



IFAD
INTERNATIONAL FUND FOR AGRICULTURAL DEVELOPMENT
Executive Board – Seventy-Eighth Session
Rome, 9-10 April 2003

REPORT AND RECOMMENDATION OF THE PRESIDENT

TO THE EXECUTIVE BOARD ON PROPOSED

TECHNICAL ASSISTANCE GRANTS

FOR

AGRICULTURAL RESEARCH AND TRAINING

BY

NON-CGIAR-SUPPORTED INTERNATIONAL CENTRES



TABLE OF CONTENTS

ABBREVIATIONS AND ACRONYMS	iii
PART I INTRODUCTION	1
PART II RECOMMENDATION	2
ANNEXES	
I. International Centre of Insect Physiology and Ecology (ICIPE): Programme for the Promotion of Productivity and Trade of Fruits and Vegetables: The African Fruit Fly Initiative (AFFI)	3
II. International Fertilizer Development Center (IFDC): Participatory Evaluation, Adaptation and Adoption of Environmentally Friendly Nutrient Management Technologies for Resource-Poor Farmers (ANMAT) Programme – Phase II	7
III. Food and Agriculture Organization of the United Nations (FAO): Organic Production of Underutilized Medicinal, Aromatic and Natural Dye Plants (MADPs) Programme for Sustainable Rural Livelihoods in Southern Asia	12
IV. International Fertilizer Development Center (IFDC): Programme for the Development and Implementation of an Information and Decision Support System for Cereal Production in the NENA Region	17



ABBREVIATIONS AND ACRONYMS

AFFI	African Fruit Fly Initiative
ANMAT	Participatory Evaluation, Adaptation and Adoption of Environmentally Friendly Nutrient Management Technologies for Resource-Poor Farmers
CFC	Common Fund for Commodities
FAO	Food and Agriculture Organization of the United Nations
ICIPE	International Centre of Insect Physiology and Ecology
IDRC	International Development Research Centre
IDSS	Information and Decision Support System
IFDC	International Fertilizer Development Center
IUCN	World Conservation Union
MADPs	Medicinal, Aromatic and Dye Plants
NARS	National Agricultural Research Systems
NENA	Near East and North Africa
NGO	Non-Governmental Organization
SME	Small and Medium Enterprise
UDP	Urea Deep Placement
WHO	World Health Organization



**REPORT AND RECOMMENDATION OF THE PRESIDENT OF IFAD
TO THE EXECUTIVE BOARD ON PROPOSED TECHNICAL ASSISTANCE GRANTS
FOR AGRICULTURAL RESEARCH AND TRAINING BY
NON-CGIAR-SUPPORTED INTERNATIONAL CENTRES**

I submit the following Report and Recommendation on four proposed technical assistance grants (TAGs) for agricultural research and training to non-CGIAR-supported international centres in the amount of USD 4 300 000.

PART I - INTRODUCTION

1. This report recommends the provision of IFAD support to the research and training programmes of the following non-CGIAR-supported international centres: the International Centre of Insect Physiology and Ecology; the International Fertilizer Development Center; and the Food and Agriculture Organization of the United Nations.

2. Documents relating to the TAGs being presented to the Executive Board for approval are contained in the annexes to this report:

- I. International Centre of Insect Physiology and Ecology (ICIPE): Programme for the Promotion of Productivity and Trade of Fruits and Vegetables: The African Fruit Fly Initiative (AFFI)
- II. International Fertilizer Development Center (IFDC): Participatory Evaluation, Adaptation and Adoption of Environmentally Friendly Nutrient Management Technologies for Resource-Poor Farmers (ANMAT) Programme – Phase II
- III. Food and Agriculture Organization of the United Nations (FAO): Organic Production of Underutilized Medicinal, Aromatic and Natural Dye Plants (MADPs) Programme for Sustainable Rural Livelihoods in Southern Asia
- IV. International Fertilizer Development Center (IFDC): Programme for the Development and Implementation of an Information and Decision Support System for Cereal Production in the NENA Region

3. The objectives and content of these applied research programmes are in line with IFAD's strategic objectives, and the policy and criteria of its TAG programme for agricultural research and training.

4. The strategic objectives of IFAD's support for technology development relate to: (a) IFAD's target groups and their household food security strategies, specifically in remote and marginalized agro-ecological areas; (b) technologies that build on traditional knowledge systems, are gender-responsive, and enhance and diversify the productive potential of resource-poor farming systems by improving productivity and addressing production bottlenecks; (c) access to productive assets (land and water, financial services, labour and technology, including indigenous technology) and their sustainable and productive management; (d) a policy framework that provides the rural poor with an incentive to reach higher productivity levels, thereby reducing their dependence on transfers; and (e) an institutional framework within which formal and informal, public and private-sector, local and national institutions provide services to the economically vulnerable, according to their comparative advantage. Within this framework, IFAD also intends to develop commodity-based approaches to rural poverty reduction, specifically targeting items produced and consumed by the rural poor. Finally, the establishment of a consolidated network for knowledge gathering and dissemination will



enhance the Fund's capacity to establish long-term strategic linkages with its development partners and to multiply the effects of its agricultural research and training programmes.

5. The TAGs proposed in this document respond to the foregoing strategic objectives, which in turn are derived from the *Strategic Framework for IFAD 2002-2006*. In particular, the grant through ICIPE for AFFI responds to objectives (a), (b), (d) and (e), through the development and deployment of international pest management strategies to improve the marketability of fruits produced by smallholder African farmers. The grant through IFDC for nutrient management responds to objectives (a), (b), (d) and (e), by promoting more efficient use of inputs in the form of urea deep placement (UDP) technology among poor farmers in Southern Asia. The grant through FAO represents the first time that IFAD is helping promote organic cultivation methods for MADPs while improving product value in niche markets and positioning smallholders to engage in profitable village-based small and medium enterprises (SMEs). It thus responds to objectives (a) through (e). The grant through IFDC to develop decision support tools responds to objectives (a), (c) and (e) inasmuch as it seeks to improve production efficiency and profitability, allowing farming communities to make timely and efficient use of inputs.

PART II - RECOMMENDATION

6. I recommend that the Executive Board approve the proposed technical assistance grants in terms of the following resolutions:

RESOLVED: that the Fund, in order to finance, in part, the Programme for the Promotion of Productivity and Trade of Fruits and Vegetables: The African Fruit Fly Initiative (AFFI), shall make a grant not exceeding one million United States dollars (USD 1 000 000) to the International Centre of Insect Physiology and Ecology (ICIPE) upon such terms and conditions as shall be substantially in accordance with the terms and conditions presented to the Executive Board in this Report and Recommendation of the President.

