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IFAD
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REPORT AND RECOMMENDATION OF THE PRESIDENT

TO THE EXECUTIVE BOARD ON PROPOSED

GRANTS

UNDER THE

GLOBAL/REGIONAL GRANTS WINDOW

TO

CGIAR-SUPPORTED INTERNATIONAL CENTRES

For: Approval

Note to Executive Board Directors

This document is submitted for approval by the Executive Board.

To make the best use of time available at Executive Board sessions, Directors are invited to contact the following focal point with any technical questions about this document before the session.

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TABLE OF CONTENTS

ABBREVIATIONS AND ACRONYMS	iii
RECOMMENDATION FOR APPROVAL	iv
PART I - INTRODUCTION	1
PART II - RECOMMENDATION	2
ANNEXES	
I. WORLD AGROFORESTRY CENTRE: PROGRAMME TO SUPPORT SMALLHOLDER CONSERVATION AGRICULTURE PROMOTION IN WESTERN AND CENTRAL AFRICA	3
II. INTERNATIONAL INSTITUTE OF TROPICAL AGRICULTURE: PROGRAMME FOR THE INTEGRATED PROTECTION OF CASSAVA FROM EMERGING PESTS AND DISEASES THAT THREATEN RURAL LIVELIHOODS	12

ABBREVIATIONS AND ACRONYMS

ACT	Association for Conservation Tillage
ARTS	African root and tuber scales (<i>Stictococcus vayssieri</i>)
CGIAR	Consultative Group on International Agricultural Research
CIRAD	Agricultural Research Centre for International Development (France)
FIDAFRIQUE	regional network in West and Central Africa for rural development and poverty reduction
ICRAF	World Agroforestry Centre
IITA	International Institute of Tropical Agriculture
IPM	integrated pest management
NARS	national agricultural research system
NRM	natural resource management
SWF	spiralling whitefly (<i>Bemisia tabaci</i>)

RECOMMENDATION FOR APPROVAL

The Executive Board is invited to approve the recommendations for grants under the global/regional grants window to CGIAR-supported international centres as contained in paragraph 7.

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

I submit the following report and recommendation on two proposed grants for agricultural research and training to international centres supported by the Consultative Group on International Agricultural Research (CGIAR) in the amount of US\$2.8 million.

PART I – INTRODUCTION

1. This report recommends the provision of IFAD support to the research and training programmes of the following CGIAR-supported international centres for the programmes indicated (see annexes for full description): the World Agroforestry Centre and the International Institute of Tropical Agriculture.

- I. World Agroforestry Centre (ICRAF): Programme to Support Smallholder Conservation Agriculture Promotion in Western and Central Africa.
- II. International Institute of Tropical Agriculture (IITA): Programme for the Integrated Protection of Cassava from Emerging Pests and Diseases that Threaten Rural Livelihoods.

2. The objectives and content of these applied research programmes are in line with the evolving strategic objectives of IFAD and the policy and criteria of its grant programme for agricultural research and training.

3. The overarching strategic objectives that drive IFAD's policy for grant financing approved by the Executive Board in December 2003 are:

- (a) promoting pro-poor research on innovative approaches and technological options to enhance field-level impact; and
- (b) building the pro-poor capacities of partner institutions, including community-based organizations and NGOs.

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 agroecological 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 the 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 sectors, and local and national institutions may provide services to the economically vulnerable, according to their comparative advantage. Within this framework, IFAD also intends to develop commodity-based approaches to the rural poor. Finally, the establishment of a consolidated network

for knowledge-gathering and dissemination will enhance the Fund's capacity to create long-term strategic linkages with its development partners and to multiply the effect of its agricultural research and training programme.

5. The grants proposed in this document respond to the foregoing strategic objectives. The Programme to Support Smallholder Conservation Agriculture Promotion in Western and Central Africa would promote Central Africa-based community- and smallholder-driven natural resource management, as well as cropping and farming systems under (a), (b) and (c) above. The latter would be developed and refined according to environmental, social and economic conditions, introducing alternative Central Africa-based techniques into existing farming systems. In order to provide for scaling up through investment projects, the legal, social and environmental prerequisites for a Central Africa-based component will also be identified, as under (d) and (e) above. Moreover, a farmer-innovator network will be established as a means for achieving large-scale adaptation of Central Africa-based systems and the dissemination of local indigenous and exogenous knowledge through a multistakeholder approach.

6. The Programme for the Integrated Protection of Cassava from Emerging Pests and Diseases that Threaten Rural Livelihoods responds to strategic objectives (a) to (c) by seeking to increase and sustain cassava productivity and improve the livelihoods of farmers through the reduction of crop losses due to pests and diseases in sub-Saharan Africa. It would develop, test and implement, in collaboration with various national and local partners, including farmers, sustainable integrated pest management technologies to protect cassava from emerging pests and diseases in five countries in sub-Saharan Africa.

PART II – RECOMMENDATION

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

RESOLVED: that the Fund, in order to finance, in part, the Programme to Support Smallholder Conservation Agriculture Promotion in Western and Central Africa, shall make a grant not exceeding one million five hundred thousand United States dollars (US\$1,500,000) to the World Agroforestry Center (ICRAF) for a four-year programme 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 Integrated Protection of Cassava from Emerging Pests and Diseases that Threaten Rural Livelihoods, shall make a grant not exceeding one million three hundred thousand United States dollars (US\$1,300,000) to the International Institute of Tropical Agriculture (IITA) for a three-year programme 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

**WORLD AGROFORESTRY CENTRE: PROGRAMME TO SUPPORT SMALLHOLDER
CONSERVATION AGRICULTURE PROMOTION IN WESTERN AND CENTRAL AFRICA**

I. BACKGROUND

1. The agricultural sector in Western and Central Africa has witnessed dramatic adaptation and evolution through several simultaneous processes: intensification (in the more well-endowed areas) and expansion of the cultivated area onto increasingly marginal lands, along with a reduction of the length of the fallow period (with its negative consequences on soil fertility replenishment). In parallel, animal husbandry has tended to become progressively less migratory and more sedentary. The transformation has led to heavy land degradation, soil loss, erosion, decreasing fertility and deforestation.

