

**RESEARCH IN ALTERNATIVE LIVELIHOODS FUND (RALF)
RESEARCH PROJECT PROPOSAL**

RALF Project Number	RALF02-05
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SECTION A: ADMINISTRATIVE INFORMATION

1. Project Title	Increased Productivity and Profitability of Wheat-based Cropping Systems to Reduce Reliance on Opium Poppy in Northern Afghanistan.
2. Start and Finish Dates	January 2005 – December 2006
3. Target areas in Afghanistan	Balkh, Baghlan, Badakhshan

4. Principal Investigator <i>(registered office in Afghanistan)</i>	<p>Mark J. Henning, Program Manager - Agriculture Joint Development Associates International (JDA) Ko Furushi St., Korte Bukhtar, House # 2 Mazar-I-Sharif, Afghanistan Tel: (AWCC) +93 070 520 191 International Tel./Fax: +998(97) 130 59 71 email: markh@jdapost.com, mazaresharif1@yahoo.com</p>
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6. Contracts / Finance Manager	<p>Sakina Hamdamova, Finance Manager Joint Development Associates International (JDA) Ko Furushi St., Korte Bukhtar, House # 2 Mazar-I-Sharif, Afghanistan Tel: (AWCC) +93 070 506 035 International Tel./Fax: +998(97) 130 59 71 email: sakina_h@jdapost.com</p>
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7. Collaborating Institutions	
(1)	<p>Dr. Mahmood Osmanzai – International Maize and Wheat Improvement Center (CIMMYT) Principal Scientist, Liaison Officer, CIMMYT Afghanistan P.O. Box 5291 Kabul, Afghanistan Tel: (AWCC) +93 (0)70 282 083 Email: m.osmanzai@cgiar.org</p>

(2)	Dr. Peter Hobbs, Cornell University Dept. of Crop & Soil Sciences 612 Bradfield Hall Ithaca, NY 14853 U.S.A. Tel: 607-254-7295 Fax: 607-255-2644 Email: ph14@cornell.edu
(3)	Dr. Henri Suter, Rural Development Programme Coordinator Aga Khan Foundation (AKF) Afghanistan House 43, Street 13, Wazir Akbar Khan Kabul, Afghanistan Tel: (Roshan) +93-(0)79-329-312 Satellite. +882-162-113-4666 Email: henri.suter@akdn-afg.org
(4)	Edgar V. Comereros, Project Director & Khalida Yaqobi, Manager Balkh Savings & Credit Union (BSCU)/World Council of Credit Unions, Inc. (WCCU) 3 rd Floor, Kaatebzada Market Darwazi Balkh Mazar-i-Sharif, Afghanistan Tel: (AWCC) 070 206 244, (Roshan) 079 219 217 Satellite Tel: 882168444342 Email: ecomeros@woccu.org , evcomeros@hotmail.com

SECTION B: PROJECT PROFILE

8. Project Summary (600 words)

This project seeks to work with farmers using a participatory technology development approach that develops new high value agriculturally based sustainable livelihood options that improve the productivity and profitability of the wheat-based system in northern Afghanistan. In the current situation, farmers turn to opium poppy as current crops and the associated cropping system are not meeting their needs. This, combined with no or little available fair credit, gives farmers limited livelihood alternatives to opium poppy. In addition, the ready market for opium poppy also fuels its growth in planted acreage. Farmers are constrained by a lack of choices in profitable crops, and by lack of knowledge or capacity in low external input sustainable agriculture, which can enhance their farming system.

This project seeks to facilitate change through three outputs:

1. Established market pathways and business plans for new crops and value added products.
2. Farmers familiarised with new high value crops; their management and integration into their traditional cropping system.
3. Build capacity of Afghan research, development and extension staff in topics relevant to the expected project outcomes.

Key activities will focus on research being market and farmer driven. Market research and analysis will assist in determining what new crops have potential to be profitable for farmers. Farmers, the beneficiaries, will be actively involved in informing and guiding the agricultural

research, whether in on-station or on-farm experiments that test new crops, such as high value oilseed crops, and new crop management methodologies, such as conservation agriculture. The combination of new high value crops and conservation agriculture principles is a key part of the project. Other key activities include significant capacity building of national agricultural research, development and extension staff.

Farmer adoption of high value crops that can synergistically enhance the wheat-based system, adoption of conservation agriculture/LEISA and using the gains in soil quality for improved production of other cash crops in the rotation (e.g., through double cropping of soybeans or soil enhancing forage crops), will contribute towards accomplishing the purpose. Creating a framework upon which micro, small and medium sized enterprises can be created in the future for high value crops and their respective value added products is a key part of the project. Although the project cannot create the businesses around new technologies, it can conduct the economic and technological research and analysis necessary to start new businesses. In sum, this project aims to offer farmers viable alternatives to reduce the differential margin of poppy, and that are environmentally sustainable, marketable, provide economic security, enhance wheat-based cropping systems and enable farmers to regain agricultural stability and food security.

The collaborators bring a creative and powerful partnership to research alternative livelihood options. The combined experience of partners encompasses many technical areas such as conservation agriculture, organic agriculture, plant breeding, market research, as well as social development areas such as extension, PTD and other participatory methods (PRA, PVS, PPB). There is also broad geographical experience among the partners.

An innovative aspect of this project is linking with another RALF project (AKF/ICARDA project) researching forage crops. There is great potential to create synergy by integrating forages and oilseed and other alternative crops (e.g., pearl millet) in rotation with each other.

9. Keywords

Alternative livelihoods, low external input sustainable agriculture (LEISA), oilseed crops, credit, participatory technology development (PTD), opium poppy, Afghanistan, wheat cropping systems, conservation agriculture, no till.

10. Budget Summary (in US\$)

	Year 1	Year 2	Total
<i>Lead institution</i> - Joint Development Associates International (JDA)	\$ 98,673	\$ 70,066	\$168,739
<i>Collaborating institutions:</i>			
CIMMYT Afghanistan	\$ 58,197	\$ 48,860	\$ 107,057
Cornell University, Dept. of Crop & Soil Sciences	\$ 1,892	\$ 1,892	\$ 3,785
Aga Khan Foundation (AKF) Afghanistan	\$64,057	\$52,303	\$116,360
Balkh Credit Union (BSCU)/World Council of Credit Unions, Inc. (WCCU)	non-funded		
TOTAL	\$222,819	\$173,122	\$395,941

SECTION C: BACKGROUND/PURPOSE

11. Background and Rationale

a) *Problem Analysis*

Many reasons lead people to cultivate opium poppy. Alleviation of poverty, access to credit (“salaam system”) and land, the ability to sell opium on an advance basis, a guaranteed market, poppy’s multi-functional role in cropping systems, and the many uses of poppy (fuel, oil, soap) other than opium all contribute to its cultivation.^{1,2} Typically the rich benefit greatly from opium poppy, while often the poor are trapped into growing it in order to survive³, particularly as opium poppy is the *only* source of credit.⁴ Although much has been said of the high profit margin on opium, the amount of labour required, in addition to the salaam system benefiting the rich at the expense of the poor, makes opium not as profitable as it is made out to be.⁵ Based on JDA’s conversations with local farmers, it takes 16 people 10 days, 14 hours/day, to harvest one ha of poppy

As poppy is grown within the wheat-based system of farming in northern Afghanistan, alternatives need to work within that system. If the wheat system can be made more profitable and production efficiency increased by reducing input costs and increasing the value gained per unit of land area per unit of time through double cropping of high value crops (with local value addition and suitable markets found for the new output), then farmers will have alternatives to poppy. Low external input sustainable agriculture (LEISA) can play a crucial role in making the wheat system more productive and profitable. Conservation agriculture, which falls under LEISA and is rapidly spreading through South Asia, can reduce input costs, raise yields and produce a truly sustainable system based on more efficient use of natural resources and less impact on the environment. Conservation agriculture/LEISA practices can improve irrigation efficiency by 30-40%, improve soil fertility and structure, and make other crops more productive through synergistic crop rotations.

If farmers are provided with fair credit and viable alternative crops and associated value added products that have a secure market and positively enhance wheat-based systems, then they will have incentives to reduce opium poppy acreage. In addition, alternative crops that have lower labour requirements than poppy will be attractive to farmers, particularly those poor farmers involved directly in the production of poppy, such as sharecroppers and tenant farmers. Although very few crops can compete with opium on a purely profit basis, particularly for those who profit the most, this project can give less fortunate stakeholders viable choices when it comes to deciding what to plant.

b) *Project Development and Partnerships*

This project resulted from JDA’s response to the government’s program to reduce poppy cultivation, and farmer interest in alternative crops such as soybean. In addition, New Life Agro (NLA), a poultry company in Uzbekistan, is in need of a reliable source of soybeans to produce high quality poultry feed. NLA can provide a secure and reliable market for soybeans, and there is also demand from other poultry farms in Uzbekistan. As Uzbekistan has a state run agricultural system, it is difficult to grow crops other than wheat or cotton. Imports of soybean under USDA Title I programs have been discontinued, which were formerly a source of soybeans for poultry companies. Winrock International, through USAID,

¹ Goodhand, Jonathan. *Frontiers and Wars: a study of the opium economy in Afghanistan*. SOAS, University of London, draft, January 2003. p. 13, 19.

² *Afghanistan Farmers’ Intentions Survey 2003/2004*, United Nations Office on Drugs and Crime, February 2004, p. 5.

³ *Ibid.*, p. 44.

