with funding from DFID through the Research in Alternative Livelihoods Fund (RALF), a program managed by the International Centre for Agricultural Research in Dry Areas (ICARDA). The title of the CRS project was “Western Afghanistan Agroenterprise Action Research Project”, the goal of which was to “**provide farming households sustainable alternatives to illicit poppy cultivation**”.

The purpose of the project was to **identify and promote sustainable agricultural livelihood options for rural farm households in western Afghanistan**.

CRS selected two districts in western Afghanistan for its research, both of which were identified poppy producing areas by the UN Office of Drugs and Crime (UNODC) in its 2003 report.

This Final Report narrative presents the lessons learned and recommendations of the project to be shared with policy makers, donors, and development actors in Afghanistan.

Content of the Final Report

Section I of the Final Report includes a summary of the results of the CRS Agroenterprise Action Research Project, including information reported in previous reports as well as results not previously reported. Section I also includes summaries of three documents produced by CRS recently which are relevant to the RALF research. Section II provides a brief explanation of the action-research approaches used by CRS for the project (again, more details have been presented in previous reports). Section III provides some details on the research information and results; this augments documents and reports already submitted during the progress of the project. Section IV describes the various ways in which CRS has disseminated information generated by this project. Section V presents recommendations for donors, policy makers, and development actors engaged in sustainable agriculture development in Afghanistan.

Note: CRS has provided semi-annual progress reports to RALF/DFID throughout the implementation of its RALF-funded program. In addition to progress reports, CRS has participated in RALF conferences, and we have shared several documents produced by CRS which were associated with its RALF-funded research. While this Final Report will provide an overall summary of the CRS RALF project, it is not possible to include all information previously shared in the progress reports, conference proceedings, and RALF monitoring and evaluation reports of the CRS project.

I. Summary

Action Research - Process

Territorial Approach to Agroenterprise Development

CRS initiated this project using an action-research methodology called Territorial Approach to Agroenterprise Development, a methodology adopted from the International Center for Tropical Agriculture (CIAT), with whom CRS has a global partnership for agroenterprise development. The highlights of the Territorial Approach include its emphasis multi-stakeholder within a defined geographic area, participatory research tools, and a learning-by-doing and adaptable implementation style.

CRS conducted preliminary research in its project areas including: socioeconomic, agronomic, and market. We consulted with traders, government representatives, farmers, and community leaders early on and throughout the project implementation. From the initial research, we identified a number of potential agriculture livelihoods options, and introduced community development, training, and market interventions to evaluate the potential of each of these livelihood options through participatory evaluation.

Participation, Efficiency, Adaptation, and Redesign (PEAR)

To identify, introduce, and evaluate agriculture livelihood options in its project areas, CRS used a conceptual approach called “PEAR”: Participation, Evaluation, Adaptation, and Redesign. This conceptual approach includes tools that explicitly recognize and respond to the challenges of introducing new crops and systems, particularly for farm households that are reluctant to risk associated with change. In Afghanistan, where income levels are extremely low, and vulnerability to risks of various sorts are quite high, people are particularly averse to change. PEAR works with farmers to first introduce practices and inputs that will enhance the efficiency (e.g. productivity or profitability) of their existing farming systems, which both (a) improves livelihoods and (b) builds trust. This is followed by innovations that will alter the farming system in more substantial ways. This participatory approach proved very effective at the farm level, and yielded important lessons, which is discussed below.

Identification of Agriculture Livelihood Options

Based on field surveys, literature, and other sources, CRS selected agriculture products for evaluation in Pashtun Zargun and Sharak districts. These include:

- Sharak District: almonds, walnuts, apricots, potatoes, peanuts, carpets, korc, kurut, and male sheep.
- Pashtun Zargun: tomato, onion, potato, okra, wheat, nurseries, and the introduction of plastic crates for post harvest transport.

Overview of the Results of the Evaluation of Agriculture Livelihood Options

Through CRS' research in Sharak district and research produced by others, almonds are competitive with poppies. However, in most cases, almond producers need access to irrigation, access to agriculture extension services, and business development support to reduce marketing costs and negotiate better terms of trade. Walnuts and apricots also provide solid economic return, requiring similar supporting interventions (irrigation, extension, and marketing). Potatoes have great potential for Ghor province, both as a cash crop and for food security and should be expanded. Improved varieties of potatoes obtained from Herat province performed extremely well in Sharak (Ghor). Peanuts also have an apparent high potential in Ghor province as a source of protein, and possibly as a cash-crop, but more work is required here to evaluate the economic returns in comparison to other cash crops.