FURTHER RESOLVED: that the Fund, in order to finance, in part, the Participatory Evaluation, Adaptation and Adoption of Environmentally Friendly Nutrient Management Technologies for Resource-Poor Farmers (ANMAT) Programme – Phase II, shall make a grant not exceeding one million United States dollars (USD 1 000 000) to the International Fertilizer Development Center (IFDC) upon such terms and conditions as shall be substantially in accordance with the terms and conditions presented to the Executive Board in this Report and Recommendation of the President

FURTHER RESOLVED: that the Fund, in order to finance, in part, the Organic Production of Underutilized Medicinal, Aromatic, and Natural Dye Plants (MADPs) Programme for Sustainable Rural Livelihoods in Southern Asia, shall make a grant not exceeding one million four hundred thousand United States dollars (USD 1 400 000) to the Food and Agriculture Organization of the United Nations (FAO) upon such terms and conditions as shall be substantially in accordance with the terms and conditions presented to the Executive Board in this Report and Recommendation of the President

FURTHER RESOLVED: that the Fund, in order to finance, in part, the Programme for the Development and Implementation of an Information and Decision Support System for Cereal Production in the NENA Region, shall make a grant not exceeding nine hundred thousand United States dollars (USD 900 000) to the International Fertilizer Development Center (IFDC) upon such terms and conditions as shall be substantially in accordance with the terms and conditions presented to the Executive Board in this Report and Recommendation of the President.

Lennart Båge
President



INTERNATIONAL CENTRE OF INSECT PHYSIOLOGY AND ECOLOGY (ICIPE): PROGRAMME FOR THE PROMOTION OF PRODUCTIVITY AND TRADE OF FRUITS AND VEGETABLES: THE AFRICAN FRUIT FLY INITIATIVE (AFFI)

I. BACKGROUND

1. Smallholders supply over 90% of mangoes produced in Africa. Out of an annual production of 1.9 million tonnes (t), however, about 40% is wasted due to fruit flies (assessments of national agricultural research systems – NARS – from participating countries, confirmed by AFFI surveys). This great waste is a consequence of the lack of local expertise and affordable technologies for the management of fruit flies.

2. This situation largely reduces the profits and market competitiveness of smallholder fruit growers and traders (about 70% of whom are women). It also results in the high cost of fruit on local urban markets, thus putting fruit out of the reach of large sectors of the urban poor and exacerbating malnutrition. The recent introduction in Europe of the regulations on uniform and strict quarantine and the minimum residue level further compounds the problem, jeopardizing the lucrative export of mangoes from Africa, currently 35 100 t annually for a total worth of USD 42 million.

3. Currently horticulture produce in Kenya grows at an annual rate of nearly 20%, reflecting the eagerness of smallholder communities to produce for local or export markets in order to obtain much-needed cash income largely used for improving household food security and children's education. Their lack of fruit fly management technologies and skills, on the other hand, results in an inability to produce quality fruit. Hence, the low productivity of the existing mango and other tropical fruit trees. This discourages prospective smallholder producers from investing in diverse and more suitable farming containing a perennial fruit production component, and prompts them to rely exclusively on immediately lucrative vegetable production. The result is the proliferation of unsustainable farming systems, and environmental degradation due to heavy reliance on fertilizer, pesticide and water inputs. In addition, smallholders living in the vast marginal lands unsuitable for intense vegetable production, but with potential for perennial fruit production, are left with grossly reduced development options.

4. In a broader context, providing technology and skills for producing quality perennial fruit should be seen as part of a rural development package. Apart from the obvious environmental benefits from diversifying agricultural production systems, converting subsistence farmers into sustainable smallholder producers has long-term social implications. Profitable fruit production depends on acquiring and updating necessary technical skills. Embarking on perennial fruit production also changes the time frame and perspective of planning. Experiences from other regions show that opportunities for farm development and increased household income resulting from improved production skills gradually change smallholders' attitudes, priorities and lifestyles. Newly emerged smallholder producers provide a vivid example of success and become a local driving force for community transformation.

II. RATIONALE/RELEVANCE TO IFAD

5. The African Fruit Fly Initiative was developed to address the primary constraint in quality fruit production in Africa by providing suitable fruit fly management technologies and skills through extensive farmer training and local and regional capacity-building. It was launched in 1997-1998 with broad stakeholder participation, using ICIPE's core investment of over USD 100 000.

6. In 1998, the Executive Board of IFAD approved the Programme for the Sustainable Management of African Fruit Flies as a five-year programme structured into two phases. It committed



an initial amount of USD 1.0 million in the form of a grant and proposed reverting, in due course, to the Executive Board for approval of an additional USD 1.0 million for the second programme phase.

7. Based on IFAD's firm commitment, and following the provisions of the TAG agreement, ICIPE has established an extensive AFFI network; made commitments to and entered into appropriate legal agreements with partner technical agencies, governments of the participating African countries and smallholder communities; and accepted six African PhD students for advanced training. These commitments are substantial and will stretch through 2003.

8. First-phase programme operations commenced in 1999 and were completed in June 2001. In addition to the USD 1 million invested by IFAD, other donors provided USD 900 000, and the African countries, ICIPE itself and AFFI technical partners invested USD 500 000. Thus the first-phase investments amounted to USD 2.4 million, or about 38% of the investment needed to complete the entire five-year programme. Apart from USD 1 million provisionally earmarked by IFAD, USD 1.7 million was approved by the Common Fund for Commodities (CFC) as cofinancing, contingent on IFAD's continuous involvement in the programme's second phase.

III. THE PROPOSED PROGRAMME

9. In its second phase, the programme will build on the accomplishments of the first phase, but, as reflected in the change in its name, it will focus on the promotion of fruit and vegetable productivity and trade as well as on fruit fly management. In particular, it will pay attention to:

- on-farm technology demonstrations and technology evaluations in the participating African countries; and
- broad training and local and national capacity-building for fruit fly management through the creation of national fruit fly teams, and collaboration with relevant international quarantine and commodity bodies.