2. IFAD played an active role in promoting innovative natural resource management-based approaches to address such degradation over time through its investment and research and development projects in the region. These techniques combine interventions at different scales (plot, field, terroir). Certain techniques employed in Sahelian Africa, (planting pits, semi circular hoops, stone cordons, some options in natural agroforestry regeneration and pastoral corridors, etc.) have been widely adopted by farmers, and the correlative investments (especially in labour) to maintain the soil capital are now part of the habits of rural communities. Due to their non-adaptation in the social or economic system, other recommended practices (living fences) have not been widely adopted.¹ In all cases, farmers and their associations, government ministries, NGOs and national and international research centres are now well equipped to assess these techniques against the environmental conditions and their acceptability to farmers under the given social, economic and demographic conditions.

3. Among the approaches with considerable potential for solving environmental problems faced by Western and Central African farmers, the Central Africa-based approach is one of the most interesting. The approach involves the implementation of three simultaneous principles: (a) minimum soil disturbance; (b) adequate soil cover at critical periods of the growing cycle; and (c) diversified crop rotations. Soil cover may be provided by crop residues, cover crops, tree pruning, or even biomass produced ex situ. The Central Africa-based approach stimulates dynamic “natural” ecological processes such as those at work under natural forests. Terms like “zero-tillage”, or “systèmes avec couverture végétale” may also be used for this approach.

4. After decades of testing and dissemination, the set of farming techniques known as the Central Africa-based approach has gained acceptance worldwide as one of the best practical ways to put into practice the concept of sustainable agriculture in a wide array of agro-climatic and socio-economic environments.

5. Successful experiences from South America have demonstrated that the Central Africa-based approach can be adapted to and adopted by large- and small-scale farmers within the context of multiple partnerships led by farmers and farmer organizations. IFAD successfully supported two of these initiatives in southern Brazil and in the Indo-Gangetic plains recently.² There is evidence that the approach can contribute significantly to solving acute labour shortages such as those resulting from HIV/AIDS. There is also strong evidence that the approach can contribute significantly to

¹ Evaluation of the Special Programme for Sub-Saharan African Countries Affected by Drought and Desertification. Office of Evaluation, IFAD, 1999.

² Dissemination and Development of Zero-Tillage Systems for Small Farmers in Tropical Brazil and the Rice Wheat Initiative of the International Rice Research Institute and the International Maize and Wheat Improvement Centre that promote zero-tillage.

improving food security, while reducing land degradation in sub-Saharan Africa. The approach may affect men and women in many different ways. It may influence their incentive to adopt particular techniques, such as eliminating ploughing (traditionally men's work), which may make it easier for women to adopt the approach.

6. The benefits of the approach regarding environmental considerations are significant: carbon sequestration in soil (which contributes to mitigating the effects of climate change), water-use efficiency, mineral balance, fertility, energy balance and improvement of biodiversity. The soil cover leads to the complete elimination of water losses by run-off as efficiently as the proven traditional techniques. In economic terms, there is strong evidence that the approach is profitable (eventual lower yields, mostly during the first years, are compensated by lower operating costs). The approach also results in high savings in labour due to the absence of tillage. In many respects, Central Africa-based techniques are low investment and low cost and can thus be considered pro-poor techniques. They tend to substitute labour, agricultural implements and inputs with knowledge of biological and environmental systems. The latter is one of the major assets of the farming communities in Western and Central Africa, including the poorest ones.

II. RATIONALE AND RELEVANCE FOR IFAD

7. The average annual population growth rate for countries in Western and Central Africa is estimated at 3%. This results in great pressure on land resources due to the need to produce more food through existing agricultural systems. Land degradation has reached alarming levels. About 50% of farmland suffers to some extent from soil erosion or fertility decrease (soil organic matter, available minerals, biological activity). The degradation of tropical soils is typically a creeping environmental problem, the effects of which are terrific in the long term: two thirds of Africa's cropland could effectively be non-productive by 2025. Thus, the region is facing a double challenge: (a) to intensify agriculture in order to be able to feed present and future generations, and (b) at the same time, to realize this intensification through sustainable practices.

8. While natural resource management (NRM) has generally been adapted to the social contexts of Western and Central Africa to some extent, it has nevertheless been carried out in isolation from agricultural practices. The Central Africa-based approach is an attempt to promote a more comprehensive approach to NRM by integrating environmental, technical, economic and social dimensions. The aim of the approach is to implement new cropping systems that improve the functioning of the physical, mineral and biological components of the agricultural system and incorporating (among others) water harvesting. As an example, crop cover or crop residues laying on the soil may be as efficient as planting pits in stopping run-off and stimulating water infiltration. These approaches represent one more step towards sustainability. The purpose of this programme is to adapt the concept of the Central Africa-based approach to the environmental and socio-economic conditions in Western and Central Africa in order to ensure that it benefits from the experience of other regions, while building on local and indigenous knowledge.

9. According to an initial diagnosis carried out in the context of the technical meetings of the Western and Central Africa network, it seems difficult (due to biomass scarcity) to consider crop residue management as an initial option for Central Africa-based technologies in areas receiving less than 800 mm of rainfall³ and with high population density. Thus, under these conditions, the programme will focus on biomass production for soil cover through **appropriate trees**⁴ and will focus on **crop residues** and **crop cover** in Sudanian areas.

³ Crop residues have been marketed for more than 20 years, and their value may sometimes exceed the financial value of the grain itself. Thus, it is quite unrealistic to consider that these residues would be used to protect the soil.