Livestock (sheep and goats) is the backbone for rural livelihoods in Ghor. However, degrading pastures, water insecurity, and poor animal health services all reduce the earning potential for livestock producers. The poor are especially vulnerable. In bad years, farmers often lose money on the livestock.

In Pashtun Zargon (Herat Province), CRS introduced tomato seedlings produced in greenhouses using improved varieties. These tomatoes did well, providing good economic returns as well as fresh and dried tomato for household consumption throughout the year. An improved variety of onions combined with better cultivation practices boosted profits significantly for all farmers, and both the onion varieties and cultivation practices have expanded over the past three years. Other high value vegetable crops that can be transported across rough roads (e.g. garlic) will also do well in Pashtun Zargon with Herat City only 1-2 hours away by road. Nurseries for vegetable and tree seedling production did very well, and are competitive with poppies.

A surprising result of the project was the success of the introduction of plastic crates designed to improve post-harvest handling of vegetables and fruits. The crates were extremely useful in reducing post-harvest losses and preserving the quality of products delivered to markets. Farmers got better terms of trade – in terms of prices in wet markets and bartering (in remote areas). Additionally, women farmers used crates in many innovative ways: keeping chickens, renting crates to neighbors, and washing kitchen-ware.

It needs to be emphasized that CRS' interventions relied on agriculture extension for production and marketing services. These activities complemented the introduction of new crops and varieties; it is very unlikely that the introduction of new crops or varieties would have been successful without these complementary interventions.

Lessons Learned

CRS concluded from its experience with RALF that **there is a broad range of viable agriculture-based alternatives to poppies**; for several crops, the economic returns are competitive and the risks are fewer than producing opium-poppy.

However, for alternatives to be successful, development actors (including the Afghan government) need so consider the following:

- *Identify appropriate agriculture products within a territory*, based on agro-ecological, market, and social realities of the locality. The interventions need to respond to local opportunities and constraints.
- *The process is important*: The value of participation of local people in the project cannot be underestimated. The extent to which people participate in the set-up of projects, introduction of new technologies, and evaluation will determine the success of any intervention.
- *Complementary and strategic interventions*: Agriculture alternatives require a range of complementary interventions, such as (a) agriculture extension services (b) business development services based on a value chain approach, and (c) irrigation.
- *Actual and perceived risks need to be reduced*: In many cases, it is necessary to provide agriculture inputs, particularly to the very poor who do not have surplus wealth or the ability to take risks with new farming systems.
- *Most participants expressed that wheat should have been more of an emphasis of the project*. This obviously reflects a priority for wheat primarily for consumption, but also as a cash crop. It is likely that the rising costs of wheat in Afghanistan as a result of the world-wide food-price crisis would underline how critical it is to keep food-security a priority. Among the poorest farmers who grow poppy, they sell poppy to buy food.
- *Water is the primary limiting factor for agriculture and the variability of water availability is the greatest source of risk to farmers*, especially rainfed producers. One reason for the prevalence of poppy is that it is relatively drought tolerant. As natural resources continue to be degraded primarily through wide-scale extraction of vegetation for fuel-wood, and with the effects of climate change, water insecurity will increasingly threaten sustainable, licit agriculture development.

Dissemination of Lessons Learned

CRS has disseminated lessons learned from its experience with RALF through in several ways:

- CRS has worked very closely with the Ministry of Agriculture in Herat Province throughout the implementation of this project. Senior and field staff of MAIL have directly participated in every stage of this project and the results were shared with them.
- Under CRS' agriculture program funded by USAID, CRS and MAIL have produced regular programs on local television highlighting agriculture technologies; some of these programs include results obtained from the RALF research.

- In March 2006, CRS presented a paper entitled “Enhancing livelihoods for resource poor households in the Afghan Hindu Kush using the Territorial Approach to Agroenterprise Development” at the International Symposium Toward Sustainable Mountain Livelihoods in Chiang Mai, Thailand.
- CRS has produced a document entitled Agronomic Approaches to Identifying Alternatives for Opium Poppy in Afghanistan. A summary of this document was shared at the ICARDA/RALF Conference in Fall 2007.

