"A Biopesticide Mediated Value Chain for Clean Vegetables"

Environmental and Social Safeguards Management in NAIP

A. Basic information

Project data

1. Project statistics:

Component code	:	2
Name of CPI	:	**Dr Duni Chand Sharma**
Name of Co-CPIs	:	Dr Ajay K. Sood Dr Jitender K. Sharma Dr Desh Raj
Institution	:	CSKHPKV Palampur- 176062
Mailing Address		**Sr Scientist (Entomology)** **Department of Entomology** **CSK HPKV Palampur-176062 (H.P.)** Telephone No. 01894- 230385 (O) 01894-232077 (R) 094184-78958 (M) Fax: 01894-230406, 01894-230511 E.Mail: sharmadc3@rediffmail.com dcsharma@hillagric.ernet.in
Consortium partners	:	**Research Institute** Indian Agricultural Research Institute (IARI), New Delhi **NGOs:** i) Society for Technology and Development (STD), Malori-Tikkar, Mandi (H.P.) ii) Western Himalayan Society for Awareness & Upliftment (WHSAU), Palampur (H.P.)
Associate partners	:	**Public Institutions:** i) National Research and Development Council, New Delhi ii) State Agriculture Department iii) State Pollution Control Board **Private Partners:** i) Dhanuka Agritech. Ltd. (DATL), New Delhi ii) Shivambu International (BDM), Una (H.P.) **Rural Social Institutions:** Mahila Mandals, Self Help Groups, Yuvak Mandals
2. Proposed date of start	:	September 1, 2008
3. Planned duration	:	3 years and 10 months

4. Project cost **:** 473.90 lakh

5. Project objectives: **:**

1. Development of value added indigenous biopesticides
2. Development of biopesticides based good agricultural practices for the production of 'clean' vegetable crops
3. Market driven production of value added products of 'clean' vegetables
4. Public-private linkage and entrepreneurship development for biopesticides, 'clean' vegetables and their value added products
5. Assessing socio-economic and marketing aspects of the value chain

6. Brief project description:

The proposed project "**A Biopesticide Mediated Value Chain for Clean Vegetables"** will be undertaken by CSKHPKV, Palampur (Lead Centre), IARI, New Delhi (Consortium partner), NGOs namely STD, Mandi (H.P.) (Consortium partner) and WHSAU, Palampur (H.P.) (Consortium partner) and DATL, New Delhi & BDM, Una (H. P.) as private partners. All these partners are carefully chosen for manageability and to deal on the two botanicals, one microbial and one bioagent for the development of biopesticides and use them to manage the insect- pests and diseases of high value vegetable crops with special emphasis on the production of 'clean' vegetables (garden pea and cabbage) for which thorough model will be developed. CSKHPKV and IARI attribute their competence by virtue of their leadership in their respective fields. CSKHPKV is premier institute excelling in hill-farming especially organic farming and has already identified local species/strains of more than five botanicals, three microbial and bioagents as potential sources of biopesticides. IARI is the premier institution excelling in Agriculture and its Division of Agrochemicals, has pioneered in neem formulations as biopesticides and is in progress of formulating other biopesticides from plants and microbes.Broadly the project consists of five components with different objectives and activities under them.

The first objective aims at `Development of value added indigenous biopesticides`. Pesticidal bioactive molecules will be identified and formulations of potent components from plants (*Melia azedarach* & *Eupatorium adenophorum*) and bioagents (*Trichoderma* sp.) will be developed for field-testing. Based upon bioefficacy of the formulations, upscaling with respect to shelf-life, stability and compatibility will be done.

The second objective involves Development of biopesticides based pest management package of practices for the production of garden pea and cabbage crops. Biopesticides based modules will be tested under field conditions for the pest management in garden pea and cabbage. Food and environmental safety of biopesticides will also be determined by working out their toxicity to beneficial arthropods, rats and fish. Apart from these, residues and persistence of biopesticides in soil and water will also be determined.

Third objective aims at ` Market driven production of value added products of 'clean' vegetables. Data will be generated for branding the crop produce as 'clean' and preparation of value added products in the form of frozen and canned garden pea and cabbage.

