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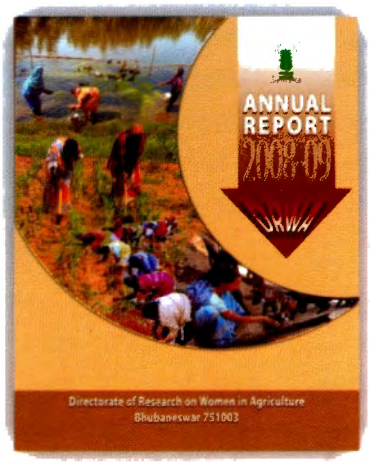
Directorate of Research on Women in Agriculture
Bhubaneswar 751 003

DRWA

Annual Report 2008-09



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Preface

It is a matter of pride that the National Research Centre for Women in Agriculture has been upgraded as the Directorate of Research on Women in Agriculture in 2008. The Sub-centre located at Bhopal was brought under the administrative control of the Director, DRWA. This structural change facilitated merging of All India Coordinated Research Project on Home Science and initiation of network projects in the thematic areas to address the subject matter on a multi-disciplinary and multi-locational basis.

In addition to in-house projects, research was carried out under inter-institutional projects, network projects, externally funded projects and World Bank aided NAIP. Realising the complimentary and supplementary roles that are essentially to be played by farmwomen and farmer for sustainable agriculture and family life, more emphasis was laid on gender mainstreaming than exclusively on women empowerment. The projects initiated during the year covered different sectors of agriculture mainly crop production, horticulture, livestock production and management, fisheries, agricultural engineering and social science by 15 scientists in position working under 13 ARS disciplines. Recognizing the capabilities of DRWA in gender research in agriculture the World Bank sanctioned an additional component under NAIP on V-PAGe to address gender in the Sustainable Rural Livelihood Projects under component-III. This also gave an opportunity for the capacity building of DRWA scientists with the support of IFAD facility grant and IRRI expertise.

I express my gratitude to Dr Mangala Rai, Secretary, Department of Agriculture Research and Education and Director General, Indian Council of Agricultural Research, for his keen interest in strengthening the activities of the Directorate. I am also grateful to Dr P.Das, Former Deputy Director General (Agricultural Extension), ICAR, for his consistent support and guidance in the formulation of projects and programmes of the Directorate under the XI Five Year Plan. Thanks are also due to Dr H.P. Singh, Deputy Director General (Horticulture) who has been in-charge of the Agricultural Extension from January-March 2009 and Dr K.D. Kokate, present Deputy Director General (Agricultural Extension) for their encouragement and guidance in accomplishing the mandated activities of the Directorate.

I appreciate the efforts taken by the members of the Editorial Board of the Annual Report and all scientific, technical and administrative staff for their research contribution and support in achieving the targets set for the year.

Krishna Srinath
Director
Directorate of Research on Women in Agriculture,
Bhubaneswar

November 2009

कार्यकारी सारांश

निदेशालय के अधिदेश व उद्देश्यों को ध्यान मे रखते हुए, कृषिरत महिलाओं के सशक्तिकरण व उनकी कृषि व इससे सम्बन्धित कार्यो में क्षमता बढाने, उनका कौशल व ज्ञान वृद्धि के लिए इस वर्ष निदेशालय में 11 संस्थानिक परियोजनाएं, चार नेटवर्क परियोजनाएं व दो वाह्य पोषित परियोजनाएं कार्यान्वित की गई। इनसे प्राप्त मुख्य जानकारियों का संक्षिप्त विवरण निम्न हैं।

कृषि में लिंग से सम्बन्धित सूचना प्रणाली के उर्न्तगत एक 'लिंग ज्ञान केन्द्र' (http://knowledgecentre.drwa.org.in) विकसित किया गया है जिस पर लिंग सम्बन्धी प्रत्ययात्मक, पृष्ठभूमि, पहुँच व विश्लेषण, प्रारुप, लिंग सम्बन्धी अन्य सूचना एवं सांख्यिकी उपलब्ध है। कृषिरत महिलाओं से सम्बन्धित एक आंकड़ों का भण्डार / आधार विकसित गया है जिसमें विभिन्न प्रदेशों की कृषिरत महिलाओं का जमीन की उपलब्धता के अनुसार, उनकी गतिविधियों के अनुसार कार्य प्रारुप, निर्णय प्रारूप बनाया गया है। दुनिया के विभिन्न देशें में की गई लिंग सम्बन्धी अध्ययनों का भी संग्रह किया है। तथा प्रंसग व वर्ष सम्बन्धित सूचनाओं को प्राप्त / देखने के लिए मैत्रीपूर्ण एक सरल अंत:किया विकसित की गई है।

धान की खेती में लिंग की सहभागिता व प्रत्यक्षज्ञान का विश्लेषण किया गया। जिससे ज्ञान हुआ कि धान की खेती से सम्बन्धित विभिन्न गतिविधियों में लिंग सम्बन्धी सहभागिता में विभिन्नता है। तथा अधिकतर गतिविधियाँ पुरूषों से सम्बन्धित है। महिलाओं की सहभागिता पौध रोपड़, धान की कटाई व सुखाई, बीज का भण्डारण व उसकी देखभाल में अधिक है। उडीशा राज्य में अनाज व दालों के भण्डारण से सम्बन्धित विभिन्न तकनिकियों का पता लगा कर उनका संकलन किया गया है। इससे यह देखा गया कि कुछ महिलाएं उन कीटनाशकों का भी प्रयोग कर रही है। जिन पर रोक लगी हुई है तथा वह भी बिना किसी व्यक्तिगत सुरक्षा कवच के।

फसलों को उगाने की पसन्द तथा फल-सब्जी की फसलों को उगाने के कार्यो - का विश्लेषण किया गया तथा पाया गया कि आम, केला, कटहल, नारियल, अमरूद सबसे अधिक पसन्द किये जाने वाली फसलें हैं। महिलाएं अधिकतर केला व पुरूष आम के उत्पादन में रूचि रखते है। महिलाएं अधिकतर छोटे व स्थानीय स्तंर पर उगने वाले फलों का उत्पादन पसन्द करती हैं। जबकि पुरुष व्यापारिक फलों का उत्पादन करना पसन्द करते हैं। सब्जियों में महिलाएं कद्दू, भिण्डी, तौरई, बैंगन इत्यादि उगाना पसन्द करती हैं। जबकि पुरूष टमाटर, भिण्डी, फूलगोभी इत्यादि उगाना पसन्द करते हैं। अन्य फसलों में हल्दी व अदरक की फसलों को अधिक पसन्द किया गया।

निदेशालय के खेतों (फार्म) में विभिन्न प्रकार के फल आधारित विभिन्न फसल प्रणालियों को चयन कर लगाया गया है। चार अमरूद आधारित माड्ल जिसमें अमरूद की चार विभिन्न प्रजातियों को चार अन्य फसलों जैसे भिण्डी, लोबिया, हल्दी व अनन्नास के बीच में अध्ययन हेतु लगाया गया है। अध्ययन से ज्ञात हुआ है कि अमरूद की इन चार प्रजातियों के विकास पर विभिन्न फसलों के बीच में लगाने से कोई महत्वपूर्ण प्रभाव नही पड़ा है। परन्तु विभिन्न चार फसलों के उत्पादन पर अमरूद की इन चार प्रजातियों का प्रभाव पड़ा है। भिण्डी व लोबिया का उत्पादन कम हुआ जब इनके बीच में इलाहाबाद सफेदा व लखनउ - 49 अमरूद प्रजातियाँ लगायी गई। सारे समीकरणो में, अमरूद व हल्दी सबसे अधिक, व इसके बाद अमरूद व लोबिया का उत्पादन हुआ।

पाँच आम आधारित फसलें जिसमें आम की पाँच विभिन्न प्रजातियाँ जैसे दशहरी, लँगड़ा, गुलबक्स, मल्लिका व आम्रपाली का प्रयोग, पाँच बीच में लगने वाली फसलों जैसे भिण्डी, लोबिया, टयूबरोज, अरबी व गैंदा का आंकलन किया गया। इन सभी समीकरणों में आम- गेंदा सबसे अधिक फायदेमन्द रहा। मिले जुले फल समूह में जैसे छोटे व शुष्क जमीन के फलों में जैसे सीताफल, बेल, आँवला, चीकू व नीबू में आँवला व नीबू में सबसे

अधिक वृद्धि प्रदर्शित हुई अपेक्षा बेल, चीकू व शीताफल के / नारियल आधारित फसल प्रणाली में, नारियल की पाँच प्रजातियाँ की वृद्धि में महत्वपूर्ण अन्तर पाया गया। इनके बीच में लगाने वाली फसलें जैसे ग्लेडियोलस, मटर, मूली व धनियाँ थी।

हर मौसम में खर-पतवार का रोकने में पोलिथिलीन की पलवार अन्य सभी उपायों की अपेक्षा सबसे अच्छी पायी गई। अमरूद में खर-पतवार को निकालने में रेक की क्षमता हाथ की खुरपी नौ गुना अधिक पाई गई। परन्तु खर-पतवार की गहराई व गुणवत्ता हाथ की खुरपी से निकालने में अधिक अच्छी थी। पहियों युक्त गुणाई यन्त्रों अमरूद के लिए उपयुक्त नहीं पाया गया। कटाई के विभिन्न यन्त्रों में भिण्डी काटने वाला यन्त्र, हाथ अथवा कैंची से तोड़ने की अपेक्षा अधिक अच्छा पाया गया।

महिलाओं को उन्नत गुणवत्ता के बीजों के उत्पादन व सब्जियों की कलम तैयार करने में सशक्तिकरण के लिए, उड़ीशा राज्य के चार ग्रामों से ४० महिलाओं का चुनाव किया गया जो कि बीजों के उत्पादन में पहले से ही व्यस्त थी।

शिशुओं के लिए अनाज, दाल, दलहन व शकरकन्दी को मिला कर सस्ता पूरक आहार तैयार किया गया है। इसका प्रदर्शन खुर्दा व पुरी जिले के छ: ग्रामों से चयनित 219 महिलाओं को दिया गया। करीब 70 प्रतिशत महिलाओं ने इस तकनीकी को स्वीकार किया। यह देखा गया है कि उड़ीशा के ग्रामीण क्षेत्रों में महिलाएं अपने शिशुओं की गाय के दूध की अपेक्षा पाउडर दूध देना अधिक पसन्द करती है। क्योंकि उनका सोचना है कि गाय का दूध शिशुओं में सर्दी व खाँसी की समस्या उत्पन्न करता है।

क्रेब को मोटा करने का प्रर्दशन चिलिका के दो स्थानों पर महिलाओं को दिया गया। महिलाओं को प्रशिक्षण में स्वंय करके सीखने दिया गया, इसमें उन्हें मुलायम क्रेब का पता लगाना, उनका लिंग जानना, क्रेब को खाना खिलाना व अन्य रख-रखाव व तालाब के प्रबन्धन के कई जानकारियाँ दी गई। इन चयनित स्थानों पर क्रेब को तालाब में सितम्बर से दिसम्बर 2008 के बीच छोड़ा गया था जिन में लगभग रु. 2625 व रु. 1572 का लाभ हुआ।

विस्तार मॉडल में वी.पी.ई.डब्ल्यू.एस. का प्रयोग कर उनके कार्य करने के तरीके का अध्ययन छ : मास के अन्तराल से किया गया। अध्ययन में पाया गया कि उनकी विस्तार सेवाओं में काफी सुधार हुआ है विशेषकर कृषिरत महिलाओं के / महिला कार्यकर्ताओं (वी.पी.ई.डब्ल्यू.एस) के द्वारा समूह में सर्म्पक करना अधिक पसन्द किया गया। जबकि पुरूष वी.पी.ई. डब्ल्यू.एस व्यक्तिगत सम्पर्क करना अधिक पसन्द करते हैं। महिला वी.पी.ई.डब्ल्यू.एस. ने जनता से बात-चीत करने की क्षमता अधिक ग्रहण की जबकि पुरूष वी.पी.ई.डब्ल्यू.एस. इनसे पीछे रहे। परन्तु महिला वी.पी.ई.डब्ल्यू.एस. सूचना के प्रसारण व खबर को सही तरीके के बारे में पुरुष वी.पी.ई.डब्ल्यू.एस. से पीछे रहे। सभी चयनित सोलह कारकों जो कि इनकी क्षमता में बदलाव के लिए आवश्यक है उनमें महत्वपूर्ण बदलाव पाया गया।