⁴ Mansfield, David. *The Economic Superiority of Illicit Drug Production: Myth and Reality, Opium Poppy Cultivation in Afghanistan*. August 2001. p. 8-9.

⁵ *Ibid.*

has donated a soybean consultant to JDA through their farmer-to-farmer program. This consultant made his first visit to Afghanistan in September 2004 and thought that the soybean trial at the government owned Dehdadi research farm looked very good. In collaboration with JDA the consultant held a workshop on soybean production and processing that was attended by farmers, as well government and international NGO personnel. This Winrock consultant has agreed to return in April 2005 to conduct more training in soybean production and processing in the target areas of this proposal.

Oil crops such as soybean, canola, safflower, sesame, sunflower, linseed, and peanut, were identified as having high value and the ability to produce value added products such as cooking oil, nutritional supplements (soybean), and poultry and livestock feed. In addition, forage crops and drought tolerant crops (e.g., pearl millet, which has excellent potential for poultry feed), were also identified as having potential. These crops were chosen in consultation with CIMMYT-Kabul, AKF, Cornell and Central Asia Development Group (CADG). In addition, JDA consulted with FAO and the Balkh Dept. of Agriculture. CIMMYT-Kabul and Cornell have provided input on the role and potential of conservation agriculture. JDA, AKF and CIMMYT personnel met in Kabul to develop the full proposal.

Initial results of variety trials show that oilseed crops will grow successfully in Afghanistan. JDA grew soybeans on-farm in cooperation with the Balkh Dept. of Agriculture in 2003, and has continued on-farm trials in 2004. Farmers have expressed to JDA their desire grow soybeans again in 2005. The Institute of Asian Culture and Development (IACD) grew soybeans on-farm in 2004 and initial results are promising. All trial results point towards soybean maturity groups (MG) II – IV being ideal for the Balkh region.

IACD has plans to set up a soy processing plant in Mazar-i-Sharif, which will contribute to market demand for soybeans. CADG has successfully grown canola and other oilseed crops in Helmand. In collaboration with FAO, JDA is growing canola in Balkh on a trial basis this fall at the government owned Dehdadi research farm in order to determine the best fall planting date.

In discussions with AKF, the possibility of a linkage with the RALF funded AKF/ICARDA forage project "*Improved rural incomes from better forage production and sales of milk products.*" (start date 1 May 2004, finish date 14 December 2006) arose. For this project AKF is working in Badakhshan and Baghlan provinces. Seed and expertise would be exchanged between projects to design experimental crop rotations. Forages (and cover crops) can provide a component to a sustainable and profitable agricultural system through rotation, crop diversification and soil improvement. For example, if a farmer intends to follow a forage crop with a grain crop, then this project (RALF02-05) could offer seed of tested varieties of canola, pearl millet, soybeans, etc. Lessons learned about how forages fit into the wheat system would be valuable to the proposed project. There is potential to coordinate field days and other training events for the benefit of farmers and government research and development staff.

Partner Descriptions

JDA is an international NGO with more than 13 years of experience in Uzbekistan. They have been in northern Afghanistan since December 2001. They bring a participatory approach to working with communities and farmers, and have extensive contacts in northern Afghanistan to facilitate on-farm trials and training. They bring on the ground technical expertise through international and national staff, and have experience in microcredit and enterprise development in Uzbekistan. The Program Manager for Agriculture has experience in participatory variety selection (PVS) and participatory plant breeding (PPB), and experience in extension work with organic farmers in the United States.

CIMMYT is an international, non-profit, agricultural research and training center dedicated to helping in the poor low-income countries. CIMMYT has a global mandate and conducts maize and wheat research to benefit developing countries through strong science and effective partnership. CIMMYT creates, shares, and uses knowledge and technology to increase food security, improve the productivity and profitability of farming systems and sustain natural resources in developing countries.

Thus, CIMMYT brings much expertise and practical knowledge to the project. Dr. Mahmood Osmanzai, a native of Afghanistan, has for many years worked directly with farmers to improve wheat systems in Afghanistan and Central Asia, often using participatory approaches. He has extensive training, extension and research experience. CIMMYT-Kabul has the network and contacts necessary to facilitate on-farm and on-station trials and experiments in northern Afghanistan.

Cornell University is a world-renowned institution that has extensive involvement in the developing world in many sectors. Dr. Peter Hobbs, adjunct professor in the Dept. of Crops and Soils (www.css.cornell.edu/faculty/hobbs/index.htm), has focused on new and innovative tillage and crop establishment options for wheat and rice in South Asia. In this work he collaborated closely with the [Rice-Wheat Consortium for the Indo-Gangetic Plains](#). He has extensive experience in PVS and participatory rural appraisal (PRA). His practical experience in conservation agriculture in South Asia and current position at Cornell, which provides access to human and technical resources, is invaluable to the project.

AKF is an international NGO that is active in more than 15 countries and part of the Aga Khan Development Network (AKDN). AKF generally works through local NGOs, but in Afghanistan it is implementing its area development programme with its own Community Development, NRM, MSE, community Infrastructure and Education teams. AKF Afghanistan has adapted its programme implementation strategy from the initial humanitarian relief towards a sustainable rural development approach - piloting alternative livelihood options and consolidating a coherent strategy aiming at reduced poppy production. AKF has developed a Micro Area Approach which concentrates development interventions in culturally and ecologically homogenous community clusters/areas covering 5 to 15 villages. The approach aims to achieve a high impact in terms of poppy reduction, social organisation and competence building and to expand from these micro areas the positive learning towards adjacent areas. These micro areas form an ideal ground for participatory action research on promising crops, improved farming systems, and establishment of small and medium enterprises for value added products. AKF, through the AKDN Afghan Rural Micro-credit Program, could also assist in linking promising alternatives to fair credits.

BSCU, with support of WCCU, is establishing credit unions in northern Afghanistan to provide savings and loan opportunities. 60% of their loans will be extended to the agriculture sector. Effective interest rates on loans will be approximately 2%. There is great support for this from farmers already. BSCU will play an integral role in providing farmers with fair credit that is linked to viable alternative livelihoods, which will decrease reliance on poppy as credit, and make farmer adoption of new crops and technologies more sustainable.

12. Project Goal

The project goal is to reduce farmer reliance on opium poppy in northern Afghanistan by increasing agricultural productivity and profitability.

13. Project Purpose

The purpose is to work with farmers using a participatory technology development approach that develops new high value agriculturally based sustainable livelihood options that improve the productivity and profitability of the wheat-based system. In the current situation, farmers

turn to opium poppy as current crops and the associated cropping system are not meeting their needs. This, combined with no or little available fair credit, gives farmers limited livelihood alternatives to opium poppy. In addition, the ready market for opium poppy fuels its growth in planted acreage. Farmers are constrained by a lack of choices in profitable crops, and by lack of knowledge or capacity in LEISA, which can enhance their farming system.

Researching and analyzing the market and economic potential of new agricultural technologies (whether new crops, associated added value products, or crop management technologies) at the very beginning of the project helps ensure that proposed interventions will have potential to alleviate poverty. A thorough analysis at the beginning will assist in identifying profitable alternatives for farmers.

A guiding principle behind introducing new technology is that it must be tested in an applied research setting (research farm), and must be demonstrated to farmers (e.g., through demonstration plots and field days). The project does not want to put farmers at risk by experimenting with unproven technology on-farm, no matter how promising a particular technology may seem in areas outside of the project target regions. Farmers must see for themselves what works and what does not. Then they can request technology to be tried on their farms with project assistance. For each province, results of on-station trials will be different due to different environments. Therefore, requests by farmers to experiment with new technology on-farm will look different in each province. For example, soybean varieties that work well in Balkh may not necessarily work well in Badakhshan. In each case farmers will make the request for a new crop or management technology. Their requests will be informed by market research and analysis, and the on-station trials.

The key stakeholders and target groups are the local farmers/households. Their active participation is critical to the success of this project. It is through their input and ideas that technology can become sustainable and beneficial for them. PTD will facilitate this, validate traditional knowledge and expose it to ideas and potentials from outside. PTD promotes open, non-formal group dynamics that can be accessed any time by all households of a community, independent of their wealth and power. By establishing local mother plots/baby plots and through participatory monitoring/evaluation of farmers' own experiments, the insight in new technology spreads evenly throughout the communities.

In addition, government personnel will be involved, as they will have responsibility in the long-term for agricultural research and development. Government personnel are specifically targeted in this proposal for capacity building. Stakeholders providing credit (AKF, BSCU) will be involved in discussions with farmers concerning new crops and technologies.

Farmer adoption of high value crops that can synergistically enhance the wheat-based system, adoption of conservation agriculture/LEISA and using the gains in soil quality for improved production of other cash crops in the rotation (e.g., through double cropping of soybeans or soil enhancing forage crops), will contribute towards accomplishing the purpose. Creating a framework upon which micro, small and medium sized enterprises can be created in the future for high value crops and their respective value added products is a key part of the project. Although the project cannot create the businesses around new technologies, it can conduct the economic and technological research and analysis necessary to start new businesses. In sum, this project aims to offer farmers viable alternatives to reduce the differential margin of poppy, and that are environmentally sustainable, marketable, provide economic security, enhance wheat-based cropping systems and enable farmers to regain agricultural stability and food security.

These benefits will be sustainable by PTD, which will facilitate farmers adapting and owning new technologies. PTD is an approach that empowers the farmers/household members and

sustains their access to service providers. In addition, the creation of a framework for new businesses around new crops and technologies will create local and regional market demand for new crops and added value products, thus fuelling growth in acreage. Lastly, building the capacity of government personnel promotes sustainability by helping them be more responsive to farmer's requests concerning adopted technologies.

