



IFAD
INTERNATIONAL FUND FOR AGRICULTURAL DEVELOPMENT
Executive Board — Sixty-Sixth Session
Rome, 28-29 April 1999

REPORT AND RECOMMENDATION OF THE PRESIDENT

TO THE EXECUTIVE BOARD ON A PROPOSED

TECHNICAL ASSISTANCE GRANT

FOR

AGRICULTURAL RESEARCH AND TRAINING

BY A

NON-CGIAR-SUPPORTED INTERNATIONAL CENTRE



TABLE OF CONTENTS

	PAGE
ABBREVIATIONS AND ACRONYMS	iii
PART I INTRODUCTION	1
PART II RECOMMENDATION	2
ANNEX	
INTERNATIONAL FERTILIZER DEVELOPMENT CENTRE (IFDC): PARTICIPATORY EVALUATION, ADAPTATION AND ADOPTION OF ENVIRONMENTALLY FRIENDLY NUTRIENT MANAGEMENT TECHNOLOGIES FOR RESOURCE-POOR FARMERS	3



ABBREVIATIONS AND ACRONYMS

ECARDS	Environment, Culture, Agriculture, Research and Development Society
IFDC	International Fertilizer Development Centre
NARES	National Agricultural Research and Extension System
NGOs	Non-Governmental Organizations
TAG	Technical Assistance Grant
USG	Urea super granules



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

I submit the following Report and Recommendation on a proposed technical assistance grant (TAG) for agricultural research and training to a non-CGIAR-supported international centre in the amount of USD 1 million.

PART I - INTRODUCTION

1. This report recommends the provision of IFAD support to the research and training programme of a non-CGIAR-supported international centre: the International Fertilizer Development Centre (IFDC) .
2. The document of this technical assistance grant (TAG) for approval by the Executive Board is contained in the annex to this report:

International Fertilizer Development Centre (IFDC): Participatory Evaluation, Adaptation and Adoption of Environmentally Friendly Nutrient Management Technologies for Resource-Poor Farmers

3. The objectives and content of this applied research programme are in line with the evolving strategic objectives of IFAD, 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 sustainable and productive management of such resources; (d) a policy framework that provides the rural poor with an incentive to reach higher levels of productivity, 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 alleviation, specifically targeting those items that are 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 multiply the effect of its agricultural research and training programme.
5. The TAG proposed in this document responds to foregoing strategic objectives (b), (c), (d) and (e) in that it will help disadvantaged farmers in the marginal rice producing areas of Bangladesh, Indonesia, and Nepal produce more food at less expense and risk, by reducing their dependence on off-farm inputs through the use of proven fertilizer technologies, using deep point placement of urea super granules (USG).



PART II - RECOMMENDATION

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

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, shall make a grant not exceeding one million United States dollars (USD 1 000 000) to the International Fertilizer Development Centre (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.

Fawzi H. Al-Sultan
President



**INTERNATIONAL FERTILIZER DEVELOPMENT CENTRE (IFDC):
PARTICIPATORY EVALUATION, ADAPTATION AND ADOPTION OF
ENVIRONMENTALLY FRIENDLY NUTRIENT MANAGEMENT
TECHNOLOGIES
FOR RESOURCE-POOR FARMERS**

I. BACKGROUND

1. Many poor wetland rice producers in South and Southeast Asia who cultivate remote, marginal soils on small parcels of land have been bypassed by Green Revolution technologies that were based on the use of capital-intensive inputs (irrigation, improved crop varieties, chemical fertilizers and pesticides) and were particularly adapted for more favourable, high potential areas. In many cases, these technologies have not been tailored to meet the needs of farming communities who, due to their remoteness, lack of market access and inability to obtain credit, cannot afford the high cost of external inputs.