10. Specific activities for the programme's second phase are as follows:

- **organize on-farm technology demonstrations** on smallholder fields in several countries in Africa, to evaluate the package(s) developed for fruit fly management; in particular, to (a) evaluate technical performance of the promising AFFI-developed baits and pathogens, to be used in bait stations as alternatives to the imported baits and pesticides; (b) conduct socio-economic assessments of the package, focused on evidence of increased yield of quality mangoes as a result of package application, thus creating direct profits for smallholder growers; and (c) describe patterns in sharing gains resulting from fruit fly control within the production-marketing chains in participating countries (among farmers, traders, middlemen, locally employed labour, etc.);
- **commercialize AFFI-developed baits, pathogens and traps** for fruit fly management by improving their formulation and establishing a demonstration unit at ICIPE for training in small-scale commercial production;
- **build local capacity for fruit fly management** by creating national fruit fly teams in the participating African countries by training fruit producers, extension service personnel, and plant protection and quarantine specialists at the relevant technical and academic levels;
- **build local and regional capacity for quarantine setting** by producing and disseminating quarantine-strengthening tools (distribution maps of mango-infesting fruit flies in Africa and user-friendly tools to identify fruit flies of economic importance) and training local and regional plant protection and quarantine authorities;
- **create a pool of young African scientists and experts** trained in fruit fly biology and management at MSc and PhD levels;



- **strengthen operations of the AFFI network** and disseminate AFFI information, technologies and products to the relevant national and international regulatory and commodity bodies;
- **produce support and training materials** for development of skills through various forms of training; and
- **establish links and provide technical back-up to local and regional development operations** conducted by non-governmental organizations (NGOs), smallholder cooperatives, funded by IFAD and/or other donors in East Africa (Kenya, the United Republic of Tanzania, Uganda), West Africa (Côte d'Ivoire, Nigeria) and North Africa (The Sudan) to facilitate large-scale implementation of fruit fly management packages.

11. **Post-programme plans.** Infestation by fruit flies constitutes the major factor reducing the volume of quality mangoes available for local markets and international trade in Africa, even though total mango production in Africa is very high. ICIPE is well aware that market saturation may ensue as a result of fruit fly control, and ultimately become a significant problem. However, this process will take time, as there is growing domestic and international demand for quality fruit, which has to be satisfied first. In the meantime, means of using the surplus can be developed. To address this potential problem, ICIPE is promoting local fruit processing, and helping local fruit traders obtain adequate technologies (e.g. mobile fruit processing units constructed in containers for The Sudan).

IV. EXPECTED OUTPUTS/EXPECTED BENEFITS

12. The majority of mango-infesting fruit flies, AFFI's target, also attack other tropical fruits grown in Africa. The control packages developed by AFFI will be directly applicable for management of fruit flies attacking most of these other tropical fruits as well. AFFI is fully prepared to expand its targets beyond mango, but this will depend on the availability of resources and stakeholder demand.

V. IMPLEMENTATION ARRANGEMENTS

13. ICIPE will coordinate the overall programme in strong liaison with NARS, regional research bodies, local authorities and other interested organizations. The collaborating institutions will conduct most operations directly on smallholder fields. NARS, NGOs, ICIPE and invited experts operating the major regional control programmes in other tropical regions will jointly implement the programme's applied components.

14. A broad AFFI network has been created and adequate arrangements were already implemented during the programme's first phase. ICIPE is fully prepared to continue its coordinating role and provide on-site technical backstopping. Details of the organizational structure, including both scientific and financial controls implemented, are available in the full design document. These aspects of AFFI were closely evaluated during the review at the end of the programme's first phase, and rated as outstanding.

15. In Africa, the programme was well received. Local authorities and smallholder communities in the programme areas were involved in programme formulation and are determined to participate and contribute in its implementation. In fact, after the programme's first phase, operations in several African countries continue using their own resources. The programme is recognized as relevant to the regional development plans and enjoys support from regional organizations such as the Organization of African Unity's Scientific, Technical and Research Commission and its Inter-African Phytosanitary Council; the Association for Strengthening Agricultural Research in Eastern and Central Africa; the Southern African Center for Cooperation in Agriculture and Natural Resources Research and Training; the International Tropical Fruits Network; and FAO's Intergovernmental Group and Sub-Group on Tropical Fruits.

ANNEX I

16. The programme received technical support from leading agencies experienced in fruit fly management, such as the United States Department of Agriculture, the International Cooperation Centre on Agrarian Research for Development, and the Agrarian Research Council-South Africa, and their continued involvement has been assured. The research and development components aimed at improving control techniques will build on ongoing research on behaviour of mango and Natal fruit flies, their natural enemies (parasitoids) and pathogens, genetics and attractants. For the most part, the same collaborators will be involved in the expanded programme.

V. INDICATIVE PROGRAMME COSTS AND FINANCING

17. The total cost of the second programme phase will be about USD 4.0 million.

Category of Expenditure	USD				Total Cost
	IFAD	CFC	Training Fund ¹	Counterpart Contribution ²	
Capital expenditures, vehicles, equipment	12 000	24 500			36 500
Materials, services, expendables	67 800	98 000			165 800
Personnel, support staff	181 500	96 000			277 500
Professional staff/ technical assistance	246 000	261 000			522 000
Consultancies	15 000				173 500
Travel, field work	93 500	80 000		900 000	
Training	70 000		360 000		
NARS and collaborators	100 000				
Networking and dissemination	15 800	288 000			1 776 200
Workshops and impact assessment	42 400				
Unallocated	6 000				6 000
Institutional costs	150 000	152 500			302 500
Subtotal	1 000 000	1 000 000	360 000	900 000	3 260 000
Supervision, monitoring		135 000			135 000
Contingencies (5%)		56 800			56 800
Loan component		500 000			500 000
Total	1 000 000	1 691 800	360 000	900 000	3 951 800

Notes:

¹ Training fund attached to AFFI allocated as scholarships at PhD and MSc levels and funded, among others, by Germany through the German Academic Exchange Service (DAAD) and by The Netherlands through the Direct Support to Training Institutions in Developing Countries Programme (DSO).

² In the form of staff salaries, facilities and in-kind contributions from participating NARS, ICIPE and collaborating technical agencies.



**INTERNATIONAL FERTILIZER DEVELOPMENT CENTER (IFDC):
PARTICIPATORY EVALUATION, ADAPTATION AND ADOPTION OF
ENVIRONMENTALLY FRIENDLY NUTRIENT MANAGEMENT
TECHNOLOGIES FOR RESOURCE-POOR FARMERS (ANMAT)
PROGRAMME – PHASE II.**

I. BACKGROUND

1. Nitrogen is the nutrient most required for the economical production of rice, and urea is the principal nitrogenous fertilizer. Unfortunately, nitrogen from urea is subject to great losses (up to 60% or more) to the atmosphere and in runoff water in the paddy ecosystem, especially when urea is broadcast into water or on the soil surface. The negative results from this practice include atmospheric and surface water pollution and farmers' costs that do not contribute to crop production. The key practice to reduce the losses and increase the efficiency of applied nitrogen is to place urea into soil near paddy plants, a practice known as urea deep placement (UDP).

