

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

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| <b>RALF Project Number</b> | <b>RALF01-04</b> |
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**SECTION A: ADMINISTRATIVE INFORMATION**

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|---------------------------------------|---|
| <b>1. Project Title</b>               | Introduction, Evaluation and Promotion of appropriate Crop Legumes and Vegetables for Eastern Afghanistan (CLVEA) |
| <b>2. Start and Finish Dates</b>      | 1 June 2004 to 31 December 2006   |
| <b>3. Target areas in Afghanistan</b> | Nangarhar Province, Eastern Afghanistan   |

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| <b>7. Collaborating Institutions</b>                       |  |
| 1)   | <p>Dr. Thomas Lumpkin, Director<br/>Asian Vegetable Research and Development Center (AVRDC) -The World Vegetable Center<br/>PO Box 42,<br/>Shanhua, Tainan, Taiwan 741, Rep. Of China<br/>Tel: +8866.583 7801<br/>Fax: +8866.583 0009<br/>Email: <a href="mailto:lumpkin@avrdc.org">lumpkin@avrdc.org</a></p>    |
| 2)   | <p>Dr. Mohammad Tayab, Vice Chancellor<br/>University of Nangarhar<br/>Darunta, Jalalabad, Nangarhar</p>   |
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## SECTION B: PROJECT PROFILE

### 8. Project Summary (600 words)

The Introduction, Evaluation and Promotion of appropriate Crop Legumes and Vegetables for Eastern Afghanistan (CLVEA) Program is an applied research effort in Nangarhar Province of Afghanistan to ascertain the livelihood impact and market potential of six legume and vegetable crops as viable alternatives to opium poppy, and the value addition of low-cost drip irrigation technology. Specifically the program will focus on the livelihood impact of soybeans, mung beans, tomatoes, onions, chilli and sweet pepper. In addition, the program will incorporate a research focus on the impact of these crops on women, in terms of potential income benefits and labor utilization. Further, the program will conduct a broad-based market analysis, locally and regionally, to assess opportunities, potential returns, supply chain development, appropriate farming systems, training and investment requirements to develop these cash crops. The program will link producers to buyers through an annual trade fair in Nangarhar and provide an online showcase for the vegetable producers through Nangarhar University. Results will be disseminated through the publication of research papers and will be scaleable through the utilization of established community relations, field-based demonstration plots and existing institutions – namely Rural Training Centers operated jointly by RI and the Ministry for Rural Rehabilitation and Development.

Conducted at 23 research sites over the ten largest opium producing districts of Southern Nangarhar Province, the program leverages the ongoing, widespread livelihoods initiatives of the Relief International Creating and Restoring Alternative Livelihoods (CRALS) program. The partnerships established for the program, with Nangarhar University's Faculties of Agriculture and Veterinary Sciences, the Asian Vegetable Research and Development Center, and International Development Enterprises, create a technically competent, cost effective, experienced consortium, with a strong track record of delivery and program impact in Afghanistan and in other countries. The CLVEA program is designed to produce high quality livelihoods research and, at the same time, create a positive livelihood impact of a minimum of 538 poppy farmers, whilst contributing to the institutional development of Nangarhar University, enhancing its capacity to serve its community and to assist in the reconstruction of the local agricultural economy.

The CLVEA program will be independently evaluated to ensure the maximum possible impact and relevance of research outputs. Furthermore, RI and its partners will leverage relationships with local and international institutions to disseminate results and to facilitate the development of complementary research and rural / agricultural development programming to further enhance the effectiveness of alternative development as part of an integrated counter narcotics strategy.

## SECTION C: BACKGROUND/PURPOSE

### 11. Background / Literature Review

In 2003 Nangarhar overtook Helmand as the largest provincial producer of illicit opium in Afghanistan, with over 18,000 hectares of poppy cultivated, according to the 2003 UNODC Opium Survey. The 2004 Farmers Intentions Survey, also compiled by UNODC, clearly indicated that farmers would continue to cultivate opium poppies if no legal alternatives existed that could produce a similar financial return on investment, and if law enforcement was not sufficiently robust to coerce them. The absence of sufficiently widespread investment in alternative development, enabling farmer access to legal agricultural and other business opportunities is frequently cited as the major obstacle to reducing economic dependency on poppy cultivation.

Nangarhar has a climate and natural resource environment that can support the production of a number of economically viable and competitive (with poppy) agricultural products. Furthermore, its location provides relatively easy access to markets in Kabul and Pakistan. However, the combined impacts of war, drought, displacement and weak governance have seriously depleted the productive capacity of the province. Throughout the Eastern Region, irrigated winter wheat is the main cereal crop, planted from mid November to mid-December at 120-125kg/ha. Up to 20% of the wheat is spring type, planted in mostly higher altitude areas in mid-January at 100kg/ha. Wheat yields can be as high as 5-6MT/ha, but are generally considerably less due to poor seed quality, poor seed bed preparation, poor planting techniques, lack of appropriate fertilizers, low soil fertility, lack of crop rotations, poor weed and pest control, and poor irrigation management. Wheat is not competitive as a replacement crop for poppy as it is too low value.

Where water is sufficient a wide variety of vegetable crops are cultivated (3-4 crops per year are possible), universally for domestic consumption and where location is appropriate for the market. Distance from the Jalalabad market dictates whether home consumption or commercial production is the main purpose of growing vegetables and little preservation for winter is practiced. Onions being less perishable are a favored commercial vegetable crop in many areas.

Wherever there is sufficient irrigation water summer crops of maize (for human consumption and well as livestock fodder), pulses (mainly mung beans) and even some rice is produced. Annual crops of Persian clover (*Trifolium respupinatum*) are everywhere cultivated as green forage and in the early spring also used as a vegetable for human consumption. A wide variety of wild plants and herbs are also gathered and consumed.

Small areas of cotton are also widely cultivated. Cotton is handpicked, and yields are low. Farmers generally sell their raw cotton to dealers in Jalalabad for PKR22.5/kg (USD0.39/kg)<sup>1</sup>. Raw cotton is then saw ginned (using antiquated Russian machines) with a 33% rendement. The resultant poor quality (short-staple) cotton is sold at PKR55-57/kg (USD0.95-0.98/kg). Cottonseed is purchased (at PKR8.6/kg; USD0.15/kg) by some farmers for animal seed, crushed to produce oil used for soap production or purchased by Pakistani traders for export to Pakistan.<sup>2</sup>

Some crops such as mustard, flax and sesame are cultivated, often inter-cropped with opium poppy, and crops of millet are cultivated for birdseed by some farmers. Some oilseed crops

<sup>1</sup> Exchange rates (as of 9 May 2003) calculated at PKR58 = USD1.0 (PKR1.0 = USD0.01725)

<sup>2</sup> Pers. com. Jalalabad cotton ginners and traders

(eg. sunflower and canola (rapeseed) have potential, but their wide-scale production is not currently feasible due to a lack of processing/crushing facilities<sup>3</sup>. Experimental production of chickpeas has not proved successful, due to infestation of a pod-boring insect.

A variety of fruits (mainly stone fruit – apricots, peaches and plums) are grown principally for domestic consumption, with apples, almonds and walnuts in the higher districts. Mulberries, figs and grape vines (growing up the taller trees) are universal. The climate is also conducive to the cultivation of guavas, persimmons, loquats and even kiwis. Apart from some crude drying of apricots most fruit is consumed seasonally. Commercial fruit/nut production in the Nangarhar districts still remains a largely unfulfilled potential, with the possible exception of pomegranates in the Khogyani district. The development of commercial fruit production has not been helped by the recent drought years.

During the 1960's and 1970's, the Soviet Union developed thousands of hectares of olive and citrus plantations, modelled on that of classic Soviet *sovkhoz*, with all production going straight back to the Soviet Union. The citrus plantations are almost all gone, but the olive plantations remain among the most extensive of their kind in Asia. Associated processing equipment for pickling olives and for oil extraction had the capacity to process 8,000MT of olives per year, but is now virtually inoperative. Massive financial investments (estimated at USD5.0 million) will be required to bring the olive plantations back into viable commercial production.

Opium is the dominant commercial crop in many districts. A somewhat uncertain supply of irrigation water, highly fragmented and small landholdings and a long tradition of cultivating the crop, as well as smuggling and a general lack of deference to authority among the local clans, are all stated as being contributory factors. Poppy cultivation has risen in Nangarhar over the past three harvests making the province the leading opium producer in Afghanistan.

Despite the range of cropping diversity options, the majority of farmers are subsistent and undertake limited cropping rotations, relying on wheat as their staple and principle crop. Inherent soil fertility levels are constantly depleted and limited applications of inorganic fertilizers are sporadically applied. Poverty dictates a human diet of mostly bread from wheat flour, supplemented with white beans and vegetables; meat is rarely consumed, mostly at important social and cultural events.

