

“A Value Chain on Linseed: Processing & Value Addition for Profitability”

Environmental and Social Safeguards Management

A. Basic Information

1. Project statistics:

Component code	:	2
Name of Consortium Leader	:	Dr. N. G. Hegde
Name of CPI	:	Mr. Ramesh Rawal
Name of CoPI	:	Dr J. M. Doke
Institution	:	BAIF Development Research Foundation
Mailing address	:	BAIF Bhavan, Dr. Manibhai Desai Nagar, NH-4, Warje, PUNE- 411058. Telephone No: 020-25231661 Fax No. 020-25231662 Email:rawal.ramesh@gamil.com, nghegde@baif.org.in
Consortium partners	:	1. Dr. Panjobrao Deshmukh Krishi Vidyapeeth, Akola (PDKV), 2. Bharati Vidyapeeth University, Pune (BVU)
2. Proposed date of Start	:	1 st April 2009
3. Planned duration	:	3 years & 3 months
4. Project cost	:	Rs. 3.78 Crores

5. Project objectives:

1. Introduction of high yielding and disease resistant varieties of linseed crop
 2. Processing of linseed crop for omega 3 oil, and omega-3 by-products.
 3. Recovery of Lignan from linseed cake for pharma application and use of Linseed cake and straw for animal feed.
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6. Brief project description:

The proposed project “**A Value Chain on Linseed: Processing and Value addition for Profitability**” will be undertaken by BAIF Development Research Foundation, Pune (lead centre) and two partners, PDKV (SAU) and BVU (Private University). All these partners are carefully chosen for manageability and to deal the targeted linseed crops with special emphasis on omega 3 oil extractions and its value addition for which complete thorough model will be developed. PDKV and BVU partners attribute their competence by virtue of their leadership in their respective fields. Dr. Panjobroa Deshmukh Krishi Vidyapeeth, AICRP unit of linseed Nagpur is the premier State Agricultural University on excelling in linseed crop research and management. BVU is who has good research background in biochemical analysis, value addition of linseed and its by-products. They also have a patent on omega 3 oils stabilization in linseed. EnSings Health Care Pvt. Ltd, Pune have a strong network of market linkages and will be involved as associate partners/stakeholders in this project.

The project consists of three objectives. The first objective aims to introduction of high yielding and disease resistant varieties of linseed crop (with technical backstopping), procurement and primary processing for continuous supply chain management for commercial production of linseed. The interventions here are introduced high yielding and disease resistant varieties to the farmers. Seeds of identified improved farmers which contain high amount of omega 3 will be given to get high amount of omega 3 oil containing linseed crop. Further, new screening of germplasm for suitable for specific products will be identified through chemical analysis of selected linseed varieties under the researchable issue.

Second objective aims at processing of linseed crop for omega 3 oil, and omega-3 by-products. The extraction of omega 3 rich linseed oil will be done by using sophisticated cold press extraction unit followed by highly efficient electromagnetic vacuum drying system. The Electromagnetic vacuum drying system will help to remove the moisture from the linseed without affecting the nutritional value of the oil. BVU will undertake studies on omega 3 content, protein estimation, fatty acids etc. its quality control and nutritional evaluation and safety certification of the linseed products. Based on inputs from a market survey, the potential products will be identified which can be marketed in various market segments as “broad-spectrum” products, niche products and products for non-conventional markets for these linseed oil. Such products will be upscale, packed, labelled and marketed. It is aimed to identify suitable packaging materials and packaging interventions to enhance better

marketability of linseed products. Feed-back on consumer preference will be elicited to make necessary modifications and also target them to new markets. Value-addition of by-products utilization is envisaged, to increase the profit of enterprises.

Third objective involves recovery of Lignan from linseed cake for pharma application and use of Linseed cake and straw for animal feed. Emphasizes on value-addition, which is brought about by extraction of lignan for pharma application by research. The use of linseed cake and straw for animal feed will be formulated through research

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

- Adoption of improved package of practices in a holistic way may be a problem if funds are inadequate.
- Marketing of Omega 3 enriched linseed oil may be a difficult, as it is an emerging health concept.
- Conflict of interest in using linseed for industrial and feed purposes *vis-a-vis* linseed for food uses in future.
- Training programmes on linseed processing in new technology for Omega-3 rich oil.
- Emergence of new markets on omega 3 rich linseed oil and its by-products in future.
- Availability of partners to carry out the programme on a upscale for commercialization.
- Developing and standardization of process of recovery of Lignan from Linseed cake is a challenge in the project.
- Consumer's response may not be overwhelming, without very active promotional exercise.
- Process of supplementation / fortification of various good items with Omega-3, will need further adoptive research

