SUMMARY ANNUAL REPORT

2001

PROJECT PE-5

Sustainable Systems for Smallholders: integrating improved germplasm and resource management for enhanced crop and livestock production systems

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PE 5 PROJECT

Title Sustainable Systems for Smallholders Integrating improved germplasm and resource management for enhanced crop and livestock production systems

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Asia

Integrated Cassava based Cropping Systems

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Forages and Livestock Systems

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Community based Natural Resource Management Hue

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Hoang Thi Sen Gender study
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Budget

Source	Amount (US$)	Proportion (%)
Unrestricted core	423811	22
Core substitution	136540	7
Carry over from 1999	54265	3
Sub total	**614616**	**32**
Special projects	1320991	68
Totals	**1935607**	**100**

Research Highlights in 2000

Output 1 System components assessed to provide alternative land use options

Forest Margins, Pucallpa

The Feasibility of Agricultural Technology Adoption by Smallholder Frontier Farmers and the Role of Seasonal Labor

- A seasonally adjusted value of labor calculated with the monthly opportunity costs of labor estimates quantifies the effect of varying labor restrictions for a typical farm

- Altering traditional technologies (rice maize cassava) in order to reduce seasonal labor shortages permits both larger and more diverse harvests and thus should become a research priority

Amazon Riverine Agriculture Productive but Unprofitable?

- Although alluvial soils produce greater harvests of many agricultural crops high transport costs and potential flooding problems limit their profitability

Forest Cover and Household Economic Security on the Amazon Frontier An Environmental Economic Tradeoff with the Adoption of Agricultural Technologies?

- Detailed analysis of farm management strategies via agro economic modeling reveals how agricultural technologies are likely to impact on farm forest cover and household economic security

Asia

Forage and Livestock Systems Project milestone

Demonstrations of forage systems in upland Laos established that they have the potential to improve soil fertility and be integrated into cropping systems

Community based Natural Resource Management Project Hue at conclusion Phase I

- It was easier to achieve success in increasing crop productivity and improving food security in an upland community than in introducing institutional arrangements such as co managment of resources to ensure long term sustainability of livelihoods
- A community based approach to resource management should involve policy and decision makers from the inception rather than when problems arise
- Likewise issues such as improving the livelihood of the poorest in the community and dissemination of information and successful technologies to all within a community and to other communities needs to be addressed during the inception stage of a project

Output 2 Generic technologies for sustainable production developed through farmer participatory research

Asia

Integrated Cassava based Cropping Systems

- In Thailand where farmers are conducting erosion control trials most have adopted the planting of vetiver grass contour hedgerows to control erosion A total of 622 farmers have so far planted 123 km of vetiver grass hedgerows covering an area of about 600 ha of cassava fields In Vietnam where some 30 farmer erosion control trials are being conducted in 13 sites many farmers have adopted the planting of *Tephrosia candida* vetiver grass pineapple or *Paspalum atratum* as contour hedgerows to control erosion others have adopted intercropping and better fertilization practices to increase income and reduce erosion in their cassava fields
- In Thailand farmers are testing the use of animal manures and green manures to maintain soil fertility and improve the physical conditions of their soil in addition to chemical fertilizers In Vietnam more farmers are applying chemical fertilizers high in N and K in addition to pig manure to their cassava crops markedly increasing yields and net income
- In Tran Phu commune Ha Tay province Vietnam a women s group representing 66 households have all planted cassava intercropped with peanut They have also planted 2 ha of peanut for seed increase so that next year all farmers will be able to intercrop cassava with peanut
- At five pilot sites in north Vietnam the adoption of improved technologies including new varieties resulted in gross incomes that were 4 5 times higher than those reported in 1994/95 at the beginning of the project
- 87% (more than 1 million ha) of the total cassava area in Thailand is now planted with new high yielding varieties of cassava
- Some cassava varieties introduced to East Timor in 2000 produced twice the yield of the local check varieties (28 35 vs 14 t/ha roots)

Forages and Livestock Sytems

- Field evaluations of ten forage technologies have commenced in Lao PDR using participatory approaches Some 250 farmers in 18 villages in 4 districts facilitated by 9 field teams 2 provincial teams and 4 national partner staff are involved

Forages for Smallholders

- *Bauhinia variegata Trema orientalis Broussonetia papyrifera* and *Ficus hispida* are among the most preferred local fodder tree species that are used by Hmong and Kasah upland farmers in Lao PDR Farmers rated these species high using criteria such as palatability for cattle availability accessibility nutritive value and regrowth

Output 3 Models/frameworks developed to target research, integrate results, assess impact and extrapolate results

Forest Margins, Pucallpa

Assessing the Impact of Integrated Natural Resource Management (INRM) Challenges and Experiences

- CIAT impact assessment research for INRM is mixed reflecting the multi faceted demands of INRM research Advances will enable cross site comparison of the reference sites and could raise new interesting research hypotheses

Asia

Forage and Livesock Systems

- Strategies developed from field experience are being applied in Extension & Training activities Incorporation of Gender & Equity into the Project Cycle and Monitoring & Evaluation of project activities

Forages for Smallholders

- A curriculum was developed for a training course on monitoring and evaluation of participatory forage research projects The modules are Leveling off concepts and experiences Field work Data analysis and reporting Development of workplan In many countries in SE Asia simultaneous translation throughout the course is essential