SECTION D: OUTPUTS/UPTAKE PATHWAYS

14. Outputs

1. Established market pathways and business plans for new crops and value added products.
2. Farmers familiarised with new high value crops; their management and integration into their traditional cropping system.
3. Build capacity of Afghan research, development and extension staff in topics relevant to the expected project outcomes.

15. Target Institutions

Target institutions include named collaborators, the provincial Departments of Agriculture, ARIA, MOAHH, FAO and other NGOs involved in agricultural development. AKF, CIMMYT, and JDA have all been closely involved in proposal preparation. AKF, CIMMYT and JDA met directly to exchange ideas and to design the logframe and workplan. CIMMYT has played a key role in setting up on-station trials, as they have the strongest capability in research and provision of genetic resources (e.g., improved germplasm) and have good linkages to government and FAO staff in each province. JDA provided the initial idea of integrating alternative crops such as oilseeds with conservation agriculture, and has facilitated overall proposal development. AKF has provided invaluable input into ensuring that agricultural interventions are farmer-led and market based. Cornell has been involved through email exchanges and has provided excellent input on potential crop species choices and crop management systems. All collaborators have committed to contribute staff time to the project, whether through current staff or hiring new staff. Winrock's Farmer-to-Farmer consultant has agreed to provide U.S. soybean varieties for testing.

AKF, CIMMYT, JDA and Cornell will engage in the process of developing, adapting and transferring technology to farmers, the ultimate beneficiaries. Knowledge of the technology will also be transferred to Afghan government research and development personnel. BSCU will be involved in the market analysis phase, and will be integrated into farmer discussions about technology to try on-farm. Farmer access to credit will empower farmers to adopt new crops and technologies without turning to opium as a source of credit to pay for inputs.

Other international NGOs will be invited to participate in on-station and on-farm field days. This will assist in disseminating research results and scaling up successful project ideas beyond directly participating farmers.

16. Target Areas and Stakeholders

According to UNODC reports, opium poppy production in northern Afghanistan is increasing. The 2003 opium survey saw strong or very strong increases in opium cultivation since 2002 in districts in Balkh, Baghlan and Badakhshan⁶. Production in Badakhshan increased by 55% in 2003, which contributed to 16% of Afghanistan's total opium poppy⁷. In northwestern Afghanistan, which includes Balkh province, opium poppy cultivation increased by a factor of

⁶ Afghanistan Opium Survey 2003, United Nations Office on Drugs and Crime, October 2003, p. 15.

⁷ Ibid. p. 36.

8 in one year- from 565 ha in 2002 to 4,460 ha in 2003.⁸ The UNODC's Farmers' Intentions Survey 2003/2004 predicts that production increases in the north will be particularly pronounced.⁹ Hopefully, engaging farmers in these three provinces will help to pre-empt further spread of opium poppy cultivation by giving farmers viable livelihood alternatives. JDA is currently working in Balkh, and AKF in Baghlan and Badakhshan.

Immediate stakeholders include participating farmers (landowners, sharecroppers, or tenant farmers) and labourers, of which women and children are a subgroup. Other stakeholders are farmers and NGO and government personnel who participate in training events and exposure to project achievements. Stakeholders in export markets include New Life Agro in Uzbekistan, who will purchase soybeans produced in Afghanistan; and companies, farmers, and consumers who purchase value added products (e.g., cooking oil, seed for planting, soy products, poultry feed). Potential future stakeholders include small businesses started as franchises around processing units used for poultry feed, which will dramatically increase the market for soybeans. Ultimate beneficiaries are Afghan farmers, who will benefit by having agricultural choices that are profitable and meet their needs.

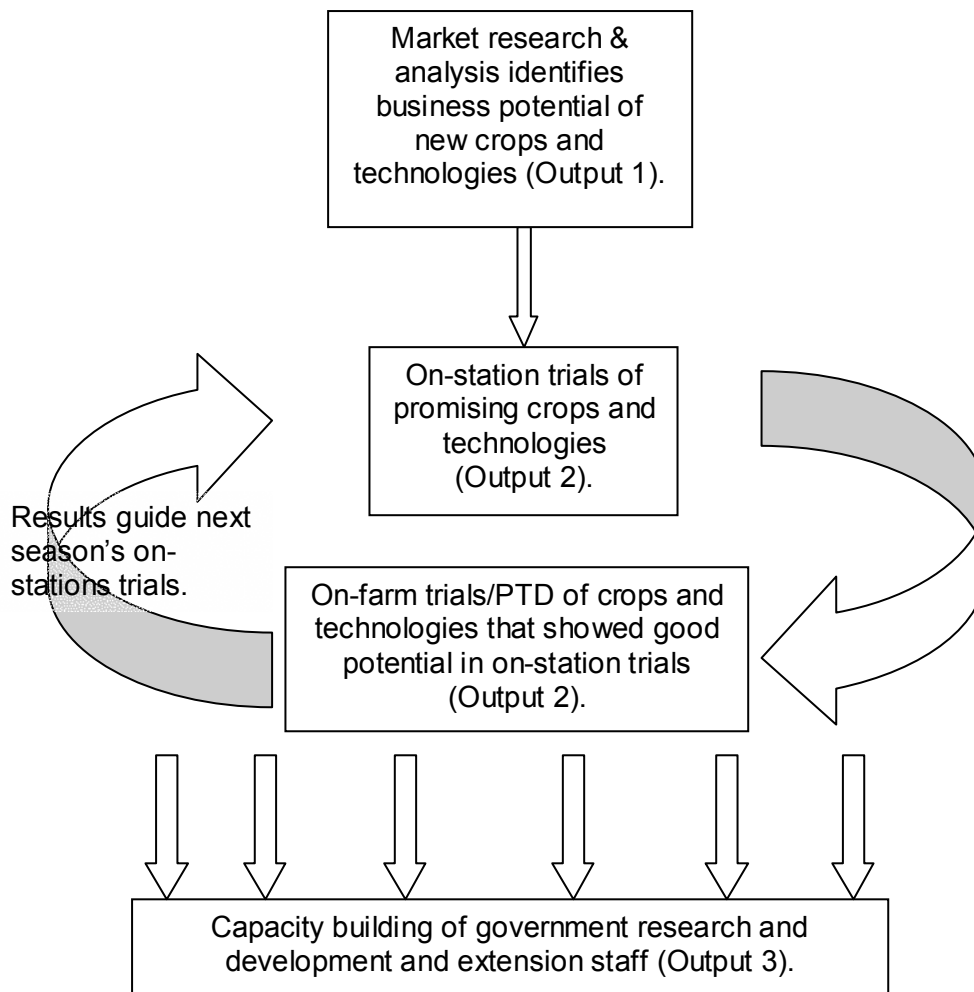
Those possibly affected negatively are traders involved in the import of cooking oil, who may actively resist local oil production. Currently, virtually all of Afghanistan's cooking oil is imported, much of it palm oil from Malaysia. Opium traders and cooking oil traders would suffer adverse impact in less business if there were widespread adoption of outputs. Local commanders involved in the opium trade and opium traders may also actively resist project activities.

17. Uptake Pathways

The timeframe of completion of each output is designed to facilitate uptake by partner institutions. Thus, Output 1, which is designed to identify technologies (new crops and crop management) that have market and business potential, will guide what technologies are tested on-station and on-farm in the activities under Output 2. Output 3, which deals with capacity building of government and NGO personnel, will facilitate adoption of crops and technologies beyond the project timeframe of two years. Each output works together to reduce farmer reliance on opium poppy and create sustainable alternatives:

⁸ Ibid. p. 43.

⁹ Afghanistan Farmers' Intentions Survey 2003/2004, United Nations Office on Drugs and Crime, February 2004, p. 5.



Output Relationships

Partner institutions, specifically JDA, AKF, and CIMMYT, are currently successfully working with farmers in the target areas to help them improve their farming system. This has built trust, which will greatly facilitate participation in this project. CIMMYT has been working with government research and development personnel on wheat trials. JDA is collaborating with FAO in on-station trials of oilseed crops. These current collaborations, which will be greatly strengthened by this project, will build stakeholders research and development capacity, and orient them towards farmers' needs via on-station and on-farm field days. JDA, AKF and CIMMYT have informal relationships with NGOs in the target area that they can work through to build NGO capacity and awareness in alternative crops and cropping systems.

If policy recommendations are made they would be to the central Ministry of Agriculture via meetings and reports, as well as showing them firsthand the potential of successful new crops and LEISA at on-farm and on-station field days.

18. Expected Impact: Livelihoods and poverty of current poppy growers

The combination of high value crops, value added products, conservation agriculture/LEISA, fair credit and market and business research and analysis will give farmers choices other than poppy that they can rely on to provide for their needs. Conservation agriculture will lead to lower input costs and better soil quality, which contributes to higher, more sustainable and profitable yields for the farming system, which also benefits cash crops. Oilseed crops and fodders offer high value, value added products and can create new

businesses. Small village-based oil extraction mills are an example of this. These mills offer many benefits, such as eliminating exploitation from middlemen and traders, and encourage job creation and support of animal husbandry through oilcake, which increases milk production (see <http://tinytechindia.com/oil.htm>).