कृषक महिला मजदूरों ने विभिन्न कृषि - सम्बन्धित उद्यमों में से मशरूम उत्पादन को सबसे अधिक पसन्द किया क्योंकि इनका उत्पादन करना सरल है व आय भी अच्छी होती है। इसके अतिरिक्त उन्होंने धान - प्रसस्करण में भी रूचि दिखायी जो कि चावल उबालने के यन्त्र द्वारा किया जाता है। परन्तु उन्होने सोलर ड्रायर व दाल की 'बडी' बनाने के व्यवयाय को अधिक पसन्द नही किया।

पशुओं के उत्पादन व उनसे सम्बन्धित गतिविधियों में महिलाओं की भूमिका, भागीदारी व इससे सम्बन्धित पारम्परिक ज्ञान के बारे में उड़ीशा, आसाम, नागालेंड व उत्तर प्रदेश में अध्ययन किया गया। पशुओं की दवाईओं व खाने की उच्च-दर के बारे में महिलाओं द्वारा कठिनाई व्यक्त की गई। अध्ययन क्षेत्र में पाया गया कि महिलाएं अपने परिवारों में भेड़-बकरी पालने के सम्बन्ध में अधिकतर निर्णयों को प्रभावित करती है। पिछवाड़े में मुर्गी

पालन के लिए रसोई में बचा खाना व अनाज के दानों के साथ-साथ अजोला का भी प्रयोग किया जाता है। चारा उत्पादन तकनीकी का निदेशालय के फार्म / खेतों में प्रदर्शन किया गया जिससे सम्बन्धित व्यक्तियों का कौशल विकसित हो सके।

आसाम राज्य में गाय-भैस, भैड़ व बकरी पालन अधिकतर पारम्परिक तरीकों द्वारा किया जाता है। किसान अधिकतर दो प्रकार के सुअरों को पालते है तथा काले रंग की प्रजाति को अधिक पसन्द करते हैं।

नागालेंड में आमतौर पर सूअर पालने का प्रचलन है। चाहे परिवार गरीब हो या सम्पन्न। किसानों द्वारा इनके पालन में जो अधिकतर समस्याएं आती हैं वह अच्छी नस्ल वैज्ञानिक पद्धति, इनके लिए घर तैयार करना व स्वास्थ्य सम्बन्धी इत्यादि हैं।

उत्तर प्रदेश में महिलाओं की पशु प्रबन्धन में सबसे अधिक भागीदारी पशुओं को खाना देना व पशुओं से प्राप्त संसाधनों के प्रबन्धन में पायी गई। जबकि पशुओं के स्वास्थ्य सम्बन्धी, चारा पैदा करना व प्रजनन में महिलाओं की भागीदारी मध्यम स्तर की पायी गई।

चार नेटवर्क-परियोजनाएं प्रारम्भ की गई हैं। इनमें परिषद के विभिन्न संस्थानों, कृषि विश्व-विद्यालयों को सम्मिलित किया गया है। यह परियोजनाएं हैं - धान आधारित पैदावार प्रणाली में लिंग सम्बन्धीय तत्थ्यों को तथा चयनित तकनीकियों का महिलाओं के परिपेक्ष में परिषकृत करना, लिंग सम्बन्धी बातों का आंकलन, फल-फूल व सब्जियों की फसलों में महिलाओं के परिपेक्ष में आंकलन व परिषकृत करना, पशुपालन में महिलाओं के लिए जीविका के साधन बढ़ाने व विशेषज्ञ प्रणाली द्वारा फसलों व पशु सम्बन्धी उद्योगों में विकसित करना।

गृह विज्ञान पर अखिल भारतीय समन्वित अनुसंधान परियोजना में लिंग सम्बन्धी आंकड़ों का आधार तैयार करना, कृषिरत महिलाओं के प्रशिक्षण के लिए माड्यूल तैयार करना, कृषि कार्यो में महिलाओं की एकरसता व उदासीनता को तकनीकी प्रयोग द्वारा दूर अथवा कम करना, पोषण सुरक्षा, परिवारों में स्वास्थ्य सुरक्षा को बढ़ाना, किशोर युवतियों में व्यवसायिक कौशलों को विकासित करना, कम प्रयोग होने वाले प्राकृतिक रेशे, संसाधनों में मूल्य वृद्धि कर उनका प्रयोग बढ़ाना व जीविका सुरक्षा के लिए ग्रामीण महिलाओं का सशक्तिकरण इत्यादि पर मुख्य ध्यान दिया गया है। इस वर्ष 18-20 फरवरी 2009 को चौधरी चरन सिंह हरियाणा कृषि विश्वविद्यालय में इस परियोजना के अर्न्तगत एक कार्यशाला का आयोजन किया गया। जिसमें वर्ष 2007-08 व 2008-09 के दौरान किये गये कार्यो का आंकलन किया गया तथा परियोजना के तकनीकी कार्यक्रम को आनेवाले वर्ष के लिए सुनिश्चित किया गया।

राष्ट्रीय कृषि नवप्रवर्तन परियोजना के अन्तर्गत दूरदृष्टि योजना विश्लेषण व लिंग (V-PAGe) परियोजना में एक वैचारिक प्रारुप विकसित किया गया है। जो कि लिंग और कृषि में अनुसंधान व विकास के सम्बन्ध को प्रर्दशित करता है। जैव प्रौद्योगिकी विभाग द्वारा पोषित समन्वित मत्स्य पालन द्वारा ग्रामीण महिलाओं का आर्थिक उत्थान परियोजना पुरी व कटक जिले के तीन ब्लाकों में संचालित है। जिसमें ६.० हेक्टेयर पानी का क्षेत्र व 251 महिलाएं लाभान्वित हुई है। समन्वित कार्प कल्चर को वैज्ञानिक प्रबन्धन के द्वारा सभी तालाबों में किया गया व महिलाओं को इसका प्रशिक्षण दिया गया। उपलब्ध संसाधनों व महिलाओं की रूचि के अनुसार मुर्गी व बतखों को भी मिला कर कार्य प्रारम्भ किया गया है। चयनित ग्रामों में पहली बार अजोला कल्चर को प्रारम्भ किया गया जिससे अजोला को मछली व बतखों के खाने में सम्पूरक आहार के तौर पर प्रयोग किया जा सके। 15 महिलाओं के एक समूह को अजोला कल्चर व खरगोश पालन के लिए प्रशिक्षण दिया गया।

महिलाओं के लाभ के लिए कृषि से सम्बन्धित विभिन्न विषयों पर प्रर्दशन दिये गये। निदेशालय की गति-विधियों के बारे में दूसरे राज्यों के किसान व महिलाओं को मीटिंग, प्रर्दशन, कार्यशालाओं का आयोजन कर उन्हें जानकारी दी गई तथा कृषि व इससे सम्बन्धित कार्यो में लिंग की भागीदारी व लिंग को मुख्यधारा में लाने के लिए जागरूक किया गया। कृषिरत महिला दिवस व हिन्दी चेतना दिवस को निदेशालय में मनाया गया। शौध सलाहकारी समिति, संस्थान प्रबन्धन समिति व संस्थान शोध समिति की सभाएं भी निदेशालय में की गई।

Executive Summary

Keeping in view its mission to generate knowledge, upgrade skills and empower women leading to enhanced efficiency in agriculture and allied sectors, the Directorate has implemented 11 in-house, 4 network and 2 externally funded projects in consonance with the mandated objectives of the Directorate. The salient outputs are summarized hereunder.

A gender information system for agriculture was developed and a portal named Gender Knowledge Centre (http://knowledgecentre.drwa.org.in) has been created that provides contents like theoretical and conceptual background knowledge about gender, approaches and analytical frameworks for gender analysis, gender related information and statistics. A database on women in agriculture pertaining to state wise, landholding wise and activity wise participation profile and decision profile of women has been created. A repository of gender related studies conducted in different parts of the world was developed. A user friendly interface has been developed to help access the theme wise and year wise references.

A gender analysis of participation and perception profile in rice farming was carried out, which highlighted gender difference in the extent of participation in various activities, majority of them being male oriented. Women's participation exceeded men in transplanting, drying of harvest at threshing floor, drying of produce at home, storing of seed and after care of seed. Various techniques followed in Orissa in storage of cereals and pulses have been identified and documented. It was noticed that in some cases the farmwomen were using banned pesticides that too, without personal protective equipments.

Analysis of crop preference for cultivation and reasons for the preferences of horticultural crops revealed that mango, banana, jackfruit, coconut and guava were the most preferred fruits. The women mostly preferred banana while men preferred mango. Women tend to prefer large number of minor and local fruits while men preferred commercial fruits. Among vegetables, pumpkin, okra, ridge gourd and brinjal were preferred by women, while men preferred tomato, okra and cauliflower. Among the other crops, turmeric and ginger were most preferred crops.

Various fruit based cropping models were planned, laid out and initiated at Directorate's farm. Four guava based models with four varieties of guava and four intercrops, namely, okra, cowpea, turmeric and pineapple were tested. There was no significant effect of different intercrops on the growth of different guava varieties. However the growth of intercrops was significantly influenced by different guava varieties. The yield of okra and cowpea was low when inter cropped with Allahabad Sufeda and Lucknow -49. Among all combinations, Guava- turmeric was found the most profitable followed by Guava- cowpea.

Five mango based models with five varieties of mango viz. Dashehari, Langra, Gulabkhas, Mallika, Amrapalli and five intercrops okra, cowpea, tube rose, colocasia and marigold were assessed. Among all combinations, mango-marigold was found most profitable. In the mixed fruit group consisting of minor and arid fruits viz. custard apple, bael, aonla, sapota and lemon , aonla and lemon showed higher growth than bael, sapota and custard apple. In the coconut based cropping system with five varieties of coconut, showed significant difference in the growth of different varieties. Different intercrops such as gladiolus, pea, radish, coriander were planted between these plants.

Polyethylene mulch was found best in controlling weeds than other treatments in all seasons. Women preferred grass mulch. In guava, weeding efficiency had increased nine times by rake as compared to hand hoe but the quality and depth of weeding was better in hand hoe while wheel hoe was not found suitable for guava. Among the harvesting equipments, the cutter was found better for harvesting of okra than plucker and secateur.

Towards technological empowerment of farmwomen in production of quality seeds and planting materials of vegetables, forty selected farmwomen from 4 villages in Orissa have been involved in seed production of vegetables.

Preparation of low cost weaning mix using cereals, pulses, oil seed and sweet potato was demonstrated in six villages of Khurda and Puri districts involving 219 mothers/farm women. Nearly 70% of the women accepted the technology. In rural Orissa, it was observed that mothers preferred powdered milk to their infants instead of cow's milk with the belief that cow's milk was cool in nature and caused cold and cough problem in infants.

Demonstration of crab fattening involving women was done at two sites selected in Chilika. Women were given hands-on training to identify the soft crab; identify the male and female crab; handling of crab; feeding and pond management. Stocking was undertaken during September to December 2008. A profit of Rs.2625 and Rs.1572 was recorded from the selected sites.

In the extension model, involving VPEWS, their performance was monitored at six monthly intervals and it was found that there was fair improvement in extension services provided particularly for farm women. Group contact was most preferred by women VPEWs, whereas it was individual contact for men VPEWs. Women VPEWs gained relatively more public speaking skill than men but lagged behind the men VPEWs with respect to communication process and correctness of the message. It was found that significant changes had taken place in all the sixteen selected parameters of change in capacity.

Among the agro-enterprises introduced to Women Agricultural Labourers (WALs) mushroom cultivation was found to be the most preferred owing to high profitability and being women friendly, followed by rice processing with par boiler. On the other hand, they were very much unhappy with the bodi making enterprise which was processed with the help of solar drier.

Studies were carried out in Orissa, Assam, Nagaland and Uttar Pradesh on resource base, traditional knowledge and participation of farm women in livestock production. The main constraints faced by the farmwomen were high cost of feed and medicines. Women in the study area were in general, enormously influential in shaping decisions in their private family domain, on almost all matters related to sheep and goat rearing. It has been established that Azolla can be supplemented for backyard poultry along with other food grains and kitchen waste. The fodder production technology was demonstrated round the year at DRWA farm for capacity building of various stakeholders. In Assam, by and large, cattle, buffalo, sheep and goats are reared under traditional system (extensive) of management. The farmers were rearing two types of pigs and had preference for black colour breeds. In Nagaland, rearing of pig was the usual practice in every family whether poor or rich. The major constraints perceived by the farmers were non availability of quality piglet

and feed, inadequate knowledge of scientific feeding, housing and health cover measures. In Uttar Pradesh, women's participation in livestock management was found high in the areas of feeding animals, management and preparation of livestock products. Their extent of participation was medium in case of health care and low in fodder production and breeding related activities.