The previous three years of drought have had a devastating effect on range vegetation, and has lead to widespread decimation of livestock. Recent estimates indicate that the total livestock population in Afghanistan may have declined by about 60% since 1998, but no specific figures are available for Nangarhar. Such a situation has caused a scarcity in the availability of meat, draught animals and breeding stock, which has prompted increased imports of live animals and poultry from neighboring countries, particularly Pakistan. These imports, without proper border controls and quarantine procedures, may entail severe veterinary risks from a number of exotic animal diseases (eg. rabies, brucellosis, FMD, Newcastle disease, rinderpest, etc)<sup>4</sup>.

The adoption of any of the viable alternative livelihood options in the agricultural sector is constrained by a number of factors:

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<sup>3</sup> Pers. com ICARDA staff, Jalalabad

<sup>4</sup> FAO/WFP Crop and Food Supply Assessment Mission to Afghanistan – 13 August 2002

<sup>5</sup> The social and economic benefits of IDE micro-irrigation systems have been documented in numerous regional and country-level impact evaluations by independent investigators. One such report, which is available on the internet, is *Pedaling Out of Poverty: Social Impact of a Manual Irrigation Technology in South Asia* by Tushaar Shah, et al. (IWMI, 2000) at [www.cgiar.org/iwmi/pubs/Pub045/Report45.pdf](http://www.cgiar.org/iwmi/pubs/Pub045/Report45.pdf)

- Lack of farmer knowledge about specific, modern inputs, farming techniques, and market information
- Lack of affordable credit to finance investment in potentially risky agricultural ventures
- Lack of local institutional capacity to support new farmer investments with information and training, particularly to provide extension services and support for crops or other products for which there is a verifiable market
- Poor quality infrastructure that can hamper the reliable availability of water, or access to markets
- Weak organization amongst farmers can reduce the prices their products command

Relief International has learned from the experience, through working with poppy farmers in Nangarhar on the development of alternative livelihood options that a number of significant and under-exploited market opportunities exist for farmers. In particular, significant opportunity exists to further develop a wide variety of vegetable and crop legume production. The introduction of low-cost technology, including greenhouses and drip irrigation can increase productivity, raise farmer incomes, and increase the number of growing cycles in a year.

The CLVEA program proposes to research the livelihood impacts of soy and mung beans, tomatoes, onions, sweet peppers and chilli. These crops have been selected because of several key factors:

- Nutritional value
- Existing local and regional demand
- Suitability to local soil and weather conditions
- A degree of existing familiarity with production techniques, with the potential for higher productivity
- Short duration growth periods
- Financial returns to the producer that may be competitive with opium

### *Soybeans*

Soybean is considered to be a most economical and valuable agricultural commodity as they have good adaptability towards a wide range of soil and climate. On an average dry matter basis, soybean contains about 40% protein and 20% oil. With this composition, soybean ranks on the top in terms of protein content among all the food crops, and second with respect to oil content among all the food legumes (peanut has the highest oil content, which is about 48%). Soybean is very nutritious - the protein and oil components in soybean are not only in high quantity but also in high quality. Soy oils contain high proportion of unsaturated fatty acids, so it is healthy oil. Soy protein contains all the essential amino acids; most of these amino acids are present in amounts that closely match those required for humans and animals. Also, soybean has functional health benefits. During the past several years there has been much interest among medical researchers in the potential role of soybeans and soy foods in preventing and treating chronic diseases. Soybean has versatile end uses. It has been used as a human food, animal feed, and industrial material. Currently world demand for soybean outstrips supply and has resulted in higher than normal prices. This situation will no doubt level off as new resources are applied to soybean production, but prices and net returns are likely to remain attractive to producers. In Afghanistan the demand for protein rich food is high and can be met, to a greater degree, by local production. Prices of between \$7 and \$9 per bushel are in line with the global price. Using appropriate management and irrigation techniques it is reasonable to expect a production level of around one metric ton per hectare, analogous to production rates for soybean in India.

### *Mungbean*

AVRDC research in to mung production in Punjab, in 2003, found that all of the 50 farmers involved in the project were keen to grow mung in the second year. Yields and returns were measured as follows:

|                                   | <b>Summer Mung After Wheat</b> | <b>Summer Mung After Potato</b> | <b>Kharif Mung</b> |
|-----------------------------------|--------------------------------|---------------------------------|--------------------|
| Yield (tons / ha) (max / min)     | 1.75 / 0.25                    | 1.875 / 0.25                    | 2.375 / 0.125      |
| Price (Rs / ton) (max / min)      | 26000 / 7550                   | 26000 / 13000                   | 27000 / 10000      |
| Net returns (Rs / ha) (max / min) | 26305 / -5257.5                | 26950 / - 880                   | 24300 / - 1743.2   |
| Sample size                       | 50                             | 50                              | 50                 |

The variation intensity in the returns over variable cost (ROVC) was 90.27 per cent from crop sown after wheat, 38.58 per cent compared to crop sown after potato and as high as 128.20 per cent from the crop sown in kharif season . The range of ROVC/ha brought out that from the crop sown after wheat, the maximum and minimum returns were Rs 26305/ha and Rs 5257.50/ha respectively (Table 6). Similar variation has been observed in the crop sown after potato in summer season and in kharif season as well. The negative figures of return over variable cost highlighted that some of the farmers incurred losses in mungbean cultivation in various rotations/seasons. The practices of such mungbean growers needs to be studied separately at micro level to pin point the snags and solutions thereof. Even at lower price, the significant yield enhancement promised encouraging improvement in the ROVC. The ROVC/ha has increased by about 54 100 per cent in different rotations in summer season and by about 30 per cent in kharif season in 2003 as compared to the returns estimated for the year 2002.

#### *Vegetables*

Vegetable production in Afghanistan is established, but output is far less than its potential. Strong demand exists in Afghan markets for vegetables, with significant price advantages for out of season produce. As short duration crops, high yields and returns can be achieved from small plots of land. It is anticipated that low-cost technologies, including greenhouses and drip irrigation, can help to increase yields dramatically. Tomatoes, onions, chilli and sweet peppers were selected as it has been observed that average yields in Nangarhar fall significantly below their potential, as illustrated below:

| <b>Crop</b>  | <b>Average Production (ton / ha)</b> | <b>Optimum Production (ton / ha)</b> |
|--------------|--------------------------------------|--------------------------------------|
| Onion        | 8                                    | 25 – 30                              |
| Tomato       | 5                                    | 20 – 25                              |
| Green Chilli | 3                                    | 8 – 10                               |

Demand for vegetables is strong in local and regional markets. In particular, out of season production results in higher prices. The wide range of altitudes and microclimates in Nangarhar, in combination with the introduction of technologies such as greenhouses, increases the likely return to farmers involved in vegetable production. Increased availability of resources in the agricultural economy will facilitate investment in secondary activities to package and process vegetable crops and add value to production. Again, demand for processed vegetable products is strong in the local and regional markets.

#### *Competitiveness with Poppy*

The UN Office of Drugs and Crime (UNODC) 2003 / Farmers Intentions Survey assessed that from the 18,900 hs cultivated with poppy, approximately 964 metric tonnes of raw opium was produced. At an estimated \$269 per kilogram, the average farm gate price for dry opium, one can extrapolate the following:

- Average yield per hectare in Nangarhar = <45 kg / ha
- Gross \$ return per hectare of irrigated land in Nangarhar – 45 x 269= \$ 12,105

- Gross return per average plot given to poppy (0.3 ha) = \$3,900 (typically a farmer will only sell @ 80% of his opium at harvest time. The rest is stored.

The survey notes that prices per kilo are currently higher than the historical trends. Prior to 2000 a kilogram of opium typically sold for \$30 to \$100. Further, it should be noted that farmers often have to make financial or in kind contributions to local commanders or tribal structures or have taken loans with unattractive interest terms, thus reducing their profit margin and the net return on poppy production. Therefore, alternative crops may not have to be competitive in terms of price alone.

Even at lower prices it is clear that alternative crops on their own may not be able to compete with poppy, on a dollar for dollar basis. However, the introduction of alternative legal crops, such as soy and mung beans, must be taken in context with other complementary social and economic initiatives, many of which are now unfolding in terms of rural reconstruction and development and alternative development / counter narcotics programs, such as Relief International's CRALS program:

- Introduction of new technology and farming techniques to increase productivity
- Increased access to irrigation water
- Increased access to credit
- Diversification of income opportunities
- Negative costs of poppy cultivation increased through more effective law and order mechanisms.

All of the interventions mentioned above are important elements of a counter-narcotics strategy and, to one degree or another, are being implemented in Nangarhar. Counter narcotics programs will take time to develop their full impact and, as such, the choice of the six proposed plants is justified and rational, especially when viewed with a longer term perspective.