2. Through participatory research, monitoring, evaluation and information dissemination, farmers taking part in the IFAD-funded ANMAT programme in Bangladesh have successfully adapted and adopted an improved nutrient management practice built around UDP. In that practice, farmers manually place 0.9-2.7-gram particles of urea into soil 3-7 days after transplanting rice seedlings within a specified planting geometry designed to accommodate fertilizer placement and future weeding. Baseline and impact surveys and farmer-conducted field demonstrations implemented by collaborating NGOs have objectively verified that farmers using the UDP practice have higher rice production, increased economic benefits, improved standards of living and greater household food security. These agronomic and socio-economic incentives and benefits are prerequisites for farmers to even consider adopting new practices. Being labour-intensive and requiring less urea, a costly input, the UDP practice is especially suitable for smallholder farmers with limited monetary and physical resources.

3. In general during dry and wet seasons, Bangladeshi farmers obtain about 1 000 and 750 kilograms (kg) per hectare (ha) respectively more paddy (an average 20% increase) from UDP than from broadcasted urea applications and use 20-30% less urea. Marginal net benefits for UDP calculated from demonstration results were USD 112 and USD 96/ha for dry and wet seasons respectively. Estimates based on a survey of 1 026 households in four pilot areas and on farmer demonstration results suggest that UDP can potentially increase household income by 12%, and provide 2 725 persons within those households the annual rice requirement above the poverty level (223.4 kg/person at 3 465 kilocalories/kg of rice). Initial indications appear to confirm similar results in Viet Nam.

4. In Bangladesh, the ANMAT programme chose to work in many IFAD project areas, particularly in places where UDP had not been practised previously to expand adoption, quantify the benefits of use at the household level, and identify household socio-economic characteristics and farm attributes influencing adoption. During 2000 and 2001, work was expanded to Nepal and Viet Nam, where farmers were completely unaware of fertilizer deep placement technology. In those countries, the programme has focused on promoting farmer participatory evaluation and adaptation of location-specific cultural practices for paddy cultivation, and ensuring availability of briquettes by shipping a briquette-producing machine to both countries. In Viet Nam, UDP is being tested for varying distances between placement points of briquettes for both transplanted (closely spaced hills) and broadcast-seeded rice. To the Fund's knowledge, the latter has never been a subject of scientific research and thus the programme can contribute to the literature on the subject. Additionally, farmers are evaluating placement of nitrogen and potassium, and nitrogen, phosphorous and potassium



briquettes. Recent field results from IFDC-sponsored studies in India have indicated nitrogen and phosphorous savings associated with the use of deep-placed multi-nutrient briquettes. Also, a replica of a Bangladeshi briquette production machine has been reproduced in Viet Nam, and several low-cost prototypes of deep placement applicators are being tested.

5. The summary of current status of fertilizer deep placement technology for wetland paddy production clearly outlines the bases for additional activities to expand the dissemination of knowledge of the technology and to obtain greater understanding of the adoption process, as recommended by the external review team.

II. RELEVANCE AND STRATEGY

6. The adoption of new and innovative agricultural technologies, even those that appear to offer great benefits, takes time. Some innovators in ANMAT programme pilot areas have begun to adopt and use UDP, but it has not yet been determined how sustainably. The programme is in an excellent position to contribute to knowledge about the dynamics of the transition from use to adoption of innovative agricultural technology, specifically the practice of UDP. It will continue for two years promotional activities for UDP within selected current pilot areas and monitor its use. It will also initiate participatory farmer research in additional pilot areas in Bangladesh, Nepal and Viet Nam, and possibly in two other countries. IFAD-funded investment and development projects will receive priority in the selection of new pilot areas. With guidance and support of the ANMAT staff, NGOs will be selected to work directly with farmers in a fully participatory manner.

7. The programme's implementation strategy will be guided by existing knowledge and the research conducted previously by IFDC and other agencies in the regions. The strategy will include rapid socio-economic and agronomic appraisals to identify appropriate pilot areas in which to implement the programme and collect baseline socio-economic and demographic data. Those data will be collected only in selected pilot areas. Baseline data will be used to define the socio-economic characteristics of households in new pilot areas and relate those to data concerning users and non-users of UDP from the ANMAT programme to guide selection of the methodologies for working in new areas. The data will also be analysed later to estimate programme impacts. Farmer orientation and training, and initiation of briquette production will follow. Marketing activities will be implemented to provide the product at convenient places and at reasonable prices to promote its use and adoption. Regional, national and local workshops and seminars will be conducted to provide forums for the exchange of ideas and perspectives among stakeholders and disseminate results to wider audiences.

8. The programme may support NARS' research on technologies or practices not proven to the extent of UDP. Nimin (a commercial nitrification inhibitor) coating of urea, with and without UDP, which has given inconclusive results, and deep placement of multi-nutrient briquettes are examples. Also, NARS may be supported for determining the nutrient content of floodwater under various management and ecological conditions in order to provide estimates of potential nutrient losses to the atmosphere and run-off water.

9. The programme will in selected locations evaluate UDP in combination with animal manure, cultivation of green manure crops and incorporation of organic residues. It will also test the use of organic soil amendments for three years in individual fields to evaluate the residual effects.

III. THE PROPOSED PROGRAMME

10. The main goals of the proposed ANMAT II programme are to reduce poverty, improve standards of living and increase household food security among smallholder farmers by improving their incomes and creating employment. Its principal objectives are to increase paddy productivity and

household incomes by disseminating UDP information and assisting farmers in adapting the technology to their social, economic and physical environments. Success will also reduce environmental pollution and increase rural development and economic growth.

11. Proposed programme activities include:

- continue key promotional activities for UDP in selected current pilot areas through 2004;
- continue testing the feasibility of UDP use in broadcast/direct-seeded rice in selected sites;
- select one or two new countries, pilot areas and partner NGOs; perform baseline surveys within each and create a basis for implementing a participatory approach and methodology;
- introduce and test UDP in new pilot areas, and nitrogen, phosphorous and potassium deep placement in current and new pilot areas;
- implement participatory evaluations of benefits from use of green and animal manures with stakeholders in pilot areas where not currently in wide-scale use;
- support selected NARS to evaluate Nimin and to determine nutrient content in flood-water for various ecological and management conditions;
- provide training in appropriate techniques for introduced practices;
- perform rigid economic analyses for field trials and demonstrations to determine benefits from individual practices and synergies from combinations;
- conduct baseline and impact surveys and analyse results to determine the 'quality of life' benefits to adopters of the practices and other outputs listed above;
- monitor and report programme activities and accomplishments; and
- assess training needs.

12. The research content will include farmer participatory trials and demonstrations using improved designs (recommended by the review team) to identify more clearly the individual contributions from fertilizer deep placement and other management practices (e.g. planting geometry) and performing more rigid economic analyses of data. Work with NARS may include the evaluation of Nimin and documentation of nutrient content of floodwater in paddy fields to provide better estimates of potential contributions to environmental pollution. Additionally, benefits of the use of organic fertilizers in combination with the UDP package will be demonstrated where applicable. Work will be conducted on the feasibility of producing a low-cost, reliable applicator for fertilizer deep placement.