Output 4 Increased effectiveness of CIAT and partners to conduct appropriate research for developing productive and sustainable land use practices

Forest Margins, Pucallpa

Alternatives to Slash and Burn (ASB) in Peru Challenges Research and Impact

- By conducting research in a collaborative manner scientists within the ASB consortium are exposed to new research methods and ideas Researchers also gain important local insights from other disciplines to better adapt and prioritize research thereby maximizing development impact

Tropileche

- Develop partnerships with NARS NGO s IARC s ARIS and private sector in LAC Asia and Africa to undertake evaluation and diffusion of a range of grasses and legumes for multipurpose use

- Ex ante analysis of the legume *Cratylia argentea* in dual purpose production systems of the Llanos piedmont in Colombia

Asia

Regional Coordination

- An MOU was signed between CIAT and the Goverment of Lao PDR allowing CIAT to set up a regional office for Asia in Vientiane
- The regional office has been established at the Headquarter site for the National Agriculture and Forestry Research Institute at Dong Dok Vientiane Province

  A visit was organized by Directors of Agriculture from four countries in Asia to CIAT HQ for discussions on the future CIAT Strategy in Asia In addition they made suggestions for regional activities by CIAT

Integrated Cassava based Cropping Systems

- A 15 minute video on the Farmer Participatory Research with cassava was produced in Thai and English
- In Vietnam 60 local extensionists and key farmers from the various pilot sites received training in participatory technology development with major emphasis on soil erosion control and fertility maintenance in cassava based cropping systems
- In Thailand 15 officials of Land Development Department were trained in FPR methodologies and visited an FPR pilot site to become familiar with the use of the farmer participatory approach in technology development and dissemination

- The 6th Regional Cassava Workshop titled Cassava s Potential in Asia in the 21st Century Present Situation and Future Research and Development Needs was held in Ho Chi Minh city Vietnam from Feb 21 to 25 2000 The 44 papers presented at the workshop reviewed the present situation of cassava in each country and in the region the research on cassava breeding and agronomy conducted in each country during the past 20 30 years The Proceedings have been published

Forage and Livestock Systems

- A book on promising forage species for Southeast Asia was published in six languages Another book on forage agronomy was completed and is in translation A third book on participatory approaches to developing agricultural technologies was written

- 32 National staff in Laos have been trained in carrying out Participatory Diagnosis Participatory Technology Development how to incorporate a Gender and Equity strategy into their activities and in carrying out Monitoring and Evaluation

Forages for Smallholders

- The Forages for Smallholders Project has established a network of 49 institutions and organisations through which participatory approaches and forage technologies are spreading in six countries in SE Asia

Problems encountered and their solution

Forest Margins, Pucallpa

During the past two years Peruvian government instability has made coordination with national partners difficult CIAT has continued the analysis and writing phases of the project

Asia

Regional Coordination

Though the regional office has now been successfully established in Lao PDR, there are logistical and personnel reasons why it remains necessary to locate some staff in other locations

There is a need to further strengthen interaction with CIAT HQ staff through joint project development and cross visits

Research activities in LAC Africa and Asia might be integrated more closely through global challenge and systemwide programs

Integrated Cassava based Cropping Systems

No problems in implementation of the Special Project except for limited researchers in China which has been solved by hiring young scientists

A more general problem in cassava research in Asia is the lack of a coordinated regional effort into cassava improvement similar to that which has occurred over the last 15 years There is opportunity to commence a new round of strategic genetic improvement using

molecular markers and gene transfer However we have been unsuccessful in attracting funds for a regional project in cassava improvment

Forages for Smallholders

Political instability in the Philippines and Indonesia has not affected work and is being managed by obtaining regular information from the field sites

Lack of research experience of local partners which is managed by having them carry out targeted research with CIAT staff and formal training

Plans for 2002

Forest Margins Pucallpa

Work with national partners (researcher and extensionists) in model development and refinement

CIAT is currently coordinating presentations with donors to conduct extensive Amazon research

Regional Coordination

Strengthen CIAT research in Asia through tapping Regional funds

Develop collaborative activities between Special Projects

Align research with that of the NARS

Develop closer collaboration with othere CGIAR Centers

Integrated Cassava based Cropping Systems

Expand dissemination activities further in Thailand and Vietnam accompanied by training and production of training materials

Participate with partners in the 17th World Congress of Soil Science to be held in Bangkok in Aug 2002 and the 7th Regional Cassava Workshop to be held in Thailand in Nov 2002

Forages and Livestock Systems

Expand the number of technologies being evaluated by farmers to include other feed resources apart from forages and to include animal health options

Fully implement the project s M&E strategy and database to monitor both outputs and impacts resulting from project activities

Strengthen the field teams through a series of workshops on extension forage technologies other livestock technologies and gender & equity issues

Publish and distribute the second and third books in the development series for smallholder farmers

Develop a research project proposal to investigate nutrient cycling issues at the crop livestock interface in smallholder upland farming systems

Forages for Smallholders

Make a synthesis of the demands ideas and recommendations of all partners for the next phase of the FSP project and develop the proposal

The FSP will continue its efforts in developing forage technologies with farmers disseminating to new areas training of collaborators field staff and key farmers and publishing project outputs There will be an increased emphasis on impact assessment of all activities as this is the final year of the ADB funded project