Through Participatory Technology Development (PTD), this project will raise farmers' capacity to take informed decisions on using new crops and new practices. Linking a supply of fair credit from BSCU and AKDN with new agricultural technologies will facilitate scaling up beyond project sites by giving farmers the ability to buy needed inputs without resorting to opium poppy as a source of credit. Analysis of farming systems and their improvement will be done through the Farmer Field Schools concept, which has the potential to facilitate rapid uptake of outputs and has minimal outside support requirements. This will facilitate uptake in a system where extension is weak or non-existent. JDA and AKF will aim to establish support networks that continue services to farmers and provide links to resources for farmers after the project is completed. AKF's Business Development Services that form part of the project are an example of such support services. CIMMYT will continue with provision of improved germplasm and new technology. This project has potential to affect Afghan government institutions by exposing them to LEISA (e.g., conservation agriculture) and moving them away from a focus on high external input dependent farming systems.

Only those ideas that show good business potential, have farmer interest, and require low external inputs to be pursued. A strong emphasis on market development will facilitate uptake of outputs by farmers, the ultimate beneficiaries. The demand for soybeans from New Life Agro (NLA) in Uzbekistan will facilitate growth of soybean acreage as will other demands based on business plans.

Two years are needed to find optimal cropping systems, best practices and the best varieties of new crops and wheat for the target area. This information will allow for scaling up to occur. Although some uptake is expected in year two, the following years would see significant adoption of technologies outside the areas where farmers are directly participating. If the example of the 'Charleston Gray' watermelon is any guide, then farmers will readily adopt a new variety, new crop and/or technology that performs well and has a good market.¹⁰

19. Monitoring and Evaluation

Using the workplan and indicators in the logframe as a guide, JDA will require quarterly reports from all partners. Each level of the logframe has associated indicators and means of verification. At the goal level, JDA, AKF and CIMMYT will conduct follow-up surveys of participating farmers one year after project completion (December 2007) to ascertain the degree of adoption of technologies (crops and crop management), and how that has impacted opium poppy acreage. At the purpose level JDA, AKF and CIMMYT will produce internal and external (e.g., for Ministry of Agriculture) project reports. At the output level, JDA, AKF and CIMMYT will provide reports and plans appropriate to each output. At the activity level, reports, plans, records of training activities, crop and crop management resources will provide evidence of completed activities. These will be provided by all collaborators, as appropriate to each activity. The PI will be responsible for seeing that indicators and verification are completed at each logframe level.

AKF's monitoring, evaluation and research unit has conducted baseline studies in the Micro Areas, which can be regularly updated to monitor the impact and success of the proposed project. Yearly reports will be submitted to the Ministry of Agriculture and their appropriate departments. There will be regular meetings of representatives from all collaborators to

¹⁰ 'Charleston Gray,' a variety from the U.S.A., was introduced approximately two years ago. It is now a very dominant watermelon variety in the bazaar.

assess progress and make necessary changes in the logframe and workplan. This will be in addition to the RALF organized program workshops. Feedback from farmers, particularly after the first year of applied research (on-station), PTD and associated field days/training events, will be used to guide and make any changes to program activities for the following season.

There will be frequent communication (in person meetings, phone calls, emails) between partners. Face to face meetings will be greatly facilitated through the on-farm workshops and field days, where collaborators will be present. The PI will visit project sites in Baghlan and Badakhshan at least twice per year, with additional visits as necessary. Site visits will be frequent in Balkh, where the PI will be deeply involved in project activities.

As most of the proposed agricultural research activities are new for the target areas, there is little benchmark information for comparison in terms of crops and cropping systems. However, benchmark information for wheat yields, currently averaging at 1.5 mt/ha (CIMMYT, personal communication), provides a useful reference point. Adoption of crops and management practices that synergistically enhance wheat production will result in higher average wheat yields. Initial soybean yields from 2005 on-farm and on-station demonstration plots in Balkh are estimated between 1 – 1.8 mt/ha. The Winrock farmer-to-farmer consultant, based on his experience in Central Asia, believes that these yields can be increased through correct variety selection and improved management practices.

Assessing gains in soil quality improvement would evaluate the success of crop diversification under conservation agriculture methods. Soil quality information can be gathered on participating farms as a benchmark against future changes. However, it must be kept in mind that soil quality improvement is a slow process, so it is not realistic to see large changes after one or two years of on-farm experiments. However, small, positive changes (e.g., higher water retention ability) one year after project completion can realistically be expected.

UNODC reports are a baseline from which change of acreage of opium poppy cultivation can be estimated, although decreases in acreage cannot be expected in two years. Growth in acreage of alternative crops and business development around value added products will be the strongest indicator of adoption of outputs. This would not be seen until after the project timeframe, although the planned post-project survey would show adoption and market trends.

20. Appraisal Issues

The Project cannot have any adverse effect. The participating farmers are involved in an active dialogue on alternative livelihood options to poppy and they will make their own choices with regard to on-farm research and adoption.

The effectiveness of the project will be enhanced if there is concurrent law enforcement and direct external suppression of poppy cultivation. Information on the adverse effects of hard drugs and their incompatibility with the local religious beliefs will enhance the preparedness of the households to pilot alternative livelihood systems.

SECTION E: ACTIVITIES

21. Activities

Output 1 - Established market pathways and business plans for new crops and value added products.

Activities will concentrate on market research and analysis of promising new crops and value added products. Proposed new crops and value added products must be profitable for the farmer and have an outlet (market) accessible to the farmer. This research, which will be done at the very beginning of the project, will lead into participatory discussions with potential entrepreneurs about the business potential of new crops and added value products. These activities will guide and lead into the actual agricultural research that must take place to determine under what conditions and agronomy new crops will grow successfully. New crops that are being considered include: soybeans, canola, safflower, peanut, sesame, linseed, and pearl millet. This list is not meant to be exhaustive, as new crops may come to the attention of project staff as market and agricultural research is conducted.

Output 2 - Farmers familiarised with new high value crops; their management and integration into their traditional cropping system.

The market research and analysis generated from Output 1 will inform participatory discussions with farmers concerning potential new crops and cropping systems. This will be carried out through initial planning workshops held in each province that bring interested farmers together with project staff. These workshops will help guide applied research to be done at stations in each province. Farmers will be shown this research at field days, at which they will be able to choose options (new crops and management technologies) to experiment with on-farm.

As many of the crops and cropping management technologies are either completely or relatively new to Afghanistan, it is important to test them on-station in the first year. In the first season the project does not want to try experimental crops and technologies on-farm, which would be asking farmers to take on too much risk. On-station trials will help eliminate those crops and technologies that have obvious failings. On-station trials will be replicated with four replications in a randomized complete block (RCB) design. Experiments planned include combining conservation agriculture practices with new crops, while integrating this into the wheat-based system.

It is possible the project may find some farmers willing to try some new crops and technologies. For example, JDA has grown soybeans, a new crop for northern Afghanistan, on-farm in Balkh province for the past two years, and farmers have expressed a desire to grow soybean again in 2005.

The results of on-farm research will also inform and guide on-station research that is conducted in the second season (2006) of the project. Workshops with farmers will be held in the middle of the project (July 2006) to assess progress and make any changes to plans for fall sowing of crops. There will be an end of project workshop with farmers to plan next steps (e.g., on-station and on-farm research in 2007). The primary goal of these workshops is to have both parts of the research, on-station and on-farm, inform, evaluate and guide each other.

The farmers will be supported in making their own choices (crops, cropping technology and value addition) and the PTD approach will create an active environment for on-farm self experimentation. The PTD approach in itself promotes self-replication and expansion of successful outcomes within and between the regions.

Conservation agriculture practices will play a key role in on-station and on-farm experiments. What follows is a definition of conservation agriculture, in order to help clarify what is meant by the term.

Conservation Agriculture¹¹

Conservation Agriculture (CA) is a term now being used to describe a crop management system that is based on zero-tillage and mulching. It differs from the more common system of conservation tillage because no tillage operation (disturbance of the soil) is done. There are three main pillars for CA; zero-tillage (just minimal soil disturbance to plant seed), mulching (previous crop residue or a cover crop) and rotations. Some people are also including controlled traffic (drive the tractor down the same tractor tracks) to reduce compaction. IPM is also an important component of this system for purposes of plant protection.

The zero-tillage provides benefits in terms of less diesel use and less greenhouse gas emissions, less cost, often timelier planting and usually after an initial transition period for farmers to learn how to do the operations properly and some stabilization of the system, better yields. The tillage needed for rooting is essentially left to biological processes such as rooting from the previous crop (by not disturbing these channels through tillage, they form good contiguous pores for drainage, oxygen and healthy plant growth), earthworms and other animal life in the soil, and fungal and mycorrhizal hyphae.

Mulching is essential for successful zero-tillage and also has multiple benefits. It can be provided by the residues of the previous crop or produced using leguminous or non-leguminous cover crops. When it is combined with zero-tillage the negative effects of raindrops or irrigation on surface soil properties are reduced leading to reductions in soil erosion and better infiltration of water into the soil profile. This is a major benefit in areas where erosion is a problem and where crops are dependent on stored soil moisture or efficient irrigation management. The mulch also provides an optimal environment to promote biological soil diversity and hence improved soil health. Soil physical soil health is also improved. The mulch will provide better moisture and temperature regimes for active biological activity which in turn will lead to faster nutrient cycling and more efficient use of soil nutrients, whether applied externally or provided from the soil nutrient stocks. By promoting soil microbial and fauna diversity, plant diseases and insects are better controlled through competitive control of diseases and promotion of beneficial insects.