#### *Processing Facilities*

Processing facilities for legume crops do not exist at this time in Nangarhar. However, there is a great deal of potential to develop facilities in support of the proposed project. Given the demand for the products proposed in the CLVEA program it is clear that a market exists to create local processing capacity. The Nangarhar Provincial Reconstruction Team (PRT) recently approached Relief International to request assistance in the development of small-scale agri-processing facilities, each up to a value of \$100,000. RI is in the process of negotiating several projects with the PRT to create communally owned facilities for legume and vegetable crops at 15 Agricultural Produce Marketing Centers that are currently being constructed, again by RI, with funding from the Department of State's Bureau for International Narcotics and Law Enforcement and from the USAID RAMP. RI expects to have processing facilities in place to serve the domestic and regional markets by the end of 2004. These facilities will include oil presses and bottling plants, drying facilities and packaging plants.

#### *Access to Agricultural Markets, Inputs and Credit*

Currently, market access is limited by a number of factors, including transport cost, poor condition of infrastructure, and lack of effective market information flows. Typically small-scale producers negotiate sales with merchants who accept the cost, and benefits, of transportation to larger markets. Producers dependent on wholesale buyers are particularly susceptible to under valuing their crops or making the wrong production decisions. The market system does have stages from farm gate to local market to provincial market, but these are typically underdeveloped. Finally, in the case of fruit and vegetables, middlemen operate from a municipal wholesale market in Jalalabad. This market is underserved in terms of infrastructure and hygiene standards, resulting in higher than necessary wastage. Relief International is currently renovating this market structure. In addition. RI is in the process of constructing

Agricultural Produce Market Centers, cooperatively owned go-downs in each of 10 target districts, that will serve to strengthen communal commodity price negotiations by offering greater quantity and quality of produce to merchants. The centers will also serve to disseminate up to date market information and yield estimates for different crops in order to facilitate effective future production decisions. The goal of this product is to increase returns to producers by bringing them higher up the value chain. In this the structural reforms ongoing in Nangarhar will affect domestic and international trade.

Lack of access to high quality agricultural inputs and credit has been a constraint on the growth of the agricultural economy in Nangarhar and, in part, an underlying cause of dependency on poppy. However, access is improving. The international community has invested heavily in both these areas, though a number of programs, which are beginning to increase the range of livelihood options available to Afghan farmers. In particular the USAID MISFA program, implemented through BRAC, MADERA and DACAAR in Nangarhar, have registered several thousand borrowers. Relief International has also established credit lines to the 19 cooperatives involved in the CLVEA program, and to nearly 200 individual entrepreneurs. RI's CRALS program is planned for at least one more year, which will sustain direct lines of credit to the participating cooperatives to facilitate the procurement of inputs at wholesale rates. This credit line will be expanded in the coming years as RI establishes an indigenous partner micro finance institution this year. Further, the private sector supply of agricultural inputs has grown significantly in the past two years. Today, all of the major supplies a farmer may wish to invest in, from improved seeds, to fertilizers and pesticides, are available on the open market in Jalalabad.

Agricultural production in Nangarhar has traditionally been sold at market in Afghanistan and in Pakistan. Strong linkages to Pakistani markets, through Pashto trading families and enterprises are very well established. Afghan produce and processed goods will certainly be competitive with Pakistani products both in Pakistan and in the Afghan market place. This will be especially true given the productivity increases and quality control that are envisaged as outputs of the proposed program.

### **The principle players in CLVEA:**

#### **a. Relief International:**

Since August 2002, Relief International (RI) has implemented an alternative development program in Afghanistan to reduce economic dependency on poppy cultivation as a livelihood strategy. In Nangarhar, and other provinces, the program initially focused exclusively on quick impact, cash for work reconstruction projects including building and rehabilitating war-damaged and neglected roads, irrigation systems, schools, paramedical clinics and women's centers. A total of 112 individual projects have been completed in Nangarhar, Takhar and Samangan Provinces under "Creating and Restoring Alternative Livelihood Sources Phase One" (CRALS I), with an additional 448 individual projects currently being implemented under "Creating and Restoring Alternative Livelihood Sources Phase Two" (CRALS II).

The overall goal of the current CRALS II is to significantly reduce poppy cultivation in the program area (selected districts in Nangarhar Province), through an integrated approach that brings together alternative crop production, agricultural marketing, public works projects, on- and off-farm skills training and employment, community mobilization, women's development and drug awareness campaigns to make lasting change away from poppy production.

RI has established a strong relationship with target communities in ten southern districts of Nangarhar – those with the highest opium output levels – and with the local authorities, in particular the Ministry of Rural Rehabilitation and Development (MRRD). These relationships are critical to the success of the proposed program and the achievement of viable and sustainable impacts.

Relief International is incorporated in California, is recognized and approved by USAID's PVO Office, and is registered as a bona fide NGO in Afghanistan. In 2003 Relief International established a sister organization in the UK, named Relief UK, and is a registered charity in that country.

#### **b. Nangarhar University Schools of Agriculture and Veterinary Sciences**

Nangarhar University (NU) is one of the oldest educational institutions in Afghanistan. Conflict and the breakdown of governance have taken their toll on the institution, but it is indeed a testament to the commitment of the University Faculty, and its leadership, that students are still being educated. The Faculties of Agriculture and Veterinary Sciences have more than 30 full time members, many of who are western educated. The University has irrigated experimental plots, on site, for utilization in research and extension programs, and facilities for the care and management of livestock. The University has recently developed an Internet learning facility, in collaboration with Relief International and Rotary International, which allows faculty and students to access modern resources and information.

The University is highly motivated to participate in the day-to-day management of research and extension projects in Nangarhar and to restore its capacity to serve the community.

#### **c. AVRDC:**

AVRDC-The World Vegetable Center is the principal international agricultural research center dedicated to vegetable research and development. Using an interdisciplinary and gender-sensitive approach, AVRDC works with its partners to develop technologies and disseminate information on vegetable production and consumption. AVRDC's strategies are explained in the long-term plan, [Strategy 2010: Empowering Small-Scale Farmers for Knowledge-Based Agriculture](#) [1024 kb], and our regularly updated rolling plan, [AVRDC Medium-Term Plan: 2003-2005](#) [648 kb]. AVRDC currently focuses its activities on four research themes:

- Innovative germplasm enhancement for greater productivity, consumer acceptance, and biofortification
- Year-round supply of safe and nutritious vegetables
- Indigenous vegetables for biodiversity, healthy diet and marketing opportunities and
- Interactive, user-friendly information management for vegetables in developing countries

AVRDC's mission is to reduce malnutrition and poverty among the poor through vegetable research and development and through partnerships with NARS and NGOs to promote vegetable production and consumption in the developing world. Our research will contribute to:

- Increased productivity of the vegetable sector
- Improved sustainability of cropping systems
- Healthy and more diversified diets for low-income families
- Environmentally friendly and safe production of vegetables
- Equity in economic development in favor of rural and urban poor

AVRDC's core expertise are:

- Strengthening sustainable production of safe and nutritious vegetables in Asia and Africa
- Innovations in variety improvement, including the use of molecular tools
- Analysis of direct and indirect impacts of vegetables
- Management of diverse vegetable germplasm
- Networks of strategic alliances for generating and sharing knowledge

AVRDC's following activities are internationally recognized by donors and partners in developing countries:

- Provision of accessible, user-friendly, science-based, cost-effective technologies for vegetable and legume (seed) production to poor farmers and small seed companies.
- Generate and disseminate germplasm and technology that address needs of the poor
- Consumer education on vegetable preparation and nutrition related issues.
- Impact assessment vegetable production and consumption

Using an interdisciplinary, gender-sensitive, and participatory approach in conducting development projects.

#### **d. International Development Enterprises –**

IDE International is a not-for-profit, 501(c)(3) organization with its Secretariat office based in Denver, Colorado. IDE has pioneered a market-based approach to poverty alleviation and smallhold farm income generation that builds on local capacity in the private sector. This method enables large numbers of poor farmers to increase their livelihoods through the purchase and use of affordable, income-generating technologies. Low-cost, innovative water-resource technologies, including affordable hand and treadle pumps, drip micro-irrigation systems, and water filtration and catchment units, have dramatically improved the lives of millions of poor farm families.

