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REPORT AND RECOMMENDATION OF THE PRESIDENT

TO THE EXECUTIVE BOARD ON A PROPOSED

TECHNICAL ASSISTANCE GRANT

FOR

AGRICULTURAL RESEARCH AND TRAINING

BY A

CGIAR-SUPPORTED INTERNATIONAL CENTRE

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ABBREVIATIONS AND ACRONYMS

CGIAR	Consultative Group on International Agricultural Research
ICARDA	International Center for Agricultural Research in the Dry Areas
NARS	National Agricultural Research System
TAG	Technical Assistance Grant
WANA	West Asia and North Africa

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

I submit the following Report and Recommendation on a proposed technical assistance grant (TAG) for agricultural research and training to an international centre supported by the Consultative Group on International Agricultural Research (CGIAR) in the amount of USD 1.0 million.

PART I – INTRODUCTION

1. This report recommends the provision of IFAD support to the research and training programme of the CGIAR-supported International Center for Agricultural Research in the Dry Areas (ICARDA).
2. The TAG document for approval by the Executive Board is contained in the annex to this report.
3. The content of the applied research programme is in line with IFAD's evolving strategic objectives and the policy of the IFAD TAG programme for agricultural research and training.
4. IFAD's support for technology development relates to:
 - (a) the household food-security strategies of IFAD's target groups in remote and marginalized agro-ecological areas;
 - (b) technologies to enhance resource-poor farming systems through the improvement of productivity and by addressing production bottlenecks; these technologies must be gender sensitive and based on traditional knowledge systems;
 - (c) access to land and water, financial services, labour, technology (including indigenous technology) and the sustainable management of such resources;
 - (d) a policy framework that motivates the rural poor to increase their productivity and reduce their dependence on transfers; and
 - (e) an institutional framework for the services provided to the economically vulnerable by formal, informal, public, private, local and national institutions.
5. The proposed TAG responds to these objectives. The research programme is based on (b). It will address (a) and (c) by increasing the productive potential of smallholders, many of whom are located in IFAD project areas, by making it easier to adopt techniques that maximize the use and efficiency of scarce water resources and by addressing water-related production constraints. The programme relates to (d) and (e) because it promotes the development of partnerships among national agricultural research system (NARS) institutions, thereby building on participatory research models.

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 Community-Based Optimization of the Management of Scarce Water Resources in Agriculture in West Asia and North Africa, shall make a grant not exceeding one million United States dollars (USD 1 000 000) to the International Center for Agricultural Research in the Dry Areas (ICARDA) 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 CENTER FOR AGRICULTURAL RESEARCH IN THE DRY AREAS
(ICARDA):
COMMUNITY-BASED OPTIMIZATION OF THE MANAGEMENT OF SCARCE WATER RESOURCES
IN AGRICULTURE IN WEST ASIA AND NORTH AFRICA**

I. BACKGROUND

1. Water scarcity is a well-known and alarming problem in West Asia and North Africa (WANA). The issue is of growing concern to national governments and research institutions. Increasingly common, water scarcity is threatening the economic development and the livelihoods of small farmers living in the semi-arid low-potential areas of the region. Agriculture presently accounts for over 75% of the total consumption of water. However, because of rapidly expanding demand, it seems certain that more and more water will be reallocated from agriculture to other sectors. Moreover, opportunities for the significant capture of new water are now limited. Most river systems suitable for large-scale irrigation have already been developed. No major resources of renewable groundwater remain untapped, and current resources are subject to overexploitation; extraction exceeds recharge rates in many cases.

2. While gains in efficiency are potentially achievable through the improved distribution and use of water in fully irrigated agriculture, a great proportion of the region's agricultural livelihoods are based on dryland farming systems in which production is dependent on low and extremely variable rainfall. The challenge in rainfed areas is to enhance and stabilize the productivity of rainfed agriculture through improvement in on-farm water-use efficiency so as to supplement rainfall deficiencies through either water harvesting, or the strategic employment of sources of renewable water. However, conventional practices that have been developed for the management of water under normal water supply conditions are not suitable under conditions of water scarcity. Water-demand management under conditions of scarcity, based on the maximization of the return on each unit of water available for agriculture, is now a strategic priority in all countries of WANA.