⁴ The definition and requested specificities of the candidate trees will be determined in detail in partnership with the "Strengthening Livelihood Strategies in the West African Sahel through Improved Management and Utilization of Parkland Agroforests".

III. THE PROPOSED PROGRAMME

10. The development objective is to raise the productivity and improve the sustainability of natural resources in Western and Central Africa as a way to reduce rural poverty and improve the access by the rural poor to technology and natural resources, including land and water.

11. The specific objective is to promote Central Africa-based community and smallholder-driven NRM, cropping and farming systems. The latter would be crafted according to environmental, social and economic conditions. Modifications and improvements in the productive, economic and social conditions for the farmers implementing these technologies would be identified, together with the appropriate dynamics and itineraries in the introduction of alternative Central Africa-based techniques into existing farming systems. In order to provide for scaling-up through investment projects, the legal, social and environmental prerequisites for a Central Africa-based component will be identified. Moreover, a farmer-innovator network will be established as a means to achieve the large-scale adaptation of Central Africa-based systems and the dissemination of local indigenous and exogenous knowledge. These objectives will be reached through a multiple stakeholder approach by cross-cutting a project framework according to environments (between 600 mm and 1,200 mm per year) and population densities (between 20 and 100 inhabitants per km²).

12. The programme will comprise four key components organized into interlinked phases and spread over a three-year period. The components are: (a) technology development, adaptation and assessment within communities to develop improved cropping systems; (b) fostering farmer-innovation networks; (c) knowledge-sharing; and (d) capacity-building. Special attention will be paid to the participation of women and women's groups in the whole process.

13. The overall approach adopted in the programme will be highly participatory and allow for the allocation of the necessary space for a dynamic, iterative and flexible process to unfold that will lead to the development of technical and organizational innovations in partnership with key stakeholders, foremost among them farmers and their organizations. Existing initiatives and dynamics that present convergences with the Central Africa-based approach (for example through crop or tree-residue management, minimum tillage, soil organic property stimulations, service plant implementation) will be highlighted and inserted into a participatory innovation management system. At the same time, selected external ideas, cover crops, forage crops, cropping systems, trees or tree management, animal management systems, etc., will be introduced according to their potential adaptability to observe biophysical and socio-economic conditions.

IV. EXPECTED OUTPUTS AND BENEFITS

14. The programme will deliver the following outputs:

- (a) Improved Central Africa-based cropping and farming systems:
- locally adapted and validated cropping systems and practices according to agroecological and social conditions
 - documented and quantified information on the introduction of innovations in the Central Africa-based approach, as well as their profitability and effects on physical productivity, economic aspects, externalities, environmental variables, etc.
 - new dynamic references on adoption and innovation in agricultural water management ("green water") in semi-arid areas
 - conditions for good-practice community- and farmer-driven NRM

ANNEX I

- (b) A farmer-innovator network:
- a dynamic network involving stakeholders who are active in promoting appropriate cropping systems, ideas, initiatives, etc. on the Central Africa-based approach
 - well-documented success stories, on the basis of which experiences can be shared to stimulate initiatives
 - articulation with existing networks for innovation
- (c) Learning, distilling and dissemination of local and exogenous knowledge:
- training material for farmer field schools and farmer field forums (farmers, technicians, NGOs)
 - agroeconomic basis for supporting the elaboration of investment projects
 - information and knowledge for promoting a conducive policy environment and related incentive mechanisms
 - articulation with the IFAD-sponsored regional network in West and Central Africa for rural development and poverty reduction (FIDAFRIQUE)
- (d) Institutional mechanisms to sustain knowledge-sharing and to foster innovation and scaling up in the region:
- consolidating the Association for Conservation Tillage (ACT) network and, specially, the Western and Central Africa component
 - building partnerships and structures to facilitate the dialogue between community-based organizations, dynamic innovation networks and policy decision-makers

V. IMPLEMENTATION ARRANGEMENTS

15. The World Agroforestry Centre (ICRAF) is the formal recipient of the IFAD grant. ACT will manage the programme by relying on its network for, knowledge of and specialists in innovation management. As ACT's formal host institution, ICRAF is expected to provide the basic administrative and financial management support in the implementation of this programme. The programme management is structured as follows.

16. The Agricultural Research Centre for International Development (CIRAD) will provide a full-time agronomist specialized in farming systems. The programme will benefit from CIRAD's worldwide network of specialists in the Central Africa-based approach. These specialists will participate in direct support through missions and will also be resource persons for sharing knowledge, training, etc. ICRAF and ACT will submit semi-annual progress reports to IFAD and use feedback from IFAD to ensure that the programme achieves its expected outputs and remains aligned with IFAD's mission. A steering committee will oversee execution of the programme. The committee will consist of representatives of IFAD, ICRAF, ACT and CIRAD and representatives of national project partners, including farmer organizations, national agricultural research systems (NARSs), the West and Central African Council for Agricultural Research and Development, universities, NGOs and IFAD development projects.

17. Programme activities will be closely linked and coordinated with the impact assessment units of IFAD investment projects. Participatory research and gender analysis methods will enhance the capacity to utilize gender-sensitive participatory research and mainstream such approaches in the involved organizations.

ANNEX I

18. The activities will develop a strong partnership with ongoing IFAD-sponsored investment projects. The latter would also provide infrastructure, selection criteria, a knowledge base and an organizational and institutional foundation for this operation. Because they are experimentation sites, they will provide realistic grounds for comparison and observation (biophysical, economical and sociological aspects) over time. A regional team and country teams will implement programme activities.