Since 1981, IDE has worked to reduce poverty in Asia and Africa by helping the rural poor to increase their agricultural productivity and income. IDE has applied business principles to facilitate market systems in which the rural poor can participate effectively as micro-entrepreneurs. By focusing on input supply chain development, IDE has been able to achieve significant results since its inception in establishing more than 100 small-scale manufacturers, plus thousands of distributors, retailers, installers and maintenance technicians in eight country programs in Asia and Africa. These small entrepreneurs have worked with local farmers to install more than 2.1 million micro-irrigation systems, including approximately 1.6 million treadle pumps in Bangladesh since 1984, 75,000 drip micro-irrigation kits in India since 1997, and 84,000 hand pumps in Vietnam since 1995. On average, these systems enable small-scale farmers to earn US \$100 of net additional income each year. Using relatively few resources (approximately \$75 million over 21 years). IDE has helped empower nearly two million small farm families to progress from subsistence agriculture to small-scale commercial farming and begin an upward spiral out of poverty.<sup>5</sup>

IDE is presently spearheading a global initiative (SIMI – Smallholder Irrigation Market Initiative), in collaboration with other key development partners, to market micro-irrigation technologies to 150 million poor farmers by 2015. IDE is gaining significant institutional expertise in the conceptual design of a new market intervention model (PRISM – Poverty Reduction through Irrigation and Smallholder Markets) that identifies and removes key constraints to smallholder market integration at three levels of market segmentation: 1) input commodity chains for technology production, 2) throughput, or farm level transformation of nature to capital, and 3) output market infrastructure that provides added value to horticultural crops and improved access to local and extra-local markets.

Since 1997, IDE has developed low-cost drip irrigation technology that is rapidly being adopted in its two South Asia programs in Nepal and India. To date, IDE's most sustained success has come in these two programs. Results after 18 months from two USAID funded programs, reveal that total value of market sales of high value horticultural crops in the Nepal program for 4,760 farm enterprises is \$499,264, with an average net additional income earned per farm micro enterprise of \$162. In India, total value of crop sales by farm enterprises is quite substantial, at \$2,485,650. Average net additional income per farm operation is \$285. The results of these two programs after less than two years, is illustrative of the potential impact on rural poverty and substantial income gain that may be attainable in Afghanistan and elsewhere using similar irrigation technology and a market-based approach to smallholder wealth creation.

RI has conducted three major learning exercises in Nangarhar since August 2002 (Items 1,3 and 4 below) that have been applied in our current alternative development programs. Our sector assessment determined a number of short and medium-term agricultural investments, some of which coincided with farmer preferences catalogued in our baseline survey. When these projects matched our available implementation timeframe they have been implemented. A good example is the fish farming projects started on a pilot basis. The proposed program fits perfectly with RI's programmatic focus in Afghanistan and is very well matched to the institutional partnerships established. An annual program workshop in Jalalabad is envisioned as the primary method of disseminating results of the individual research projects. Invitees to the proposed workshop will include governmental and non-governmental partners (local NGOs), and fellow RALF implementers. The workshop will be supported by the creation of a program website and an annual trade fair.

RI's Women in Development (WID) program conducted two market surveys on behalf of USAID's Office of Transitional Initiatives (OTI) in 2002, to ascertain demand for a raft of services and productive activities that could be provided by women. The results of the surveys have been utilized by USAID to determine some of their livelihood investments. The WID program is active in Nangarhar. Afghanistan's first Ministry of Women's Affairs (MOWA) owned Women's Development Center (AWDC) opening on May 9 2004. RI is currently providing literacy and vocational education to more than 1000 women in the proposed RALF target districts and plan to extend this work in 2004. RI is partnering with Cal Poly and San Diego State on exchange programs, in the summer of 2004, to build women's capacity, through a train the trainer program, in horticulture. RI's objective is to increase women's incomes through value addition to economic activities they are already involved in. The ongoing education program has demonstrated that it is possible to work with women in rural Nangarhar, within prevailing social norms, and that families are keen to add to their livelihood security through increasing female productivity. RI aims to study the impact of alternative livelihoods development on women, their labor utilization and their incomes, as part of the proposed CLVEA program and to disseminate results through the AWDC network, NU and our local NGO partners.

#### **Literature reviewed:**

1. "An Agricultural Sector Assessment and Proposed Interventions for Nangarhar Province, Afghanistan", prepared by Richard Hicks, Relief International, June, 2003
2. "Creating and Restoring Alternative Livelihood Sources Phase II (CRALS II) Mid-term Project Report", Relief International, December 2003
3. "Creating and Restoring Alternative Livelihood Sources Phase I (CRALS I) Program Evaluation." Prepared by Colin Reynolds, UCLA Center for International and Development Education Occasional Paper Series.
4. "Creating and Restoring Alternative Livelihood Sources Phase II (CRALS II) Baseline Survey of Agriculture and Livelihoods in 144 villages of Ten Southern Districts of Nangarhar." Relief International, July 2003.
5. FAO/UNDCP/ISE Mission to Nangarhar and Kunar, 6-11 June 2002. Anthony Fitzherbert, FAO Consultant and Mission Leader
6. FAO Draft "A strategic approach to development of the agricultural and food sector in the eastern region of Afghanistan", September 2002
7. FAO Afghanistan Survey of the Horticulture Sector 2003
8. FAO Afghanistan National Livestock Census, Interim Report 2003
9. United Nations Office on Drugs and Crime (UNODC) Afghanistan Opium Survey 2003
10. UNODC Afghanistan Farmer's Intentions Survey 2004/2004
11. "The Economic Superiority of Illicit Drug Production: Myth and Reality." prepared David Mansfield. August 2001. Paper for the International Conference on the Role of Alternative

Development in Drug Control and Development Cooperation, Feldafing / Munich Germany, January 2002.

12. "Alternative Development in Afghanistan: The Failure of Quid Pro Quo." prepared David Mansfield, August 2001. Paper for the International Conference on the Role of Alternative Development in Drug Control and Development Cooperation, Feldafing / Munich Germany, January 2002.
13. "The Afghan Agricultural Extension System: Impact of the Soviet Occupation and Prospects for the Future." By Dr. Tooryalai Wesa, Doctoral Thesis, University of British Columbia, 2002.
14. "Addressing Livelihoods in Afghanistan" by Adam Pain and Sue Lautze, Afghanistan Research and Evaluation Unit, September 2002.
15. "Three Villages in Alingar, Laghman: A Case Study of Rural Livelihoods." Afghanistan Research and Evaluation Unit, October 2003.
16. "Land Rights in Crisis." By Liz Alden Wily, Afghanistan Research and Evaluation Unit, March 2003.
17. "Afghanistan: Women and Reconstruction." International Crisis Group Asia Report # 48, March 2003.

## 12. Project Goal

To determine the economic and livelihood impact of a range of vegetable and crop legume projects, enhanced by drip irrigation, on poppy farmers in Nangarhar Province, and to scale up those projects that demonstrate the most significant rate of return, in order to develop sustainable, legal alternatives to poppy cultivation as a livelihood strategy.

## 13. Project Purpose

The purpose of the CLVEA program is threefold fold:

### *Economic Purpose*

1. To ascertain the most viable alternative legal economic activities for poppy farmers in Eastern Afghanistan, through evidence-based applied research.
2. To examine the role of women in the rural economy and to develop research projects that specifically target women and identify successful mechanisms for increasing female participation in economically productive activities and that result in increased incomes for women as a result.
3. To conduct local and regional market research to determine the existence and needs of markets for agricultural and cottage industry derived products from Nangarhar and to facilitate the connection of buyers and sellers through a trade fair and an online portal to Nangarhar industry.
4. To utilize a holistic and participatory research methodology and project design that looks at the rural economy, and its effects on farmer's incomes, at multiple points – involving farmers and other entrepreneurs in on and off farm income generating projects.
5. To develop commercially viable supply chains of distributors and retailers of agricultural inputs and drip irrigation technology that is marketed to farmers on a cost fee basis.
6. To identify and facilitate the linkage of farmers to micro credit lending mechanisms that will enable farmers to access small capital loans for start up investment in a horticultural productivity package (seed, fertilizer, agronomic training, market information, IPM, irrigation technology).

### *Agricultural Purpose*

7. To focus on vegetable and crop legume production, enhanced by low cost drip irrigation systems, as under-developed aspects of the rural economy in Nangarhar; and the livelihood impact of rural infrastructure development.

8. To monitor the impact of alternative livelihoods investments on the reduction of economic dependency on poppy cultivation through the development of multiple “sentinel” case studies across the target districts.
9. Scaling-up successful projects that demonstrate a significant rate of return on investment to project participants and a sustainable market for products or services. RI / MRRD Rural Training Centers in two southern districts of Nangarhar, farmer education, public information and local NGO collaborations will be utilized to support the scaling-up process.
10. To solicit buy-in from farmers and entrepreneurs, demonstrated by co-investment, in the scaling-up of successful projects.

*Research Purpose*

11. Establishment of a model research plot at Nangarhar University to create baseline data for comparison with field sites. The model plot will be closely monitored to measure plant and water related issues and the impact of improved practices and technologies will be measured against unimproved methods typical of the region, through comparison.
12. To build the capacity of the Faculties of Agriculture and Veterinary Sciences at NU, and the Provincial Office of the MRRD, to conduct livelihoods research and extension training.
13. Publication of research findings for application across Afghanistan. Publication will be done under the imprint of Nangarhar University, with all documents available online.