Rotations and crop mixtures are an important and sound agronomic practice in any agricultural system to help minimize disease and pest outbreaks. Estimates of CA for the World were estimated to be 70 million hectares or more in 2002 and growing fast as farmers latch onto this system that essentially helps them produce more at less cost. CA, once farmers overcome their mindsets and are allowed to experiment with the technology and see for themselves how it works (it is essential to have farmer participation when experimenting with this technology), they adopt it rapidly since it improves their incomes and livelihoods. Suitable equipment is another key component for success but since many local manufacturers are developing machinery for zero-tillage and planting into residue in the region (China, India, Pakistan) this constraint is being resolved with equipment available these days within the reach of financial constraints of small farmers.

¹¹ Courtesy of Dr. Peter Hobbs, Dept. of Crop & Soil Sciences, Cornell University.

- **Seasonality**

There are critical dates to the project's proposed on-station and on-farm research activities:

October/November 2004 (timing depends on province)

Winter wheat sowing needs to be done on-station to help determine varieties that will work best in rotation with alternative crops. For example, shorter season wheat may be desirable if soybeans will follow wheat. CIMMYT has already initiated this in the target areas in collaboration with FAO. In addition, FAO is doing staggered sowings of canola in Balkh to determine the best fall planting date for a successful spring harvest.

April/May/June 2005 (timing depends on province)

Planting of crops that will follow wheat harvest will occur in the spring-summer (e.g. late planted soybeans), as well as spring planted crops (e.g., canola or safflower in Badakhshan). Establishment of plots using conservation agriculture practices.

October/November 2005 (timing depends on province)

Winter sowing of farmer chosen varieties (e.g., wheat, canola) on-farm using farmer chosen technologies. Further on-station trials as necessary. Establishment of plots using conservation agriculture practices.

April/May/June 2006 (timing depends on province)

Spring sowing of farmer chosen varieties on-farm using farmer chosen technologies. Further on-station trials as necessary. Establishment of plots using conservation agriculture practices.

Field days, which emphasize hands-on learning that makes farmers more likely to try new technologies for themselves, will be held during these critical dates.

Output 3 - Build capacity of Afghan research, development and extension staff in topics relevant to the expected project outcomes.

Crucial to the sustainable adoption of new crops and technologies is building the capacity of government personnel. Therefore, training opportunities that are relevant to the project will be offered to government as well as NGO staff. These could coincide with farmer field days on-station and on-farm. Training opportunities could also include training at regional and international (e.g., CIMMYT) research centers that have activities relevant to the project.

- **Climate**

Availability of water is perhaps the most crucial environmental issue. Research stations have a good supply of water, but farms may not. This is most acute in Balkh, where the irrigation infrastructure is badly in need of rehabilitation, both technically and socially. Some factors are simply beyond the project's control. For example if a local warlord cuts off or reduces the water supply to a village where there are on-farm trials. Every effort will be made to locate on-farm trials where there is reliable irrigation water. Some drought or water stress can be valuable, however, for determining the most drought tolerant varieties.

On-station research trials will be carried out at:

1. Darul Aman Main Research station in Kabul, where a large number of wheat varieties can be screened.
2. Pos-i- Ishan, Baghlan, (government research farm)
3. Dehdadi, Mazar-I-Sharif, Balkh, (government research farm)
4. Jurm, Badakhshan, researcher designed experiments on rented land (due to absence of operational research station)

CIMMYT has secured these sites for research. Official memos regarding joint collaboration with approval of the Minister of Agriculture have been sent to all research stations. The project will be able to draw on the expertise of provincial Department of Agriculture personnel, FAO and Winrock International consultants. In addition, much expertise is available to the project through internal and professional networks within each collaborator's institution.

Special resources needed include two 2 wheeled tractors for demonstrating conservation agriculture practices in Balkh and Baghlan. The farming system in Badakhshan tends to be a very subsistence driven system with very small landholdings (less than 1 ha), so even small tractors may not be feasible.

Special resources also include oilseed expellers/presses, either to be imported from a regional country, or designed and built in country. Winrock's soybean consultant has experience working with Central Asian farmers in building soybean roasters, which are an important part of the creation of a poultry/livestock feed business.

JDA and AKF have already worked with farmers in the target area, so in the first year there may even be some on-farm trials, depending on farmer willingness and interest to try new crops and/or technologies. But the emphasis in the first year will be on applied research trials on-station to help determine those technologies that can be offered to farmers for their own experimentation and adaptation.

22. Implementation and Management

The Partner Institutions will establish complementarity and synergy as follows (this has been agreed to by each partner, having reviewed and/or submitted these summaries to the PI):

CIMMYT has a global mandate and conducts maize and wheat research to benefit developing countries through strong science and effective partnership. *CIMMYT* creates, shares and uses knowledge and technology to increase food security, and improve the productivity and profitability of farming systems and sustain natural resources in developing countries.

The specific competence of *CIMMYT* is its international experience in research and training and provision of improved germplasm, its membership in a future harvest international network related to the project focus and its experience in evaluating production potentials in the different ecozones. Dr. Mahmood Osmanzai, a native of Afghanistan, brings many years of experience research, training to the project, having worked in Afghanistan, Africa, North America and Central Asia with a variety of crops and production technologies

CIMMYT-Afghanistan plays an important role in implementation of the whole project with the specific role in following activities:

- Plan, design and conduct applied research, on-station and on-farm, in close collaboration with partners.

- Assist in capacity building and HR development of NARS and partners.
- Ensure availability of suitable wheat germplasm and its management.
- Assist in suitability assessment and identification of other high value crops for wheat based cropping system.
- Encourage and extend crop diversification.
- Assist in testing, verifying and extending new conservation agriculture technologies to farmers with very active farmer participation.

We can state several guiding principles that will underpin the project approach, which will guarantee not only reaching our goals, but also reaching them in the right way. These principles are based on a philosophy that is shared by all the project institutions. The principles below have helped us earn the trust of collaborators in the public, private, and non-profit domains, based on our reputations for a pragmatic-results orientation, commitment to service, and even-handedness in our partnerships.

The project's guiding principles can be expressed as follows:

- The project strengthens locals for the benefit of Afghanistan (Afghanistan for Afghans); project partner institutions will recede into a background support role once our immediate job is completed.
- The project will work to preserve and strengthen local knowledge and technologies in its work with plant genetic resources and farming practices.
- The project will be mindful of the multiple dimensions of sustainability, i.e., genetic diversity in farmers' fields that ensures long-term sustainability; environmental sustainability and institutional sustainability.
- All project planning, research, and technology development and dissemination will occur in the context of networks (including the Afghanistan Ministry of Agriculture, and the national agricultural research and extension system), taking advantage of the comparative advantages and skills of the different institutions working in the agricultural sector in Afghanistan.

JDA will:

- lead RALF project implementation and management
- coordinate collaboration between the partners and monitor overall progress; evaluate outcomes and impact and be responsible for reporting requirements
- carry out crop and crop systems development in Balkh province (on-station & on-farm)
- provide technical assistance for trials in Badakhshan and Baghlan
- source consultants as needed
- perform market research and development in collaboration with AKF
- work closely with partners to develop training and extension resources for NGOs, Afghan government research and development personnel and farmers
- work with BSCU to provide farmers with access to credit
- assist in sourcing crop species and varieties

The specific competence of JDA is its experience in venture development with a participatory development approach and its established relations with the target groups in Balkh province. In addition, the Program Manager has experience in working in low external input sustainable agriculture, via working with the organic farming community in the northeast and northwestern United States. In addition, the Program Manager has experience managing on-station and on-farm trials.

The AKF will:

- compile market information, carry out market assessments and establish business plans through its business development services
- pilot local processing steps with farmer groups
- enable access to microcredit (if needed) through its affiliated ARMP
- carry out applied research and crop/farming systems development in Badakhshan and Baghlan Provinces
- promote participatory technology development with the test crops and associated management practices within its regional NRM programmes

AKF contributes with its specific competence in MSE Development/BDS and in NRM. AKF has experienced teams and a comprehensive work infrastructure with centers in Puli Khumri/Baghlan and Baharak/Badakhshan and area sub offices in various districts of the two target provinces. The NRM teams support community development in more than 600 villages and are well trained in participatory technology development (PTD). AKF will integrate the innovation potential of this research project in the ongoing alternative livelihood initiatives covering main poppy growing areas of Badakhshan and Baghlan.

Cornell University will:

- provide technical expertise, particularly relating to conservation agriculture/low external input sustainable agriculture
- assist in training farmers, government, and NGO staff in conservation agriculture
- assist in sourcing crop varieties through the CGIAR system, and from commercial sources
- assist in developing training events and resources with partners for farmers and Afghan research and development personnel

Cornell is well positioned to provide support on agronomy issues for the various crops used in this project, especially in relation to tillage and crop establishment. Dr. Peter Hobbs's skills are in agronomy and his experience is in the 30 years he spent in South Asia working for CIMMYT and IRRI on cropping systems and improved land management.

BSCU, which is supported by the *WCCU*, will provide small loans to farmers in Balkh province who adopt technologies and need equipment (e.g., 2-wheeled tractors for no-till), inputs, etc. They will be a source of fair credit to farmers and will greatly facilitate scaling up of outputs.

The Project Partners will jointly elaborate work plans and coordinate project implementation in monthly meetings, whether by phone, internet or in person.

Concerning the institutional and policy framework, each partner is committed to:

1. A participatory approach via farmer driven research.

Farmers' demands and interests will be taken in account at all levels.