Four network projects involving ICAR Institutes and SAUs under NARS were initiated and they deal with gender issues in rice based production system and refinement of selected technologies in women perspective; assessment of gender issues and identification and refinement of selected women specific technologies in horticultural crops; enhancing livelihood of rural women through livestock production and development of expert system for crop and animal enterprises.

The AICRP on Home Science focused on development of gender specific database, training modules for farm women, technology interventions for drudgery reduction in agriculture, nutritional security and health promotion of farm families, promoting vocational skills amongst adolescent girls, value addition to under-utilized natural fibre resources and empowerment of rural women for livelihood security. A three day Annual Workshop of the project was held at CCSHAU, Hisar from 18 to 20 February, 2009, where in progress of work and achievements during 2007-08 and 2008-09 were reviewed and presented. Technical programmes for the ensuing year and plan of action were also finalized.

In the project on Visioning, Policy Analysis and Gender (V-PAGE) under NAIP, a conceptual framework to depict the relationship between Gender and Agricultural R &D was developed. The project on economic upliftment of rural women through integrated fish farming sponsored by DBT was in operation in three blocks of Puri and Cuttack districts of Orissa and covering a total of 251 beneficiaries and in about 6.0 ha water area. Composite carp culture with scientific management was taken up in all ponds and the women were trained in the culture procedure. Ducklings and poultry birds were introduced for integration as per the resource availability and choice of the women group. For the first time azolla culture was introduced to supplement the feeding of ducks and fishes in selected villages. A group of 15 women were trained in azolla culture and rabbit rearing.

Various demonstrations were carried out on different aspects of agriculture for the benefit of farmwomen. The activities of the Directorate were explained to the farmers and farmwomen of various states through meetings, demonstrations, exhibitions and workshops, for creating awareness on gender participation and gender mainstreaming in agriculture and allied activities. The Women in Agriculture Day and Hindi Chetna Divas were observed. The meetings of RAC, IMC and IRC were conducted.

1. INTRODUCTION

1.1 Brief History

The Working Group on Agricultural Research and Education constituted by the Planning Commission for the formulation of the Eighth Five Year Plan (1992-97) recommended for establishment of a National Research Centre for Women in Agriculture (NRCWA). Accordingly, the Indian Council of Agricultural Research established the NRCWA in the month of April 1996 at Bhubaneswar and has since been upgraded as the Directorate of Research on Women in Agriculture (DRWA) from the year 2008. A sub-centre of DRWA is located at the campus of CIAE, Bhopal.

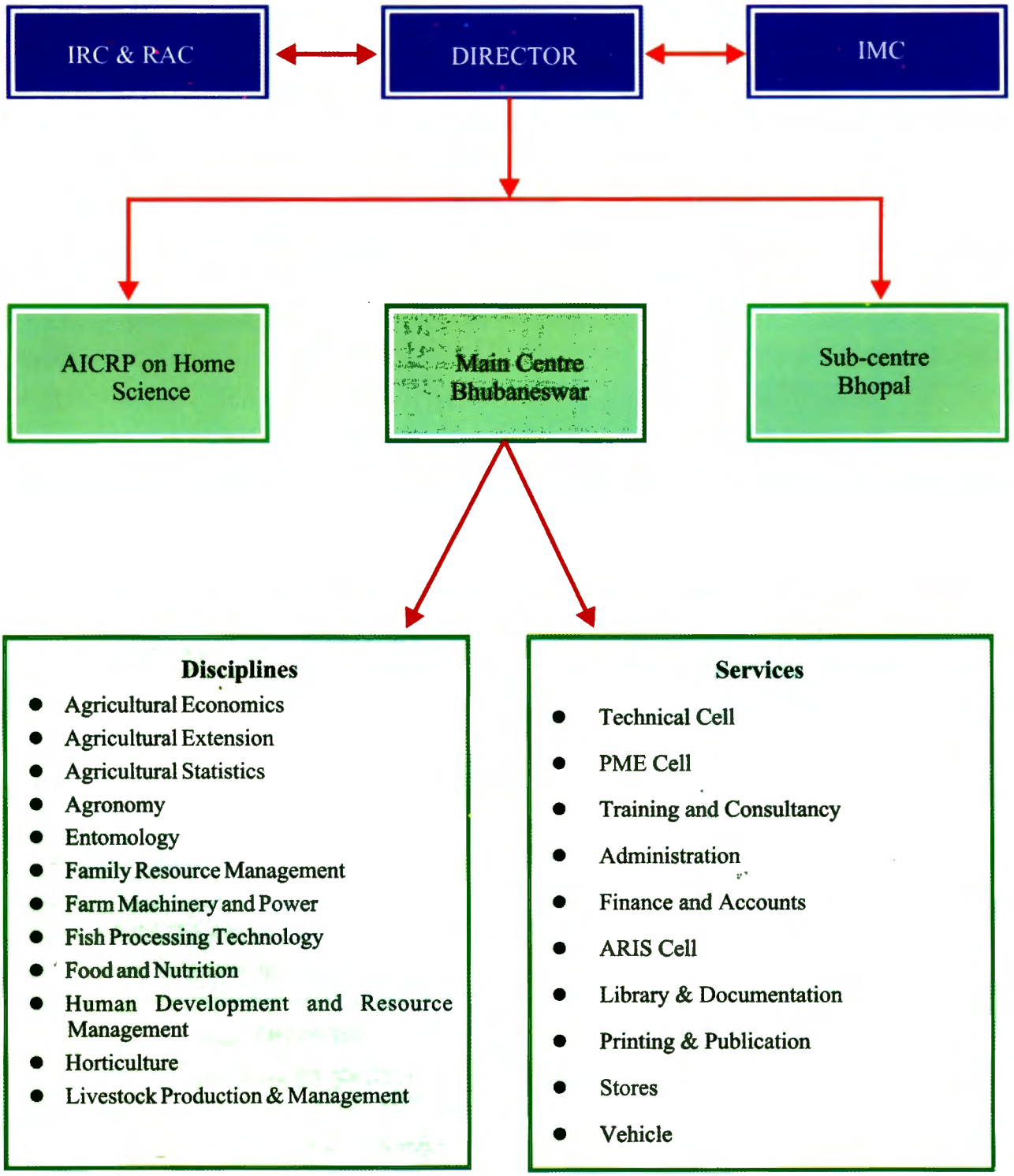
1.2. Mandate

Carrying out basic, strategic and applied research to identify gender issues and test appropriateness of available farmtechnologies/ programmes/policies with women perspective. To do training and consultancy for promoting gender mainstreaming in research and extension for empowerment of farmwomen and capacity building of scientists, planners and policy makers to respond to the needs of the farmwomen.

1.3 Objectives

- Conduct basic, strategic and applied research on gender issues in agriculture and allied fields.
- Create and maintain database on gender specific information about men's and women's role in food production and agriculture development for effecting technologies, programmes and policies.
- Test the appropriateness of farm technologies and programmes and policies in terms of gender sensitivity in collaboration with relevant national and international organizations and suggest suitable modifications.
- Develop drudgery reducing options for decreasing the workload and increasing the efficiency of women.
- Develop gender sensitive modules and methodologies for transfer of technology.
- Develop gender sensitive training modules and materials and impart trainings, seminars and workshops for capacity building of scientists, researchers, planners and policy makers for gender mainstreaming and practical application of gender related technologies.
- Develop and publish gender sensitive materials, create network linkage through journals and information sharing.
- Develop system of managing and sharing gender related knowledge to support institutions and government in their efforts to mainstream gender in policy and programmes; and
- Develop effective evaluation and monitoring arrangements for gender mainstreaming.

1.4 Organogram of DRWA



1.5. Budget and Expenditure (Main and Sub-centre)

(Rs In lakh)

Sl. No.	Head of Account	Plan			Non Plan		
		BE	RE	Exp	BE	RE	Exp
A.	Recurring						
1.	Establishment charges	0.00	0.00	0.00	98.00	153.00	152.24
2.	OTA	0.00	0.00	0.00	0.05	0.05	0.00
3.	Traveling Allowances	6.50	6.50	6.50	0.95	0.90	0.90
4.	Contingency	60.00	65.00	65.00	10.00	11.00	11.00
5.	Contingency for Network projects	0.00	10.00	10.00	0.00	0.00	0.00
6.	HRD	3.50	3.50	3.50	0.00	0.00	0.00
	Total (A)	70.00	85.00	85.00	109.00	164.95	164.14
B.	Non-recurring						
1.	Equipments	0.00	21.75	21.75	0.00	0.00	0.00
2.	Works	100.00	70.25	70.25	1.00	20.00	20.0
4.	Library	7.00	0.00	0.00	0.00	0.00	0.00
	Total (B)	107.00	92.00	92.00	1.00	20.00	20.00
	Total (A+B)	177.00	177.00	177.00	110.00	184.95	184.14

1.6 Manpower (Main and Sub-centre)

Category	Sanctioned	Filled	Vacant
Scientific	17	15	02
Technical	07	07	0
Administrative	08	06	02
Supporting	01	01	-
Total	33	29	4

2. RESEARCH ACCOMPLISHMENTS

2.1 CREATING A REPOSITORY OF GENDER DISAGGREGATED DATA AND DOCUMENTATION

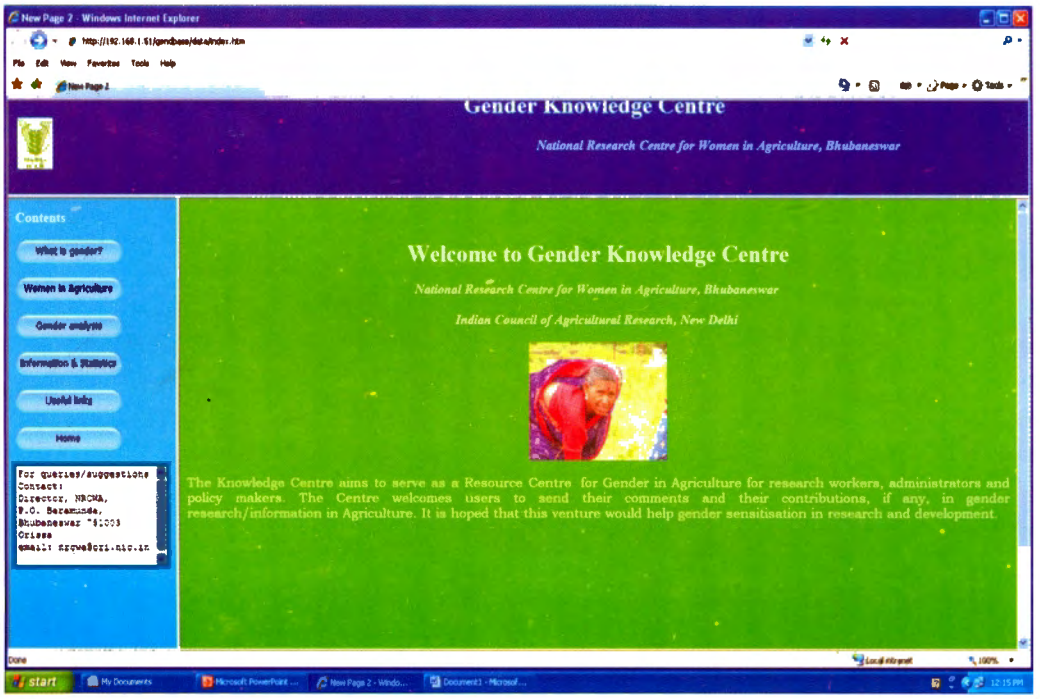
Development of gender information system for agriculture

H.K. Dash, M Srinath and Sabita Mishra

It is an inter-institutional collaborative project with IASRI, New Delhi, with the following objectives.