13. Extending and elaborating the achievements and benefits of this programme will reinforce rural development activities in general and IFAD-supported projects in particular as recommended by the external team. The current ANMAT programme has established formal agreements with two IFAD-funded investment projects in Bangladesh, the Agricultural Diversification and Intensification Project (ADIP) and the Smallholder Agricultural Improvement Project (SAIP). ANMAT staff will participate in planning and evaluation meetings for ADIP and SAIP staff and stakeholders, provide training for staff and partner NGOs, and select additional NGOs that are common to the projects. ADIP and SAIP will provide fertilizer deep placement training for farmers and include the practice in their demonstration plans. The programme will continue to seek similar arrangements with investment projects in Nepal and Viet Nam and with any new pilot areas, which will be selected primarily from among areas covered by investment projects.

14. To permit analyses of the process of adoption over 4-5 years, the programme will continue to work in selected current pilot areas through 2004. During 2003, funding permitting, it will select additional NGOs, and new pilot areas in Nepal, Viet Nam and up to two additional countries for baseline surveys, dissemination of information, participatory trials and demonstrations, training, and supply of briquettes. The review committee will recommend which countries to expand pilot areas to; Cambodia, India and Myanmar are possibilities.

IV. EXPECTED OUTPUTS / EXPECTED BENEFITS

15. The programme will produce the following outputs:
- reinforce and complement IFAD-funded rural development projects;
 - demonstrate and validate that UDP is a sustainable practice, creates employment, improves household food security, contributes to reduction of poverty and raises living standards;
 - determine household and farm typologies of farmers within the pilot areas;
 - define household and farm characteristics and attributes important in adoption or non-adoption of the newly introduced practices;
 - define the diffusion path of the adoption of the UDP technology in Bangladesh;
 - conduct surveys that permit an evaluation and assessment of gender-disaggregated data;
 - establish a woman entrepreneur (or several) in briquette production;
 - define other possible nutrient management practices that may contribute to increased productivity and income;
 - determine the feasibility of producing a field applicator for fertilizer deep placement in wetland paddy soils;
 - obtain the manufacturing and sales of at least six briquette-producing machines in one or more than one country other than Bangladesh;
 - improve farmers' access to briquettes by providing marketing training for briquette producers and retailers;
 - demonstrate an example of activities related to the commercialization of agricultural technology and dissemination of information to farmers; and
 - provide a more rational basis for policy dialogue with decision-makers on nutrient management requirements.

V. IMPLEMENTATION ARRANGEMENTS

16. IFDC headquarters will be responsible for administrative and financial management of the programme. Memoranda of understanding will be prepared to elaborate the collaboration between IFDC, NGOs, NARS or others, including the transfer of funds by IFDC and the justification of the use of those funds by recipient local organizations.

17. The Asia Division of IFDC, in Dhaka, Bangladesh, will implement the programme through an appointed resident programme coordinator, responsible for finalizing plans with NGOs, NARS and others, and monitoring and reporting of activities. Programme staff will comprise a full-time programme coordinator stationed in Dhaka, and an agricultural sociologist and a soil scientist, both part-time consultants located at IFDC headquarters. The support staff of four to five persons will be located at the programme office in Dhaka. The ANMAT programme staff will coordinate NGO activities, training (directly or in cooperation with others), funding from the IFAD grant and monitoring and reporting of programme activities and accomplishments. Bangladesh, Nepal and Viet Nam will continue to be the target countries in the proposed programme, while IFAD loan projects in these countries will be the key locations of the research sites. In this context, IFAD's Asia and the Pacific and Technical Advisory Divisions will participate in programme planning and review on an annual basis, as part of a programme steering committee to be established for the purpose.

18. FAO will play a key role in programme technical review and backstopping.

**VI. INDICATIVE PROGRAMME COSTS**

19. The proposed grant funding for the three-year programme is USD 1.0 million. IFDC's contribution is estimated at USD 236 500.

Description of Costs	USD			
	Year 1	Year 2	Year 3	Total
Personnel	142 200	138 100	167 000	447 300
Operations	94 300	76 600	105 300	276 200
Collaborators	72 000	72 000	60 000	204 000
Administration	23 700	21 500	27 300	72 500
Total IFAD	332 200	308 200	359 600	1 000 000
IFDC contribution	77 100	72 200	87 200	236 500
Total programme	409 300	380 400	446 800	1 236 500



**FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS (FAO):
ORGANIC PRODUCTION OF UNDERUTILIZED MEDICINAL, AROMATIC AND
NATURAL DYE PLANTS (MADPs) PROGRAMME FOR SUSTAINABLE RURAL
LIVELIHOODS IN SOUTH ASIA**

I. BACKGROUND

1. South Asia is a veritable treasure chest of valuable medicinal, aromatic and dye plants (MADPs) – herbs, shrubs, trees and vines found naturally mostly in fragile ecosystems predominantly inhabited by rural poor and indigenous communities. These MADPs have significant medicinal and commercial value, but are currently threatened due to the lack of concerted conservation efforts and uncontrolled, exploitative trade practices.

2. Appropriate management of MADP resources can help conserve biodiversity and provide critical rural resources to build sustainable livelihoods. A holistic, participatory and strategic research approach is needed to develop new technological, economical, institutional and policy solutions for non-destructive harvesting, remunerative organic cultivation, value-addition, processing and profitable marketing of MADPs, and equitable sharing of the benefits to strengthen environmental, livelihood, and health security of the resource poor and their fragile habitats. Ecological farming methods such as organic agriculture represent sustainable options through their principles of soil improvement, crop diversification, reliance on locally available materials, and integration into the social environment including also small-scale farmers.

II. RATIONALE/RELEVANCE TO IFAD

3. This research programme builds strongly on the synergy of available subject knowledge and the experience of partners with the introduction of organic production and seeks to bring about greater sustainability. Through actual working models in different parts of South Asia, it aims at demonstrating sustainable livelihood opportunities for the rural poor, while arresting natural resource degradation and maintaining biodiversity. It complements existing IFAD projects in India, Nepal and Sri Lanka.

4. Indigenous peoples in different parts of South Asia have always had detailed knowledge about MADPs and traditional healing systems, but lack skills and resources to benefit from this. Putting indigenous peoples at its core, the programme will provide a catalytic and enabling platform to harness and disseminate such knowledge and build individual and collective capabilities to overcome obstacles. With an integrated approach that includes providing access to financial services and markets through a formal business platform, it will help eliminate critical poverty bottlenecks and create success stories among tribal communities, small and marginal farmers, the landless and rural women. These success stories, and the people who have contributed to them, will in turn be powerful examples and agents of change.