2. Economic and market flexibility.

All of the components of the market chain for a particular agricultural product must be in place, or have the potential to be developed, for a new crop and associated added value products to be successful. For example, if soybeans are shown, after research, to be profitable and agronomically feasible, then there must be capacity for soybean processing, which entails access to, or development of, certain equipment. This could include processing equipment for livestock and poultry feed or food oil.

3. Agricultural sustainability.

Low external input sustainable agriculture (LEISA) will be the focus of research on-station and on-farm, which conservation agriculture is a part of. The project will not seek to promote technologies requiring high external inputs. In addition, the project will not seek to apply one set of successful crops and crop management technologies in all target areas, recognizing that each province has different climates, as well as varying access to potential markets.

In sum, the project will be guided by farmer demands, market realities and agricultural sustainability. Each partner is committed to working long-term in Afghanistan, which will ensure further development and promotion of project outputs. In addition, building the capacity of Afghan government research and development personnel increases the likelihood that outputs will be sustained and promoted beyond the two-year project timeframe.

SECTION F: FINANCIAL INFORMATION

23a. Financial Summary (Total Budget in US\$)

ITEMS	Year 1	Year 2	Total
Personnel	\$ 77,435	\$ 76,812	\$154,247
Travel	\$ 20,650	\$ 18,850	\$ 39,500
Operational expenses	\$ 17,830	\$ 17,580	\$ 35,410
Equipment	\$ 43,760	\$ 1,000	\$ 44,760
Consumables	\$ 7,360	\$ 8,360	\$ 15,720
Workshops	\$ 8,970	\$ 9,810	\$ 18,780
Training	\$ 16,200	\$ 16,200	\$ 32,400
Publications	\$ 3,250	\$ 3,250	\$ 6,500
Overheads	\$ 19,546	\$ 15,186	\$ 34,732
Contingency	\$ 7,818	\$ 6,074	\$ 13,893
TOTAL	\$222,819	\$173,122	\$395,941

23b. Budget for Lead (Applicant) Institution JDA (US\$)

ITEMS	Year 1	Year 2	Total
Personnel	\$ 38,335	\$ 39,832	\$ 78,167
Travel	\$ 11,970	\$ 10,470	\$ 22,440
Operational expenses	\$ 3,000	\$ 3,000	\$ 6,000
Equipment	\$ 25,090	\$ -	\$ 25,090
Consumables	\$ 2,460	\$ 2,460	\$ 4,920
Workshops	\$ 1,950	\$ 1,950	\$ 3,900
Training	\$ 3,000	\$ 3,000	\$ 6,000
Publications	\$ 750	\$ 750	\$ 1,500
Overheads	\$ 8,656	\$ 6,146	\$ 14,802
Contingency	\$ 3,462	\$ 2,458	\$ 5,921
TOTAL	\$ 98,673	\$ 70,066	\$168,739

23c. Budget for Collaborator 1 CIMMYT Afghanistan (US\$)

ITEMS	Year 1	Year 2	Total
Personnel	\$ 9,600	\$ 10,080	\$ 19,680
Travel	\$ 5,080	\$ 4,080	\$ 9,160
Operational expenses	\$ 10,500	\$ 10,500	\$ 21,000
Equipment	\$ 7,670	\$ -	\$ 7,670
Consumables	\$ 2,000	\$ 2,000	\$ 4,000
Workshops	\$ 1,500	\$ 1,500	\$ 3,000
Training	\$ 13,200	\$ 13,200	\$ 26,400
Publications	\$ 1,500	\$ 1,500	\$ 3,000
Overheads	\$ 5,105	\$ 4,286	\$ 9,391
Contingency	\$ 2,042	\$ 1,714	\$ 3,756
TOTAL	\$ 58,197	\$ 48,860	\$ 107,057

23d. Budget for Collaborator 2 Cornell University, Dept. of Crop & Soil Sciences (US\$)

ITEMS	Year 1	Year 2	Total
Personnel			
Travel			
Operational expenses	\$ 360	\$ 360	\$ 720
Equipment			
Consumables			
Workshops	\$ 300	\$ 300	\$ 600
Training			
Publications	\$ 1,000	\$ 1,000	\$ 2,000
Overheads – 10%	\$ 166	\$ 166	\$ 332
Contingency – 4%	\$ 66	\$ 66	\$ 133
TOTAL	\$ 1,892	\$ 1,892	\$ 3,785

23e. Budget for Collaborator 3 AKF (US\$)

ITEMS	Year 1	Year 2	Total
Personnel	\$29,500	\$26,900	\$ 56,400
Travel	\$ 3,600	\$ 4,300	\$ 7,900
Operational expenses	\$ 3,970	\$ 3,720	\$ 7,690
Equipment	\$11,000	\$ 1,000	\$ 12,000
Consumables	\$ 2,900	\$ 3,900	\$ 6,800
Workshops	\$ 5,220	\$ 6,060	\$ 11,280
Training			\$ -
Publications			\$ -
Overheads	\$ 5,619	\$ 4,588	\$ 10,207
Contingency	\$ 2,248	\$ 1,835	\$ 4,083
TOTAL	\$64,057	\$52,303	\$116,360

24. Budget Notes, by line item and by Collaborator

JDA

Personnel

Funds are requested for the JDA Agricultural Program Manager's (PI) salary, who will devote 70% of his time to the project. 50% of the PI's salary (\$22,000/yr, includes 15% fringe benefits, with 5% annual raise) is requested, the rest being covered by JDA. The Agricultural Program Manager will hire one local full-time agriculturalist to assist in the project (\$4140/yr, full-time, includes 15% fringe benefits, w/ 5% annual raise), who will work full-time for the PI on the project.

Funds are also requested for one full-time driver (\$2070/yr, includes 15% fringe benefits, with 5% annual raise), and a half-time local administrative assistant/accounts person (\$1725/yr, includes 15% fringe benefits, with 5% annual raise). These three local positions will devote 100% of their time to the project.

Consulting funds are requested for Dr. Peter Hobbs at Cornell University, who will make two trips/year for 14 days each to Afghanistan (\$300/day salary = \$8,400/yr) to conduct training of farmers and NGO and government staff. He will also help establish and evaluate on-station and on-farm experiments.

Travel

International travel funds are requested for Dr. Peter Hobbs (RT airfare estimated @ \$1700/trip via Tashkent, includes Tashkent/Termez RT airfare as well) for two trips each year to Afghanistan. Per diem (\$45/day x 14 days x 2 trips/yr) is requested for Dr. Hobbs as well.

Funds are also requested for the PI to make regional trips to source seeds and no till equipment, and conduct market research. Pakistan and Iran both have potential to supply seeds and/or equipment, and are potential markets for products. The cost is estimated at \$3000 the first year, when most of these initial market research activities are carried out, and \$1500 the second year. This money would also cover visits to international meetings/conferences that are relevant to project objectives (e.g., a conference on conservation agriculture in India). These funds would cover airfare and per diem.

Local travel funds are requested for Dr. Hobbs's in-country travel to and within the three provinces. This is estimated at \$800/yr and covers fuel and airfare. Funds are requested for the PI to travel to Badakhshan project sites two times per year (RT airfare @ \$300 x 2 trips/yr). Per diem for Badakhshan site visits is also requested (\$20/day x 7 days x 2 trips/yr). Funds are also requested for 4 site visits/year to Baghlan by the PI and local agriculturalist (\$20 per diem x 5 days x 2 staff x 4 visits/year).

Travel funds to consult with project partners three times/year in Kabul is requested for the PI and local agriculturalist (RT airfare @ \$120 + per diem @ \$45/day x 3 days x 2 staff x 3 trips/yr). These meetings will be used to evaluate project progress and make any necessary changes.

Travel funds are requested for JDA's Executive Director to visit Mazar-I-Sharif three times/year (RT airfare, Tashkent/Termez @ \$60) to consult with the PI and visit Balkh project sites. Per diem is also requested for these visits (\$20/day x 2 days).

Operational Expenses

Funds are requested to cover fuel expenses from visiting project sites in Balkh (estimated at \$100/month). These visits would be to set up and manage (e.g., data recording) on-station and on-farm experiments. Funds are also requested to cover fuel expenses from visiting project sites in Baghlan (estimated at \$100/month). These visits would be to setup and manage on-station and on-farm experiments. Visits to Baghlan will be less frequent, but the distance is greater, thus requiring an equivalent amount of funds for fuel as Balkh, where distances are less but visits more frequent.

Funds are also requested to cover office supplies (estimated at \$50/month).

Equipment

Funds for one 2-wheeled tractor for experimenting with conservation agriculture practices are requested. Estimated cost is \$3000, which includes implements (e.g., no-till seeder) and shipping costs to Mazar-I-Sharif.

Funds are requested to either purchase an oil expeller unit from tincytechindia.com, or for designing and building locally made expellers and/or soybean roasters. This is estimated at \$5000.

Funds for a used 4WD vehicle are requested (estimated at \$15,000 for a Toyota Landcruiser in good condition). This will be invaluable for site visits in Balkh and Baghlan.

Computer and communications equipment includes one computer for the local agriculturalist (estimated @ \$1000), scanner (estimated @ \$100), digital camera to document project progress, (estimated @ \$400) and one mobile phone (\$90) for the local agriculturalist. Funds are also requested for books and periodicals relating to project objectives (estimated @ \$500 for first year only)

Consumables

Funds to cover purchase, import and/or shipment of seed for experiments is requested (estimated at \$500/yr). Funds for supplies (inputs, etc.) for on-farm experiments are also requested (estimated at \$1000/yr).

Funds for units for two cell phones (\$40/month) are requested for the PI and local agriculturalist.