The lessons learned from the RALF contributed to several rural development projects developed by CRS over the past few years. For example, CRS is now implementing a watershed development program in Ghor Province that combines irrigation development with agriculture extension activities. Our work in Ghor emphasizes the need to improve pastures and rangeland for sustainable livestock production. We have developed local capacity on livestock production. CRS has recently initiated a three year Agriculture Development Alliance with funds from USAID and other sources, which will be implemented in Herat, Ghor, and Bamiyan provinces. The ADA emphasizes: vegetable production, nurseries, drought tolerant crops, and livestock production. The program strategy is built, in part, from the lessons learned of the CRS RALF project.

Constraints and More Questions

As one would expect, the experience with RALF has raised more questions than it has answered. A few critical issues are presented here:

- Agriculture development actors often assume agriculture as the exclusive or primary livelihood activity for rural families. The CRS RALF project was based on this assumption. However, there is clearly more going on; remittances play a large role in the livelihood security for families, coming from family members working in Afghanistan (including harvesting poppies in southern provinces) and in Iran or Pakistan.
- Landlessness is a major issue. Agriculture interventions almost always assume that rural people are farmers, and that they have land. However, a significant portion of people we work with in central and western Afghanistan do not own land, and are either share-croppers or laborers. Rural development interventions in Afghanistan need to explicitly recognize the need to provide services and create opportunities for the landless.
- Drought and floods have been persistent throughout western Afghanistan in recent years. These threats are a constant factor for farmers, particularly the poor. Development assistance is being diverted, in some cases, to respond to emergencies. Also, people are reluctant to invest in agriculture development when they perceive risks to be high. Successful agriculture development will require interventions that reduce these risks.
- Agriculture development in Afghanistan is extremely challenging, not least of all due to the persistent security threats for development actors. Insecurity will limit the potential for expanding agriculture alternatives for poppy by limiting the extent that government and non-government workers can reach people, and insecurity requires ever increasing amounts of funds to be used for protecting development workers.

II. Research Approaches

PEAR Approach - Agricultural System Redesign

Influencing farmers to exclude poppies from their farm systems and explore other agriculture options is not easy and requires a sustained effort over a long period of time. Toward this end, CRS adopted an approach called PEAR (Participation - Efficiency - Adaptation (Substitution) - Redesign).

The PEAR process (planning, implementation and monitoring of activities) was done in a participatory way. Initially for gaining confidence of farmers, activities were undertaken to increase the efficiency of existing practices / systems followed by the farmer. Once that was achieved new techniques were introduced. Subsequently, the farming system could be modified, or redesigned, based on whole farm analysis.

In Pashtun Zargon and Shahrak districts, CRS began program activities first by introducing 'improved' / high yielding varieties of existing crops of onion (yellow Spanish), potato (Karakh), Garlic (Chinese), Cotton (Akola), and many other crops for building confidence amongst farmers. Once that was done, alternatives of poppy were introduced and evaluated, including: greenhouses, plant nursery, wheat, cumin, chickpeas, and others. Finally, through farmers' club discussion we initiated a redesign of farms through a process of "whole farm analysis".

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III. Research Results

This section includes results and observations collected throughout the RALF project. It is augmented by attachments previously included in semi-annual RALF reports. Furthermore,

this section discusses some activities that have been rolled into other CRS programs in Ghor and Pashtun Zargon Provinces.

While this is not an exhaustive report of the activities and trials done under the RALF program, it is representative of some of the more interesting results and activities undertaken. Other activities and results can be reviewed in the regular semi-annual reports submitted over the LOP.

Results of Tomato, Onion, Potato

Tomato demonstrations

Tomato plots were planted using seedlings from the CRS demonstration greenhouses. These seedlings germinated 45 days earlier than the open seeded variety used in Shahrak and Pashtun Zargon. Farmers who planted the seedlings as well as their normal local tomato plots reported not needing to purchase fresh tomato during the summer and fall and purchasing far less dried tomato during the winter. Families in project areas use approx. 1.5 kg/day fresh/family. They also indicated that they were able to plant smaller plots with the seedlings and harvest more than with the local variety.