19. The programme will receive methodological and technical inputs from various institutions and ongoing experiences from: (a) the region (Burkina Faso, north Cameroon, Chad, Guinea and Mali, with the direct participation of ACT, CIRAD, the International Crops Research Institute for the Semi-Arid Tropics; professional organizations; NARSs; Agence Française de Développement [AFD]; and Société de développement du coton du Cameroun); (b) other African regions (through the ACT network and supported by the Food and Agriculture Organization of the United Nations and the German Agency for Technical Cooperation); and (c) other continents (mainly Latin America, where organizations dedicated to the Central Africa-based approach have strong capacities among smallholder organizations such as those in Paraná state, Brazil, where the motivating factor that started the zero-tillage movement was soil erosion; following this example, the project will usefully integrate the importance of soil erosion as part of its farmer sensitization).

VI. INDICATIVE PROGRAMME COSTS AND FINANCING

20. The total programme cost is estimated at US\$2.7 million. It will be funded by donor agencies (IFAD and AFD) and by contributions from the research and development institutions involved in the programme. The proposed contribution of IFAD is estimated at US\$1.5 million. The associated investment projects of IFAD will also contribute to the programme through their human and physical infrastructure. CIRAD will contribute through the direct involvement in the programme of technical staff. ACT will manage the programme and contribute to the total costs (in kind). IFAD (Western and Central Africa Division and Technical Advisory Division) will supervise the programme annually; supervision will be supported through the budget of the programme development financing facility. The institutional and organizational arrangements, workplans, budgets, procurement plans and audit arrangements will be detailed in the grant agreement. No disbursements will take place until all IFAD requirements are met.

**PROGRAMME COSTS AND FINANCING
(US\$)**

Cost by Category	ICRAF	ACT	CIRAD	IFAD loans	AFD	IFAD	Total
Personnel	150 000		250 000	100 000		423 000	923 000
Local travel				50 000		116 000	166 000
Meetings, international visits					150 000	181 000	331 000
Research consultants and technical assistance				50 000	100 000	265 000	415 000
National student fellowships	50 000		50 000			123 000	223 000
Equipment and supplies (NARS)					50 000	230 000	280 000
Logistical support (in kind)		100 000		100 000			200 000
Overhead costs						162 000	162 000
Total	200 000	100 000	300 000	300 000	300 000	1 500 000	2 700 000

LOGICAL FRAMEWORK

Narrative summary	Objectively verifiable indicators (by June 2009)	Means of verification	Assumptions
Goal			
Improved livelihoods and sustainable socio-economic growth among rural communities in WCA	<p>Area using practices of the Central Africa-based approach in various ecosystems, the number of sites (testing, full-scale development) at community level and donor-funded (including IFAD-funded) projects</p> <p>Strategies and policies elaborated to promote and develop Central Africa-based practices in the region</p> <p>Improved and stable crop yields from dryland farming attributable to effective water use</p> <p>Increased number of food-secure periods (months) among households</p> <p>Increased number of farmers and farmer groups and associations including (and promoting) the Central Africa-based approach in their NRM practices</p>	<p>External reviews and evaluations</p> <p>Field surveys</p> <p>Impact evaluation</p>	<p>Favourable worldwide dynamics in promoting the Central Africa-based approach as a contribution to reduce poverty and improve NRM</p> <p>Difficulties in reexamining individual cropping systems, individual farming systems and the social rules at the community level simultaneously</p>
Purpose			
<p><u>Purpose:</u> to stimulate and facilitate community-based processes in which the target rural communities (including the poor and disadvantaged) are empowered to innovate and sustain conservation agriculture practices in farming</p>	<p>Existing and published strategies and policies elaborated to promote and develop Central Africa-based practices in the region</p> <p>Higher number of farmer associations that are committed to modifying social rules and rights regarding parklands, land, crop residues, trees and livestock management</p> <p>Existing recognized champions of the Central Africa-based approach at the community level and the significant area managed through the practices</p> <p>Set of good Central Africa-based practices prepared and disseminated</p> <p>Active and efficient institutions at all geographical levels (mainly ACT) able to foster innovation in NRM and scaling-up in the region</p> <p>Existing and new operational networks of stakeholders committed to the Central Africa-based approach</p> <p>Number of stakeholders by type, number of papers, learning events, interaction with IFAD learning systems (FIDAFRIQUE, Portal), etc.</p>	<p>External reviews and evaluations</p> <p>Field surveys</p> <p>Community development plans</p> <p>Supervision, mid-term reviews on IFAD-funded projects</p>	<p>Favourable worldwide dynamics in promoting the Central Africa-based approach as a contribution to reduce poverty and improve NRM</p> <p>Difficulties in reexamining individual cropping systems, individual farming systems and social rules at the community level simultaneously</p> <p>Central Africa-based cropping systems are more profitable individually than conventional systems</p> <p>The approach provides more environmental and social benefits to communities than does conventional agriculture</p> <p>The implementation of the approach needs and stimulates improved knowledge mobilization, generation</p>