3. Several technologies for the improved management of scarce water resources are now available. Three main technologies will be particularly tested through this programme. The first one involves supplemental irrigation for rainfed crops during periods of severe moisture stress, especially during dry years. For wheat production, for example, pilot tests have demonstrated that supplemental irrigation covering 50% of water requirements typically allows the yield per ha to double. The second one involves rainwater harvesting through microcatchments. Pilot tests have demonstrated that, in rangeland areas, the achievement of a 90% survival rate for fodder-shrubs can be ensured through this technology. The third one involves water-use efficiency improvements through better responses to nitrogen-based fertilizers. Pilot tests have shown that supplemental irrigation, combined with an application of 50 kg of nitrogen-based fertilizers per ha, almost doubled the yield of wheat.

4. However, many of these technologies are not widely adopted or are perceived as unsuitable for farmers. This can be attributed to a number of constraints, including those relating to technical, socio-economic and policy considerations, but, most importantly, the lack of community participation in the development and testing of improved technologies. This programme will be based on community participation in the research and development, testing and adaptation of improved water-management options at the farm level.

II. RELEVANCE TO IFAD

5. The programme responds directly to the *Strategic Framework for IFAD 2002-2006* in terms of the improvement of equitable access to productive natural resources and technologies and the strengthening of the capacity of the rural poor. Communities will be strengthened by being involved in the development and refinement of enhanced water-harvesting practices that build on local knowledge. The community approach of the programme will not only ensure community access to new knowledge, but will also facilitate an adaptive learning process among all stakeholders, including NARSs and policy-makers.

6. The programme is also related to IFAD's regional strategy for the Near East and North Africa, which identifies water as the single most binding constraint on the rural poor in the subregion, a constraint that is exacerbated by the disproportionately low research investments in rainfed agriculture. The programme will contribute to IFAD's strategic objective to address the closely linked issues of rural poverty reduction, agricultural growth and sustainable environmental management and, particularly, to address the most critical issue – the scarcity of water – as a matter of urgency.

7. The programme is in line with global initiatives for the improvement of water management, and it is directly linked to the CGIAR Challenge Programme on Water for Food and Desertification, Drought and Poverty in Agriculture. The programme activities are expected to be of direct relevance to IFAD's loan programmes in WANA and, eventually, in other dry areas where water management is a key issue. The research will be conducted in principal and satellite sites that are to be located within ongoing or recently completed IFAD-financed project and programme areas. These include areas in Egypt (IFAD Loan No. 355-EG), Jordan (Loan Nos. 392-JO and 468-JO), Morocco (Loan Nos. 437-MA and 556-MA), Syria (Loan Nos. 363-SY, 393-SY and 477-SY) and Tunisia (Loan Nos. 394-TN, 499-TN and 593-TN).

III. THE PROPOSED PROGRAMME

Objectives and Related Outputs

8. The programme's objectives and related outputs are as follows.

9. **Objective 1:** the adoption by farming communities of strategies and tested technologies for the optimal, conjunctive use of rainwater and scarce water resources in supplemental irrigation systems for improved and sustainable water productivity in rainfed areas. Expected outputs will consist of:

- recommendations for appropriate irrigation systems and schedules to ensure optimal water productivity and net benefits to rainfed-resource users;
- strategies for the conjunctive utilization of rainwater and other scarce water resources in combination so as to maximize the benefits deriving from each and to increase agricultural production in a sustainable way;
- effective methodologies to tailor production systems, cropping patterns and cultivars in order to match the water requirements for agricultural production with sustainable water supplies in accordance with the socio-economic environment; and
- recommendations for operational guidelines to deal with the trade-off between water-use efficiency and net benefits under differing socio-economic conditions.

10. **Objective 2:** the widespread integration and adoption by IFAD beneficiaries of suitable water-harvesting techniques to capture and efficiently utilize rainwater run-off in more productive and sustainable systems. Expected outputs will consist of:

- improved methodologies for the identification of water-harvesting sites and high-potential methods for various conditions;
- techniques for the provision of sustainable supplies of water from rainfall run-off for economic production from rangeland, field crops and fruit trees and methodologies for the design and implementation of such techniques at the field and watershed levels;
- methodologies for the classification of catchment potential and the optimal use of harvested water in these catchments; and
- analysis of potential economic and institutional constraints and recommended policy measures to support the integration of water harvesting in agricultural systems.