## SECTION D: OUTPUTS/UPTAKE PATHWAYS

### 14. Outputs

All projects will produce an annual, evidence-based report, including cost benefit analysis, gender, stakeholder and livelihood impact analysis, on each of the individual research projects; and an annual market research analysis report to identify potential markets for Nangarhar products and services, within Afghanistan and neighbouring countries, disseminated through the RTCs to farmers and cooperatives. All participants will be required to answer questions about their poppy farming behaviour in order to ascertain project impact of their economic dependency on poppy. The following livelihood research topic papers will be produced by the end of year 3 – soy, mung, tomato, chilli, onion, sweet pepper, drip irrigation, internet as a marketing tool, impact of the crops on women's incomes and workloads.

A baseline for comparison of agricultural and water related issues will be established through the creation of a model facility at Nangarhar University.

Each research project will be expected to generate a minimum of 30% of the cash component of the managing farmer's livelihood in order to be considered worth replication.

1. A minimum of 24 fully operational research plots growing the following crop legumes:
  - o Mung beans
  - o Soy beans
2. A minimum of 24 fully operational vegetable production facilities growing the following vegetables with over three annual growing cycles:
  - o Onions
  - o Tomatoes
  - o Chillies
  - o Sweet pepper
3. Test the value added of drip irrigation techniques at each of the project sites and develop a training manual and a network of commercial suppliers / installers if proven to increase yields and quality.
4. A subsector market assessment report on high value horticultural crops (on crop legumes and vegetables)
5. A minimum of 38 "lead farmers" trained as extension agents to spread knowledge and good practice related to projects with a high rate of return. A minimum of 8 female extension agents will be supported to increase women's knowledge and economic productivity. A minimum of 50 farmers trained in the skills required to successfully implement one of the research projects for him or herself.
6. Production and widespread dissemination of information leaflets and other promotional resources to spread information about how to implement proven, income increasing projects. An annual program workshop, conducted in Jalalabad, with field days at the RTCs, to share information with relevant peers on the progress of research projects and interim results. Afghan government agencies, international partners, local NGO partners will participate. Results of the Nangarhar level workshop will be presented at the annual national RALF workshop. A minimum of one trade fair in Nangarhar and the creation of an online portal to market Nangarhar products and services and link buyers to sellers.
7. Nangarhar University and MRRD colleagues at the RTCs develop the capacity to design, manage and report on livelihoods research projects, after three years, independent of external support. NU will have the capacity to develop multi-media training / extension materials and manage their dissemination through print and Internet media. Training materials on each of the ten areas of research will be prepared and disseminated.

## 15. Target Institutions

1. 19 producer / marketing co-operatives established under RI's CRALS programs (agreed to participate). The RI baseline study and ongoing relations with the 19 co-operatives have ascertained the preferences of co-operative members and boards, which are reflected in the design of the proposal.
2. Nangarhar University Faculties of Agriculture and Veterinary Sciences (agreed to participate). RI has undertaken program design discussions with NU to determine the precise scope of the program and the contributions NU can make to implementation.
3. RI / MRRD Rural Training Centers (agreed to participate)
4. Private sector businesses in Nangarhar involved in the trading of agricultural products

## 16. Target Areas and Stakeholders

Ten districts in the Southern belt of Nangarhar Province. These districts are the ten largest opium-producing areas in the Province. The districts selected are:

1. Surkh Rod, 2. Turghar, 3. Khogiani, 4. Rodat, 5. Behsud, 6. Kot, 7. Chaparhar, 8. Sherzad, 9. Shinwar and 10. Achin.

A preliminary baseline survey was conducted in 144 villages from the 10 districts. All the villages were grouped into 19 clusters within the respective geographical districts. In total there are 36 focus villages and 72 satellite villages. The clusters were selected using four main criteria: level of opium production; willingness to work towards alternative, legal livelihoods; hydrological profile; effectiveness of community governance in communication to and involvement of community members in problem solving and decision making. The CRALS II program targets small landowners, landless sharecroppers and rural entrepreneurs. In total, RI has developed direct relationships with more than 7000 individual farmers through their participation in agricultural or economic development projects. The UNODC 2003/4 Farmer Intentions Survey demonstrates that only a small proportion of poppy farmers, approximately 20 %, are either landless tenants or sharecroppers. The ratio of landless or share cropping poppy farmers to landowning farmers is particularly high, relative to the national average, in Eastern Afghanistan. However, 87 % of all poppy farmers make the decision to grow poppy themselves, regardless of whether they are landless or landowners. They make the decision for the land at their disposal. Therefore, landless and sharecropping poppy farmers are equally as likely to opt to grow legal alternatives to poppy as others. As a result, the benefits of the project are accessible to the poorer members of each target community.

Community leaders, district commanders and other district and provincial level powerbrokers have strongly supported RI programs to date. On the whole they are keen to be seen to be helping to deliver development benefits to their people. Based on the quantity and quality of projects completed to date, there is significant demand from community leaders for RI to continue to implement projects in these 10 districts, as well as to expand to other areas. Security and other problems that periodically affect the area are usually quickly solved by local leaders who are keen to maintain access to project sites for us. With the widespread support for our programs at different levels in the community RI is confident of being able to successfully deliver all program goals.

Further targeting of specific projects in particular villages within these districts has been coordinated with the Ministries of Agriculture and Animal Husbandry, Rural Rehabilitation and Development, Irrigation and Water Resources, Education and Public Health.

## 17. Uptake Pathways

1. Extension through two rural training centers built by RI for handover to the MRRD. These centers, in Khogyani and Rodat districts will be open and fully equipped by the end of June 2004. NU, MRRD and RI extension personnel will operate from the RTCs to train lead farmers, facilitate field demonstrations and dissemination of literature and other resources. Farmers and local entrepreneurs will be encouraged to participate in the establishment and operation of research projects and their scale-up, in a hands-on experiential learning environment. A minimum of 38 lead farmers will be trained and will share their knowledge, in an applied manner, to a minimum of 500 more farmers. The MAAH is a key partner in the RTC project and will be utilizing the facilities to conduct outreach and training, with RI support. However, MAAH were not selected as the key partner for the RTCs for two reasons. Firstly, the MRRD is the focal ministry for counter narcotics, and as a DOS INL grantee, they were the designated point of contact in the Afghan government for Relief International's CRALS program, under which the RTCs have been created. Secondly, MRRD has greater capacity to deliver development projects on the ground and have been assessed as more likely to be able to sustain the RTCs in the long term.
2. Creation and dissemination of relevant printed material describing successful projects.
3. Creation and dissemination, through the RTCs, of locally produced multimedia training material, developed by NU.
4. Trial implementation of successful projects through 19 existing production / marketing cooperatives, established by RI in 2003, and with more than 3500 members.
5. All projects will be evaluated on an annual basis, with performance reports (translations in local languages will be available) archived at NU, MRRD and at the RTCs. This information is considered open source and will be shared through ICARDA to all interested parties.
6. Showcasing successful projects online, facilitated by the NU Internet Learning Center. A program website will be established to provide local and international access to practical demonstrations and project diaries.
7. Policy recommendations will be determined at the annual program workshop. It is anticipated that policy recommendations will be focused on the provincial level. Any recommendations relating to the central government level will be relayed by line ministry representatives participating in the workshop.

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

The research projects will contribute towards poverty elimination in both a practical and a theoretical manner, as follows:

- 500 farmers will participate in projects in which they will have an actual financial stake. They will reap the benefits of a successful project.
- Approximately 9 different project studies will add to the body of applied knowledge available to farmers, suggesting investments that can produce a financial return in the short, medium and long term that will be competitive with the real return on poppy.

The program expects to make impacts on multiple levels, as follows:

- Technical – farmers will have access to knowledge and training to help them adopt new farming practices, support for the introduction of new agricultural products, and more capable local education and resource institutions – RTCs, and NU.
- Infrastructure – whilst the program will not create or rehabilitate infrastructure it will determine project identification and impact criteria to ensure that future infrastructure investment is targeted in a way that has the maximum possible net benefit on incomes and livelihoods of poppy farmers.

- Socio-economic – participating farmers have the opportunity to benefit financially from the program, by implementing projects that will have a net positive return on investment. Furthermore, adaptation of successful strategies can contribute to the cash income portion of a farmer’s livelihood in the longer term and, assuming wide scale adoption of new products and technologies can help to change the economic and political base of the province.
- Institutional – Nangarhar University and the MRRD Rural Training Centers will have an increased technical capacity to support the rural economy in Nangarhar, through increased skill levels of staff, valid on the job experience and some logistical and financial support.

The project will directly impact a minimum of 500 farmers in the three-year implementation period. Its impact may be much more widespread beyond that point, depending on adoption of new ideas and successful projects.