Narrative summary	Objectively verifiable indicators (by June 2009)	Means of verification	Assumptions
	Existing, recognized women associations involved in the Central Africa-based approach and women champions of the approach among NRM associations and initiatives Women's capacity to cultivate larger areas through the approach		and management The approach represents a fantastic opportunity to foster local innovation, indigenous knowledge and creativity
Objectives and Outputs			
<p>Objective 1: Building cropping systems</p> <p><u>Associated output:</u> Locally adapted Central Africa-based cropping and farming systems developed and shared</p>	<ul style="list-style-type: none"> • Number of locally adapted Central Africa-based practices and cropping systems developed and validated: at least one per agroecological site, including conditions for good practices at the level of communities and farmers • Comparative analyses of innovations in the Central Africa-based approach (conventional practices versus the approach practices), including environmental, technical, conflict-management and economic aspects, and quantitative measurement of differential effects on non-target groups • Number of established farmer field school (FFS) dynamics • Number of established processes for new community-based rules for land, livestock and crop management developed • Average area cultivated by farmers using the approach 	<ul style="list-style-type: none"> • Published technological briefs describing the sequence of recommended technical actions • Studies, reports and external evaluations on technical, environmental, economic and social issues • Number of participatory workshops aimed at expressing, analysing and synthesizing multistakeholder considerations • External review reports • Land-use statistics 	<ul style="list-style-type: none"> • The Central Africa-based approach may have negative effects on vulnerable groups like transhumants • Pre-existing motivation among farmers to invest in soil conservation and NRM and to develop organizations (and overcome constraints) to manage good practices in social and regulatory terms • Existence of IFAD field staff willing to invest in participatory experimentation and fine tuning with farmer groups • Necessity accurately to control the free roaming of animals
<p>Objective 2: Stimulate self-driven farmer-innovator networks</p> <p><u>Associated output:</u> Mechanisms and systems to stimulate and facilitate farmer innovations that are developed and functioning within the target communities</p>	<ul style="list-style-type: none"> • Publication of mechanisms and criteria for identifying and rewarding innovations that have been developed and functioning among participating farmers • An operating active purpose-built farmer-innovator network • Existence of registered consolidated farmer associations interacting with researchers and undertaking exchanges with other expert farmers • Existence of a formalized, dynamic multiscale network in which stakeholders are active in promoting appropriate cropping systems, ideas, alerts and warnings, methods, initiatives, etc. in the Central Africa-based approach • Published success stories on the basis of experiences that can be shared to stimulate initiatives 	<ul style="list-style-type: none"> • Documented field trips, workshops, exchange visits • Publications • Documented, organized visits (to the project demonstration sites, other active NRM sites and sites of the Central Africa-based approach) • External evaluations • Report on workshops and learning events • Supervision and review reports 	<ul style="list-style-type: none"> • Pre-existing natural creativity and motivation of farmers to select, improve, monitor and evaluate innovations • Existing worldwide movement towards a wide vision of the creation and diffusion of innovations, giving more and more room to farmer innovations • Existence of national and international field researchers willing to invest in participatory experimentation with farmer reports

Narrative summary	Objectively verifiable indicators (by June 2009)	Means of verification	Assumptions
	<ul style="list-style-type: none"> • Active women-innovator associations and women in innovator associations and networks • Active articulation of Smallholder Conservation Agriculture Promotion (SCAP) network with existing networks, including ACT, FIDAFRIQUE and Portal 		<p>groups</p> <ul style="list-style-type: none"> • Less work is needed with the Central Africa-based approach than with conventional agriculture
<p>Objective 3: Knowledge-sharing and management (regional)</p> <p><u>Associated output 1:</u> Building institutional mechanisms to sustain knowledge-sharing and to foster innovation and scaling-up in the region</p>	<ul style="list-style-type: none"> • A consolidated network for the Central Africa-based approach in WCA based on ACT and other stakeholders • Strengthened institutions to manage knowledge-sharing and learning in Central Africa-based practices and techniques • Pan-African initiatives in the Central Africa-based approach • Partnerships and structures built to facilitate the dialogue among community-based organizations, dynamic innovation networks, commodity-chain actors (including the private sector) and policy decision-makers • Contractual arrangements between farmer organizations and other stakeholders 	<ul style="list-style-type: none"> • External evaluation of existing documents • Workshop and learning event reports • Supervision and review reports • Reports on stakeholder meetings • Organization of a Francophone/Anglophone final event 	<ul style="list-style-type: none"> • Farmers will be empowered to negotiate more effectively with international public and private bodies, as well as financial institutions • Villages are used to working together, and social ties are supportive of collective, gender-sensitive plans
<p>Objective 3: Knowledge-sharing and management (local)</p> <p><u>Associated output 2:</u> An active foundation in knowledge management is established and operational to distil, learn from and disseminate local and exogenous knowledge</p>	<ul style="list-style-type: none"> • Existing training material for FFSs and farmer field forums (farmers, technicians, NGOs, universities) • The agro- and socio-economic foundation for multistakeholders to support the elaboration of investment projects in the form of an accurate database, including all the elements to be taken into account in loan projects and allowing for profitability criteria • Convincing information and knowledge for promoting a conducive policy environment and related incentive mechanisms • Number and quality of multistakeholder learning events • Coordination with IFAD-sponsored FIDAFRIQUE, including capitalization activities 	<ul style="list-style-type: none"> • External evaluation of existing documents • Workshop and learning event reports • Supervision and review reports • Documented web site linked to FIDAFRIQUE 	<ul style="list-style-type: none"> • SCAP will benefit from experience with FFSs and the Central Africa-based approach in Anglophone Eastern Africa • Present international initiatives (like TerrAfrica) need to be provided with rigorous and convincing reference materials (success stories, economic and environmental analyses) and SCAP results

Narrative summary	Objectively verifiable indicators (by June 2009)	Means of verification	Assumptions
<p>Objective 4: Capacity-building</p> <p><u>Associated output:</u> Consolidate the continental, regional, national, village and local groups and institutions generated through the programme</p>	<ul style="list-style-type: none"> • Farmers organized around the concept of learning and experimenting groups using relevant techniques and approaches from the FFSs • A workable project management structure, including farmer-level operational arrangements • Consolidation of inter-African innovative farmer networks, through ACT, and building an official WCA branch of ACT • ACT capacitated and operating as a Central Africa-based approach–NRM networking platform in WCA and the rest of Africa • A consolidated Central Africa-based approach network in WCA based on ACT and other stakeholders, including active women • Existing pan-African initiatives in the Central Africa-based approach • Partnerships and structures built to facilitate the dialogue between community-based organizations, dynamic innovation networks, commodity-chain actors (including the private sector) and policy decision-makers • Existing contractual arrangements between farmer organizations and other stakeholders • Improvement in the attitudes of development and extension staff and villagers towards the Central Africa-based approach • Improvement in the quality of training in the pro-poor orientation of field activities 	<ul style="list-style-type: none"> • Documented project management and operational framework • Publications • External evaluations • Reports of farmer groups • Supervision and review reports • External evaluation of existing documents • Workshop and learning event report supervision and review reports. • Reports on meetings among stakeholders • Organization of a Francophone/Anglophone final event • Capacity-building assessment reports • Targeted surveys 	<ul style="list-style-type: none"> • Interest and commitment of farmers • Compatibility with local social-cultural norms and practices • Thanks to SCAP, the farmers will be empowered to negotiate more effectively with international public and private bodies, as well as financial institutions • Availability of a cadre of research, development and extension agents ready to undertake professional change • Villagers and research, development and extension agents willing to share knowledge and skills