- Develop gender related database for agriculture and allied sectors
- Develop gender related information data products
- Develop user friendly information retrieval system

Gender Knowledge Centre



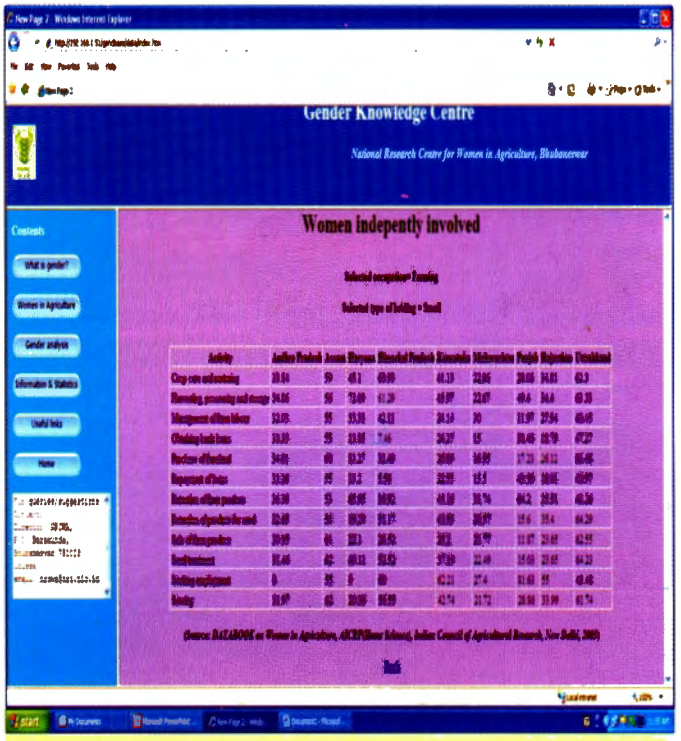
A portal named Gender Knowledge Centre (http://knowledgecentre.drwa.org.in) has been developed that provides contents like theoretical and conceptual background knowledge about gender, approaches and analytical frameworks for gender analysis, gender related information and statistics. Under the information and statistics module, information on occupation-wise work participation, statistical profile on women labour including daily earnings, data on women and men's participation in marine fisheries was compiled. The data were collated in different ways to create distinct and meaningful tables and databases on women in agriculture and online reference system was created using MS Access and user friendly data retrieval algorithms have been developed. This portal provides researchers, students and other stakeholders, access to different types of information.

Database on Women in Agriculture

A database on women in agriculture has been created using the data from Data Book of AICRP Home Science. Data pertain to the state wise, landholding wise and activity wise participation profile and decision profile of women. About 2100 records have been created with the following data architecture. Data have been collated to create more meaningful tables on extent of women's participation in different activities in farming and livestock management and involvement in different types of decision making.

Table 1. Data architecture

Profile	Typology (families)
Decision making	Women jointly with men
Participation	Women jointly with women
	Women independently
Occupation	Holding
Farming	Landless
Livestock	Marginal
	Small
	Medium
	Large



Reference system

In order to create a repository of gender related studies conducted in different parts of the world and provide stakeholders access to such studies, a reference system is being developed. About 1800 references have been collected so far and 1038 references were entered into the database. Sources comprise annual report, Journals, proceedings, theses and books. Studies have been classified under different groups such as (i) Technology testing & refinement (ii) Extension and institutional paradigm (iii) Socio-economics (iv) Policy (v) Empowerment and (vi) Mainstreaming. A user friendly interface has been developed to help access the theme wise and year wise references.


KNOWLEDGE BASE ON GENDER STUDIES
Print Studies
ANNUAL REPORT
BOOK
JOURNAL
PROCEEDING
THESIS
Navigation
HOME
FAQs
CONTACT US
MUTE AUDIO
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Successfully loggined...!
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Login
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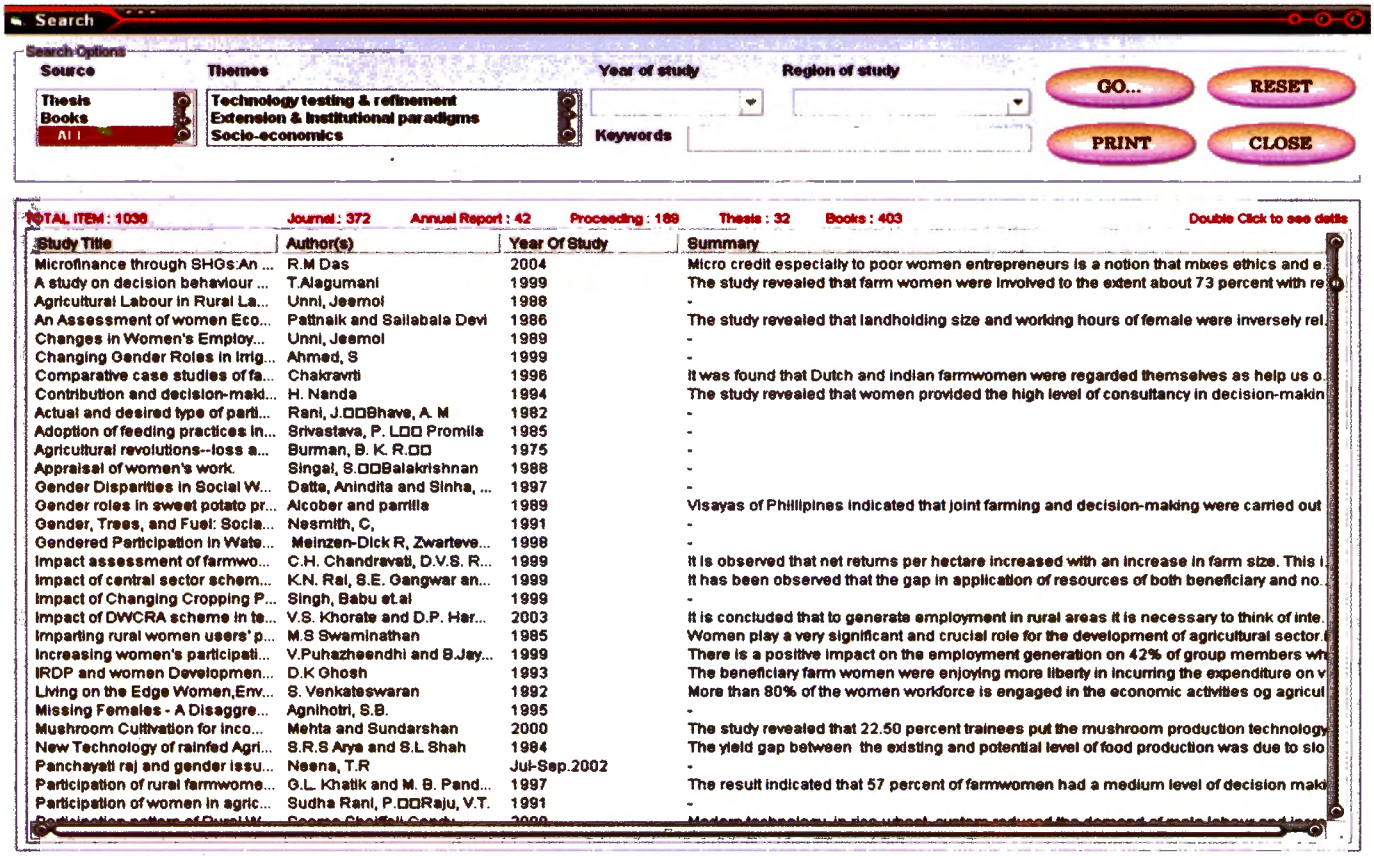
DIRECTORATE OF RESEARCH ON WOMEN IN AGRICULTURE


Search
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Technology testing & refinement
Extension & institutional paradigms
Socio-economics
Year of study
Region of study
Keywords
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TOTAL ITEM : 1036
Journal : 372
Annual Report : 42
Proceeding : 169
Thesis : 32
Books : 403
Double Click to see detils
Study Title
Author(s)
Year Of Study
Summary
Microfinance through SHGs:An ... R.M Das 2004 Micro credit especially to poor women entrepreneurs is a notion that mixes ethics and e
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Double to See Details

2.2. TECHNOLOGY TESTING AND REFINEMENT

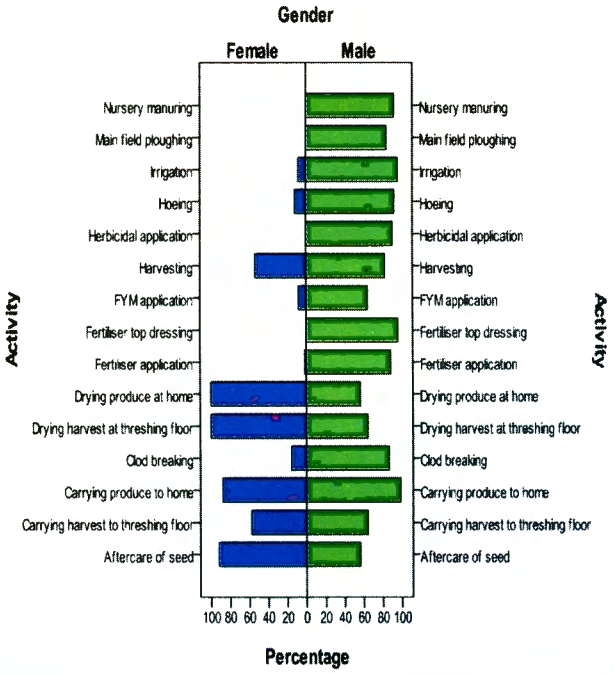
Technological empowerment of farmwomen for family sustenance

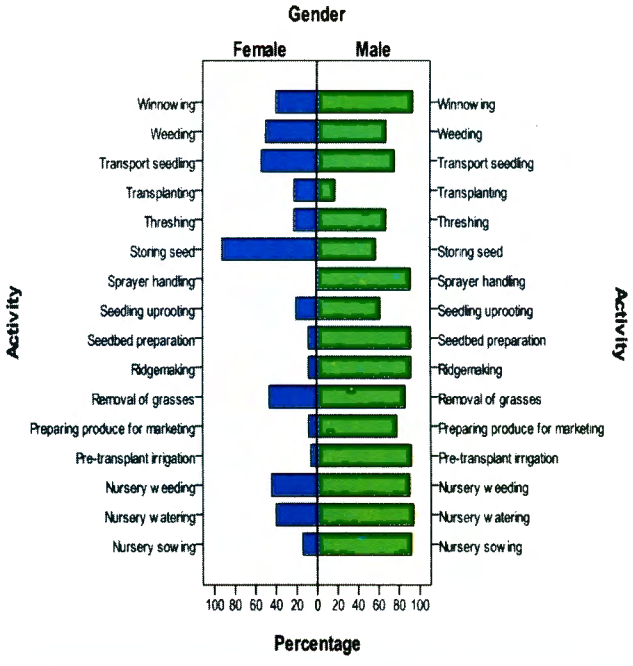
M.P.S. Arya, S.K. Srivastava, B.L. Attri, Sabita Mishra, Naresh Babu, L.P. sahoo and Abha Singh

The project aims to assess the gaps in development and adoption of agricultural technology; requirement and availability of nutritional food; evaluate and refine available technology with reference to women in agriculture; undertake on-farm testing in order to build confidence among the women for agricultural development and to reduce operational drudgery encountered by the farmwomen under different farming systems. Therefore, various activities were undertaken to achieve different objectives.

Gender wise participation in rice cultivation

To elicit information on the gender participation in rice cultivation and its determinants a survey was conducted among randomly selected 25 farm families each from two





villages (Mendhasal and Italanga) covering 50 men and 50 women. Data were collected through a survey schedule on participation of women and men of farm families and their perception towards various operations of rice cultivation. The perception towards the participation (men and women) in each activity was recorded on nine attributes of differential participation. A gender analysis of participation and perception profile was carried out.

It was evident that there was gender difference in the extent of participation in various activities, majority of them being male oriented. However, women's participation exceeded men in transplanting, drying of harvest at threshing floor, drying of produce at home, storing of seed and after care of seed. Perception of men and women regarding different activities of rice cultivation was also studied and most of activities were perceived easy and required skill (Table 2).