Workshops

JDA will hold three workshops each year in Balkh with an estimated 30 people/workshop attending (farmers and staff). These will be used to guide and evaluate research. Costs are estimated at \$15/participant, which covers transport, food and workshop materials (\$2,700/yr).

Funds are requested for the PI and local agriculturalist to attend the RALF annual program workshop (Mazar/Kabul RT airfare @ \$120 + \$45 per diem x 4 days x 2 staff).

Training

JDA, in collaboration with project partners, will hold two field days/year for farmers and national research staff at two sites in Balkh. These will be to introduce new crops and conservation agriculture practices. Costs are estimated at \$15/participant, which covers transport, food and training materials (estimated 50 participants x 2 sites x \$15/participant x 2 field days/year).

Publications

Funds are requested for annual reports, extension materials and translation (estimated at \$750/year).

Overheads – 10%

Contingency – 4%

CIMMYT

Personnel

Funds are requested for a senior research agronomist (\$9,600/yr with 5% annual increase), who will work full-time on the project for Dr. Osmanzai. Funds are also requested to hire a consultant (estimated at \$4,000/yr) to assist in technology development and adaptation. Dr. Osmanzai's salary is covered by CIMMYT.

Travel

Funds for international travel are requested to source equipment and crop varieties (\$2000 first year, \$1000 second year).

Funds for Dr. Osmanzai or the senior research agronomist to travel from Kabul to consult with JDA in Mazar-I-Sharif and visit project sites, three times/year are requested (RT airfare @\$120 + \$40 per diem x 5 days x 3 visits/year).

Funds for Dr. Osmanzai or the senior research agronomist to travel from Kabul to Badakhshan for project site visits are requested (RT airfare @ \$300 + per diem @ \$20/day x 7 days x 3 visits/year).

Funds for Dr. Osmanzai and/or the senior research agronomist to travel from Kabul to Baghlan for project site visits are requested (4 visits/year x per diem @ \$20 x 5 days x 2 staff).

Operational Expenses

Operational expenses include applied research expenses in the three provinces. This is estimated at \$300/month x 6 months for each province. These funds will assist in coordination with the provincial level national research staff (Dept. of Agriculture), who will help with the on-station experiments. This will strengthen national research capacity so that work can continue past the project timeframe.

Funds are requested to cover supplies needed for on-station experiments in all three provinces. This is estimated at \$3000/year. Funds are also requested for fuel for vehicles, estimated at \$200/month, and office supplies, estimated at \$50/month.

Equipment

Funds to purchase three computers for staff and national agricultural research staff are requested (estimated at \$1000/computer). Funds are also requested for a digital camera (estimated @ \$400) to aid in project documentation and reporting, three mobile phones (\$90/phone) and research equipment (estimated @ \$1000 to cover balances, measuring tapes, field markers, hand planters and sign boards).

Consumables

Funds are requested for supplies (seed, fertilizer, land rental and other inputs) for on-station variety trials (estimated @ \$2000/year).

Workshops

Funds are requested to attend the annual RALF program workshop. Cost for five staff (two project and three national agricultural research staff) to attend is estimated at \$300/participant.

Training

Training funds are requested for two training events/year. These would be for national agricultural research staff, and could be held in-country at project sites, and/or in a nearby country if appropriate to project objectives. A lump sum of \$7,200/year is requested. This will help to build capacity of Afghan research, development and extension staff.

CIMMYT, in collaboration with project partners, will hold two field days/year for farmers and national research staff at two sites each in Baghlan and Badakhshan. These will be to introduce new crops and conservation agriculture practices. Costs are estimated at \$15/participant, which covers transport, food and training materials (estimated 50 participants x 2 sites x \$15/participant x 2 field days/year).

Publications

Funds for publication of annual report, extension materials and translation are requested (estimated @ \$1,500/year).

Overheads – 10%

Contingency – 4%

Cornell University, Dept. of Crop & Soil Sciences

Cornell's *Personnel, Travel, Equipment, Consumables, and Training* costs are covered by the JDA budget.

Operational Expenses

Funds are requested for office supplies (estimated at \$30/month).

Workshops

Funds are requested to cover the RALF annual program workshop. Cost is estimated at \$300. Ideally, this would coincide with one of Dr. Hobb's visits to Afghanistan.

Publications

Funds are requested for publications costs, estimated at \$1000.

Overheads – 10%

Contingency – 4%

AKF

Personnel

Funds for technical staff are requested as follows: MSE coordinator (\$9,400 first year @ \$3200/month x 3 months, \$6,400 second year @ \$3,200/month x 2 months), BDS providers (\$2,880 @ \$480/mandate x 6 mandates), Badakhshan research coordinator (\$3,600/yr), NRM/PTD coordinator (\$4,200/yr) and an M & E officer (1 month salary requested/yr @ \$540/yr).

Funds for support staff are requested as follows: labor research (2 laborers @ \$120 month = \$,2880/yr), NRM VF (\$3,600 first year, \$4,000 second year), and guards to protect research plots (two guards @ \$100/month = \$2,400/yr)

Travel

Regional travel costs are estimated at \$100, but only \$500 is requested the first year, while \$1200 is requested for the second year. Local travel costs are estimated at \$100/month for

11 months of each year (\$1,100/yr requested). Funds for exposure visits are requested in a lump sum of \$2,000/yr.

Operational Expenses

Funds are requested for land rental for research plots (estimated @ \$720/yr). Funds are also requested for fencing materials for research plots to keep animals from destroying plots (estimated @ \$250 for the first year only). \$3,000/yr (estimated) is requested to cover fuel costs.

Equipment

Funds are either requested to purchase two oil expeller units from tincytechindia.com, or for designing and building locally made expellers and/or soybean roasters. This is estimated at \$5000/unit. A lump sum is requested for books and periodicals relating to project objectives and research (estimated @ \$1,000/yr).

Consumables

Consumables include seed, fertilizer and other inputs for on-farm experiments (estimated at \$1,500 first year, \$2,500 second year). Also included are packaging materials, estimated at \$1,400/yr.

Workshops

AKF will hold three workshops each year in Baghlan and Badakhshan with an estimated 30 people/workshop attending (farmers and staff). These will be used to guide and evaluate research. Costs are estimated at \$15/participant, which covers transport, food and workshop materials (\$2,700/yr).

Funds for regional exchange of experience with other projects, and for the annual RALF program workshop, are requested (estimated @ \$210/day x 3 staff x 4 days = \$2,520/yr).

Training

AKF provides training within its' over all RD training plan (PTD, BDS etc.).

Publications

Publications are budgeted by other Project Partners.

Overheads – 10%

Contingency – 4%

Attachment 1: Logical Framework

RALF Project Number	RALF02-05
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Project Title	Increased Productivity and Profitability of Wheat-based Cropping Systems to Reduce Reliance on Opium Poppy in Northern Afghanistan.
Lead implementing institution	Joint Development Associates International, (JDA)

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Assumptions and Risks
Goal: To reduce farmer reliance on opium poppy in northern Afghanistan.	Farmers have alternative crops to opium poppy in their wheat based cropping systems by end of the project.	Final Project evaluation report/ Follow-up surveys of participating farmers after 1 year from end of project (31 December 2007). Presence of added value products in the market.	A stable political and security environment and adequate law enforcement/eradication. Commitment of government and partners.
Purpose: To engage farmers in diversification of their farming systems with alternative high value livelihood options that improve productivity and profitability in wheat-based cropping systems.	Through applied research and PTD, validated research results are available for 3 promising crops and farming systems management options. 400 farmers are actively testing new technologies by the end of project in 8 districts in the target region.	Internal project research records and data sets, Project progress reports, Reports to appropriate Afghan government departments (e.g., Agriculture).	Prices of new crops and added value products remain competitive. No major natural disasters during project period in target area (e.g., drought). Good security to allow access to project sites. Climate for new Afghan based businesses is favourable. Lower labor intensive cropping systems may increase the vulnerability of sharecroppers.

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Assumptions and Risks
Outputs			
1. Markets and Marketing			
<p>1.1 Established market pathways and business plans for new crops and value added products.</p>	<p>Compiled market information of potential crops and added value products.</p> <p>Market connections between market players are investigated for at least 3 crops and 3 added value products.</p> <p>At least 6 farmer groups establish business relationships for local sale or export of promoted crops and added value products.</p> <p>Assessed competitiveness of targeted products.</p>	<p>Market assessment reports.</p> <p>(Potential) Suppliers are linked with buyers (locally and regionally).</p> <p>Signed contracts and agreements (e.g., letter of interests, MOU) between suppliers and buyers.</p> <p>Business plans.</p>	<p>Internal markets are not oversupplied by cheap imports.</p> <p>Government regulations are favourable to export activities.</p> <p>Fluctuations in world market prices of new crops could affect profitability of growing crops locally.</p> <p>Deterioration of security could affect trade (internal and external).</p>
2. Farming Systems Development			
<p>2.1 Farmers are familiarised with new high value field crops.</p> <p>2.2 Farmers are familiarised with improved crop management technology (conservation agriculture, low external input agriculture).</p> <p>2.3 Farmers integrate positive experiences with new crops and technology into their traditional farming practices.</p>	<p>Interest of farmers in applied research trials. (2.1 & 2.2)</p> <p>400 farmers conduct on-farm experiments with new crops and technologies. (2.1 & 2.2)</p> <p>3 new crops/varieties are replicated at village level by at least 5 farmers. [5 baby plots per mother plot] (2.3)</p> <p>Farmers experiment (on-farm plots) with proposed crops and management techniques. (2.3)</p> <p>200 farmers make better use of farm nutrient cycling and therefore buy less fertilizer.</p> <p>In areas of water shortage (e.g. at tail of</p>	<p>Reports on applied research trial work.</p> <p>Participation of farmers in farmer field days and PTD groups.</p> <p>Reports on participatory monitoring and evaluation with stakeholders.</p> <p>Final project impact evaluation report.</p>	<p>Applied research and on-farm trials and experiments successfully identify adapted varieties to target areas.</p>