The fourth objective emphasizes on public-private linkage and entrepreneurship development for biopesticides, 'clean' vegetables and their value added products by establishing the linkage amongst various stakeholders of the value chain. Farmers, members of rural social institutions (*Mahila Mandal*, SHGs), and un-employed youths will be trained by organizing awareness camps, Kisan Melas, publishing extension literature and conducting demonstrations. Skill development w. r. t. production of bioagent (*Trichogramma* sp.) will also be taken to initiate small-scale production units. Apart from this, the brand promotion of vegetables produced using biopesticides based pest management packages will also be undertaken by developing appropriate quality labels.

Fifth objective entitled `Assessing socio-economic and marketing aspects of the value chain` is aimed at strengthening, commercialization of biopesticides, 'clean' vegetables and their value added products. Social and policy imperatives are as important as any other referred above, therefore, economic feasibility analysis will be done. The line departments of state government will be sensitized for promoting vegetable production through biopesticides based pest management.

The total funds required are Rs 473.90 lakhs

7. Environmental category issues in the subproject

- Social:
- Environmental

8. Safeguard policies triggered (World Bank policies)

Safeguard policies triggered (World Bank policies)	**Yes**	**No**
Environmental Assessment (OP/BP 4.01)	[X]	[ ]
Natural Habitats (OP/BP 4.04)	[ ]	[ ]
Pest Management (OP 4.09)	[ ]	[ ]
Cultural Property (draft OP 4.11-OPN 11.03 -)	[ ]	[ ]
Involuntary Resettlement (OP/BP 4.12)	[ ]	[ ]
Indigenous Peoples (OD 4.20)	[ ]	[ ]
Forests (OP/BP 4.36)	[ ]	[ ]
Safety of Dams (OP/BP 4.37)	[ ]	[ ]
Projects in Disputed Areas (OP/BP 7.60)	[ ]	[ ]

Projects on International Waterways (OP/BP 7.50)	[ ]	[ ]

B. Risk analysis and related issues

- Development of commercial formulations of biopesticides may be difficult if the supply chain management and fund availability is inadequate.
- Adoption of package of practices for production of 'clean' vegetables in a holistic way may be a problem if the cost of biopesticides be higher.
- Emergence of new market for biopesticides and 'clean' vegetables/ value added products in future.
- Packaging interventions of value added 'clean' vegetables in the un-organized sector are a complex issue.
- Training programmes among un-organized and low educated persons may be a problem.
- A logistic problem as this model is going to be tried out for the first time in the region.
- Consumers response may not be overwhelming, without very active promotional exercise.
- Sensitization of the line departments may not induce promotion of biopesticides use for pest management in vegetable crops.
- Marketing of biopesticides formulations, 'clean' vegetables and their value added products may be a difficult, unless the prices are competitive in the market.

9. Impact assessment

Given below, and adequately addressed.

10. Potential indirect and/ or long-term Impacts due to anticipated future activities in the project areas (assessment of anticipated conflict/ complimentarily with the current as well as those proposed for the next five years in the areas of activities of the sub-project):

- Two commercial formulations of innovative indigenous biopesticides will be available for holistic management of insect-pests and diseases of garden pea and cabbage

- A model of `production to consumption' for 'clean' garden pea and cabbage through innovative indigenous biopesticides.
- Backward and forward linkages with different stakeholders in the biopesticides mediated value chain for the production of 'clean' vegetables for better public-private cooperation, entrepreneurship development and sustainability.
- Stakeholders empowerment through increased income and employment generation
- Increased number of trained/ skilled human resources in biopesticides
- Conservation of naturally occurring eco-friendly bioagents and improved soil health, quality ground water, and 'clean' food and environment for better health.
- Availability of 'clean' quality vegetables and their processed products.
- Techno–economically feasible business plans for each of the selected biopesticide
- Sensitizing line-departments of state government for the promotion of vegetable production through biopesticides based pest management programme.
- Rural entrepreneurship will help in reducing migration to urban areas through enhanced employment and income generation.