Table 2. Prioritized perception about different activities of rice cultivation

Activity	Perception	
	Men	Women
Seed bed preparation	Skill required, Easy, Socially assigned	Easy, Suitable for the body
Nursery manuring	Skill required, Easy, Suitable for the body	Easy, Skill required
Nursery sowing	Skill required, Easy Suitable for the body	Easy, Skill required
Nursery weeding	Easy, Skill required, Suitable for the body	Skill required, Easy, Traditional
Nursery watering	Easy, Skill required, Suitable for the body	Skill required, Easy, Traditional
Seedling uprooting	Skill required, Suitable for the body, Socially assigned	Skill required, Easy, Traditional
Transporting seedling	Easy, Skill required, Suitable for the body	Skill required, Socially assigned, Suitable for the body
Main field ploughing	Easy, Skill required, Socially assigned	
Clod breaking	Easy, Skill required, Suitable for the body	Easy, Skill required, Suitable for the body
Removal of grasses	Easy, Skill required, Suitable for the body	Easy, Skill required, Traditional
FYM application	Skill required, Easy, Suitable for the body	Easy
Fertilizer application	Easy, Skill required, Suitable for the body	Easy
Pre-transplant irrigation	Easy, Skill required, Socially assigned	
Transplanting	Socially assigned, Skill required	Easy, Skill required, Suitable for the body

Table 2. Prioritized perception about different activities of rice cultivation (Contd)

Activity	Perception	
	Men	Women
Ridge making	Easy, Skill required, Socially assigned	Difficult , Skill required
Irrigation	Easy, Skill required, Suitable for the body	Skill required
Top dressing	Skill required, Easy, Socially assigned	
Weeding	Easy, Skill required, Suitable for the body	Skill required, Easy, Suitable for the body
Herbicidal application	Easy, Skill required, Socially assigned	
Hoeing	Easy, Skill required, Suitable for the body	Easy, Skill required, Suitable for the body
Sprayer handling	Easy, Skill required, Suitable for the body	
Harvesting	Easy, Skill required, Suitable for the body	Easy, Skill required, Suitable for the body
Carrying harvest to	Easy, Skill required,	Easy, Suitable for the body,
threshing floor	Not Suitable for the body	Skill required
Drying harvest	Easy, Traditional	Easy, Suitable for the body, Socially assigned
Threshing	Skill required, Easy, Suitable for the body	Easy
Winnowing	Easy, Skill required, Suitable for the body	Easy, Suitable for the body
Carrying produce to home	Easy, Suitable for the body, Skill required	Easy, Suitable for the body
Drying produce	Easy, Skill required, Suitable for the body	Easy, Suitable for the body, Traditional
Storing seed	Skill required, Suitable for the body, Traditional	Easy, Suitable for the body, Skill required
Preparing produce for marketing	Traditional, Suitable for the body, Easy	
Aftercare of seed	Skill required, Easy	Easy, Suitable for the body, Socially assigned

Evaluation of drudgery reducing gear in agricultural operations

Evaluation of protective materials like hand gloves, lumber belt, plastic shoes and gum boots was made for their ease in use, elimination of discomfort, cost affordability and social acceptance. The assessment of women involved in transplanting revealed that

- Hand gloves were better for weeding, but during transplantation gloves were torn due to pebbles in soil.

- Lumber belt (PUFF Sarco) was rated difficult to use at work as it was heavy and caused stomach ache while bending.
- Lumber belt locally made of cotton was acceptable as it helped in reducing the pain of bending while transplanting.
- Plastic shoes were found good in working under dry conditions but it was difficult to use in puddle soil as they got heavy on sticking.
- Gum boots were found to be problematic as they go deep in to the puddle soil and rendered difficult to pull out the legs.

Training for knowledge empowerment

The trainings were conducted at the village level on biological fertilizer plant protection management and storage of fruits and vegetables.

Table 3: Details of trainings conducted

Sl. No.	Date	Topic	Place	No. of Participants
1.	24 April 2008	Herbal pest management, bio-pesticides, weed control (IPM) and vegetable production.	Mendhasal	25
2.	27 May 2008	Low cost storage structure- Zero Energy Cool Chamber for fruits and vegetables.	Italanga	20
3.	18 July 2008	Use of Bio-fertilizer under Maize- Black gram cropping system.	Mendhasal	30
4.	31 July 2008	Use of Bio-fertilizer	Italanga	28
5.	31 July 2008	Preparation, filling of pits and planning of banana suckers	Mendhasal	30
6.	10 November2008	Safe use of pesticides and eco-friendly pest management of okra	Mendhasal	30
7.	10 November 2008	Preparation and application of organic manure.	Mendhasal	30

Experimental rice field

Lumber belt made of cotton

Network project on Gender issues in rice based production system and refinement of selected technologies in women perspective

M.P.S. Arya, S.K. Srivastava, S.P.Singh

A Network project on Gender issues in rice based production systems and refinement of selected technologies in women perspective was initiated in collaboration with G. B. Pant University of Agriculture and Technology, Pantnagar, Kerala Agricultural University, Vellanikkara, Trichur, Project Directorate of Rice Research, Rajendranagar Hyderabad; and Central Rice Research Institute, Cuttack. The objectives of the study were assessment of socio-economic conditions, women's role, gender issues, policies and programmes in rice based production system and identification and documentation of women friendly technologies and indigenous knowledge base and refinement of selected technologies. Project launching Workshop was conducted on formulation, refinement and finalization of technical programme for 2009-10 and it was decided to conduct survey so as to assess the status of various issues to be undertaken in the project.

The sampling procedure and sample size were also finalized and it was decided that survey will be conducted in five rice growing (acreage basis) districts of the States of five participating Centres. The Directorate of Research on Women in Agriculture (DRWA), Bhubaneswar, however, will select other than Orissa as there are two Centres (CRRI,Cuttack and DRWA, Bhubaneswar) in Orissa. Out of each district, one Development Block with highest acreage in rice will be identified and two villages from each Development Block will be selected at random. Data will be collected from 1000 respondents, one man and one woman respondent per household. Survey schedule consisting of two parts ; part A on household information and part B on the identification of gender issues was developed and finalized. The data collection is under process.

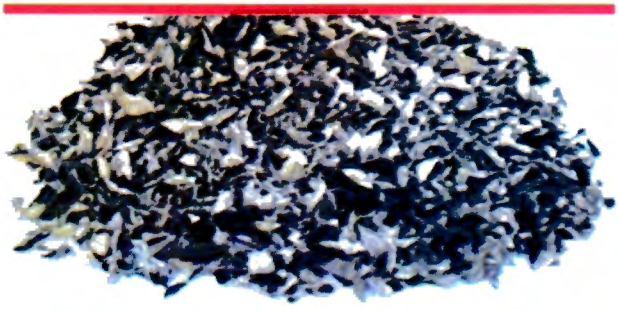
Project launching Workshop in progress

Refinement of storage pest management techniques in selected cereals, pulses, condiments and spices with gender perspective.

S.K. Srivastava, Suman Agarwal and Naresh Babu

Five techniques of storage of cereals and pulses viz; rice storage structure doli made from strip of bamboo; rice storage in Akha (gunny bag) made from jute by using EDB ampoule; pulse storage in Akha (gunny bag) made from jute by using Begunia (Vitex negundo) leaf; rice storage with garlic and paddy storage in Jari Akha after drying have been identified and documented from Orissa.

DOLI



BEGUNIA LEAVES

Men purchased chemicals like EDB ampoule while women collected Begunia leaves for the storage of their produce. Two techniques of storage of condiments and spices for the storage of red chillies and ginger rhizome have also been identified and documented .The details of these techniques are given below.

Storage of red chillies in Orissa

To reduce the moisture content, red chillies are cleaned and dried in sunshine for 2-3 days. Chillies are stored either in earthen pots or plastic containers. The containers are also cleaned and exposed to sunlight for drying and to be free from insect infestation. The dried chillies are placed in the container along with a pouch of fenugreek seed and mouth of container is closed. The containers are kept in a dry and shaded place. By this process chillies could be stored for 5-6 months without spoilage.

Storage of ginger rhizome in Orissa

To reduce the spoilage of ginger during storage, healthy ginger rhizomes are selected at the time of harvesting. Selected rhizomes are cleaned, dried in shade and kept in a pit dug in a cool place with the protection from sunshine and rains. A pit of 1 m depth is made and a layer of sand is put at the bottom of pit. Ginger rhizomes are kept over the sand inside the pit. The pit is covered with wooden materials having some space between rhizome and wooden materials and plastered with mud and cow dung. By this process ginger rhizomes could be stored for 4-5 months with 10-15% losses.

Refinement and development of horticulture based cropping models for gender mainstreaming

Prakash Chandra Tripathi,B.L.Atri and Naresh Babu

The objectives of the project are

- Developing and standardizing horticulture-based and subsistence-oriented production models suitable for rural women
- Identifying and assessing activities involving drudgery and their implications to rural women

Crop preference

In order to asses the crop preference for cultivation and reasons for the preferences of horticultural crops, a survey of 200 farmers of 5 villages of Orissa was carried out. The survey revealed that mango, banana, jackfruit, coconut and guava were the most preferred fruits. The women preferred banana (77.3 %), jack fruit (64%) and coconut (57.7 %) for cultivation, while men preferred mango (73.3 %), banana (73.3%) and guava (46.6%). The results revealed that women tend to prefer large number of minor and local fruits while men preferred commercial fruits (Table 4). As far as the reason of preference was concerned, men preferred cultivation for commercial purpose (82.0%) (Table 5). Among vegetables, pumpkin, okra, ridge gourd and brinjal were preferred by 53.3, 45.0, 41.3 and 49.3 percent of women respectively, while men preferred tomato (54.7 %), okra (54.7 %) and cauliflower (23.0%) (Table 6). About eighty nine percent women preferred to cultivate vegetables for home consumption while 92 % men preferred grow vegetables for commercial purpose (Table 7). Among flowers, marigold was preferred by 67.6 % men and 78.7 % women. Around 34 % men and 26 % women preferred tube rose for cultivation (Table 8). As far as the reason of flower cultivation was concerned 85.3 % women and 55.3 % men grow flower for worship (home consumption). About 72 % had grown flower for commercial purpose in comparison to 32 % women. About 58 % women had grown flower for beautification of courtyards (Table 9). Among the other crops, turmeric and ginger were most preferred crops .The reason of preference was for domestic consumption, commercial purpose and medicinal use .

Table 4. Estimated gender preference for fruit crops

Name of Fruit	Preference (%)	
	Man	Woman
Mango	73.3	66.7
Banana	73.3	77.3
Guava	46.6	40.0
Jackfruit	32.0	64.0
Coconut	54.7	57.7

Table 5. Reasons for preference

Reason for preference	Preference (%)	
	Man	Woman
Home consumption	56.0	96.0
Firewood/fuel	17.3	44.0
Commercial Purpose	82.7	38.7
Profitable	28.7	15.3
Family Nutrition	10.7	21.3

Table 6. Gender preference for vegetable crops

Name of crop	Preference Rank	
	Man	Woman
Pumpkin	IV	I
Brinjal	III	II
Okra	I	III
Ridge gourd	VII	IV
Chilli	X	IX
Bitter gourd	VI	V
Potato	V	VI
Tomato	I	VII
Cauliflower	II	VIII
Colocasia	IX	X
Pointed gourd	VIII	XI
Onion	XI	XII

Table 7. Reason for cultivation of vegetable crops

Reason for preference	Preference (%)	
	Man	Woman
Home consumption	57.3	89.3
Commercial purpose	92.0	57.3
Profitability	18.7	8.0
High yield	10.7	13.3
Processing purpose	4.0	14.7
Seed Purpose	1.3	6.7
Market demand	20.0	10.7
Nutrition	13.3	17.3

Table 8. Estimated gender preference for flower crops

Name of crop	Preference (%)	
	Man	Woman
Marigold	67.6	78.7
Rose	29.3	18.7
Chrysanthemum	24.0	14.7
Tube rose	34.7	26.7
Jasmine	12.0	22.7
Gladiolus	13.3	6.7

Table 9. Reason for preference of cultivation of flower crops

Reason of preference	Preference (%)	
	Man	Woman
Worship	53.3	85.3
Commercial	72.0	32.0
Beautification of house	16.0	58.7
Profitability	22.7	2.6

Development of horticulture based cropping models

Various fruit based cropping models were planned, laid out and initiated at institute's farm. These models are being evaluated for their for food, fuel and fodder production and employment generation so that the best models may be identified to fulfill the need of food, fodder and fuel of a rural family and reduce the time of women devoted for collection of fuel, fodder and food and the utilization of saved time in the income generation activities through value addition and bye product utilization produced under these models. The details of these models and initial results are as follows:

Guava based cropping models

Four guava based models with four varieties of guava viz. Allahabad Sufeda, Lucknow-49, Arka Mridula, Arka Amulya and four intercrops, namely, okra, cowpea, turmeric and pineapple were planted during Kharif 08. The growth and yield attributes of guava varieties were recorded. It was found that plant height was highest in guava cv. Allahabad Sufeda after two years of planting while the lowest growth was recorded in cv.Arka Amulya. Higher fruit yield was recorded in cvs. Allahabad Sufeda and Lucknow -49 but the fruit quality was better in cvs. Arka Amulya and Arka Mridula. There was no significant effect of different intercrops on the growth of different guava varieties. However the growth of intercrops was significantly influenced by different guava varieties. The yield of okra and cowpea was low when inter cropped with Allahabad Sufeda and Lucknow -49. The plant height of these crops was higher and plants were lanky and yield was lower. The fodder generation was more in cowpea. Among all combinations, Guava turmeric was found the most profitable with total income of (Rs 55,944/ha) followed by Guava cowpea (Rs. 54,741/ha, Table 10).