## 19. Monitoring and Evaluation

The proposed program will be monitored on an ongoing basis through collaborative surveys and reviews with communities, in order to ensure projects achieve the planned impacts in a timely manner. Standardized livelihood surveys will be developed at the beginning of the implementation period, by our international partners, to ensure data collection remains focused on the livelihood impacts of specific research projects, and that the data collected is statistically relevant. Monitoring and evaluation processes will utilize participatory inquiry to understand the qualitative as well as quantitative impacts of the production of the new crops, on the participating farmers, their families and the wider communities. All monitoring and impact measurement, used to inform program evaluation, will be developed by cross-referencing key data collected using the following methods:

- Empirical data – baseline household income survey, using a cluster sampling methodology in all target clusters and a statistically relevant non program control sample, INL, UNODC and other empirical analysis
- Cost benefit analysis – all economically productive projects will be subject to annual cost benefit analysis, based on scrutiny of project balance sheets, to determine the internal rate of return. Project design may be amended based on the outcome of this analysis. In some cases projects demonstrating an insufficient rate of return to participants may be terminated.
- Livelihood impact analysis. – The relative success of each economically productive project will be measured through the analysis of the financial gain for each participant. The greater the financial gain to individuals the greater the reduction of economic dependency on poppy.
- Social infrastructure analysis – measurement of the financial impact of social infrastructure, such as schools and clinics, through the measurement of household expenditure on health, education and other social services. Impact on families of different crop labor requirements, involvement of women in labor, training and decision-making, utilization of changed income structure, impact of involvement in research, will be studied.
- Institutional analysis: what effect does investment in new socio / economic organization have on participating people, their families and their communities. Is there any impact on the existing governance and problem solving mechanisms within the community by the empowerment of the producer cooperative.

- Qualitative assessment - key informant interviews, community development process reports
- Project MIS data - performance of economic development projects, measured by profit and loss statements, investment and profit sharing reports

*Indicators:*

Participation - # of farmers involved in production of the six crops year on year, utilizing the methods and technologies employed by CLVEA; Area of land covered by projects; socio-economic profile of original and new participants; ratio of poppy farmers to farmers in participating cooperatives;

Livelihood impact – net return to participants; contribution of labor to the projects; complementary business linkages for participating farmers; # and type of processing facilities created by participating cooperatives; activities of participating institutions – NU and RTCs;

The program will be independently evaluated to review performance and the livelihood impacts of each of the research projects by an independent evaluator.

## **20. Appraisal Issues**

*Technical* – all of the proposed projects are familiar to farmers in Nangarhar and are therefore realistic and achievable.

*Environmental* – natural resource management is critical in Nangarhar where water, in particular, is not efficiently utilized. The program will ascertain local criteria to determine the value of particular investments in infrastructure and natural resource management. All projects are designed to be sustainable in light of the prevailing environmental conditions. Where possible existing locally available resources will be utilized. At best, the projects are environmentally beneficial, at worst, neutral.

*Economic* – the program will contribute to the determination of the economic cost of poppy reduction.

*Financial* – each project will be subject to financial cost benefit analysis to determine the rate of return on an annual basis. Livelihood impact surveys will determine the benefit, or otherwise of participation.

*Adoption of Appropriate Technology* - research questions will focus on crop productivity, efficiencies in water use and labor time allocation, gender dimensions of technology adoption and divisions of labor, and the contribution of crop yields to household food security and farm revenue.

*Social development* – social cohesion and governance will be scrutinized by the program. Governance systems, be they Shuras, provincial administration or co-operative boards will have to function effectively to maximize positive results. A study of the impact of the research projects on women will ascertain the net benefit, or cost, of particular investments in terms of income, labor and opportunity cost.

## SECTION E: ACTIVITIES

### 20. Activities

The organizational responsibilities of the program partners can be summarized as follows:

- RI: Situation analysis, program coordination, project implementation (with NU), financial management, program reporting, facilitation of independent evaluation.
- AVRDC: Training, production of training material, establishment of model research projects, collection of germplasm.
- NU: maintenance of research projects, data collection, extension training, monitoring, publication of research documents.
- IDE: procurement and supply of drip irrigation equipment, installation and training.

#### ***Component 1: Marketing, Extension and Administration (RI)***

Activities:

- Conduction annual fair days
- Analyzing market chain and looking new market opportunities for vegetables and legumes
- Linking farmers with micro finance institutes.
- Developing website of the project, and keeping and disseminating information about the project.
- Keeping relations with other international agencies working in Afghanistan.
- Keeping overall record of expenditures of the project
- Making arrangements for workshops
- Arranging consultant trips
- Making arrangements for translation of technical guides in local language and their publication
- Making arrangements for distribution of technical guides to interested farmers and other interested parties
- Arranging supplies needed for various research and development activities

#### ***Component 2: Introduction and Monitoring of Technological innovation in Vegetables and Legumes (AVRDC)***

Activities:

- Conducting training (extension workers on setting up demonstration fields and NU staff for improved management practices, germplasm collection, conducting surveys and performing economic analysis)
- Help NU and extension workers in setting up demonstration fields on each research site
- Help NU in conducting the base-line and livelihood impact evaluation surveys and data analysis
- Help NU in germplasm collection
- Preparation and publication of technical guides on various issues of vegetable and legume production in English, which will be translated in the local language with the help of RI and NU later on.

#### ***Component 3. Introduction of Irrigation Technologies (IDE)***

Activities:

- Design of appropriate irrigation technology for different farmers in different areas based on their ecologies and socioeconomic conditions
- Demonstration of irrigation technologies
- Training of farmers, extension personal, and manufacturers on the use and manufacturing of irrigation technologies.

- Preparation of guideline on irrigation technologies in English, which will be translated into English later on.

#### **Component 4. Implementation**

- Setting up demonstration plots on vegetables and legumes with the help of AVRDC Crop Management Specialist and taking necessary data from each demonstration plot
- Training farmers on the use of improved management technologies in vegetables with the help of AVRDC Crop Management Specialist
- Conducting ex-ante constraint and ex-post livelihood impact evaluation surveys with the help of AVRDC Socioeconomist
- Collecting germplasm with the help of AVRDC expert
- Setting up trade fairs with the help of RI
- Conduct market chain analysis with the help of RI expert
- Set up demonstration on irrigation technologies with the help of DIE experts and taking necessary data from demonstration plot
- Train farmers on the use of irrigation technologies with the help of DIE experts and manufacturers on how to manufacture these technologies locally.
- Arrange for translation of technical guides on various issues from English into the local language
- Distribute the technical guides on various issues to farmers and other interested parties with the help of RI.

## **21. Implementation and Management**

Relief International, as lead agency, will manage all aspects of program implementation including:

1. Co-ordination of partner contributions.
2. Scheduling of consultant visits.
3. Provision of logistics, administration, accommodation in the field, security management, translation support and all other operational support services.
4. Establishment and ongoing oversight, with NU, of research sites and data collection.
5. Liaison with local authorities, communities, external agencies and donors.
6. Program progress reporting (with the exception of the production of annual and final research reports as specified above).
7. Financial reporting.

Relief International has a substantial operational presence in Nangarhar, based in Jalalabad, with a fully funded program staff. RI's ongoing livelihoods program forms the basis of the research program. 19 of the 23 proposed research sites are already built and operational. The two Rural Training Centers are currently under construction and will be open prior to the end of June 2004. All market analysis and project preparation can be comfortably achieved from April 2004 onwards with installation of all drip irrigation systems, initial training and procurement completed in time for the first early vegetable growing cycle in the early autumn.

As a charitable organization, registered under the US IRS Tax Code Section 501 (C)(3), RI is an independently audited organization. Our annual A 133 audited accounts are public documents. RI strives to achieve the highest standards of financial transparency and accountability. Our regular audit company audited our Afghan operation in January 2004 – Gelman, Rosenberg, Freedman (Interaction recommended auditors) – and no findings were reported. Our 2003 finances will be fully audited in April 2004.