2. Technologies that are scale-neutral and able to reduce greatly input costs while increasing rice yields of low input/low output farming systems, are now available. One such low-risk, cost-reducing technology to be evaluated and adapted under the proposed programme is the fertilizer deep placement method (USG or briquettes produced by compaction with tableting machines) in flooded rice culture. The technology prototype is even more promising when combined with nutrient recycling techniques (e.g., the use of leguminous crops and shrubs which, together, can produce higher nutrient use efficiency, higher yields and reduce surface water pollution), depending on location-specific requirements and socio-economic factors that influence adoptability.

II. RATIONALE/RELEVANCE TO IFAD

3. Paddy soils are universally deficient in nitrogen, which can be derived from urea. Farmers attempt to introduce these water-soluble fertilizer on soils during periods of frequent torrential rains; as a result, large losses of fertilizers can occur in the run-off waters from the flooded paddies, entailing both a significant economic loss for the farmers, as well as the contamination of surface and ground water.

4. The economic benefit and adoptability of the fertilizer deep placement technology is promising. It eliminates fertilizer losses while promoting a temporarily delayed but subsequently very high uptake of nitrogen by the rice plant. This has been demonstrated in five years of applied research by IFDC and a regional non-governmental organization (NGO) working with small rice farmers in the impoverished Konkan area of Western India. During this research, the IFDC has developed techniques to overcome factors that have impeded the adaptation and adoption of the technologies by the more disadvantaged farmer communities. These include the insufficient availability fertilizer briquette, poorly targeted adoption groups and the lack of simple tools to facilitate the transplanting pattern necessary for efficient fertilizer use. As a result of this experience, small rice farmers were able to increase paddy yields on over 140 farm plots by 1.0-2.0 t ha over yields obtained by traditional fertilizer and crop management practices.

III. THE PROPOSED PROGRAMME

5. The programme specific activities fall under five major components: (i) **input use technology evaluation and adaptation**. This includes the following: demonstration of deep placement technique of urea briquettes with related modified rice transplanting geometry; design and conduct of on-farm, farm-managed experiments to evaluate deep placement technology against traditional practices (measure yields, cost benefits, gender-disaggregated labour requirements,



ANNEX

collect agroclimatic, chemical and physical data); and develop locally suited adaptations; (ii) **organization and planning**. This includes: holding meetings in each country to develop a strategy for implementation; identifying target villages; establishing baseline data on current practices and input use; and sharing experiences in participatory methodologies for technology evaluation and adaptation; (iii) **developing the input delivery system**. After the initial import of input supplies for demonstration/evaluation and technology appropriateness assessment, efforts will be directed towards developing alternative production and marketing and distribution schemes for local urea briquette supply with fertilizer producers, vendors, dealers and farmer groups; (iv) **technology dissemination activities**. These include: community discussion/planning meetings and field days; preparation of promotional technology materials (training aids and brochure in local language); promotion of community and regional networks through farmer organizations and cooperatives to broaden the circle of farmer evaluation and adoption of technologies; and the organization of seminars for diffusion to other regions; and (v) **monitoring and reporting**.

IV. EXPECTED OUTPUTS / EXPECTED BENEFITS

6. The following concrete **outputs** will result from the successful implementation of the activities: locally adapted urea briquette placement technologies showing promise of widespread adoption; village-based urea briquette production and promotion enterprises; methods for producing supplementary nutrient inputs on-farm; and systems and methodologies for technology adaptation and dissemination.

7. The major expected impacts include: increased rice production among target farmers (by 40 to 50%) with less inputs and lower risk; reduced need for nitrogen fertilizer inputs and their reduced costs for farmers; increased income and additional community employment in local fertilizer briquette enterprises; reduced contamination of surface waters; and enhanced capability for participatory technology adaptation and transfer in National Agricultural Research and Extension System (NARES) and NGOs, including those serving IFAD loan project areas.