Table 10. Yield, fuel, fodder employment generation and income in different guava based cropping models

Cropping model`	Guava-Pineapple	Guava-Okra-Pea	Guava-Cowpea-French bean	Guava-Turmeric
Main crop yield (q/ha)	23.8	24.6	28.8	20.3
Inter crop I yield (q/ha)	13.1	37.2	7.0	28.5
Inter crop II yield (q/ha)	-	21.4	27.4	-
Fuel yield (q/ha)	74.6	60.6	68.5	99.6
Fodder yield (q/ha)	-	-	12.7	-
Biomass produced (q/ha)	3.4	15.70	-	5.0
Labour (days/ha)	308.0	360.0	370.0	375.0
Income (Rs/ha)	32,078.0	43,278.0	54,741.0	55,944.0

Mango based cropping models

Five mango based models with five varieties of mango viz. Dashehari, Langra, Gulabkhas, Mallika, Amrapalli and five intercrops okra, cowpea, tube rose, colocasia and marigold were laid out and planted in one acre area during Kharif 08. The growth parameters of different mango varieties were recorded. The plant height was highest in mango cv Gulabkhas and lowest in cv Dashehari .There was no effect of intercrops on the growth of different mango varieties in the fist year. Similarly there was no effect of different mango varieties on the growth and yield of intercrops. The fodder generation was higher in cowpea while biomass generation was higher in marigold and colocasia. Among all combinations, mango-marigold was found most profitable with total income of Rs 69,612/ha (Table 11).

Table 11. Food, fuel and fodder production in different mango based cropping models

Cropping system	Intercrop-I yield (q/ha)	Intercrop-II Yield (q/ha)	Fuel yield (q/ha)	Fodder yield (q/ha)	Biomass (q/ha)	Labour (man days)
Mango- Cowpea-Radish	105.0	80.0	1.1	30	-	270
Mango- Okra-French bean	63.0	21.3	1.2	4.5	16.7	280
Mango-Tuberose	6750.0*	-	1.3	-	-	260
Mango-Marigold	43.3	-	1.5	-	65.6	260
Mango -Colocasia	96.8	-	1.1	-	38.4	244
Mango -Yam	76.3	-	1.2	-	7.6	220

*No. of flower sticks

Minor fruit based cropping models

The mixed fruit group consisting of minor and arid fruits viz. custard apple, bael, aonla, sapota and lemon were planted in the month of September 2008. Aonla and lemon showed higher growth than bael, sapota and custard apple. The intercrops (marigold and tube rose) were planted between the crops in February 09.

Coconut based cropping models

The five varieties of coconut were planted in the month of September 2008 to initiate coconut based cropping system. The growth data revealed that there was significant difference in the growth of different varieties. Different intercrops such as gladiolus, pea, radish, coriander were planted between these plants in December 2008.

Cashew nut based cropping models

The six varieties of cashew were planted in the month of September 2008 to initiate cashew nut based cropping system. The growth data revealed that there was no difference in the growth of different varieties.

Horti- silvi pastoral models

Two horticultural crops i.e. drum sticks, curry leaf and six fodder crops namely napier grass, guinea grass, *Brachiaria humidicola, Stylosanthes hemata, Stylosanthes guianensis* and cowpea were planted in the month of August 2008 to develop the horti- silvipastoral models. Very little yield of main crops was obtained in the first nine months. Highest fodder yield was found in cowpea. Similar results were recorded in curry leaf-fodder grass combination (Table 12)

Table 12. Fuel and fodder production in drumstick- fodder crops models

Cropping system	Plant height of drum stick (cm)	Fuel yield (q/ha)	Fodder yield (q/ha)	Mandays/ ha
Drumstick- Guinea grass	172.7	1.1	98.8	165
Drumstick- B. humidicola	164.8	1.2	65.0	165
Drumstick- S.guainensis	181.0	1.3	22.0	165
Drumstick- S.hemata	196.2	1.5	12.0	165
Drumstick- Napier	166.3	1.1	30.0	165
Drumstick- Cowpea	193.6	1.2	297.6	145

Value addition

- Garland making

Marigold grown in the horticultural based cropping models was used for garland making. Garland making was found profitable and required very limited inputs (Table 13). Apart from profitability it has potential for generation of additional income for women.

Table 13. Economics of garland making

Marigold yield (q/ha)	Av. Wt of garland (g)	No. of garlands /ha	No. of garland prepared /hr	Cost of flower (10 /kg)	(Cost of material (@ Rs 0.50/ garland)	Return from sale of garland @5/	Profit (Rs)	Potential employ ment (man days/ha)
45	300	15000	13	45000	7500/-	75000/-	22500	156

- Flower arrangement

The bouquet making from gladiolus flower was tried. It was found that bouquet making by gladiolus flower increased the return by 50 %.

- Pineapple slice making

The pineapple dice and slices are preferred food items. These slices can be prepared by pineapple slice and knit. These slices can be kept for 2-3 days by storing them at 2-4°C. The pineapple slice making and packing in polyethylene bags with minimum processing gave a profit of Rs. 6/- kg.

- Turmeric processing

Drying of turmeric was found to provide additional income and employment to women. But the drying and grinding of turmeric needs some equipment for boiling, drying and grinding and packing of turmeric. The turmeric processing trials revealed that drying and powder making of turmeric gave profit of Rs. 10/kg.

Identification of drudgery and reduction of drudgery in different horticultural crops

Assessment of drudgery/hazards of weeding in horticultural crop

Weeding is one of major activities performed by women in field crops as well as horticultural crops. Studies were conducted to find out the issues related to weeding in horticultural crops. Testing the different mulches and chemicals for their effect on growth and yield of guava was done. Their weed control efficiency and perception of women about these treatments were also analysed. Survey conducted with 150 men and women in five villages revealed that, women were more concerned about the issues related to weeding as compared to men. The cost, laborious nature, health hazards such as back ache, allergy, nail and finger injuries, non-availability of suitable tools and technologies are the major issues (Table 14). Some of crop specific issues in horticulture were: presence of hairs and spines in some crops such as okra, brinjal and pineapple, presence of sap and pungency in some crops such as chili, colocasia. (Table 15).

Testing of efficacy of different mulches and chemicals in guava crop

Different weed control treatments such as weedicides and mulches were tested for controlling weed in guava and their effect on growth and yield of guava and perception of women about these treatments were recorded. It was found that the polyethylene mulch was found best in controlling weeds than other treatments in all seasons. The growth of guava was higher in mulching treatments than control and weedicide treatments. Higher increase in growth was recorded in all mulch treatments than control and weedicide treatments. Similarly higher yield was recorded in mulching treatments than control and highest yield (5.01/kg/tree) was recorded in coir mulch. The soil moisture retention was higher in mulching treatments. The perception of women about these treatments showed that 55 % women preferred grass mulch while 15 % women preferred coir mulch. Only 5 percent of women preferred weedicide. About 10 percent of women preferred the polyethylene mulch. The main reason of preference of grass mulch was its easy availability (55%) and the low cost (45%) (Table 16).

Table 14. Issues in weeding

Issue	Response (%)	
	Men	Women
Cost	40.0	76.7
Time Consuming	53.3	73.3
Laborious	26.6	63.3
Lack of suitable implements	23.3	33.0
Lack of knowledge of suitable weed control technology	23.3	20.0
Allergy	16.6	50.0
Pain in nails and fingers	6.6	43.3
Back ache	25.0	66.7

Table 15. Crop specific hazards perceived by women in weeding of horticultural crops

Crops	Hazard	Response (%)
Okra	Itching in hands due to hair	100.0
	Injuries in finger, nails	75.0
	Hand pain	20.0
Chili	Injuries in finger, nails	50.0
	Hand pain	50.0
	Itching due to pungency	100.0
Ridge gourd	Itching in hands due to hair	50.0
	Back ache	50.0
Brinjal	Injury due to spine	66.0
	Allergy due to insecticides	50.0
Pointed gourd	Injury due to sharp lead edges	50.0
	Difficulty in weeding due to cropping nature	50.0
Colocasia	Itching in hands	25.0
	Itching due to sap of plant	50.0
Pine apple	Injury due to spine/ leaves	100.0
	Chance of snake bite/insect bite	100.0
Banana	Injuries in finger, nails	25.0
	Hand pain	50.0
	Chance of snake bite/insect bite	25.0

Table 16. Growth and yield of guava, weed population and perception of women towards weed control methods

Treatments	No. of weeds/sq.m			% Increase in plant height	Fruit (yield)kg /tree	Preference (%) of women farmers	Reason of preference		Cost (Rs/ sq.m)
	Kharif	Rabi	Summer				Cost	Availability	
Control(No weeding)	460	180	106	27.5	3.51	-	-	-	-
Hand weeding	100	117	76	26.9	3.58	10.0	15	25.0	4.0
Weedicides Glyphosate	102	103	63	27.7	3.48	5.0	5	5.0	3.0
Black polyethylene mulch	0	0	0	36.5	4.74	10.0	5	5.0	5.3
Grass mulch	13	43	74	38.4	4.39	55.0	45	55.0	2.0
Coconut coir mulch	24	80	95	39.7	5.01	20.0	15	15.0	7.0

Evaluation of weeding equipments for efficiency enhancement and drudgery reduction

Weeding tools such as hand hoe (Khurpi), rake, wheel hoe, wheel hoe (big) were tested for the reduction of drudgery in weeding of fruits and vegetables. In guava, weeding efficiency had increased nine times by rake as compared to hand hoe but the quality and depth of weeding was better in hand hoe while wheel hoe was not found suitable for guava. In marigold, the weeding efficiency had increased by use of wheel hoe and rake. The quality of weeding was better with wheel hoe than with the rake. Among these tools wheel hoes were more preferred by women in term of time saving and lesser physical stress.

Evaluation of harvesting equipments for efficiency enhancement and drudgery reduction

Harvesting equipments such as plucker, cutter and secateur were tested for the harvesting of guava and okra. In guava, harvesting efficiency of men had increased 18 % by Bhindi plucker while in women it had decreased. The cutter increased the harvesting efficiency of women by 23 % while harvesting efficiency had decreased in both men and women while using secateur. The use of the tools reduced the damage of fruits by 10 percent and increased the shelf life of the guava. In case of okra, use of cutter doubled efficiency of both men and women and decreased the percentage of damaged fruits and increased the shelf life of okra. The cutter was found better for harvesting of okra than plucker and secateur.

Network project on Assessment of gender issues and identification and refinement of selected women specific technologies in horticultural crops

P.C. Tripathi, Naresh Babu, L.P. Sahoo

The Launching workshop of Network Project was conducted at DRWA, Bhubaneswar during 12-13 January 2009. The project is aimed to identify the issues related to women in horticultural crops and refinement of women friendly technologies. There are five ICAR institutes including DRWA, Bhubaneswar, IIHR, Bangalore, CTCRI , Trivandrum, CISH Lucknow and CIPHET Ludhiana and one agricultural university namely, GBPUAT, Hill campus Ranichouri in the project. The PI and CO-PI of five network centres participated in the workshop. The project planning, targets and area of survey etc. were finalized in the workshop. Accordingly, all centres except Ranichouri had started the work . The survey schedules were prepared and translated into local languages. The preliminary survey is in progress.

Technological empowerment of farmwomen in production of quality seeds and planting materials of vegetables

L. P. Sahoo, N. Babu, P. C. Tripathi and M. P. S. Arya

The project aims to

- Study the involvement of farmwomen in production, procurement and distribution of vegetable seeds.
- Impart skill training and conduct demonstration on techniques of seed and planting material production.
- Produce seeds of vegetables and planting materials involving farmwomen.
- Assess the quality of seed produced.