11. **Objective 3:** the development and adoption by farmers of techniques and systems that optimize water productivity in irrigated systems, including water management, alternative crops, use of different water sources and policy and institutional options. Expected outputs will consist of:

- information on how sustainable and efficient farmers in the various agricultural production systems use water in agriculture and on the sources of inefficiency;
- adopted, tested, economically viable, socially acceptable technologies that sustainably improve water use in various agricultural systems and ensure environmental viability;
- guidelines for optimal irrigation scheduling that maximize the agricultural returns on the irrigation-water used;
- the policies required to implement more efficient water-management practices, including water valuation; and
- farmer's institutional arrangements for the participatory management of water in conditions of scarcity.

12. **Objective 4:** enhancement of the capacity of national programmes and the integration of researchers, extension workers, farmers and decision-makers in a regional programme for the sustainable management of water resources in WANA. Expected outputs will consist of:

- skilled and qualified national researchers in water-resource management;
- greater integration of sustainable water-resource management into national development programmes; and
- enhanced awareness among decision-makers and other stakeholders of the principles of sustainable and efficient scarce-water-resource management.

Key Activities

13. These will include:

- the development, testing and promotion of production techniques, alternative innovative approaches and practical tools such as models and decision-support systems;
- the evaluation, together with the stakeholders, of potential production strategies that match water requirements with water supply and optimize the use of water within the biophysical and socio-economic environments of the target areas;
- analysis of the existing policies and institutional arrangements regarding water-use efficiency and the development of recommendations for improvement;
- the development of methodologies for the classification of rainfall, catchment potential and optimal water harvesting, while minimizing soil losses through erosion;
- the development of guidelines for the socially acceptable and efficient collection, allocation and use of run-off water within an integrated watershed system;
- the identification of potential institutional constraints on the management of large catchments (common property management) and the assessment of options for relieving these constraints; and
- regional training programmes for national researchers and extension professionals.

IV. IMPLEMENTATION ARRANGEMENTS

14. ICARDA will be responsible for the overall coordination and management of the programme, including technical and financial reporting. The research will be conducted in full partnership with the national programmes of participating countries and, where possible, will utilize existing facilities and link with ongoing national research and development programmes.

15. National coordinators will be designated by the principal NARS partner for each benchmark site. The national coordinator will be responsible for the management of the NARS activities. The budget also provides for the appointment by ICARDA of national professional officers, who will serve as the principal liaison between ICARDA and NARS partners at each site and who will be responsible for logistic and administrative support within each country and for monitoring the progress of programme activities.

16. A programme steering committee will be formed, comprising a senior representative of ICARDA, representatives of IFAD and other donors and representatives of NARS partners (Morocco, Jordan and Egypt) to review, amend and approve annual workplans and budgets.

17. Annual programme coordination and planning meetings will be held between ICARDA and scientists from the national institutions of all countries collaborating in the programme. At these meetings, progress will be reported and discussed and workplans will be developed for the following year. The reports and workplans will be submitted to the programme steering committee for review. The annual meetings will be in addition to workshops and seminars to be held on specific topics or to synthesize results. Where feasible, meetings will be scheduled to overlap with the workshops and seminars so as to reduce travel and meeting costs.

V. INDICATIVE PROGRAMME COSTS AND FINANCING

18. The total cost of this four-year programme is estimated at USD 4 930 550. IFAD's proposed contribution is estimated at USD 1.0 million. The Arab Fund for Economic and Social Development (AFESD) already approved a contribution of USD 1.0 million in 2002. ICARDA's in-kind contribution is estimated at about USD 1.0 million. The in-kind contribution of the participating NARSs is estimated at USD 1.0 million. Detailed estimates and financing arrangements are provided in the table below.

PROGRAMME COSTS
(USD)

Cost Category	Programme Financing				In-Kind Contributions	
	IFAD	AFESD	Other donors/ ICARDA	Total Financing	ICARDA	NARS
Research personnel including consultants	185 000	185 000	40 000	410 000	690 000	200 000
Operational costs	200 000	200 000	150 000	550 000	-	100 000
International travel	80 000	80 000	110 000	270 000	-	-
Equipment and supplies	150 000	150 000	115 000	415 000	-	450 000
Training, workshops, etc.	200 000	200 000	195 000	595 000	-	50 000
Publications and information dissemination	22 000	22 000	81 000	125 000	-	-
Programme coordination and management	20 000	20 000	40 000	80 000	-	-
Total direct costs	857 000	857 000	731 000	2 445 000	690 000	800 000
ICARDA grant administration	103 000	103 000	129 000	335 000	344 800	200 000
Contingencies	40 000	40 000	35 750	115 750	-	-
Total programme costs	1 000 000	1 000 000	895 750	2 895 750	1 034 800	1 000 000