It is important to note that the local variety proved a better performer in areas where there was more water. The most significant benefit to the CRS tomato was the early cultivation and therefore, extended growing/harvest seasons. Through the CRS project farmers have gained confidence in planting vegetables at different times than they have in the past.

While greenhouses haven't been taken up in most of the villages, the performance of early tomato has popularized greenhouses. With further sensitization and training on seedling production CRS sees the potential for seedling production to become more popular as an enterprise option.

Onion demonstrations

The newly introduced onion variety was very popular among the participating villages. Not only was the yield better than the farmers expected, the new variety of onion (Yellow Spanish) sold at 40 AFA/kg compared to the price of local onions at 25 AFA/kg. Many farmers said that only the failure of rain-fed land prevented them from selling more onion than they did.

Furthermore, they are holding the variety back in most locations in order to increase the plots planted with it. Given the importance of onion to the local diet and the widespread demand for onion throughout the year, the new onion variety is likely to spread quickly, and to take up larger plots of land than it did previously. This would be a useful result for alternative livelihoods.

Recently, CRS with a local trader has started seed agro-enterprise and onion (Yellow Spanish) is one of the main crops with huge growth potential.

Potato demonstrations

The Karokh variety of potato performed much better than anyone expected. While in Sheberg, the potato crop (local and Karokh varieties) failed due to an unidentified disease, it performed better than the local variety in other villages (only 9 of 10 villages participated in this demonstration). As with many of the interventions, the dedication of the farmers was key to successful results.

Given the importance of potato to the local diet, the potential for potato sales as evidenced by frequent sell outs in local bazaars, and the improved performance of the Karokh variety, CRS and participating communities see potato as an key product for scale up through varietal propagation and distribution (possibly through an On Farm Voucher system as used by CRS in East Africa) as well as in improved potato storage. There are currently groups working on potato storage that can give expertise in this area.

Table 1. Results of potato demonstrations (village averages)

Village	Frequency of irrigation	Area cultivated (m ²)	Seed Rate (kg)	Yield (kg)	Increase over local variety
<i>High Access</i>					
Dahane Margha	Weekly	252	21	300	13.7 times
Dahane Hasarak	Weekly	536	100	920	9 times
Pai Tonda	Weekly	402.3	42.7	338	7.5 times
<i>Medium Access</i>					
Sheberg	Every 12 days	236.7	22.6	8	n/a
Abrawa	Every 10 days	322.8	34.7	470.7	12.8 times
<i>Low Access</i>					
Leech	Weekly	85	31	254	8.3 times
Tagob Mazar	Every 10 days	160	40	240	6 times
Sar-e-Zaw	Weekly	194	33	837.5	20.5 times
Konde Sokhta	Weekly	304	16	330	19 times

Peanut trials

Peanut was an entirely new crop for farmers in Pashtun Zargon and Shahrak districts. There was substantial skepticism as to whether or not it would grow at all. In fact the governor of Ghor requested samples because he was so surprised that peanut would grow at all in Shahrak. Although few farmers were willing to risk putting in small peanut trials, the results of peanut were very popular (table 5). Participating farmers were very pleased and found the market potential for peanut satisfying; however none of the farmers chose to sell in this season due to food needs.

Peanut is worthwhile for potential scale-up crop for Ghor. Currently all peanut is imported from Herat or Kabul. The demand for peanuts is quite high especially around holidays and is also a good source of protein. While choosing appropriate locations for peanut scale up is critical to success of such a crop (some areas of Ghor have overly high altitude for peanut), areas in the valleys would have a new and valuable cash crop.

Table 2. Results of peanut demonstrations (village average)

Village	Plot size (in square meters)	Seed volume	Harvest
Pai Tonda	30	166.7 gr	9.67 kg

Dahane Hasarak	n/a	100 gr	3 kg
Dahane Margha	15	50 gr	6 kg
Sar-e-Zaw	2.4	30 gr	2 kg

New Technology: Using Plastic Crates for Transporting Fresh Products

In our earlier reports, the results of drying trays were included showing a dramatic increase (20-42%) in prices for dried apricot using trays as opposed to traditional methods.

CRS introduced plastic crates for tomato producers as part of a more comprehensive project to improve the post-harvest segments of the supply chain of tomatoes and fresh fruit (See Table 3).