ANNEX II

**INTERNATIONAL INSTITUTE OF TROPICAL AGRICULTURE: PROGRAMME FOR THE
INTEGRATED PROTECTION OF CASSAVA FROM EMERGING PESTS AND DISEASES THAT
THREATEN RURAL LIVELIHOODS**

I. BACKGROUND AND RATIONALE

1. Cassava is the dietary staple for over a half billion people in some of the world's poorest countries. In Africa alone, hundreds of millions depend on the crop for food. Its versatility as a food and adaptability to adverse environmental conditions make it an ideal "safety net" crop and income-generating opportunity for IFAD's target group.

2. In addition to its food-security role, growing cassava is an important means of generating cash income among the rural poor, particularly women, through the small-scale processing and marketing of cassava products such as *gari* and starch. The crop is therefore an important element of IFAD's rural poverty eradication strategy, and there are currently more than seven IFAD loan-financed development projects that support cassava-related activities: the Roots and Tubers Development Programme (Benin); the Roots and Tubers Market-Driven Development Programme (Cameroon); Agricultural Revival Programme in Equateur Province (Democratic Republic of the Congo); the Root and Tuber Improvement and Marketing Programme (Ghana); the Support to Rural Development in North Lower Guinea Project and the Sustainable Agriculture Development Project in the Forest Region (Guinea); the Roots and Tubers Expansion Programme (Nigeria); and the Agricultural Services Support Programme (the United Republic of Tanzania).

3. A number of serious pests and diseases threaten cassava production in Africa. Among these are a new strain of cassava mosaic virus disease, cassava green mites, African root and tuber scales (ARTS), and the spiralling whitefly (SWF).

4. There is a need to reduce the pressure of cassava pests and diseases and thereby minimize cassava losses and improve the livelihoods of rural poor people who are dependent on this staple. The programme will develop, test and implement sustainable integrated pest management (IPM) technologies, in collaboration with various partners in five sub-Saharan African countries: Benin, Cameroon, the Democratic Republic of the Congo, Guinea and the United Republic of Tanzania.

II. THE PROPOSED PROGRAMME

5. The overall goal of the programme is to increase and sustain cassava productivity and improve the livelihoods of farmers through the reduction of crop losses due to pests and diseases in sub-Saharan Africa. The purpose of the programme is to develop, test and implement sustainable IPM technologies, in collaboration with various partners including farmers, to protect cassava from emerging pests and diseases in five countries in sub-Saharan Africa.

6. The **specific objectives** of the three-year programme include the following:

- (a) develop, evaluate and distribute pest- and disease-resistant cassava germplasm
- (b) release and monitor proven natural enemies (predators, parasites and pathogens) for the management of pests
- (c) monitor and forecast the spread of diseases and their vectors
- (d) carry out farmer-participatory evaluation and training in the implementation of best-bet IPM options for pests and diseases

ANNEX II

- (e) evaluate the biological and socio-economic impact of the introduced IPM technologies in terms of reduced pest and disease damage and increased cassava productivity and farm incomes
7. The participating countries in Western and Central Africa would include Benin, Cameroon, the Democratic Republic of the Congo, Guinea and the United Republic of Tanzania; the primary beneficiaries of this programme will be resource-poor cassava farmers, including women.
8. The key **programme activities** will be:
- (a) Develop, evaluate and distribute pest- and disease-resistant cassava germplasm:
- actively promote varieties of cassava that combine pest and disease resistance in important cassava-growing areas in sub-Saharan Africa; establish nuclear sites for the multiplication and distribution of planting material to key stakeholders
 - Develop cassava varieties that are resistant to ARTS and SWF and investigate and understand mechanisms of resistance
- (b) Release and monitor proven natural enemies (predators, parasites and pathogens):
- two parasitic insects (*Encarsia haitiensis* and *E. guadeloupae*) that have been proved to control SWF will be multiplied at IITA's Biological Control Centre in Benin before being released in the Democratic Republic of the Congo and the United Republic of Tanzania with the aim of controlling SWF in those countries
 - the phytoseiid predatory parasite (*Typhlodromalus aripo*) that has proved successful against cassava green mites in many African countries has not been effective in parts of the United Republic of Tanzania; the programme will therefore release and monitor fungal pathogens that have been effective in controlling cassava green mites
 - strains of *T. aripo* that have established successfully in the highlands of Cameroon will be released and monitored in the relatively high-altitude Katanga Province of the Democratic Republic of the Congo; in addition, the fungal pathogens of cassava green mites will also be released in Katanga in case *T. aripo* does not establish successfully there; both *T. aripo* and the fungal parasite will be released during the early part of the rainy season when conditions are optimal
 - fungal pathogens that attack ARTS were identified during a previous IFAD-financed project; the pathogens, collected from various West African countries, will be tested for virulence on populations of ARTS and the associate ants (*Anoplolepis tenella*); the most virulent strains will be used in farmer-participatory field trials on cassava crops in Cameroon and in the Democratic Republic of the Congo
- (c) Monitor and forecast the spread of diseases and their vectors:
- targeted surveys will be conducted annually in Cameroon, in the Democratic Republic of the Congo, Gabon and Equatorial Guinea to assess the incidence and severity of cassava mosaic virus disease and the abundance of the whitefly vector; studies to assess SWF damage and its effects on productivity will be carried out with the aim of introducing SWF management into IPM approaches