5. Aggregated across South Asia, the programme will seek to forge mutually beneficial and enduring partnerships at the local, state, national and international levels. It will establish linkages with related research programmes and development projects such as those supported by IFAD in each of the countries, assess ongoing and past successes on which to build, identify weaknesses that prevent higher competitiveness, and develop and improve mechanisms to enhance benefits available to various target groups and to the environment.



6. Stakeholders in the programme will include:
- **policy-makers at the state and national levels from participating countries.** Their active support and involvement will help create an enabling policy environment in South Asia, and improve access to infrastructure and funding;
 - **reputed national and international organizations** with considerable expertise and experience in all aspects of the product chain from the producer/collector to the customer, who will serve as a central pool of resources and services; and
 - **NGOs, research and education institutions, farmer organizations, certifying agents and senior state-level functionaries** who will ensure smooth programme implementation in their respective areas, and effective and equitable dissemination of the benefits and results.
7. After the programme received individual proposals from stakeholders, a participatory workshop was held in January 2003 as the first step towards building a common, synergistic platform to launch an effective action research programme. Agreement was reached that some activities (such as research and development, coordination, regional and interregional business platform design, and certain marketing and information management aspects) would be managed centrally and on an interregional basis. At the same time, given varying local conditions and government policy frameworks, it was decided to identify distinct areas/regions in South Asia and develop working models of organic MADP production and related products in each area. Accordingly, ten such areas were identified, for which revised proposals were received and integrated into the final programme design document.

III. THE PROPOSED PROGRAMME

Goals and Objectives

8. The programme's goal is to sustainably improve the livelihoods of the rural poor through development of diversified production chains for organically produced MADPs and certified collected MADPs. This will contribute to improved rural food security through higher capacities and income and an improved natural resource base and biodiversity, particularly in marginal and uncultivated areas.
9. The programme's specific objectives are to:
- empower the rural poor and rural communities through participatory involvement, training and equitable benefit distribution, including fair trade principles, in all MADP and related organic production processes and outputs;
 - develop, strengthen and test the full production chain for organic MADP products from production, collection and value-adding to certification, market research and marketing through appropriate small and medium enterprises (SMEs), NGOs and information and communication networks; and
 - develop, implement and test (verify) a fully transparent and traceable quality management programme with certification for organic production, responsible collection and other high-quality international trade parameters (e.g. World Health Organization (WHO) and European Union regulations and international accreditation) to enable long-term marketing advantages, including export and local health care.



Programme Components

10. The programme will have the following components:

- (a) **Community organization.** Stakeholder-identified priorities included participatory bottom-up programme organization, planning and implementation, which will require adequate stakeholder training, organization and access to information. Dynamic, easily accessible (also by programme beneficiaries) and user-oriented information systems are therefore key elements both to stakeholder empowerment and to the successful establishment of production chains.
- (b) **Action research and pilot activities relating to the production chain and quality management objectives.** These can be summarized as:
 - **Production.** The input of special resource partners, among them a certifying agency, will facilitate community organization, conversion to organic production, product development and marketing – activities that include, among others, know-how development and transfer, planning and documentation, harvesting techniques, new and improved quality control methods, and linkages with animal husbandry. Participatory on-farm research, demonstration farms and organic nurseries will be the backbone of the organic conversion process and of the integration of cultivation with certified collection.
 - **Collection.** The programme will develop protocols built on guidelines developed by the World Conservation Union (IUCN), WHO (including its ‘Good Agricultural and Field Collection Practices’ currently under development) and others. Local target groups will fully participate in the process, thus also building ownership and including traditional knowledge and strategies.
 - **Value addition/processing.** Action learning of good harvesting practices is the first step to value addition through quality improvement. Several pilot projects will test and demonstrate new products and other value additions, including rigorous quality control and process documentation suitable for acceptance by international markets.
 - **Marketing.** Marketing will initially be a centralized activity and will start with a global market survey. The survey will provide a realistic market assessment, an analysis of competition, and an understanding of product-market opportunities, including niche market segments and the best value-addition alternatives. Marketing will also cover awareness generation within the local farming community and in the domestic market, while initiating a brand-building exercise for South Asian MADP products in key international markets, and strategic links with customers and research institutions. Finally, it will identify and document best practices studies and disseminate practical lessons learned.
 - **Business platform.** The key objective of the business platform or the SME structure is to allow farmers to concentrate on their core competence, namely farming, while relieving them of most of the risks they currently face and the non-farming activities they are involved in such as logistics and marketing. SMEs will be structured like a corporate entity with the farmers as stakeholders. They will be repositories of the latest technology and know-how on all elements of the value chain between the producer and the consumer. They will ensure that farmers receive fair cash compensation for their produce; they will also provide funds for development activities and share profits with farmers.
 - **Quality management.** Quality management is a key element in every sector of the production and marketing chain. With raised awareness (training) and proper implementation (training, monitoring protocols and traceability records), it will



provide a competitive advantage to any conventionally produced products thus assuring long-term income security and conservation of limited resources.

- **Certification.** Certification and its protocols are key to quality control and will be elaborated, tested and adapted to achieve international accreditation. The experience will be used to formulate standards for organic certification and collection certification throughout South Asia. A national agency providing cost-effective individual and group certification will be a key programme stakeholder and will help develop local certification schemes.

IV. EXPECTED OUTPUTS/EXPECTED BENEFITS

11. Outputs and benefits associated with successful implementation of the research programme may be summarized as:

- established, functioning organic production models, particularly in ecologically and economically marginal areas, under a favourable and facilitating government policy;
- indigenous, group and other cost-effective certification systems for organizing production and collection with well-developed standards and protocols;
- effective networking systems for stakeholders at all levels throughout South Asia for active collaboration, and sharing of experiences and best practices;
- vibrant and dynamic, profit-sharing, fair trade SMEs providing access to financial services, technology, value addition and effective marketing channels;
- improved collection methods from uncultivated areas, integrated into other biodiversity management schemes;
- special conservation areas in different eco-zones, sustainably managed in a participatory manner while also being used for commercial collection;
- creation of additional employment in NGOs and small rural enterprises, and a base of well-trained and equipped producers and collectors, including disadvantaged groups of local communities such as tribals, women, youth, small and marginal farmers, and the landless;
- improved health conditions through reduced exposure to potential chemical hazards, greater awareness and consideration for human and environmental health, and effective use of traditional systems of medicine;
- generally improved soil conditions and agricultural production among participating communities as a result of greater awareness, care, organic soil-building practices, crop rotation, and moisture and erosion control;
- organic agriculture fully integrated in the curricula of schools, universities and research institutions, and in government policies and strategies;
- a strong and increasing base of successful examples of beneficiaries from organic cultivation and certified collection of MADPs who will further promote the concepts and practices in South Asia.