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):

- Omega-3 rich food intake will help due to their therepeutical value among cardiovascular problems, diabetes prone and obese affected populations both in urban and rural areas.
- High potential direct impact would be on household food and livelihoods security of dryland poor farmers is assured through replication of more such models on linseed value chain.
- The indirect benefits will be sustainability of linseed cultivation with better prices in dryland regions of the country, offering fodder security for livestock including meat animals with better productivity and efficiency and dairy production and human food supplementation with Omega-3.
- Increased linseed cultivation will be at the cost of replacement of other crops. Obviously less remunerative crops will be replaced.
- Development of rural feed sector with better utilization of feed resources and increased animal production.
- Awareness of farmers for achieving better returns with improved marketing approaches.
- 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:

Public Institution

Dr. Panjobrao Deshmukh Krishi Vidyapeeth, Akola

Private participation:

Bharati Vidyapeeth University

EnSings Health Care Pvt. Ltd, Pune

International institutes:

Saskatchewan University, Canada

Preliminary discussions were held with few stakeholders and NGOs 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 & full proposal

S. No	Date & Location	Programme	Participants	Remarks
1	28 May, 2008	Brainstorming session on NAIP consortium on linseed and medicinal plant	AICRP linseed Nagpur, PDKV IRSHA, BVU, Pune and Saskatchewan University, Canada	to evolve broad contours of linseed and medicinal plant consortium
2	30 May 2008	Meeting on draft proposal on linseed and medicinal plant project	AICRP linseed Nagpur, PDKV IRSHA, BVU, Pune and Saskatchewan University, Canada	Discuss about joint work on linseed and medicinal plant processing and its value addition
3	27 Aug. 2009	Discussion on linseed processing and its value addition	AICRP linseed Nagpur, PDKV IRSHA, BVU, Pune	Discuss on different value added products of linseed
4	10 Oct. 2008	Discussions on role of BVU in the project	IRSHA, BVU	Discussing the possibilities of linseed value addition and quality control
	23-24 Oct. 2009	Interaction Workshop, the 2 nd Meeting of the Expert Group		To discuss about the detailed project with budget details
5	25-27 Sep. 2008	3 days interaction workshop, NAARM, Hyderabad	National Director & Coordinator(Comp - 2), NAIP, others include BAIF, Pune, AICRP linseed Nagpur, PDKV and IRSHA, BVU, Pune	To discuss about the detailed technical programme of the proposal and fixing responsibilities to the partners associated with the project
6	6-7, Nov. 2009	Expert group meeting	BAIF, Pune, AICRP linseed Nagpur, PDKV and IRSHA, BVU, Pune	Discussed the value chain of linseed and its by products
7	17 Dec. 2008	3 rd Meeting of the Expert Group, New Delhi	BAIF, Pune, AICRP linseed Nagpur, PDKV, IRSHA, BVU, Pune and Saskatchewan University, Canada	To discuss the revised proposal
8	20 Jan. 2009	RPC meeting	BAIF, Pune, AICRP linseed Nagpur, PDKV and IRSHA, BVU, Pune	Value chain on linseed has been approved
9	10 Jan. 2009	Discussions on role of AICRP linseed, PDKV in the project	AICRP linseed Nagpur	Discussing the possibilities of seed production of linseed and its GAP

S. No	Date & Location	Programme	Participants	Remarks
10	6 Feb. 2009	PMC meeting at New Delhi	BAIF, Pune, AICRP linseed Nagpur, PDKV and IRSHA, BVU, Pune	To discuss about the detailed technical programme of the proposal and value chain

13. Measures to Address the Issues:

A document on Safeguard Matrix has been prepared. Farmers' Education and Training on the use of IPM and INM will be conducted for the participating Farmers in the sub-project.

Awareness of risk related factors will be addressed to the stakeholders through orientation sessions on topics such as adoption of improved package of practices in a holistic way, using technologies such as harvesting at physiological maturity & artificial drying to circumvent problems of marketing of linseed, educate them to safeguard the conflicting interests of food uses *vs* industrial purposes by diverting grains only when it becomes unfit for human consumption thus coming out of food chain.