ANNEX II

- (d) Farmer participatory implementation of best-bet IPM options and national capacity-building in IPM:
- six to ten farmer-training sites will be established in each of the target countries in conjunction with local partners, who, after training, will provide technical backstopping
 - a workshop will be held in each country to train trainers and develop curricula that will be based on technical notes on each pest and disease, followed by exercises that farmers could follow to learn how to implement the best-bet IPM options for managing the most important pests and diseases in the locality
 - IPM training will concentrate on two key periods in the cassava crop cycle in terms of pest and disease attack: (i) the first two to three months after planting, and (ii) harvest
 - the programme will provide training to enhance national capacities to test, implement and monitor the IPM technologies developed by the programme; training will cover entomopathogens, disease-vector relationships, insect and plant interactions and host plant resistance to pests and diseases
- (e) Impact measurement:
- the effects of natural enemies, the spread of pest- and disease-resistant germplasm and the best-bet IPM options promoted by the programme will be measured and evaluated in key areas by monitoring the establishment and spread of natural enemies, the adoption of resistant varieties and the improvement in cultural practices by farmers by comparing the population dynamics of the pests and the severity of the diseases and, eventually, by measuring the production of cassava
 - the impact of farmer training will be further evaluated through farmer interviews including questions formulated to extract the most accurate information possible on the practices of farmers following the implementation of the packages
 - the programme will sensitize opinion leaders and policymakers on the value of impact assessment and methodologies and train technicians in the methodologies of impact assessment

III. EXPECTED OUTPUTS AND BENEFITS

9. The programme will deliver the following outputs:
- (a) reduced pest and disease incidence and severity through the introduction of resistant and tolerant cassava varieties and effective natural enemies and the use of effective cultural practices
 - (b) increased cassava yields in areas where pest and disease germplasm is used, where effective natural enemies are established and where farmers have been trained and have adopted methods to reduce the incidence and severity of pests and diseases

ANNEX II

- (c) enhanced food security due to an increase in cassava yields, increased incomes by a minimum US\$100 per hectare of production per crop cycle (if market circumstances allow the sale of surplus cassava and its products) and, ultimately, the improved livelihoods of the rural poor
- (d) establishment of effective natural enemies of SWF, cassava green mites and the ants that are associated with ARTS is likely to benefit neighbouring countries; the organisms responsible are likely to move naturally across the border at no cost to the countries involved
- (e) enhanced farmer knowledge in the implementation of packages for managing multiple pests and diseases and increased appreciation for the role of resistant varieties, effective natural enemies, cultural controls and phytosanitation when used together in the management of cassava pests and diseases
- (f) the increased capacity for IPM acquired by national programmes and by farmers and programme partners could be applied in tackling similar crop pest and disease problems in the future; linkages and networks established or maintained through the programme and postgraduate student training supported directly by the programme or by other funds, but integrated into the proposed programme, are likely to benefit future IFAD projects relating to the integrated management of pests and diseases afflicting other crops grown by the rural poor in sub-Saharan Africa

IV. IMPLEMENTATION ARRANGEMENTS

10. The programme will be implemented by IITA, while working closely with programme partners, regional research bodies and other interested organizations. IITA's Biological Control Centre for Africa, in Benin, will manage the programme. The implementation of the programme will be preceded by a stakeholder participatory workshop to discuss and finalize the workplans, in consultation with key implementing partners. The programme will make use of existing networks established by IITA programmes in the sub-regions. The programme will have three levels of management. On the IITA side, the programme leader (coordinator) will oversee programme execution, coordinate with other cassava IPM activities in Africa, liaise with IFAD on matters concerning programme execution and participate in various country-specific programme activities. The staff at IITA-Benin, IITA-Cameroon, IITA-Democratic Republic of the Congo and IITA-United Republic of Tanzania will maintain direct and frequent contacts with the national programme coordinators to assist them in the execution of programme activities in collaboration with programme partners. Several IITA scientists will provide the programme leader with the necessary scientific backstopping in virology, entomo-pathology, crop improvement, and biodiversity and in regular monitoring and evaluation and impact assessment of best-bet technologies.

11. At the national level, the programme is coordinated by a national programme coordinator (a representative nominated by each of the participating countries) who: (a) liaises with the programme leader and his assistants concerning all matters related to the programme; (b) liaises with in-country partners; (c) prepares country-specific workplans and budgets with the assistance of the programme leader; (d) organizes and supervises country laboratory and field activities; (e) identifies participants for in-country training; and (f) prepares country reports.

12. A steering committee composed of representatives of IITA, key programme partners and IFAD will meet once a year to review programme accomplishments and fine-tune workplans for the following year. Representatives of relevant NGOs, other partners and IFAD-financed projects in the targeted countries will be invited to the steering committee meetings. The Technical Advisory

ANNEX II

Division will supervise the programme through consultant and resource persons who will also monitor progress. Financing of these activities shall not be covered by grant resources.

13. IITA will be responsible for providing technical and financial reporting to IFAD based on existing guidelines, policies and procedures. IITA also will be responsible for the financial management of the programme, and IFAD grant expenditures will be audited as an integral part of IITA's annual audit by its independent auditor.

V. INDICATIVE PROGRAMME COSTS AND FINANCING

14. The programme is proposed for three years, with a total cost of US\$2.6 million, of which IFAD would provide US\$1.3 million. The additional contributions will be provided by IITA, the governments of participating countries in the form of salaries and services, and other projects and donors as detailed in the linkages section and below. Costs will be defined in detail during a participatory workshop during which a refined workplan for each participating country will be prepared and agreed upon by collaborating parties.