The project is taken up in participatory mode in 4 villages (Two rainfed and two irrigated). Involvement of farmwomen in production, procurement and distribution of vegetable seeds, their knowledge and skill is being studied using a semi structured interview schedule. Forty selected farmwomen, 10 from each village, are participating for seed production of vegetables. Methodology includes identification and refinement of technology suitable to farmwomen, technological empowerment in terms of skill training, and exposure visits and seed production in their own farm. Farmwomen will be given exposure to new techniques of seed production like micro propagation. Analysis of gender role and constraints in seed production of vegetables will be carried out. Impact assessment will be done in terms of increase in seed production, quality seed produced, and increase in knowledge and skill.

Method of seed production

Involvement of farmwomen for production of vegetable seed can be ensured by opting a suitable method. Based on their access to the available resources and expertise, the following methods are proposed to be adopted.

- Seed production in homestead garden
- Seed production to meet the village need
- Commercial scale
- Community seed production or seed village programme
- Planting material production/nursery

Selection of locale of study

Four villages were identified for participation in the project. Two rain fed villages of Khurda district were selected for seed production of vegetables in home-stead garden. Two irrigated villages were taken for production of seeds on a commercial scale. A village predominantly growing pointed gourd was taken for production of planting materials. Ten farm women from each village were identified for participation in the project.

Procurement of source seed

Breeder seed and foundation seeds were collected from different institutes like agriculture universities, ICAR research centres, seed corporation and good private seed producers. Seeds, after procurement were planted in DRWA farm for demonstration, multiplication and standardization of production methodology and then supplied to farmers

Capacity building of farmwomen

Skill training was imparted to farm women on different activities like planting, rouging, seed collection and planting material production.

Seed production involving farmwomen

Seed production of vegetables was taken up in three villages involving thirty farm women. The crops were:

- Brinjal Var Utkal Tarini, Utkal Madhuri
- Chilli Var Utkal Abha
- Tomato Var BT-2, BT-10
- Bottle Gourd
- French Bean Var Anupam
- Cluster Bean
- Amaranths Var Arka suguna

Table 17. Seed source and varities

Seed source	Seed varieties
DSST,IARI	Brinjal Hybrid Tomato hybrid
BSP unit, OUAT	Brinjal Tomato Chilli
OSSC	Bottle gourd
CHES	French bean Amaranthus
NHRDF	Okra
Private	Cluster bean French bean

Participatory evaluation of low cost weaning mix

Abha Singh

Nutrition education and dissemination of weaning mix technology among different classes of farm women

Nine training- cum- demonstration programmes were conducted in six villages of Khurda and Puri district involving 219 mothers/farm women to demonstrate the procedure of preparation of low cost weaning mix using cereals, pulses, oil seed and sweet potato. Along with method demonstration of weaning mix, nutrition education was also imparted to farm women on various aspects such as infant feeding practices, hygiene and sanitation, balanced diet for infants and mothers, importance of safe drinking water, and importance of fruits and vegetables in the diet. Details of the training programmes are given below.

Table 18.Training programmes conducted

Village	Date	No. of participants
Italanga	8 April 08	22
Bagalpur	11 June 08	12
Balbhadrapur	21 August 08	23
Italanga	5 November 08	32
Jaipur	20 November 08	36
Balapur	29 November 08	13

Participatory evaluation of adoption and non-acceptance of proposed intervention

Participatory evaluation of low cost weaning mix was done with 138 mothers/farm women in different villages. To evaluate the mix, a motivational/awareness training was conducted to the mothers. After that, a demonstration cum training was conducted for the same participants. Small quantity of weaning mix was provided to all the participants to evaluate the

Table 19. Reasons for acceptance(n=97) and non-acceptance (n=41)

Acceptance	
Reason	**Rank**
Cheap in relation to market food	I
Good for child health	II
Liked by child	III
Hygienic	IV
Easy to prepare	V
Daily time saving of mothers	VI
Energy saving of mothers	VII

Non-acceptance	
Reason	**Rank**
Non availability of ingredients	I
Sweet potato processing is difficult	II
Difficulty in storage	III
Preparation procedure is lengthy	IV

mix with their infants. Participatory evaluation of low cost weaning was done on various aspects including acceptance and rejection and reasons thereof. Among 138 participants, technology was accepted by ninety seven mothers. Forty one participants did not accept the technology due to various reasons. Rank order of reasons for acceptance and non-acceptance of technology is summarized in Table 19.

Impact of weaning mix on health and nutritional status of infants

To assess the impact of weaning mix on the health and nutritional status of infants, in the first phase, thirty infants were taken as an experimental group (19 male and 11 female infants in the age group of 6-18 months) and fifteen as a control group.

Before starting the experiment measurements on weight, height, head circumference, chest circumference and mid upper arm circumference of infants were taken and means were calculated. It was observed that mean values of all the anthropometric measurements of experimental group were less than the national standard. Anthropometric measurements of control group were also taken before experiment to compare with experimental group. In control group also mean values of anthropometric measurements were less than the national standard.

Feeding practices of infants selected for assessing the impact of low cost weaning mix on the health and nutritional status of infants were also recorded. Roasted flake (chura) power with milk/water and sugar was observed to be the most preferred weaning food (Table 20). The survey revealed that in rural Orissa, mothers preferred powdered milk to their infants instead of cow's milk with the belief that cow's milk was cool in nature and caused cold and cough problem in infants.

Table 20. Feeding practices of experimental group of infants (n=30)

Weaning food	Percentage
Roasted flake powder with milk/water and sugar	86.7
Powdered milk	23.3
Soft boiled rice with boiled potato	10.0
Others	6.7

Assessment and refinement of aquaculture technologies for gender mainstreaming

P.K.Sahoo ,M.Srinath & A.K.Mishra

The activities taken up under this project are

1. Assessment of mariculture technologies in gender perspective. (Collaboration with CMFRI)
2. Development strategies for gender empowerment through suitable brackish water aquaculture in Orissa state. (Collaboration with CIBA)
3. Assessment and refinement of freshwater aquaculture technologies in gender perspective.

Achievements in terms of targets fixed for each activity

- Assessment of mariculture technologies in gender perspective.

A four day workshop was held to enlist the mariculture practices and to develop the survey schedule. Available mariculture practices were listed and analyzed in gender prospective. Two practices namely, mussel culture and oyster culture were selected for a detailed study. Interview schedule was developed to collect data on gender participation and gender needs. Sampling plan for the survey was also finalized. A total 200 households was proposed to be surveyed for assessment of the mussel culture in geneder perspective. The survey is in progress.

- Development strategies for gender empowerment through suitable brackish water aquaculture technologies in Orissa state.

The project aims to assess and transfer suitable brackish water aquaculture technology to identified target women groups in Orissa and to assess the existing employment, income and cropping pattern in selected sites including gender participation and gender needs.

Progress of work

A meeting with the scientists of CIBA was held to finalize the demonstration plan of crab fattening involving women. Two sites were selected in Chilika, where crab trading is more predominant. One site is in the village Chandrapur of Balugaon and the other site is the island village Mahinsa of Satpada. A Farmer Scientist interface was organized for assessing the prospect of crab fattening in the locality; besides their socio-economic status, attitude and knowledge; the awareness of the technology. Crab fattening demonstration was organized in Chandrapur in open water involving 15 women of a SHG by installing bamboo pen. A bamboo pen (due to its low cost and durability) was built using locally available materials. In Mahinsa it was a pond culture. Seventeen women took part in the demonstration. Women were given hands-on training to identify the soft crab; identify the male and female crab; handling of crab; feeding and pond management. Crab fattening is a seasonal work (August to January) and depends on the availability of soft crab. Stocking was undertaken during September to December 2008 at Mahinsa and during December 2008 at Chandrapur. A profit of Rs.2625 and Rs.1572 was recorded from village Mahinsa and Chandrapur respectively (The expenditure accounted only for the procurement of soft crab). While undertaking the demonstration constraints faced by the women were also recorded.

2.3 SYSTEM DEVELOPMENT AND MANAGEMENT

Designing gender sensitive extension model and testing its efficacy

B.N. Sadangi, Sabita Mishra, H.K. Dash, S.K. Srivastava, P.K. Sahoo, L.P. Sahoo, & Abha Singh

Gender Sensitive Extension Approach

The project aims to develop an extension model based on public-private partnership to address gender sensitivity, cost effectiveness, leadership development among farmwomen, technological location specificity and subject matter support from specialists. In consonance with the objective of the project, an extension model was developed incorporating the essential features envisaged in the objectives. A group of young men and women selected from two clusters of villages were trained as private actors to function as Village level Para Extension Workers (VPEWs) and transfer location specific and need based farm technologies. The model employed by DRWA (public institution) is aimed to facilitate extension services at a micro-level without gender bias.

Role of Village level Para Extension Worker (VPEW)

The following activities are performed by the VPEWs to meet the objectives of the project:

- Collecting data on crops, livestock, horticulture, fisheries and home science.
- Providing agricultural information and technology to the farmers and farm women.
- Conducting demonstrations for increasing the skills in agriculture production.
- Bringing changes in the prevailing men-centred agriculture through women empowerment
- Organising self help groups (SHG) and promoting different agricultural activities through group.
- Developing agricultural plans and programmes suitable for farm women to enhance their socio-economic well-being including WSHG in the empowerment process.
- Participating in the pre-seasonal training programmes at DRWA.
- Assist scientists of DRWA in participatory agricultural research and extension programme.
- Carrying the problems of the farmers to scientists and solutions of the problems from scientists to farmers in a two way process.
- Coordinating with different local institutions, projects and NGO's for all around development of agriculture.
- Recording weekly agriculture activities in the dairy.
- Distributing critical inputs for the programme among the beneficiaries and supervising the utilization.
- Establishing healthy working relationship among themselves and with other villagers.
- Assisting the farming community specially in marketing of agricultural produces and getting institutional credit.
- Eradicating the prevailing gender related social superstitions.
- Sustaining the agriculture development of the village by mainstreaming gender in agriculture.

Capacity building of the VPEWs

During the year, following capacity building programmes for VPEWs were developed and implemented for enabling them to perform their aforesaid role.

- Four-day pre-seasonal training (4)
- Project review meeting (3)
- Result demonstration (12)
- Method demonstration (25)
- Field day in rice farming (2)
- Distribution of farm literature (30)
- On-farm Interaction with scientists and technical staff
- Problem solving telephone calls

Capacity building of VPEWs

Emphasis was laid to conduct more result and method demonstrations in the selected clusters to demonstrate the skills required and productivity of different technologies to the farming communities. Scientists and technical staff of the DRWA with the active involvement of VPEWs had planned and implemented the demonstrations. Necessary data on gender related information were also collected to assess the performance of the demonstration in various contexts.

Table 21. Need based farm interventions transferred to the women and men of the selected clusters through the VPEWs

Activities	Rainfed cluster	Irrigated cluster
Oyster mushroom (Number of SHGs)	2	4
Nutritional cum seed production unit (Numbers)	30	20
Backyard poultry farming by farmwomen (Number of women)	100	-
Cultivation of mustard and green gram as inter crop (in acre)	1	-
Commercial cultivation of vegetables like coriander and palak & bitter gourd (in acre)	0.3	0.5
Bitter gourd cultivation (in acre)	0.3	1.0
Pest Management (neem based and chemical base) (in acre)	0.5	0.5
Pheromone trap (Number of demonstrations)	5	10
Potato cultivation by WSHG (in acre)	0.5	-
Vermicomposting (Number of units)	1	2
De-worming in cattle and goats (Number of demonstrations)	20	-
Ornamental fish farming (Number of demonstrations)	-	3
Carp fry production and fish farming by WSHG (Number of ponds)	1	2
Rice cultivation (Number of demonstrations)	4	4
Value addition (Number of demonstrations)	2	2

Performance monitoring

The performance of the VPEWs was monitored at six monthly intervals and it was found that there was fair improvement in extension services provided particularly for farm women. All the para workers

maintained weekly diary highlighting the problems faced and solutions offered. The contact of VPEWs with the scientists of the centre has increased considerably due to growing demand of men and women for solution to their problems.

There was a perceptible improvement in the parameters of performance such as number of farmers contacted, number of farm women contacted, number of field visits per week, number of problems identified, number of demonstration conducted, number of other related agencies contacted, number of consultations made with scientists and technical staff of DRWA, exposure to agriculture information leaflet, newspaper, TV, radio programmes.

