



PARTICIPATING AGENCIES	
	<ol style="list-style-type: none"> 1. Indonesian Centre for Agriculture Post harvest and Development (ICAPRD), Bogor, INDONESIA 2. Indonesian Centre for Estate Crops Research and Development (ICECRD), Bogor, INDONESIA 3. Department of Export Agriculture, Peradeniya, SRI LANKA 4. Ministry of Agriculture and Rural Development, (MARD), Hanoi, VIETNAM
	<p>Cooperating Agency: International Pepper Community (IPC), Jakarta, Indonesia</p>
	<p>FAO Contribution : US\$476, 000</p>
	<p>Period of Operation : 2008 & 2009 (2 Years)</p>

PROJECT OBJECTIVES

To improve income and livelihood of small Pepper farmers in Indonesia, Sri Lanka and Vietnam

Through :


- Increased pepper production and Decreased cost of production through higher production and productivity and effective crop management
- Development of Post harvest, Processing technologies and value addition.
- Marketing and technical interventions to enhance black and white pepper quality and its competitiveness

PROJECT OBJECTIVES (Contd..)


- Local Capacity build up
- Training Programmes for Transfer of Technologies
- Outreach Programmes
- Field Demonstration on GAP & IPM


Foot rot still remains a major threat

Severe Foot rot infection




Slow decline in Bangka, Indonesia






Wooden standards of dead vines


Foot rot affected pepper garden in Vietnam



Slow decline in Sri Lanka



Stem borer infestation -Indonesia



Approaches to achieve the Project Objectives

- Increasing production & productivity through
 - Production of disease-free planting materials of high yielding varieties for replanting, adopting biocontrol technology
- Implementation of efficient crop management practices involving Integrated Nutrient Management (INM), Good Agricultural Practices (GAP) and Integrated Pest and Disease Management (IPM)
- Hygienic post harvest technology for processing black & white pepper

Approaches to achieve the Project Objectives (Contd...)

- Post Harvest Technological intervention
- Value added products for local consumption & export
- Developing ideal marketing strategies
- Transfer of Technology -Training programmes
- Local capacity build-up
- Field demonstrations for the conviction of farmers on the proven technologies

MAJOR ACHIEVEMENTS

Production / Protection / Crop Management

- To avoid / reduce crop loss, major strategy was on nursery management, healthy planting material, production / distribution & Replanting (Govt., NGOs, SHGs). The importance has been well recovered by farming community.
- Collection, Conservation of healthy, productive cultivars for future.
- Popularisation of Improved Methods of Pepper Cultivation (IMPC).
- Brought awareness on the importance of biological control technology in management of diseases & insect pests of black pepper, the major production constraints.

MAJOR ACHIEVEMENTS (Contd.)

- For the local capacity build up, three training programmes
 1. Biocontrol technology
 2. Nematode management
 3. Outreach programme were arranged in Indonesia for Sri Lanka and Vietnam Scientists
- Hygienic processing of black and white pepper production
- Improved white pepper production technology (reduced processing of retting from 15 days to 5 days).
- Transfer of Technology through training programmes conducted on GAP / IPM

MAJOR FOCUS OF DISEASE MANAGEMENT

- Nursery management for production of Healthy Planting Material of Black pepper

Solarisation of Nursery mixture



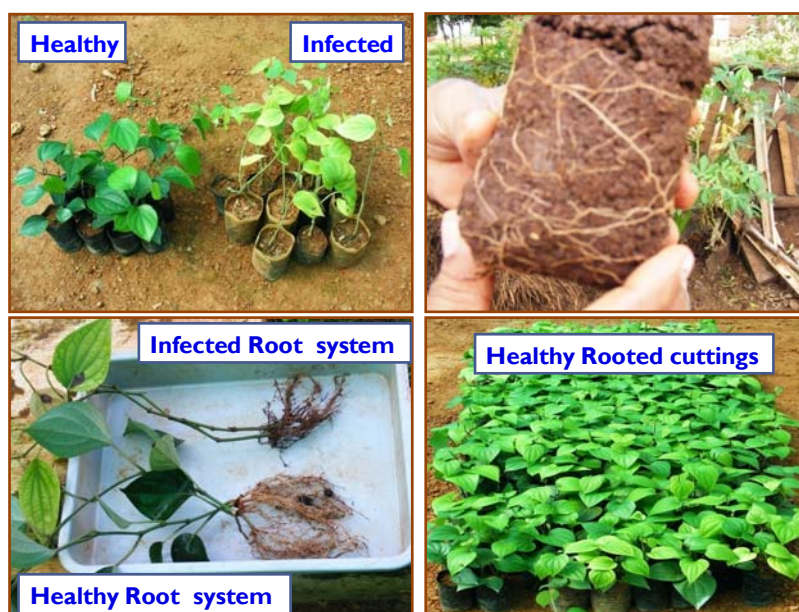
Mixing Biocontrol Microbials (VAM)



Raising Rooted cuttings in Poly bags to ensure root rot free

- Replanting - Treatment of Planting pit
 - Application of biocontrol inoculum along with compost

Production of Healthy Planting Materials



ORTHOTROPIC SHOOTS MULTIPLICATION AS SOURCE OF PLANTING MATERIAL



Healthy Planting Material production for replanting is
the only strategy to increase pepper Production



PROGRAMMES IMPLEMENTED

Collection of virus-free high yielders and their field evaluation for quality parameters along with existing popular varieties