**PROGRAMME COSTS AND FINANCING
(US\$)**

Item	IFAD	IITA	NARS	Total
Personnel (staff and consultants)	455 000	275 000	800 000	1 530 000
Supplies and research	244 400			244 400
Training and capacity-building	188 200	125 000		313 200
Travel	124 900			124 900
Indirect costs	172 100			172 100
Capital equipment: computers and vehicles	115 400		50 000	165 400
Total	1 300 000	400 000	850 000	2 550 000

LOGICAL FRAMEWORK

Objective hierarchy	Performance question and indicators	Monitoring mechanisms	Assumptions and risks
Goal			
Cassava productivity increased and sustained through the reduction of crop losses due to pests and diseases in sub-Saharan Africa	- Cassava production and quality significantly increased by 2009	- National cassava statistics - Published impact data	- Political situation remains favourable
Purpose			
Develop, test and implement sustainable IPM technologies, in collaboration with various partners and with farmer participation, to mitigate losses due to major cassava pests and diseases in five countries in sub-Saharan Africa	- NARS and farmers in five countries have the knowledge and technology in implementing best-bet options for pest and disease management by 2009; damage caused by pests and diseases reduced by at least 20% in cassava production in the five countries by 2009	- IITA/IFAD reports - NARS, NGO reports - Steering committee and project reports - Publications	- Conflict with other pests does not arise
R1. Pest- and disease-resistant cassava evaluated, multiplied and supplied to partners for dissemination	- At least four genotypes with acceptable pest and disease resistance and end-user characteristics are multiplied in foundation planting material sites in at least three of the target countries by 2007 - Sources and mechanisms of resistance to African root and tuber scales (ARTS) and whiteflies identified and incorporated into at least two improved cassava varieties by 2009 - At least 100 introduced and local genotypes evaluated for resistance to multiple pests and diseases and preferences by natural enemies in each of at least four countries by 2009	- IITA/IFAD reports - NARS reports - Steering committee and project reports - Publications	- Commitment of NARS and other partners remains favourable - Security in target countries remains favourable

Objective hierarchy	Performance question and indicators	Monitoring mechanisms	Assumptions and risks
<p>R2. Efficient natural enemies (predators, parasites, pathogens) released, and their spread and impact monitored</p>	<ul style="list-style-type: none"> - <i>Neozygites tanajoae</i> released in at least three sites in the United Republic of Tanzania and the Democratic Republic of the Congo, and spread determined by 2007; persistence and spread of <i>N. tanajoae</i> in Benin is determined by 2008; persistence of mid-altitude strains of <i>T. aripo</i> in Cameroon is determined by the end of 2007 - Two virulent pathogens of ARTS and its tending ants are tested on a limited scale by the end of 2007; further distribution of the pathogens conducted in the Democratic Republic of the Congo by 2008 - Two parasites of spiralling whitefly released in the United Republic of Tanzania by 2007, and their spread and impact on spiralling whitefly (SWF) determined by 2008 and 2009 - Cultures of at least two predatory mites and at least two strains of <i>N. tanajoae</i> and at least two strains of each of two pathogens of ARTS multiplied and maintained at IITA-Benin or IITA-Cameroon 	<ul style="list-style-type: none"> - IITA/IFAD reports - NARS reports - Steering committee and project reports - Publications 	<ul style="list-style-type: none"> - NARS and other partners commitment remains favourable - Predators, parasitoids and pathogens become established
<p>R3. Disease and vector spread monitored and forecasted</p>	<ul style="list-style-type: none"> - Incidence and severity of cassava mosaic virus disease and its rate of spread determined; and vector abundance and dynamics determined yearly; geo-referenced maps produced yearly and used to forecast rate and potential of spread of the disease into new areas. - Virus strains identified, and novel strains characterized yearly 	<ul style="list-style-type: none"> - IITA/IFAD reports - NARS reports - Steering committee and project reports - Publications 	<ul style="list-style-type: none"> - Commitment of NARS and other partners remains favourable

Objective hierarchy	Performance question and indicators	Monitoring mechanisms	Assumptions and risks
<p>R4. Best-bet options for pest/disease management implemented with farmer participation and NARS staff trained in IPM</p>	<ul style="list-style-type: none"> - Cassava pest and disease technical notes for use in training manuals completed by the end of the first year of the programme - At least one workshop held in at least one locality in each country to test the technical notes and develop exercises for farmer training during the second quarter of the first year of the project - At least 20 NARS and NGO staff in each country receive IPM training by the end of each year of the programme - At least 450 farmers in each country practicing best-options by the end of the programme - At least two radio broadcasts used yearly in each farmer training locality in each country to promote best-bet options - At least one technical staff from NARS in all five countries trained in entomopathology, virology, entomology and acarology by 2006 - Two postgraduate students selected for work on cassava resistance to ARTS and whiteflies will have completed their training by the end of 2009 	<ul style="list-style-type: none"> - IITA and NARS reports - NGO and IFAD reports - Project and network reports - Publications - Student theses - Training manuals - Leaflets - Radio reports 	<ul style="list-style-type: none"> - Qualified students found at the start of the project, and universities in Africa assure commitment to postgraduate training - Commitment of NARS and networks remains favourable
<p>R5. Biological, agronomic and socio-economic impact of IPM best-bet options determined</p>	<ul style="list-style-type: none"> - Impact of introduced IPM technologies determined by monitoring pest and disease levels at least twice in programme areas in all countries - Cassava yield in all community-based farmer training localities will be evaluated in all countries by 2009 	<ul style="list-style-type: none"> - IITA/IFAD reports - Steering committee and project reports - Proceedings - Publications 	<ul style="list-style-type: none"> - Difficulties in quantifying changes in poverty indicators over a three-year period

Objective hierarchy	Performance question and indicators	Monitoring mechanisms	Assumptions and risks
	<ul style="list-style-type: none"> - Baseline macroeconomic data on cassava productivity and markets compiled, and baseline farmer perception surveys conducted in at least three countries by 2007 - The socio-economic impact of the project's IPM technologies and poverty reduction indicators quantified in at least three countries by 2009 - Steering committee meets yearly to review workplans and project progress 		