There were substantial side benefits to plastic crates that were not originally expected when the crates were distributed. When CRS staff gave the crates as a trial in the initial 10 villages, it was expected that spoilage would be reduced and therefore terms of trade would be increase per/crate transported. This certainly was the case as shown in Table 3.

However, greater benefits were discovered when CRS staff made an impact assessment after the orchard harvest were complete. About half of the crates were distributed to men, half to women. The women were the end user of the crates in all cases. Unfortunately in villages where the men were recipients, it was not possible to ask their wives for complete information. Where women were recipients, the following benefits were discovered.

- Plastic crates are much lighter weight than traditional reed crates and are easier for women to manage.
- Women in 2 villages were able to rent their crates out to neighbors for 10 AFA/day.
- Crates provided a ventilated cage to keep chicken while they laid eggs thereby reducing opportunity costs involved with following chickens around looking for eggs.
- Crates were used widely and with great success for washing kitchen utensils.
- Participants from the villages in the Medium Access category reported plastic crates enabling them to transport grapes from Dara-e-Takht for local sale successfully for the first time.
- Women were able to send the crates full of produce to local bazaars. Shopkeepers would keep the crates until the produce was sold, then the women took the crates back. This proved to be an innovation in tracking sales.
- Local crates last 1-2 years depending on frequency of use. Plastic crates are considered virtually indestructible. If they last for only 3-4 years, they will be more cost effective than local crates.

Further research is needed on the potential impact of increasing use of plastic crates on the trading relationships between traditional crate makers and farmers. Families in participating villages travel 6+ hours on foot or animal to trade rock salt for reed crates in an area called Jalg-e-Mazar or Shahrak District Center. While they did not immediately see any negative impacts on using plastic versus reed crates, there may be unforeseen impacts on barter

relations with those areas in the future. CRS has other programming ongoing in Jalg-e-Mazar and will also discuss the barter system with them in the coming season.

Table 3. Comparison of local containers and plastic crates (Konde Sokhta, Sar-e-Zaw, Dahane Margha)

Produce	Reed basket	Bag	Plastic Crate
Apricots/Wheat (trade with Kuchis*)		5 man/2 man	2 man/ 1 man
Wheat flour/Apricot (trade with Kuchis)	1 man/1 man		1 man/2 man
Apricots/Kurut	10 man/1 man (trade with Kuchis)	5 man/5 kg (village trade)	4 man/10 kg (trade with Kuchis)

*trade with Kuchis is considered to be several hours journey on foot

In other villages, participants discussed results in terms of wastage due to crushing, rotting, etc. In these cases, the weight exchange remains constant, but the return increases because there is less loss during transport. For instance, exchange of apricot and wool (fixed at 4 man apricot = 1 man wool) is improved through introduction of plastic crates:

- Reed crate—loss of 1/5 man for each load (trade with Kuchis)
- Plastic crate—negligible loss recorded

CRS is currently implementing a USAID funded watershed development program in Abrawa and Kond-e-Sokhta villages. As part of this, the small work begun with women under this particular activity is being expanded to include SHG and enterprise development. The potential to organize women, especially the most vulnerable women, around these already successful interventions will add to the potential impact of new interventions.

EVALUATION RESULTS

Results from Product Cards

Product cards were completed for 11 of the interventions tested under the RALF projects. Product cards were completed through a process of translation and testing with individuals not familiar with the RALF project. This process was chosen to ensure simplicity of design and presentation aimed reaching both literate and illiterate project participants. Each participating village received a full packet of product cards for use in remembering proper timings, fertilizer use, and other aspects of the various interventions.

CRS' purpose for the product cards was to get an idea of how each of the 11 interventions was viewed in comparative importance by the targeted villages. CRS staff led farmer groups in ranking the interventions on 4 characteristics: overall, food security, income generation, adaptation to local conditions. Table 4-7 show the results for the top 4 rankings in all categories (1 most preferred and 4 least preferred).