V. IMPLEMENTATION ARRANGEMENTS

12. Steering committees at various levels will oversee all programme activities to ensure effective implementation and achievement of stated objectives, based on participatory, bottom-up approaches. The implementing institution, FAO, will be responsible for administration, overall coordination and the coordination of interregional issues such as research, marketing and networking. The programme will run for three years in its first phase.

13. Senior personnel from various stakeholder organizations and local stakeholders will meet regularly to ensure information flow, share experiences, review progress, suggest programme corrections



and build ownership. Different government agencies will collaborate to provide the necessary policy environment and resources such as land, facilities and personnel as per requirement.

14. Annual technical and financial audits will be performed and full evaluation missions are planned during the second programme year (PY) and before the end of PY3. Scaling up to a development programme and expansion of the model experiences from other regions is planned for the second phase.

15. Financing or other types of contributions are expected from the International Development Research Centre (IDRC), the Ford Foundation and FAO; private programme partners (which may include Indian Consultants Associates Pvt. Ltd.; Gram Mooligai; the Foundation for Revitalisation of Local Health Tradition; the Medicinal and Aromatic Plants Programme in Asia; the Organic Herb Trading Company; the Andhra Pradesh Groundwater Borewell Irrigation Schemes Project; Agriculture, Man and Ecology; Hope in the Nilgiris; the International Centre for Integrated Mountain Development; IUCN; the Research Institute for Organic Agriculture); the Governments of Bhutan, Nepal and Sri Lanka; the Indian National Medicinal Plants Board; the Indian National Horticulture Board; the Agricultural and Processed Food Products Export Development Authority; the Ministry of Agriculture of the Government of India; state governments and others.

VI. INDICATIVE PROGRAMME COSTS AND FINANCING

16. A preliminary budget has been drawn up after consultations with stakeholders. Estimated programme cost for the first three-year phase is USD 3.6 million.

Cost Category	USD						
	IFAD	IDRC	Ford Foundation	Governments and Government Organizations	Private Sector/ NGOs	FAO	Total
Staff cost/coordination/management	360 000	80 000	70 000	390 000	90 000	110 000	1 100 000
Technical assistance support/consultancies/policy/market research, etc.	125 000	80 000	35 000	220 000	50 000	20 000	530 000
Action research through collaborating NARS (including small grants competitive fund)	515 000	140 000	80 000	480 000	65 000		1 280 000
Training and workshops NARS/travel	218 000	20 000	58 000	90 000	65 000	30 000	493 000
Overhead (13%)	182 000		27 000				209 000
Total	1 400 000	320 000	270 000	1 160 000	260 000	160 000	3 600 000



**INTERNATIONAL FERTILIZER DEVELOPMENT CENTER (IFDC):
PROGRAMME FOR THE DEVELOPMENT AND IMPLEMENTATION OF AN
INFORMATION AND DECISION SUPPORT SYSTEM FOR CEREAL
PRODUCTION IN THE NENA REGION**

I. BACKGROUND

1. Rainfed agriculture in the Near East and North Africa (NENA) region is constrained by limited natural resources, including poor soil with declining fertility and low rainfall with high interannual variability. In addition, rainfall is poorly distributed during the growing season, and particularly from February to April, corresponding to the flowering and the grain-filling stages. The cereal-based farming system is predominant, with wheat covering 50% and barley covering 20% of the total cropped areas respectively. These two commodities provide a major part of the population's daily diet. The traditional production system is a cereal-fallow rotation integrated with small ruminants. This rotation is oriented to increase water availability for the crop sown after the fallow, and is gradually being replaced by a continuous cropping system due to the increasing demand for food from a growing population.
2. Another major condition needed to obtain high cereal yields is the establishment of adequate nutrient-management practices. Research conducted in NENA indicates that nitrogen is the most limiting nutrient for cereal production. Nitrogen fertilizer applications have been reported to double grain yields when rainfall is sufficient, but also have resulted in yield reductions or no effect at all when rainfall is limited. The most common source of variation to explain these differential nitrogen responses has been water availability. Extensive research has also been conducted on the effect of including legumes (e.g. fava beans, alfalfa, lentils) in rotation with wheat and barley. Adequate management practices in these rotations typically result in increased soil organic matter levels, which in turn improve the soil water-holding capacity and the ability to supply nutrients.
3. National and international research institutes in the region have generated a vast amount of relevant research results that should allow farmers to obtain higher yields through improved water and nutrient use efficiency. However, much available information is still not being used at the farm level. Farmers, typically risk-averse, often cannot afford to use input levels required for higher yields and then confront insufficient rainfall during the growing season. Consequently, they often use low input levels, a strategy that results in small or no losses in low-rainfall years, but also prevents them from obtaining higher yields and income in good rainfall years.
4. Developing recommendations based exclusively on a research station experimental approach would likely be unfeasible because of the length of time and amount of resources required. Alternatively, well-tested simulation approaches offer a time- and cost-efficient complementary option to experimentation on the physical and economic system. These simulation tools can be coupled with remotely sensed data, with information on climate variability at community level, and with existing databases to develop information and decision support systems (IDSSs) that can effectively assist planning and decision-making processes in the region's complex and heterogeneous agricultural systems.
5. Furthermore, systems analysis can potentially increase resiliency and reduce on-farm risks of agricultural production systems. However, pay-offs can only be expected when a truly integrated systems approach is employed that includes farmers as the actual decision-makers. This participatory process also ensures that there is sufficient scope for farmers to alter their crop management practices based on the information provided.



6. The proposed programme is based on the need to adapt and apply an IDSS to produce two types of information: first, information needed by rural financial institutions, rural insurance programmes and other institutional service providers (extension, input supply and output marketing) for improving their planning activities and for assessing regional production risks and variability (e.g. defining land feasibility for different uses, characterizing production risks for different agroecological regions, developing cereal yield forecasts, etc.); and second, information for testing at the farmer level the outcome of implementing improved agronomic recommendations.

7. The programme will work with community groups, local institutions, farmer advisers and farmers. The objective will be to explore expected outcomes for using different technologies under diverse scenarios of climate, prices, etc. (considering variability and risk), and to define strategies that will lead to higher and more stable farmer incomes. Specifically, the IDSS will explore nutrient- and moisture-management practices that can help minimize farmer risks during drought years and maximize farmer returns during rainy years. The recommendations generated with IDSS help will be implemented through a participatory approach. An outstanding characteristic of the IDSS concept for agricultural applications is that all outputs are generated in very simple formats (maps, simple plots, tables, etc.) that can be readily understood, interpreted and used by extension staff, inputs service providers and other stakeholders for improving farmer-level decision-making and planning processes.