V. IMPLEMENTATION ARRANGEMENTS

8. The programme will be implemented in close partnership with a number of entities that have a strong presence in IFAD-financed project areas (through a formal agreement with project management units). They will also have the capacity to afford the collaborative research, with a sound understanding of the target communities' socio-economic circumstances and their access to land, capital and other resources. These will be critical to the successful adoption of the new technologies to be tested under the programme. For instance, in Bangladesh the programme will be implemented in close collaboration with the Grameen Krishi Foundation, the Bangladesh Agricultural Research Council, the Bangladesh Agricultural Research Institute and the Bangladesh Rural Advancement Committee, all of which support IFAD loan projects. In Nepal, the Environment, Culture, Agriculture, Research and Development Society and the National Agricultural Research Council will be the main partners. The participating NGOs have established track records in achieving measurable benefits for physical resource-limited farmers in the chosen target areas. Their experience in working with poor farming committees and their intimate knowledge of the same are essential to programme success and to the diffusion and sustainability of the technologies beyond the life of the programme.

9. In Bangladesh, the programme will also actively collaborate with the United States Agency for International Development-sponsored Agro-Based Industry and Technology Development Project currently being implemented by IFDC. This agribusiness project will facilitate contacts with fertilizer dealers to develop the production of large fertilizer granules (USG) with local smallholder private businesses. The present programme will learn from and build on that experience.



10. Programme implementation will be preceded by a stakeholders workshop in one of the participating countries, bringing together all the key players to discuss concrete collaborative research protocols and develop an annual workplan and budget. In order to capitalize on the Konkan experience, the IFDC will endeavour to capture crucial lessons that can emerge from it and apply them to the design of specific action research activities. The first three to six months of the programme will be devoted to drawing transferable lessons from the Konkan experience. This will be done by having the programme team (including, in particular, a rural sociologist or a part of the programme team) perform an action-oriented assessment of experience in this area in close conjunction with the former collaborating NGO. This preliminary work will constitute an opportunity for sharpening, in an on-field training dimension, the understanding of adopters' typology and of adoption-favouring circumstances in order to better equip the programme team for dealing with the country specificities of Bangladesh, Indonesia and Nepal.

11. While only one chief NGO will be selected per country for direct funding, governmental agencies and other NGOs will be involved in the programme to encourage a wider dissemination of the technologies. After three years, the impact of the programme on the pilot villages will be assessed (through a farmer-driven evaluation process) to determine the need for continued support to promote diffusion beyond the target villages. The expertise of regional International Rice Research Institute representatives will be solicited whenever necessary.

12. The programme will be coordinated and managed by an international staff member (resident programme coordinator) outposted to the IFDC Regional Office in Dhaka, Bangladesh. In addition to overall management and promotion of the programme, the resident programme coordinator will work closely with NGOs in each country to monitor the progress of the programme in terms of its profitability at the farm level, its impact on fertilizer demand and small enterprise development. Short-term consultancies are provided for a rural sociologist (three months per year) to guide preparation of questionnaires for collection of baseline data on current rice production techniques and socio-demographic data about farmer typology and households. These will include: age, education, income, the gender division of labour discriminated in regard to activities and on and off-farm employment, household composition and related variables. The rural sociologist will work closely with the NGO consultant and NGO programme leaders to develop interview instruments to collect data on the attitudes and perceptions of farmers about USG use, especially as compared to traditional practices. The comparisons will focus on the labour requirements, yields, transplanting technologies and training that farmers require. The rural sociologist will also interact with programme staff members in the design of field demonstrations. The feedback from all of these activities will allow the incorporation of farmers' views and result in improvement of the technologies and their rate of transfer. Based on the available information from previous experiences in Bangladesh, India, and Indonesia, the NGO consultant (year one) will work with IFDC staff members to identify circumstances affecting the adoption of the technology. The consultant will also evaluate local conditions and advise the programme on means of promoting the active participation of farmers and adoption of sound technologies based on his experience.

**VI. INDICATIVE PROGRAMME COSTS AND FINANCING**

(USD)

Cost Category	IFAD	IFDC	NARES	NGOs	TOTAL
I. Coordination/technical assistance personnel	451 000	213 300	-	-	664 300
II. Operational costs	300 530	186 700	200 000	-	687 230
III. Collaborating NARES-NGOs	248 470		-	400 000	648 470
Total	1 000 000	400 000	200 000	400 000	2 000 000