Table 4. Top 4 Interventions Overall

Crop	High Access	Medium Access	Low Access
Okra		4	
Onion	3	4	4
Potato	2	2	2
Tomato	4	3	3
Wheat	1	1	1

Table 5. Top 4 Interventions Food Security

Crop	High Access	Medium Access	Low Access
Nursery			4
Okra	3		
Onion		4	4
Peanut	4		
Potato	2	2	2
Tomato		3	3
Wheat	1	1	1

Table 6. Top 4 Interventions Income Generation

Crop	High Access	Medium Access	Low Access
Nursery	4		3
Onion	2	4	4
Potato	1	2	1
Tomato	3	3	2
Wheat		1	2

Table 7. Top 4 Interventions Adaptation to the Territory

Crop	High Access	Medium Access	Low Access
Nursery	2		3
Onion	4	4	4
Potato	3	2	2
Tomato		3	
Wheat	1	1	1

This exercise was quite helpful in assessing the potential for scaling up interventions considered to have the highest impact for different purposes with farmers. It's interesting to note that there was substantial agreement about rankings between the Territories.

It is useful to note that drying trays and plastic crates were used mostly by women. No women were able to participate in this exercise (even when they were present, they did not participate) and these two intervention were largely overlooked by the men. However, from 1 village in the Medium Access territory, the farmer participants had experience with the plastic crates and ranked them number 3 in all but the adaptation category (plastic crates were omitted from the adaptation ranking).

The most interesting result of this exercise is the focus on food security first in almost all cases. In fact, in the Medium Access territory, there was almost no deviation from the food security ranking.

The ranking exercise supports the conclusion of CRS staff that environmental and economic conditions in target areas precludes widespread risk taking on the part of farmers. Shifting any cultivation patterns, including opium poppy, will require greater food and economic security for the whole area.

Results from Expectations PRA Activity

This activity was meant to encourage full and open discussion of the project, its results and suggestions for improvements. As noted above, the Medium Access territory results were the least differentiated for reasons already stated in the previous section. The most interesting outcome of the discussions was the surprise of most participants at being consulted for evaluation purposes. In all cases they indicated that agricultural interventions are not accompanied by follow-up to discuss methods and results.

The participants in the discussion were also generally very balanced in their assessment of successes and failures. They saw a significant role for themselves in both the success and failure of any intervention. They were even willing to admit personal fault which was highly unexpected. For instance, with wheat trials those who had not weeded in order to maintain animal feed levels were dissatisfied with the variety performance but knew it was largely their fault.

The most common complaint directed at the project was that of timing of inputs. This was mostly a problem in the first cycle of the project when accessing some of the villages was quite difficult due to road conditions. The resulting solution to the problem had been a central collection point for materials during poor weather conditions. This was better, but some felt that it still caused problems in timely application of new varieties, crops and technologies.

In most cases participants were willing to separate income and yields in the “expectations wheel”, but not in all cases. The research team equates this again with the continued focus in these territories on food security as well as in-kind trade. Yield is income, which made the plastic crates even more successful as an intervention. Nevertheless, **most participants felt that wheat should have been a greater focus than it was.**

Ultimately, the participatory nature of the project allowed for a high level of success in the approach among farmers. However, the flood and then drought conditions compounded by high levels of aphid infestation and the preponderance of pack rat destruction (see semi-annual report Jan-June 2006) was devastating to many of the objectives of the project in collective marketing trials and income generation.

IV. DISSEMINATION OF OUTPUTS

International dissemination

CRS' international dissemination has included a paper submitted to and presented at the International Symposium Toward Sustainable Mountain Livelihoods in Chiang Mai, Thailand, March, 2006. The paper has already been shared earlier.

CRS staff also participated in a 3 week speaking tour in the United States. This included discussing the RALF project, among others, with foundations, university professors and students, Inter-Action's Afghanistan Working Group, and other private donors.

Kamal Battacharyya, Paul Hicks and Melody McNeil drafted a paper on the Agronomic Approaches to Alternatives for Opium Poppy and recommendations for future alternative livelihood programs. Summary of this paper has been shared with larger audience in Dissemination workshop organized by CRS in Herat (ICARDA and other actors were present in that experience sharing meeting) and informally at Ghor.

The draft paper has argued that not all licit crops can be considered as alternatives to poppy. It has further argued that profitability alone is not enough for making an agricultural enterprise an alternative to poppy. To actually displace poppy cultivation, an alternative crop has to compete with poppy spatially and temporally.