11. Identify the key stakeholders and describe mechanisms for consultation with and to them done/ disclosure so far done including pre-project consultations with stake holders workshop before formulating the full proposal, discussing the full proposal with some stakeholders before submission to the PIU:

Research Institute

Indian Agricultural Research Institute (IARI), New Delhi

NGOs:

i) Society for Technology and Development (STD), Malori- Tikkar, Mandi (H.P.)

ii) Western Himalayan Society for Awareness & Upliftment (WHSAU), Palampur (H.P.)

Public Institutions:

i) National Research and Development Council, New Delhi

ii) State Agriculture Department

iii) State Pollution Control Board

Private Partners:

i) Dhanuka Agritech. Ltd. (DATL), New Delhi

ii) Shivambu International (BDM), Una (H.P.)

Rural Social Institutions:

Mahila Mandals, Self Help Groups, Yuvak Mandals

Preliminary discussions were held with few stakeholders before organizing stakeholder's workshop. They were made aware of NAIP Project, objectives and expected outputs and impact. The final modalities will be worked out after the project approval.

12. Chronology of meetings/ activities held in connection with preparation of the concept note and full proposal

S.No.	Date	Programme & Location	Participants	Remarks
1.	01.10.2007	Concept note preparation meeting at CSKHPKV, Palampur	CSK HPKV UHF IHBT SKUAST	Discussion about preparation of concept note and area of work
2.	03.10.2007	Discussion with NGO and representatives from private firms at CSKHPKV, Palampur	NGO, RTDC, Palampur; Dhanuka Agritech Ltd., New Delhi and Pannacea International Ltd., New Delhi	Discussion on their role and participation in the consortium
3.	06.10.07	Meeting with Director of Research, CSK HPKV, Palampur at Palampur	All associates of consortia from CSKHPKV	Directions for preparation of concept notes
4.	08.10.2007	Discussion with NGO at CSKHPKV, Palampur	Gram Seva Shaktisabha Society, Dadhol, Bilaspur	Discussion on their role and participation in the consortium
5.	10.10.07	Meeting with Director of Research, CSK HPKV, Palampur at Palampur	All associates of consortia from CSKHPKV	Presentation of concept notes by the CPIs
6.	12.10.2007	Concept note submitted	-	-
7.	21.11.2007	Provisional selection of the concept note for full project proposal by NAIP	-	-
8.	28.11.2007	One day pre-stakeholder meeting held at NAARM, Hyderabad	CPIs of provisionally selected consortia	Sensitization for preparation of full project proposal
9.	13.12.2007	Interaction meeting with consortium partners under	CSKHPKV, IHBT, SKUAST, UHF	Discussion on the preparation

		the Chairmanship of Director of Research, CSKHPKV, Palampur at Palampur		of full project proposal
10.	26.12.2007	Interaction meeting with consortium partners under the Chairmanship of Vice Chancellor, CSKHPKV, Palampur at Palampur	CSKHPKV, IHBT, SKUAST, UHF IARI	Proposal presentation for comments of Vice Chancellor
11.	28.12.2007	One day stakeholder Interaction workshop held at NASC, New Delhi	CPIs of provisionally selected consortia	Sensitization for preparation of full project proposal
12.	04-05.01.2008	Interaction meeting with consortium partners at, CSKHPKV, Palampur	CPI, CCoPIs and Co-PIs of provisionally selected consortia	Preparation of full project proposal
13.	10-11.03.2008	TAG -2 Meeting (first), Krishi Anusandhan Bhavan, New Delhi	CPI, CCoPIs and Co-PIs	Presentation of project proposal
14.	7-8.04. 2008	TAG -2 Meeting (second), Krishi Anusandhan Bhavan, New Delhi	CPI, CCoPIs and Co-PIs	Presentation of revised project proposal
15.	22.04.2008	Discussion with representative of BDM (food processor) at CSKHPKV, Palampur	BDM, Una (H. P.)	Participation in the consortium for the production of value added vegetable products
16.	28-30.04.2008	Workshop on "Writing winning proposals" at NAARM, Hyderabad	CPI and Co-CPI	Formulation of proposal document for submission to RPC
17.	5-6. 05. 2008	RPC meeting at Krishi Anusandhan Bhavan, New Delhi	CPI, CCoPIs and Co-PI	Presentation of project proposal in RPC
18.	23-24.06. 2008	Cost Committee Meeting at Krishi Anusandhan Bhavan, New Delhi	CPI, CCoPIs and Co-PI	Discussion on various aspects of the budget
19.	31.07.2008	Project Management Committee meeting at Krishi Anusandhan Bhavan, New Delhi	CPI and Co-PI	Discussion on various aspects of project implementation