Attachment 1: Logical Framework

|                     |           |
|---------------------|-----------|
| RALF Project Number | RALF01-04 |
|---------------------|-----------|

|                                      |   |
|--------------------------------------|---|
| <b>Project Title</b>                 | Introduction, evaluation and promotion of appropriate crop legumes and vegetables for Eastern Afghanistan (CLVEA) |
| <b>Lead implementing institution</b> | Relief International  |

| <b>Narrative Summary</b>   | <b>Objectively Verifiable Indicators</b>   | <b>Means of Verification</b>   | <b>Assumptions and Risks</b>   |
|--|--|--|--|
| <p><b>Goal:</b> To determine the economic and livelihood impact of a range of vegetable and crop legume projects, enhanced by drip irrigation, on poppy farmers in Nangarhar Province, and to scale up those projects that demonstrate the most significant rate of return, in order to develop sustainable, legal alternatives to poppy cultivation as a livelihood strategy.</p> | <ul style="list-style-type: none"> <li>• % and absolute change in cash income as a result of participation in specific agricultural projects.</li> <li>• Comparative \$ value of return on poppy.</li> <li>• % And absolute reduction of land area under poppy cultivation, measured in hectares.</li> <li>• Rate and scale of adoption of new crops, agricultural practices and new technologies, measured in #s of farmers utilizing the above.</li> <li>• % and absolute of overall investment of farmer co-investment for scale up.</li> <li>• Participant satisfaction with participation and commitment to cultivate additional land.</li> </ul> | <ul style="list-style-type: none"> <li>• Livelihood, community and market surveys.</li> <li>• Ground verification, requests for assistance with adoption / utilization of seeds, inputs and technologies.</li> <li>• UNODC Opium Survey and Farmer Intentions Survey.</li> <li>• Seed, technology supplier's sales report.</li> <li>• Co-operative income / expense reports.</li> <li>• Co-investment receipts.</li> </ul> | <ul style="list-style-type: none"> <li>• Security remains stable in target provinces.</li> <li>• The rule of law extends to the opium production industry and attaches a negative value to opium production.</li> <li>• Governance at provincial and community level continues to improve and be more effective.</li> <li>• Infrastructure and other environmental factors continue to receive investment.</li> <li>• No unexpected, large scale macro-economic changes that can distort markets, e.g. currency / exchange rate fluctuations.</li> </ul> |
| <p><b>Purpose:</b><br/>                     Conduct applied research for future benefits but provide immediate economic and social benefits to project participants<br/><br/>                     Develop capacity at an local academic institution to make data-driven decisions and contribution to the regional community</p>   | <ul style="list-style-type: none"> <li>• Participant (farmer and NU) satisfaction with their participation.</li> <li>• Return on invested capital, incremental % and absolute profit to farmers.</li> <li>• Increase in NU extension outreach and activities.</li> <li>• Relative competitiveness of new products with poppy farming.</li> </ul>   | <ul style="list-style-type: none"> <li>• Co-operative / lead farmer income statements.</li> <li>• Market assessments, price tracking reports.</li> <li>• # of NU extension outreach activities conducted.</li> <li>• Participant interviews – lead farmers, NU, RI staff, private sector supply chain actors.</li> </ul>   | <p>Full counter narcotics strategy begins to gain traction in Afghanistan, including security / law and order elements.</p> <p>NU resources available to ensure successful participation in planned program.</p>   |

| Narrative Summary   | Objectively Verifiable Indicators  | Means of Verification  | Assumptions and Risks  |
|---|--|--|--|
| <p>Disseminate new agricultural ideas and practices through participatory and culturally acceptable methods</p> <p>Refine the counter-narcotics strategy and reduce the dependency of the Afghan farmer on the illicit cultivation of poppy</p> <p>Improved agricultural productivity in the eastern Afghanistan area, development of raw material for future processing investments, and development of potentially exportable crops</p> | <ul style="list-style-type: none"> <li>• Evidence of private or government investor interest in developing processing capacity.</li> <li>• Evidence of private or government investor interest in developing export capacity.</li> </ul>   | <ul style="list-style-type: none"> <li>• Co-investment receipts.</li> <li>• Records of requests for scale up assistance.</li> <li>• UNODC Opium and Farmer Intentions Surveys.</li> <li>• Photographs.</li> </ul>  | <p>Environmental / climate factors continue to favor agricultural revival.</p>   |
| <p><b>Outputs:</b></p>  |  |  |  |
| <p>1. Economic outputs: viable alternatives to poppy; market research; holistic / participatory research; supply chain development; MF linkages.</p>  | <ul style="list-style-type: none"> <li>• \$ Of value of crop sales from each project / growth cycle.</li> <li>• Internal rate of return for each crop / site.</li> <li>• Price monitoring of the six target crops.</li> <li>• # of hours of labor per growth cycle per site, gender disaggregated, opportunity cost of labor contributions.</li> <li>• \$ Value of return on labor inputs.</li> <li>• .</li> </ul> | <ul style="list-style-type: none"> <li>• Co-operative / lead farmer balance sheets.</li> <li>• Market assessments, price tracking reports.</li> <li>• NU baseline data.</li> <li>• Project diaries.</li> <li>• Participant interviews – lead farmers, NU, RI staff, private sector supply chain actors.</li> <li>• Local MF providers loan records, MF recipient business plans.</li> <li>• Co-investment receipts.</li> <li>• Records of requests for scale up assistance.</li> <li>• UNODC Opium and Farmer Intentions Surveys.</li> <li>• Website data.</li> <li>• Pictures.</li> </ul> | <p>Sufficient demand exists in markets for the target crops, are accessible and offer satisfactory absorptive capacity for additional supply, without depressing prices.</p> |

| Narrative Summary   | Objectively Verifiable Indicators  | Means of Verification  | Assumptions and Risks  |
|---|--|--|--|
| <p>2. Agricultural outputs: vegetable and crop legume production; poppy reduction; scale up; farmer co-investment; marketing.</p> | <ul style="list-style-type: none"> <li>• # Of participants in each project.</li> <li>• # of participants in participatory research, evaluation processes, gender disaggregated.</li> <li>• # Of project replications, \$ value of farmer co-investments,</li> <li>• #, Name, type of participants in supply chains.</li> <li>• \$ Value of participation in specific supply chain activities.</li> <li>• #, \$ Value and terms of successful examples of MF linkage, repayment information, return on investment.</li> <li>• % Increase in production of target crops, \$ value of each crop / growing cycle, income impact on participants.</li> <li>• Incidence of disease or pest infestation on target crops, success of treatments, water requirements, artificial or commercial inputs required per growing cycle, \$ cost of these inputs.</li> <li>• % and area (in hectares) of poppy reduction.</li> </ul> | <ul style="list-style-type: none"> <li>• Co-operative / lead farmer balance sheets.</li> <li>• Market assessments, price tracking reports.</li> <li>• NU baseline data.</li> <li>• Project diaries.</li> <li>• Participant interviews – lead farmers, NU, RI staff, private sector supply chain actors.</li> <li>• Local MF providers loan records, MF recipient business plans.</li> <li>• Co-investment receipts.</li> <li>• Records of requests for scale up assistance.</li> <li>• UNODC Opium and Farmer Intentions Surveys.</li> <li>• Website data.</li> <li>• Pictures.</li> </ul> | <p>Mineral content of water does not prematurely clog drip systems, and if it does the frequency / cost of required replacement or maintenance does not outstrip \$ value of productivity benefits.</p> <p>Speed of adoption of successful livelihood strategies by a wider # of farmers.</p> <p>Labor costs for new strategies are such that they can compete with opportunity costs.</p> |
| <p>3. Research outputs: NU capacity building; model research plot; publication of research results; online dissemination.</p>     | <ul style="list-style-type: none"> <li>• Results from intensive study of the model research plot and comparison plot.</li> <li>• Additional research investments in NU from non-RALF sources.</li> <li>• # And functional specialization of NU staff trained in research / extension.</li> <li>• # And impact assessment of NU field visits.</li> <li>• # Website hits, # and \$ value of online orders, # of requests for information</li> </ul>  | <ul style="list-style-type: none"> <li>• Co-operative / lead farmer balance sheets.</li> <li>• Market assessments, price tracking reports.</li> <li>• NU baseline data.</li> <li>• Project diaries.</li> <li>• Participant interviews – lead farmers, NU, RI staff, private sector supply chain actors.</li> <li>• Local MF providers loan records, MF recipient business plans.</li> </ul>  | <p>Plots are maintained in effective order.</p>  |