Several examples of agricultural enterprises which compete with poppy for labor input during the April-May poppy gum collection period have been presented, including greenhouse cultivation of vegetables, dairy, sericulture, fruit-tree nurseries., These crops all have the potential to create temporary labor shortage for poppy crop management. On the other hand, this paper has documented that saffron, which is promoted by many organizations as an alternative to poppy, does not actually displace poppy. On the contrary, evidence from Goryan district suggests that the same farmers often grow both poppy and saffron because they are grown in different seasons; income from saffron may in fact support expanded poppy cultivation.

This paper has presented a filtering tool, adapted from CIAT's territorial approach to agro-enterprise, which allows systematic assessment of a range of alternative livelihoods. It has illustrated how the key variables (filters) of profitability and seasonal land and labor requirements influence the potential for a crop to become a viable alternative to poppy. It has also shown that additional considerations, such as risk avoidance, also play a key role in influencing a farmer's ultimate decision to adopt an alternative livelihood.

Tree nurseries have been discussed as one such enterprise which gives higher profit than poppy but where uptake by share-croppers is exceptional, and which therefore has only limited potential to displace poppy cultivation.

This paper has identified a few very promising alternative livelihoods to poppy, but it is still too early to provide conclusive evidence. At this time, these agro-enterprises are being “tested” by individual interested farmers, who may or may not have grown poppy. Ultimately, the viability of AL will be confirmed by evidence of actual adoption and diffusion of the agro-enterprises to additional farmers, including share-croppers, and confirmation from field observation that they actually displace poppy.

Local dissemination

Local dissemination has had interesting side benefits in Ghor and Pashtun Zargon. As the 2006 harvest came in and successes were being discovered, farmers began taking the dissemination into their own hands. As has been mentioned in our previous reports, the social and relational aspects of rural Afghan society are beneficial to local dissemination. Farmer meetings and field days have been exceptionally easier to organize and participation has been increasing over time.

There is a cultural norm of sharing new crops and techniques as well as fruit harvest within and between communities in Ghor, as CRS expects is the case in many other parts of Afghanistan. Social obligations dictate sharing the first harvest of a new crop or variety with neighbors, relatives, village leaders and mullahs. This also ensures that the new crops/varieties travel between villages as some relatives will be living in other villages. Table 8 gives a specific example of sharing obligation with the new variety of potato.

Table 8. Traditional sharing obligation in Shahrak District: ex. Potato, Konde Sokhta

Volume harvested	Neighbors	Relatives	Village head	Village teacher	Village mullah
1,500 kg	5kg/household	5-20 kg/household	40 kg	20 kg	10% (payment received on all new crops/varieties)

From Konde Sokhta and Sar-e-Zaw villages alone vegetables, potato and wheat varieties traveled to 38 new families living in 4 non-RALF villages in addition to what was shared within the 2 participating villages. This pattern was especially important with onion, tomato and potato varieties as well as fertilizer use instructions.

Farmers from RALF villages report never before understanding proper soil preparation and fertilizer use and saw dramatic yield increases from proper use resulting from CRS instruction (example shown in Table 9). They shared this information to neighbors and farmers from neighboring villages. Increased yields experienced in non-RALF villages will be followed in the next season.

Table 9. Dahane Margha Local Potato yields comparing soil preparation and fertilizer use

Year	Volume planted	Volume harvested
2005	5 man	20 man
2006	5 man	50 man

V. KEY RECOMMENDATIONS

Recommendations fall into suggestions for scale-up or further research and need for government and policy interventions. All of these issues have appeared in the preceding sections, however, it is useful to compile them here.

Scale-up and further research:

- In almost all locations where the **Karokh variety of potato** was used, farmers saw gains over local varieties of potato. The exceptions were areas where water deficiency and disease caused failure. It would be useful to increase the number of farmers using the Karokh variety and to use the phase 1 farmers as potential producers of planting material. They can eventually, yields permitting, be vendors in an On-Farm Voucher system where benefiting farmers would go to “buy” potato planting material. This will be especially useful in areas, like Ghor, where food insecurity leads families to eat all the harvest rather than holding back for the next season. It may also lead into a viable agro-enterprise.
- While **peanut** is not something that can immediately be done on a large scale, the potential in the program areas is there. Further work with a larger group of demonstration farmers should be done in order to establish a knowledge base on peanut production and post harvest techniques. There is also a need to explore further collective marketing potential.
- Further promotion of **plastic crates** will be useful for marginal farmers and vulnerable women with access to orchards. However, this should be accompanied by research into impacts on reducing customary trade in traditional basket crates.
- Scale up of **improved drying trays** and training on local construction of drying trays. This should be accompanied by work with women, where possible, on collective marketing. Again, CRS is looking at this with SHGs and women’s groups under the watershed program.
- Further research into the impact of **improved soil preparation and fertilizer use**. These techniques are very simple and the fertilizers are available locally. Most farmers in the evaluation indicated these two trainings alone have made a significant difference in their yields in crops CRS has not been involved with. It’s also a main topic that they have spread to other farmers in their areas.
- Continued scale up of both **onion for propagation** and scale-up and **tomato seedling production** as agro-enterprises are interesting options. While the demand for the improved onion variety is clear, it still remains unclear whether or not people will purchase the planting material. With tomato seedlings, training on their production and dissemination of the benefits of early tomato cultivation will be necessary before scale-up. Again the issue of demand transferring to the willingness to buy needs research and sensitization.
- Dairy has the potentiality to become an alternative to poppy provided it is backed up with facilities for milk transportation and cold storage of milk. For good dairy, forage and rangeland is important. Further research is needed into the potential, with rangeland rehabilitation, for **livestock-based agro-enterprise** to increase. The current

- status of animal health and nutrition are such that livestock production, which would be labor intensive and useful as an alternatives needs to be tested for its viability.
- Greenhouse with proper market linkage is a potential alternative of poppy. However, follow-up and training is required for village-based **greenhouses** and collective marketing for sensitization as well as to monitor local demand and acceptance of the technology especially in Ghor and Pashtonzargon. As mentioned in the June 2006 report, the drought conditions in Ghor Province and rainfed situations may limit the acceptance of greenhouse technology. The risk aversion of these communities and the continued focus on food security crops is also an important consideration for spread of GH. However, the CRS greenhouse will continue to be in use as a training/promotion site.
 - The **nurseries** begun under RALF are still growing. Further training is also ongoing in them. Currently CRS staff are engaged in skill development in budding training in several locations. Many farmers see the need for nurseries in both the short and long terms, and have expressed willingness to buy saplings of trees. However, this is another instance where the actual willingness of area farmers will factor in heavily to the success of the enterprise. Looking for viable markets outside Shahrak will be critical. However, its acceptance to share croppers needs to be looked into carefully.

Key observations and recommendations:

- Ownership and access are both critical in determining vulnerability. One of the factors contributing to the success of the plastic crates and drying trays with widowed women was that they often have access to the orchards of their brothers or other male relatives. They can use the produce with apparently no cost. Any further work in this area should also track the impact on these access relationships and the potential of improved market conditions to negatively impact free access.
- Obligatory sharing of yields will allow for greater dissemination of new crops and varieties, as well as increase demand for training and new technology. These patterns vary by village and would be worthwhile to investigate in the preparation of any new program to be undertaken by RALF/DfID. Investigation before the fact will allow for ease in follow-up in ex-post surveys/evaluations. CRS will be look at inter-village sharing more closely in the watershed program.
- Women play an important role in the farm economy. While their voice can sometimes be more difficult to hear depending on the area's sensibilities, there are specific interventions like the plastic crates and the drying trays, that will target them automatically. It is critical that female staff are included in all project planning and community sensitization. They can help ensure that these interventions become part of the project. Promoting female students in the agriculture faculties and targeting them for internships is a way that CRS has begun doing this. Also, supporting female extension workers in the Provincial Agriculture Departments would also increase women's direct participation in agriculture programs.
- Continued instability of water availability leading to widespread failure in rain-fed lands will continue to have a negative impact on any alternative livelihood interventions. Until farmers in remote areas are confident in their food security, it is

unlikely that they will move out of opium poppy cultivation given its dependability in their economic situations.

- Water is a key constraint facing every location in the CRS project. The need for water resource rehabilitation and watershed management efforts to accompany alternative livelihoods programs cannot be overstated. These are long-term interventions requiring a high level of community mobilization requiring multi-year funding. A shift in the funding patterns that currently characterize the landscape in Afghanistan must be sought.