II. RELEVANCE TO IFAD

8. The primary beneficiaries of the proposed programme will be resource-poor farmers, whose incomes will be improved by higher and more stable cereal yields and production. The programme will provide relevant information to government and NGO extension agents and to grass-roots organizations working with poor farmers whose access to relevant information is more constrained. Decision support systems will help improve their ability to deal with agricultural planning, prioritize resource allocation, issue drought alerts, and perform cereal yield and production forecasts. NARS will also use the IDSS to assist in the screening of crop and soil management practices, fertilizer recommendation systems, cultivar characteristics, etc. Programme output in the form of operational information and decision-support systems and methodologies for information exchange will be useful for IFAD's activities in the region, since it will generate and transfer information that can be readily used in established development projects and by trained staff who will be able to adapt the IDSS for the objectives of the different IFAD projects.

9. It is proposed that, given its time-frame, the programme initially focus on two countries, namely Morocco and Syria, with a wide impact on other NENA countries. Morocco will be a study case representative of Maghreb conditions (Algeria, Morocco and Tunisia). Syria will be a study case representative of Near East conditions (Jordan, Syria and Turkey). In Morocco, the programme will link with two IFAD-financed projects to establish benchmark sites, namely, the Rural Development Project for Taourirt – Taforalt, and the Rural Development Project in the Mountain Zones of Al-Haouz Province. Similarly in Syria, the programme will link with the IFAD-financed Coastal Midlands Agricultural Development Project and the Idleb Rural Development Project to establish benchmark sites. It will focus, however, on Homs and Hama provinces, where cereals and legumes are widely cultivated.

III. THE PROPOSED PROGRAMME

Goals and Objectives

10. The overall goal of the proposed participatory applied research programme is to reduce farmers' poverty through increased income, greater food availability and reduced risks by improving agricultural planning and decision-making. This will be achieved through the development and



application of an IDSS that will generate information relevant to national, regional and farmer levels. The programme will seek specifically to:

- characterize agro-ecological zones and climate variability for assessing the feasibility of land units for cereal production with different crop and soil management practices, and to explore alternative land uses (e.g. tree crops, pastures) for land units with moderate or low cereal production feasibility;
- improve existing information exchange and decision-making processes; and agronomic practices in rainfed cereal production with special emphasis on nutrient- and moisture-management practices that can help minimize farmer risks during drought years and maximize farmer returns during rainy years; and
- identify the best institutional arrangements for a sustainable use of the IDSS, in terms of continued availability and exchange of results to farmers and other stakeholders such as extension services, farmer associations, rural financial institutions, development organizations and agribusinesses, including private-sector input providers.

11. The programme will use the IDSS to:

- define agro-ecological zones based on soil and climate characteristics;
- characterize the existing agricultural production system including farmer technology levels, nutrient management, crop rotations, tillage system and erosion risk;
- explore crop and soil management practices that will result in more resilient cereal production systems (based on optimizing soil moisture and nutrient use);
- conduct selected case studies including: (a) establishing cereal production forecasts; (b) applying decision aid tools for the ongoing cereal season (e.g. evaluating expected return of treatment with pesticides in the late season, deciding wheat end-use animal feed or grain); (c) applying decision aid tools for future cereal seasons (e.g. tillage system and dates for maximizing water storage, cultivar characteristics for different regions and production systems); and (d) studying the profitability of different cereal production systems under the currently escalating free-market scenario;
- promote exchange of information and recommendations to stakeholders effectively; and
- train high-level extension specialists and provide them with a strong background in using models and involving farmer groups and local institutions, including NGOs, for transfer of appropriate technologies.

Programme Outputs

12. The programme will generate the following outputs:

- validated IDSS to assist in the definition of improved cereal rainfed production systems in different agro-ecological zones of the NENA region, and improved cereal yields; results of case studies with the full participation of farmers in site selection, land preparation, planting, management, etc. The comparison of improved practices with existing and/or traditional practices will be the ideal introduction of the benefits of IDSS to farmers, extension agents, government planners and rural financial institutions;
- a cadre of trained staff within the regional NARS capable of applying systems analysis and updating and improving the IDSS for their stakeholders' benefit. Stakeholders in each target area will have a full understanding of IDSS capabilities for evaluating different production options and for generating information and recommendations. Although the research will take place in Morocco and Syria, participants from Algeria, Tunisia and Turkey will participate in travelling workshops and training sessions;



- tested methodologies (based on a systems approach and participatory research) for transfer of information and technologies to farmers and policy-makers; and
- Internet websites in the region constantly updated with the results of the case studies and with the information produced with the IDSS, oriented to assist farmer advisors working in the private and public agricultural sectors.

IV. IMPLEMENTATION ARRANGEMENTS

13. IFDC will be responsible for programme management and coordination. The main collaborators will be the Institute for Agronomy Research in Morocco, the Research Directorate in Syria, and the International Center for Agricultural Research in the Dry Areas (ICARDA). The linkages with IFAD-funded and other rural development projects will be intensified and extended to other regions. The programme will rely on NARS scientists' implementing activities according to a workplan and budget. Research plans will be developed in multi-disciplinary sessions under the leadership of a lead scientist who will be the country 'contact scientist' for the programme.

14. A steering committee will be established composed of directors of the national research institutes in the participating countries, the IFDC programme coordinator, and one representative each from ICARDA, IFAD and IFDC. The programme's regional workplans will be reviewed in the annual steering committee meeting to evaluate progress and achievements, assess budget use, set the future strategy, and decide on action for financing. IFAD will field its own missions once a year to supervise the programme.

V. INDICATIVE PROGRAMME COSTS AND FINANCING

15. The total cost of the three-year programme will be about USD 1.8 million. IFAD's contribution is estimated at USD 900 000 (50%). The in-kind contribution of IFDC is estimated at USD 415 000 (23%), while that of the participating NARS is estimated at USD 480 000 (27%).

Description	USD			
	1 st Year	2 nd Year	3 rd Year	Total
IFAD contribution				
Personnel	105 000	107 000	60 000	272 000
International travel	33 000	16 000	35 000	84 000
Operational costs	67 000	69 000	40 000	176 000
Training and workshops	25 000	26 000	26 000	77 000
Equipment	40 000	1 000	1 000	42 000
Collaborators	45 000	75 000	31 000	151 000
Total direct costs	315 000	294 000	193 000	802 000
Grant Administration	40 000	33 000	25 000	98 000
Total IFAD contribution	355 000	327 000	218 000	900 000
IFDC contribution	151 000	139 000	125 000	415 000
NARS contribution	192 000	192 000	96 000	480 000
Total programme costs	698 000	658 000	439 000	1 795 000