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|--|--|--|---|
|  |  | <ul style="list-style-type: none"> <li>• Co-investment receipts.</li> <li>• Records of requests for scale up assistance.</li> <li>• UNODC Opium and Farmer Intentions Surveys.</li> <li>• Website data.</li> <li>• Pictures.</li> </ul>  |   |
| <b>Activities:</b>   |  |  |   |
| <p><b>1.</b> 24 operational research sites (including the model plot at NU) growing soy and mung beans, providing a minimum 30% incremental profit to the lead farmer.</p>                           | <ul style="list-style-type: none"> <li>• Number of research site agreements formulated.</li> <li>• Cost of inputs.</li> <li>• Volume of output.</li> <li>• Cost of post harvest handling methodology.</li> <li>• Prices realized per unit volume.</li> <li>• \$ Value of income increase to lead farmer.</li> <li>• % Of farmer cash income provided by profit from a particular crop.</li> <li>• Comparison of return from improved vs. unimproved production.</li> <li>• Comparison of income from each plant to the income potential of an equivalent investment in poppy.</li> </ul> | <ul style="list-style-type: none"> <li>• Signed research site agreements.</li> <li>• Price reports.</li> <li>• Productivity reports.</li> <li>• Project diaries.</li> <li>• Livelihood surveys.</li> <li>• Participant interviews – lead farmers, NU, RI staff.</li> <li>• Project income statements.</li> <li>• Photographs.</li> </ul> | <p>Market assessment, training and procurement complete prior to start of first growing period.</p> <p>Absence of atypical blights or infestations.</p> <p>Absence of atypical market factors e.g. monetization projects of a similar crop.</p> <p>Comparative analysis is adequately rigorous and methodology sufficiently observed to produce scientifically and statistically significant results.</p> |
| <p><b>2.</b> 23 operational research sites (including the model plot at NU) growing onions, tomatoes, chillies and sweet peppers, providing a minimum incremental 30% profit to the lead farmer.</p> | <ul style="list-style-type: none"> <li>• Number of research site agreements formulated.</li> <li>• Cost of inputs.</li> <li>• Volume of output.</li> <li>• Cost of post harvest handling methodology.</li> <li>• Prices realized per unit volume.</li> <li>• \$ income increase to lead farmer.</li> <li>• % of farmer cash income provided by profit from a particular crop.</li> </ul>   | <ul style="list-style-type: none"> <li>• Signed research site agreements.</li> <li>• Price reports.</li> <li>• Productivity reports.</li> <li>• Project diaries.</li> <li>• Livelihood surveys.</li> <li>• Participant interviews – lead farmers, NU, RI staff.</li> <li>• Project income statements.</li> <li>• Photographs.</li> </ul> | <p>Market assessment, training and procurement complete prior to start of first growing period.</p> <p>Absence of atypical blights or infestations.</p> <p>Absence of atypical market factors e.g. monetization projects of a similar crop.</p>   |

| Narrative Summary   | Objectively Verifiable Indicators   | Means of Verification  | Assumptions and Risks  |
|---|---|--|--|
|   | <ul style="list-style-type: none"> <li>• Comparison of return from improved vs. unimproved production.</li> <li>• Comparison of income from each plant to the income potential of an equivalent investment in poppy.</li> </ul>   |  | Comparative analysis is adequately rigorous and methodology sufficiently observed to produce scientifically and statistically significant results.   |
| <p>3. Drip irrigation tested, training manual produced and network of private sector suppliers / installers established. Field tests comparable to results of studies at NU model plot.</p> | <ul style="list-style-type: none"> <li>• % Increase in production compared to traditionally irrigated crops.</li> <li>• % Increase in water use efficiency.</li> <li>• Quantity of water used per growing cycle for a given area of each crop.</li> <li>• % And quantity of water use reduction as a result of DI introduction.</li> <li>• % And \$ value of reduced utilization of commercial inputs as a result of DI introduction.</li> <li>• % And \$ value of change in plant health, reduction of incidence of disease and pest infestation, as a result of DI introduction.</li> <li>• % And \$ value of change in quality of produce as a result of DI introduction.</li> <li>• Manual reflects local conditions and is translated in to local languages.</li> <li>• Private suppliers of equipment are importing and selling DI systems.</li> <li>• The program trains installation crews.</li> <li>• DI is applied in scale up projects.</li> </ul> | <ul style="list-style-type: none"> <li>• Water use reports, baseline studies from NU.</li> <li>• Participant interviews – lead farmers, NU, RI staff.</li> <li>• Sales and marketing reports.</li> <li>• Project balance sheets.</li> </ul>                      | <p>Model research plot effectively measures typical water consumption.</p> <p>Absence of atypical blights or infestations.</p> <p>DI distribution pipelines are not clogged by high mineral contents in the water too quickly to show results.</p> <p>Comparative analysis is adequately rigorous and methodology sufficiently observed to produce scientifically and statistically significant results.</p> |
| <p>4. Market assessment for targeted crop legumes and vegetables produced.</p>  | <ul style="list-style-type: none"> <li>• Projected local and regional price range for target crops.</li> <li>• Price elasticity of local market for target crops, based on supply.</li> <li>• Demand centers / buyers for particular target crops identified in the local and regional markets. Linkages established.</li> </ul>  | <ul style="list-style-type: none"> <li>• Physical market visits, assessments, and price surveys.</li> <li>• Price elasticity metrics applied in local markets.</li> <li>• Interaction with prospective buyers.</li> <li>• Third party market reports.</li> </ul> | <p>Market conditions and opportunities, both locally and in the importing region remain relatively stable, or improve, in the medium to long-term.</p> <p>Access to local and regional markets to conduct price surveys.</p>   |

| Narrative Summary   | Objectively Verifiable Indicators   | Means of Verification   | Assumptions and Risks  |
|---|---|---|--|
|   | <ul style="list-style-type: none"> <li>• Analysis of import market for the target crops conducted, including sources of imports, price and quality competitiveness of local products, key importers and distribution channels.</li> <li>• # Of visits from interested buyers to local markets.</li> <li>• # And nature of technical recommendations for training needs and supply chain development.</li> </ul>   | <ul style="list-style-type: none"> <li>• Discussions with produce importers and Pakistan agricultural economists.</li> </ul>  |  |
| <p>5. 38 lead farmers trained (including a minimum of 8 women) and extension training to a minimum of 500 more conducted.</p>                               | <ul style="list-style-type: none"> <li>• % and # of participants who demonstrate successful acquisition of knowledge.</li> <li>• %, # and Output of healthy crop cycles.</li> <li>• % and # of Women trainees.</li> <li>• # of secondary trainees working with lead farmers.</li> <li>• # of secondary trainees who adopt knowledge, crops and or technology.</li> <li>• \$ Value of co-investment in scale up.</li> </ul>  | <ul style="list-style-type: none"> <li>• Training reports.</li> <li>• Photographs.</li> <li>• Post training test results.</li> <li>• Participant interviews.</li> <li>• Participant registers.</li> </ul>   | <p>Farmers are motivated and understand the potential benefit, are confident they will receive adequate support.</p>   |
| <p>6. Appropriate publications created and disseminated. Annual program workshops conducted and results disseminated. Annual Nangarhar Trade Fair held.</p> | <ul style="list-style-type: none"> <li>• # and Type of informational publications for farmers produced.</li> <li>• # and type of research reports produced.</li> <li>• # and type of secondary projects initiated using the program information or research reports.</li> <li>• # and identity of participants in the annual program workshop.</li> <li>• Rate of adoption of program results into workshop participant's own policies, procedures and projects.</li> <li>• # and identity of visitors to annual trade fair.</li> </ul> | <ul style="list-style-type: none"> <li>• Examples of published materials.</li> <li>• Production run data.</li> <li>• Distribution reports.</li> <li>• Workshop register.</li> <li>• Workshop and trade fair participant feedback.</li> <li>• Trade fair register.</li> <li>• Media reports.</li> <li>• Pictures.</li> </ul> | <p>Farmers have adequate levels of basic education, confidence and access to resources to adopt new technology, crops or practices. Security is stable enough to attract buyers from external markets to Nangarhar for a trade fair.</p> |

| Narrative Summary   | Objectively Verifiable Indicators   | Means of Verification  | Assumptions and Risks  |
|---|---|--|--|
|   | <ul style="list-style-type: none"> <li>• \$ Value of sales initiated at the trade fair.</li> <li>• \$ Value of repeat business.</li> <li>• Geographical provenance of visitors to the trade fair and locations of any buyers identified through the trade fair.</li> </ul>  |  |  |
| <p>7. NU Faculty capacity enhanced to create capacity to design and implement independent applied research. Creation of independent capacity to create multi-media extension materials through the existing NU computer / Internet center. Program website established.</p> | <ul style="list-style-type: none"> <li>• #, nature and \$ value of non-RALF investments in NU research projects.</li> <li>• # and functional specialization of NU project participants.</li> <li>• Objective analysis of improved research capacity based on success of ongoing RALF research projects.</li> <li>• #, nature and impact of NU field site visits.</li> <li>• # and nature of extension and research trainings undertaken for the benefit of NU staff.</li> <li>• #, nature, subject matter of multi-media extension information produced.</li> <li>• # of occasions and size of audience in viewings, dissemination of printed materials.</li> <li>• # and Nature of research reports published in recognized journals.</li> <li>• # of website hits.</li> <li>• # and nature of requests for information or collaboration.</li> </ul> | <ul style="list-style-type: none"> <li>• Research contracts.</li> <li>• Peer reviews.</li> <li>• Training registers.</li> <li>• Visit reports.</li> <li>• Training reports.</li> <li>• Consultant reports.</li> <li>• Examples of multi-media publications.</li> <li>• Website tracking data.</li> </ul> | <p>Selected program staff remains with the program and do not take higher paying jobs elsewhere.</p> <p>Ministry of Higher Education do not impose restrictive rules on NU participation.</p> <p>Internet proves a useful informational exchange and marketing tool in the Afghan context.</p> |