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Assumptions and Risks
	<p>irrigation systems), farmers demonstrate that yield can be increased by 10-20% with less irrigation.</p> <p>50 farmers combine better crop management technology with diversified cropping systems. (2.3)</p>		
Capacity building			
<p>3.1 Build capacity of Afghan research, development and extension staff in topics relevant to the expected project outcomes.</p>	<p>Five government staff/province are trained in accordance with project objectives.</p> <p>In each province, at least four staff (government, NGO) are trained and positioned in follow-up of project activities.</p> <p>Policy dialogue on roles and responsibilities of main stakeholders (MAAH, NGO, farmer groups, private sector).</p>	<p>Training reports.</p> <p>Final project report.</p> <p>Policy papers from MAAH, Strategy document for follow up on project activities,</p>	<p>Government participation.</p>
Activities			
Market and Marketing			
<p>1.1 Gather market information, both locally and regionally, on promising new crops and value added products.</p>	<p>Identified market opportunities.</p>	<p>Report on market assessment.</p>	<p>Information is available and trustworthy.</p>
<p>1.2 Analyze market information for crop profitability and opportunities for value addition by farmers at local level.</p>	<p>At least 5 potentially profitable alternative crops/value added products are identified.</p> <p>The comparative economic viability of at least 5 alternative crops/added value products against traditional crops, poppy and imported products is assessed.</p>	<p>Market analysis reports and business plans.</p>	

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Assumptions and Risks
1.3 Participatory discussions including potential entrepreneurs about business potential of new crops and added value products.	Established parameters for successful business formation around at least 5 products.	Reports of stakeholder groups on enterprise development.	The economic potential is attractive.
2. Farming Systems Development			
2.1.1 Participatory discussions with farmers about their interests in new crops.	Farmers' contributions guide testing of new crops. Knowledge about farmer's preparedness for adoption of new interventions.	Reports on participatory planning with stakeholders.	
2.1.2 Applied research of identified crops.	New wheat varieties tested for potential rotation with new crops. On-station trials in each province including at least 5 new crops and at least 5 potentially promising varieties per crop (equal to at least 25 crop/variety entries/year).	Reports on applied research trial work by Province and/or trial site.	
2.1.3 Exposure of farmers to new crops.	Options chosen by farmers for their on-farm experiments.	Distribution lists of seed for the establishment of farmer own mother plots with chosen crops/varieties.	Applied research and on-farm trials and experiments successfully identify adapted varieties to target areas.
2.1.4 PTD of new crops.	400 Farmers experiment in 3 locations/province trialing at least 5 new crops, and a minimum of 5 new varieties/crop.	Reports of PTD groups participatory monitoring and evaluations. Project progress reports referring economic impact.	
2.1.5 Sharing of experience/ lessons learned and extend knowledge on crops, their best management practices and their contribution to farm income/competitiveness with poppy production.	Experience on new crops and technologies shared and evaluated by farmers and researchers. Resources produced by farmers and project staff combining applied and farmer led research (PTD). Resources shared with other interested stakeholders.	Experiment evaluation reports. Crop/variety specific self replication rate (number of baby plots per mother plot in PTD groups). Work shop reports.	

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Assumptions and Risks
<p>2.2.1 Participatory discussions with farmers about their interests in better crop management technologies.</p>	<p>Farmers' contributions guide applied research.</p> <p>Knowledge about farmer's preparedness for adoption of new technologies.</p>	<p>Reports on participatory planning with stakeholders,</p>	
<p>2.2.2 Applied research of conservation agriculture and low external input sustainable agriculture methodologies.</p>	<p>Applied research trials with new crops/varieties combined with at least 3 better crop management technologies.</p>	<p>Reports on applied research trial work by Province and/or trial site.</p>	
<p>2.2.3 Exposure of farmers to conservation agriculture and low external input sustainable agriculture methodologies.</p>	<p>Options chosen by farmers for their on-farm experiments.</p>	<p>Documents of the design of farmer own experiments with better crop management technologies</p>	<p>Applied research and on-farm trials and experiments successfully identify better crop management technologies to target areas.</p>
<p>2.2.4 PTD of conservation agriculture and low external input sustainable agriculture methodologies.</p>	<p>100 Farmers experiment in 3 locations/province trialing at least 3 relevant technologies 5 new crops, and a minimum of 5 new varieties/crop.</p>	<p>Reports of PTD groups participatory monitoring and evaluations. Project progress reports referring ecological and economic impact.</p>	
<p>2.2.5 Sharing of experience/ lessons learned and extend knowledge of better crop management technologies.</p>	<p>Experience on new technologies are shared and evaluated by farmers and researchers.</p>	<p>Experiment evaluation reports.</p> <p>Technology specific self replication rate (number of baby plots per mother plot in PTD groups).</p> <p>Work shop reports.</p>	
<p>2.3.1 Optimisation of the traditional farming system with new field crops and better crop management technologies.</p>	<p>At least 50 farmers engage in farming systems optimisation with the project proposed crops/technologies and income generating marketing opportunities.</p>	<p>Farm reports on farming systems optimisation referring ecological and economic impact and relevance for poppy substitution.</p>	

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Assumptions and Risks
Capacity Building			
<p>3.1 Training offered to government, NGO staff and interested stakeholders.</p>	<p>On the job training and coaching,</p> <p>At least two training events/year open to stakeholders/non project staff relevant to project objectives offered at different levels.</p> <p>Training evaluation is reflected in production of manuals and fact sheets.</p>	<p>Training reports and attendance.</p> <p>Manuals and fact sheets.</p>	

Attachment 2: Work plan: Activities and Milestones

RALF Project Number RALF02-05

Project Title	Increased Productivity and Profitability of Wheat-based Cropping Systems to Reduce Reliance on Opium Poppy in Northern Afghanistan.
Lead implementing institution	Joint Development Associates International (JDA)

Project Year	Year 1						Year 2												Year 3												
Calendar Year	2004						2005												2006												
Calendar Month	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	
Project Month	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	
Activities & Milestones:																															
Activity 1.1: Gather market information, both locally and regionally, on promising new crops and value added products.																															
Milestones:																															
1. Markets assessed.																															
Activity 1.2: Analyze market information for profitability for farmers and opportunities for value addition at local level.																															
Milestones:																															
1. Business plans established.																															
Activity 1.3: Participatory discussions with potential entrepreneurs about business potential of new crops and added value products.																															
Milestones:																															
1. Parameters for business development established.																															
Activity 2.1.1: Participatory discussions with farmers about their interests in new crops.																															

Project Year	Year 1						Year 2												Year 3											
Calendar Year	2004						2005												2006											
Calendar Month	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Project Month	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6
Milestones:																														
1. Planning workshops held in each province to help guide and evaluate applied research. (Activity 2.1.2)																														
2. Research plans generated based on farmer's interests.																														
Activity 2.1.2: Applied research of identified crops.																														
Milestones:																														
1. Research plots established.																														
2. Research reports at end of seasons.																														
Activity 2.1.3: Exposure of farmers to new crops.																														
Milestones:																														
1. Field days for farmers at research sites (timing depends on province).																														
Activity 2.1.4: PTD of new crops and low external input sustainable agriculture methodologies.																														
Milestones:																														
1. Farmers decide on which crops and technologies they make PTD experiments.																														
Activity 2.1.5: Sharing of experience/ lessons learned and extend knowledge on crops, their best management practices and their contribution to farm income/competitiveness with poppy production.																														

Project Year	Year 1						Year 2												Year 3											
Calendar Year	2004						2005												2006											
Calendar Month	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Project Month	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6
Milestones:																														
1. Spreading of best practices to other farmers.																														
Activity 2.2.1: Participatory discussions with farmers about their interests in better crop management technologies.																														
Milestones:																														
1. Planning workshops held in each province to help guide and evaluate applied research. (Activity 2.2.2)																														
2. Research plans generated based on farmer's interests.																														
Activity 2.2.2: Applied research of conservation agriculture and low external input sustainable agriculture methodologies.																														
Milestones:																														
1. Research plots established.																														
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Milestones:																														
1. Field days for farmers at research sites (timing depends on province).																														
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Project Year	Year 1						Year 2												Year 3														
Calendar Year	2004						2005												2006														
Calendar Month	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12			
Project Month	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6			
Milestones:																																	
1. Farmers decide on which crops and technologies they make PTD experiments.																																	
Activity 2.2.5: Sharing of experience/ lessons learned and extend knowledge of better crop management technologies.																																	
Milestones:																																	
1. Spreading of best practices to other farmers.																																	
Activity 2.3.1: Optimisation of the traditional farming system with new field crops and better crop management technologies.																																	
Milestones:																																	
1. Adoption of new field crops and better crop management technologies.																																	
Activity 3.1: Training opportunities, relevant to project, offered to government and NGO staff.																																	
Milestones:																																	
1. Two training events/year (on-station and/or on-farm) relevant to project objectives offered at different levels.																																	
2. Manuals and fact sheets available.																																	