Field evaluation of elite cultivars at Sri Lanka



GAP / IPM Demonstrations at Lampung



PEPPER FARMERS SWITCHING OVER TO RUBBER



PEPPER COCOA MIXED CROPPING



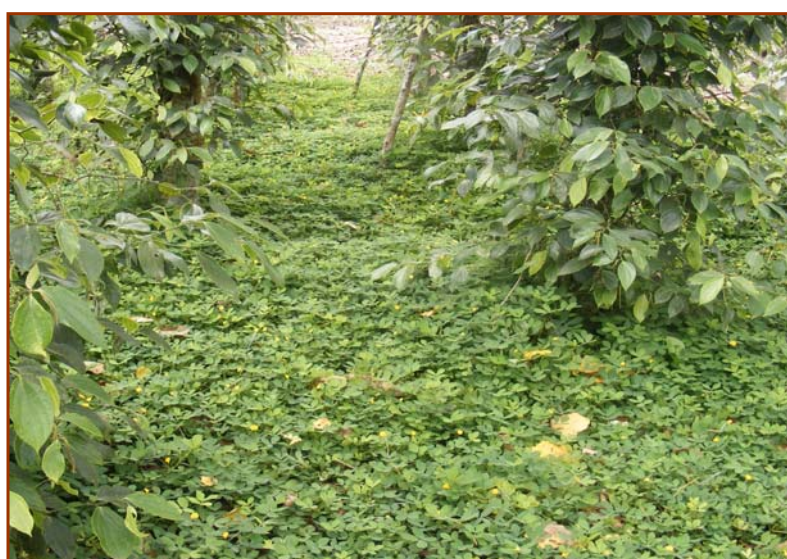
Mixed cropping with coffee



Inter space available in coconut can be utilized for pepper cultivation



Cover crop (*Arachis pinto*) that reduces disease spread and also stem borer infestation



High yielding cultivars in Vietnam



Post Harvest Technology

Available hygienic processing technologies need to be popularized among the farming community



Processing machinery

Post Harvest Technology (Contd.)

Additional market avenues need to be explored for value added products



RECOMMENDED MARKETING STRATEGIES

- ❖ To enhance market potential, minimal hygienic Processing and grading Centers of pepper is suggested.
- ❖ In view of the cyclic nature of farm gate price regulations of pepper supply for short periods of 3-5 months by stocking pepper at the growing centers is recommended.
- ❖ To ensure food safety and quality Central Laboratories with the state-of-art facilities may be set up in Sri Lanka and Vietnam.

RECOMMENDED MARKETING STRATEGIES (Contd.)

- ❖ GI Registration by the respective countries for protecting the different grades and qualities of pepper.
- ❖ Forward Training of pepper for better price discovery.
- ❖ Promoting/enhancing domestic consumption / Marketing to suit local needs.
- ❖ Undertaking promotion to explore new markets like Africa.
- ❖ Promoting nutraceutical values with health notes of pepper to increase consumption and new applications, thereby ensuring good marketing potential.

INITIATIVES FOR LOCAL CAPACITY BUILD UP

The following Training Programmes were Conducted

- ❖ Biological control of Foot rot & slow decline diseases through Antagonists / PGPRS / VAM at ICERD / Ballitro, Bogor, Indonesia, 19th April - 2nd May
- ❖ Nematode Management at IAS, Ho Chi Minh City 19th September - 2009
- ❖ Outreach Programmes at Indonesia for Scientists from Sri Lanka & Vietnam for "hands on" training on GAP/ IPM of Pepper

Biological control -VAM Production



Impact of Biological Control Training Programme

- ❖ The Scientists at BALLITRO identified efficient strains of VAM, *Trichoderma* and *P. fluroscens* and are utilizing the same for immediate nursery programme for the production of root rot free / Healthy pepper cuttings.
- ❖ Similarly at EARS Sri Lanka, large scale multiplication of VAM and *Trichoderma* has started specifically for the nursery programmes.
- ❖ At Vietnam local expertise available on this is utilized for the large scale multiplication for *Trichoderma* and *P. fluroscens*

Nematology Training Programme in progress at Vietnam



Major findings / farmers problems that need intervention


- ❖ Wide-spread grievances among farmers on high cost of cultivation and poor price structure
- ❖ Insufficient knowledge about Pepper management including disease and pest management at Farmer's level
- ❖ Phytosanitary measures are totally neglected and need to be practiced to reduce and avoid disease intensity
- ❖ Technology transfer is inadequate and needs to be intensified through on-field training programmes and technology demonstrations in farmer's field
- ❖ Some farmers in Indonesia are switching over to more profitable ventures like Rubber cultivation and tin mining
- ❖ Capacity build up on Biological control technologies, Virus diagnostics, and nematode suppression needs to be implemented

Farmers Training Programmes



FIELD DEMONSTRATION

- ❖ Field demonstration on GAP/IPM and organic pepper have been laid out in farmer's fields in all the three countries.
- ❖ Separate field demonstrations have been laid out with and without cover crop.
- ❖ Full dose and half dose of fertilizer application has been tested to see its impact.



APPEAL to the participating countries to continue the following initiatives of the FAO project for sustainability of Black pepper

- Popularisation of Healthy planting material production, certification and distribution / Replanting
- Infrastructure development for Scaling up of production of biological control agents/biofertilizers to meet the demands of the farming community
- Exploiting the benefits of Biological control for organic pepper production



APPEAL (Contd.)

- Marketing of Value added products to suit internal demands / Export
- Marketing system through co operatives/ Farmers societies
- Technology dissemination through NGOs SHGs/ in PTD mode
- Field demonstrations of GAP/ IPM Technologies standardized for conviction of farming community

Acknowledgements

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