14. Consultation/ disclosures to be done in future:

Local disclosure through mechanisms such as launch workshop, interfaces during the implementation stage of the subproject 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. Participating farmers will be trained through demonstration programmes and workshops on various themes relevant to farming including use of IPM & INM, primary processing, post-harvest product preparations, nutritional benefits awareness, recipe making, marketing aspects *etc.*

The project findings (brochures/ CDs/ videos/ literatures) will be disclosed time to time and necessary feedback will be collected for further improvement and better implementation. Assistance of different related organizations will be taken.

1. Dissemination of holistic crop management and extension services to participating farmers specifically IPM & INM through training & education programmes.
 2. Demonstration of new products preparations to stakeholders.
 3. Demonstration of commercially viable Omega-3 rich linseed oil technology
 4. Process of Lignan extraction from Linseed cake will be demonstrated
 5. Transfer of technology of value-added health foods to stakeholders
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6. Dissemination of information and sensitization of line departments of state and central governments to policy makers, planners and project partners for enhancement of linseed production
7. Popularisation through information dissemination on safety of developed products to the consumers.
8. Information dissemination through mass and print media on health and nutritional benefits to stakeholders, targeted groups especially cardiovascular, diabetic and obese urban consumers.
9. Linkages with financial institutions will be enabled so that as when requested the entrepreneurs are adequately financed for their commercial activities. Both print and other media will be fully utilized to attain the desired goals and objectives.

Consortium PI

National Coordinator

National Director

Annexure I

Environmental safeguard: Activities, issues, impact and mitigation measures

Activities ¹	Issues	Anticipated level of Impacts ³		Mitigation measures (Negative Impact) ⁴
		Positive	Negative	
On farm production for specific high yielding Varieties /Crop diversification	Yield increase	4		
	Positive effect on use & availability of water resources	4		
	Positive effects of change in cropping pattern on soil, water and environment	3		
	Effect on agro biodiversity-fodder availability increased	2		
Integrated farm extension services with buy-back	Crop management is in place with training on crop management to participating farmers	5		
Transport and processing of produce	Clean grain for marketing	4		
Fine-tune technologies for development of linseed products				
By-product value addition	By-product utilization in place	4		
Standardize extraction of omega 3 rich linseed oil for mass scale supply	cardiovascular disease people – suitable food made available	4		
		4		
Assessment of nutrient composition in linseed oil and its by products.	Human health-food chain labeling available	5		
Sensitizing line departments of governments for enhancing linseed production	Nutritional security is in place	5		
Entrepreneurship development of stakeholders for intensive cultivation, product development, mechanization	Health brand promotion in place	4		
Value-addition through branding of linseed as health foods by training and popularization.	Health brand promotion in place	4		

Social safeguard: Activities, issues, impact and mitigation measures

Activities ¹	Issues	Anticipated level of Impacts ³		Mitigation measures (Negative Impact)
		Positive	Negative	
Base-line survey	Availability of accurate bench mark information		2	Participatory approaches for data collection will be carried out
On farm production for specific end uses –use of linseed varieties	1.Change in occupational patterns	2		
	2. Unequal access to inputs		2	
	3.Hike in income	4		
Integrated farm extension services	Effective crop management practices in place	4		
Buyback assurance	Market assurance is in place	5		
Procurement of grain from farmers	Adulteration in supply of grain by farmers (mixture of various grain grades)		2	Fair average grain quality defined
	Insufficient quantities available for procurement due to low marketed surplus		3	*Targeted farmers may be given higher acreage of linseed to increase marketed surpluses
Aggregation, transportation and processing of produce from selected cluster	Supply-chain management is in place for commercialization	4		
Product(s) for wide-spread markets & niche markets	Clear market segmentation of different products	3		
Standardize combinations for value added linseed products by fortification of milk, chocolate, honey etc.	Nutrition through multi-source of food	3		
Evaluation of linseed cake and straw for animal feed	Availability of feed for animals	3		
Assessment of nutrient composition in omega 3 rich linseed oil	Market for omega 3 linseed oil due to increased consumer	4		

	awareness on nutritional composition.			
Identification of number of potential food products for wide ranging and niche markets through market survey	Few and potential linseed value added products identified and are prioritized for potential markets.	4		
Pricing of the developed food products	Increased profits from linseed oil and value added products	3		
Sensitizing line departments of governments for enhancing linseed production	Nutritional security can be achieved	2		
Entrepreneurship development of stakeholders for intensive cultivation, product development, mechanization.	Hike in income	3		
Taking demo units of processing to field	Higher adoption	3		
Value addition through branding of linseed as health foods by training and popularization.	Health and nutrition is linked with linseed products	4		

*This will be implemented from Rabbi 2009-10 as this is lesson learnt in past season in component 3