13. Measures to Address the Issues:

A matrix on E&S Management Safeguard Framework has been prepared. Trainings to stakeholders participating in the sub-project viz. master trainers (NGOs and SHGs), farmers and entrepreneurs on awareness about the use of biopesticides for clean vegetable production, mass production and use of IPM technologies including Trichogramma will be conducted. Supply and utilization of plant species namely, *Melia* and *Eupatorium* for biopesticide production and the related risk will be addressed.

Farmers will be educated for adoption of good agricultural practices (GAP) with extensive use of IPM technologies including biopesticides for the production and marketing of clean vegetables and the value added products. In the lean periods of supply of vegetables biodegradable packaging will be popularized.

14. Consultation/ disclosures to be done in future:

Local disclosure through mechanisms such as launch workshop, interfaces during the implementation stage of the sub-project for sharing the results and soliciting feed-back, one will circulate project brochures and implementation progress from time to time, putting up annual reports on the web site and annual stakeholder workshops wherever feasible. The consultation/ disclosures will be done as per NAIP guidelines depending on the progress of the project. Training, demonstration programmes and workshops on various themes relevant to biopesticides production and utilization. The project findings (brochures/ CDs/ videos/ literatures) will be disclosed time to time and necessary feed back will be collected for further improvement and better implementation. Assistance of different related organizations will be taken.

a. Dissemination of biopesticides and their utilization through extension services and other partners to farmers.
b. Demonstration of new product preparations to stakeholders.
c. Transfer of technology w. r. t. production of ‘clean’ garden pea and cabbage, and their processing to stakeholders.

d. Dissemination of information and sensitization of line departments of state government and project partners for biopesticides promotion.
e. Popularisation through information dissemination on safety of developed products to the consumers.
f. Information dissemination through mass and print media on food and environmental safety.
g. Linkages with financial institutions will provide adequate financing to entrepreneurs for their commercial activities. Both print and other media will be fully utilized to attain the desired goals and objectives.
h. NGOs will play a major role along with the rural social institutions in imparting skills to small-scale entrepreneurs and farmers.

Consortium PI	**National Coordinator**	**National Director**

ANNEXURE - I

Environmental safeguards: Activities, issues, impact and mitigation measures

Activities	Issues	Anticipated level of impacts		Mitigation measures (Negative impacts)
		Positive	Negative	
Fine tuning of production technologies for bioagents	Production of bioagents	5	-	NA
Production technology of biopesticides from plants	Utilization of plant species namely, *Melia* and *Eupatorium* for biopesticide production	-	1	Encouraging plantation of *Melia* by the stakeholders and utilization of *Eupatorium* in phased manner
Value addition in vegetable crops through biopesticidal interventions	Development of good agricultural practices for the production of clean vegetables	4	-	NA
Environmental safety of biopesticides	Toxicity to non-target organisms	4	-	NA

ANNEXURE - II

Social safeguards: Activities, issues, impact and mitigation measures

Activities	Issues	Anticipated level of impacts		Mitigation measures (Negative impacts)
		Positive	Negative	
Popularization of biopesticides, clean vegetables and value added products	Skill upgradation in clean and safe production technology of vegetables	5	-	NA
Development of entrepreneurship	Entrepreneurship development and commercialization of bioagents for income generation	4	-	NA
Public–private linkage	Set-up of public–private linkage for commercial production of biopesticides and pesticide free vegetables and their processing	5	-	NA
Identification of farming system and natural resources	Socio- economic impact assessment through benchmark survey	5	-	NA