Message delivery by VPEWs

Focused group discussions were held separately with men VPEWs (4) and women VPEWs (4) to study the message delivery on the parameters like peak time, audience, contact, use of aids, change in public speaking skills, and correctness of the message and content of the message. It was observed that men VPEW's peak time message delivery was evening (6 - 8 pm) whereas it was afternoon (3 -5 pm) for women VPEWs. Both farmers and farmwomen were contacted almost equally by men VPEWs whereas women VPEWs contacted more the farmwomen than men farmers. Group contact was most preferred by women VPEWs, whereas it was individual contact for men VPEWs. Women VPEWs gained relatively more public speaking skill than men but lagged behind the men VPEWs with respect to communication process and correctness of the message. The message delivery/communication was mostly verbal and through other modes such as demonstration specimen and farm literature.

Change in capacity of VPEWs

Assessment of capacity of the VPEWs was made through self-assessment (VPEWs), assessment by the audience (farmers and farmwomen) and supervisors (scientists and technical staff) involved in the project. The rankings obtained from the assessment were compiled and tested for concordance (Kendall's, W) the results obtained from the analysis are presented in table 22. Significant agreement between the judges was found with respect to following four areas out of thirteen areas of capacity taken for the study:

- Knowledge in farming
- Skills in technology application
- Organising group discussion and village meetings
- Solving the problems of farmers and farm women in agriculture and allied sectors

In the rest nine areas divergent opinions were observed among the judges suggesting that further actions were needed to improve the capacity of the VPEWs.

Table 22. Change in capacity of the VPEWs

Sl. No.	Parameters	Mean score on a 5 point scale			Co-efficient of concordance	$\chi 2$
		Self	Audience	Supervisor		
1.	Capacity to listen and analyse	4.0	3.6	2.9	0.266	5.586 ^{NS}
2.	Meeting and talking to men	3.4	3.8	2.6	0.615	12.910 ^{NS}
3.	Meeting and talking to women	4.1	4.1	3.0	0.1	2.940 ^{NS}
4.	Identifying farm problems and needs of men and women	3.5	3.0	2.7	0.559	11.739 ^{NS}
5.	Knowledge in farming	4.0	3.6	2.9	0.862	18.102**
6.	Skills in technology application	3.7	3.5	2.7	0.679	14.259*
7.	Organising group discussion and village meetings	3.7	3.9	3.4	0.673	14.133*
8.	Solving the problems of farmers and farm women in agriculture and allied sectors	3.6	2.8	2.5	0.686	14.406*
9.	Organising demonstrations	4.0	3.0	2.5	0.360	7.560 ^{NS}
10.	Sharing knowledge and information with clientele	3.4	3.0	2.8	0.103	2.163 ^{NS}
11.	Facilitating marketing, input supply, credit and other line department activities	2.5	2.2	2.2	0.467	9.807 ^{NS}
12.	Strengthening women self-help groups and their activities	3.4	3.2	3.0	0.562	11.802 ^{NS}
13.	Motivating the farmers and farm women in adopting farm technology	2.9	2.9	2.8	0.246	5.166 ^{NS}

*Significant at 5% level ** significant at 1% level
N.S. Not Significant

Concurrent evaluation of the model

A concurrent evaluation of the project with respect to 16 identified areas of change (effectiveness) was made by 120 beneficiaries consisting of 60 farmwomen and 60 farmers, selected randomly from two clusters to indicate changes as perceived by them. To find out the direction of changes due to project implementation, a non-parametric statistics i.e., McNemar change test was employed. The data on changes as perceived by the beneficiaries together with the result of the analysis are presented in table 23. It was found that significant changes had taken place in all the sixteen selected aspects implying that there were significant positive impacts of the model on the beneficiaries of the project areas.

Table 23. Concurrent evaluation on changes among farmers and farmwomen

(n=120)

Sl No.	Area of change	Extent of change in numbers			χ2
		-ve to +ve	+ve to ve	No change	
1	Providing a general awareness among the audience on scientific farming.	115	-	5	113.08**
2	Sensitizing the men and women	110	-	10	108.010**
3	Contact with change agents	98	-	22	88.011**
4	Access to farm information and advisory	77	-	43	75.014**
5	Learning of farming skills	91	1	28	86.097**
6	Organization of group activities	112	-	8	110.080**
7	Assistance provided in identifying problems	83	-	37	81.020**
8	Solutions provided	68	-	52	66.014**
9	Adoption of new farm technologies	80	1	39	75.111**
10	Organization of extension program to facilitate learning	111	-	9	109.009**
11.	Assistance provided/ received in other related activities like input supply, credit mobilisation, marketing	61	-	59	59.016**
12.	Cooperation among the stakeholders	87	2	31	79.288**
13.	Conflicts among the stakeholders	64	3	53	53.730**
14.	Demands for farm information technology	114	-	6	112.088**
15.	Extent of success of technology given under the project	90	-	40	88.011**
16.	Meeting your current needs in farming	85	-	35	83.011**

** significant at 1% level




Livelihood security through entrepreneurial activity among farm families

Suman Agarwal and Geeta Saha

The project has been implemented in the selected villages of the Pipli and Shakhigopal block of Puri districts of Orissa State. From each selected blocks, two villages were selected. It was found that two women SHGs existed in the villages for the past four years but were not involved in any entrepreneurial activities as no skill trainings were provided to these SHGs for income generation. Therefore, to get them involved in income generating activities for livelihood security, efforts were made to apprise them about various enterprises which they could take-up for income generation. Based on their interests and resources available with them, capacities of the women were developed in the areas like, bee-keeping, mushroom cultivation, vermin-compost preparation, agro-processing and value addition. After the skill/ capacity development, women were facilitated to set-up enterprises.

Livelihood response information based on enterprises promoted

Efforts were made to obtain the responses from the women who have already established the group enterprises in Mushroom cultivation, agro-processing and value addition (as to get the income from enterprises require some time) under a different project. The details of these enterprises have been given in Table 24.

Table 24. Livelihood response information based on enterprises promoted

S. No.	Name of enterprise	Mushroom cultivation	Agro processing		
			Paddy processing	Badi/ papad/ turmeric powder making	Value addition in fruits & vegetables
1	No. of Groups/ units	10	4	9	2
2	Size of units	123 Beds	---	---	---
3	Total expenditure (Rs.)	1666	7022	1276	608
4	Production per unit	92 kg	1137 kg rice 2.5 Qt. Bran	40 kg badi 15 kg papad 3 kg turmeric powder	58 Bottles Squash
5	Duration	One year	One year	One year	One year
6	Amount sold	65.6 kg @ Rs.40/kg	All	All	All
7	Total profit earned (Rs.)	2640	8015	3480	2900
8	Net profit	974	993	2204	2292

About 90% of women reported that the promoted enterprises had increased their family income.

To identify the factors for effective functioning and sustainability of the SHGs, a PRA was conducted with the selected women SHGs. The following emerged as the crucial factors.

- Credit facilities
- Skill development
- Capacity building
- Support system

Capacity building of women agricultural labourers (WALs) for increasing efficiency in agro-enterprises

Sabita Mishra

Objectives

- Improve the skills of WALs in different farm activities to enhance their earning either from wage or/and agro-enterprises.
- Support the WALs in organizing their social custom climate, providing critical inputs and developing credit links and marketing avenues.
- Record relevant data pertaining to the women in the enterprises, their performance and impact on their socio-cultural living.
- Record the case studies and suggestions for strengthening the WALs in social systems.

Four villages namely Durgapur, Kochila Nuagaon, Gabanala and Braja Sunderpur were selected in four blocks i.e. Salepur and Tangi Chaudwar of Cuttack district as well as Nayagarh Sadar and Nuagaon of Nayagarh district in Orissa state. In each block, one Self Help Group consisting of women agricultural labourers was identified and their socio-economic profile was surveyed. About 92% of WALs belonged to OBC and in the age group of 31-40 years. About 58% of the families had family size ranging from 5 to8. Their educational level was up to Medium English School (58.33%). The estimated average income was Rs.822 per month. The data also revealed that they had exposure to outside district and some of them had exposure to TV/radio. For most of the activities, about 70 percent took joint decisions.

As per the objective of the study, for capacity building of the WALs, agro-enterprises selected were :

1. Mushroom cultivation
2. Rice processing with parboiling unit
3. Bodi making with solar drier
4. Bee keeping
5. Backyard poultry rearing

Group discussion (27 nos.), followed by training (23 nos.), demonstration (23 nos.) and exposure visit (13 nos.) were conducted for capacity building.

It was observed that various types of socio-cultural barriers were there in villages which created hindrance for the WALs to take part in any type of developmental work. Before the project the social climate was unfavorable including lack of team spirit, lack of social mobility, uncertain marketing situation, social stigma and gender inequality. In order to develop a favourable climate, focus group discussions, brain storming sessions, regular advisory services, awareness meetings, field trips, identification of village market points and retailers were arranged.

After transfer of the technologies related to selected enterprises, the capacity building of WALs was measured by the gain in knowledge and skill. The highest gain was in case of mushroom cultivation in both knowledge (40%) and also skill (35%) followed by rice processing where they had gained 39% in knowledge and 25% in skill. But on the other hand, the lowest gain in knowledge (29%) was in case of backyard poultry rearing while lowest skill in the field of bee keeping (14%).

The impact / outcome of enterprises were also observed during the project work. The average profit, average productive use of leisure time and average production were considered as the parameters to judge the impact. The highest profit was obtained from mushroom cultivation which the WALs preferred most as one of the best women friendly agro-enterprise followed by rice processing with par boiler for income generation. On the other hand, they were very much unhappy with the *bodi* making enterprise which was processed with the help of solar drier developed by CRRI, Cuttack.

After introduction of enterprises, the WALs faced various constraints under different areas like: non-availability of spawn and straw treatment for mushroom cultivation, heavy weight of parboiling unit and its non-availability for rice processing, in efficient functioning(in adequate penetration of sun rays) and less capacity of solar drier, discolouring of products and sourness in taste in *bodi* making, non-availability of bee colony, difficulty in managing bees and fear of bee attack while bee keeping, watch and ward of birds by WAL's during their engagement in field and immunization for poultry rearing.

As per the objectives of the study, the impact on their socio-cultural living and the leadership development were recorded through case studies.

Case study 1: Mushroom-an intervention for women empowerment

Self Help Group named 'Jai Sriram' in Salepur Block of Cuttack District, constituted in 2006 with a small group of 12 women members, has now emerged as a path finder for women empowerment. Smt. Sabitri Rout, the President of SHG, now realizes the real meaning of empowerment. According to her, 12 members of her group belonging to SC & OBC had neither any income nor aspiration in life except discharging household activities as means of living. Under her leadership, the group started selling grocery and subsequently ventured into broom making, that failed due to lack of market. In 2007, the scientists of DRWA, Bhubaneswar through CYSD, initiated the process of empowerment. After identifying the needs, seasonality of employment, access to resources etc, of farm women through survey and PRA, they decided to take up straw and oyster mushroom cultivation as appropriate interventions. The scientists endeavoured best to maintain group cohesiveness through motivation, focus group discussions, exposure to successful units, regular advisory services and sharing of experiences of successful farmers. When the group was convinced of mushroom enterprise, training-cum-demonstration was organized followed by the support of critical inputs like spawn and polythene. To help women achieve a fair degree of competency, regular follow-up was also arranged. The first phase started with enterprise of 30 beds of oyster mushroom. The investment was Rs. 450 @ Rs. 15 per bed. Total yield was 50 kg out of which they consumed 30 kg at home and sold 20kg @ Rs. 40 per kg. in the village itself. The total income was Rs. 800 with a profit of Rs. 350.

Mushroom cultivation (Straw)

Mushroom cultivation (Oyster)

Now, the group members are fully motivated and convinced about the benefit of the mushroom enterprise. The enterprise has now branched into individual enterprise with 10 – 30 beds in each household to enable easy marketing. The male counterparts appreciate the farmwomen in this type of endeavour, as it did not disturb the household activities. The women use their leisure time for about two hours per day and earn good amount. The farmwomen feel oyster mushroom is more profitable with less investment compared to straw mushroom.

Regarding leadership development, the President Sabitri Rout has trained a group of members and out of them three have become trainers in mushroom cultivation. The nearby villages like Jaripada, Chapada, Safa kanpur, Kochila Nuagaon and Rameswar have been covered in conducting training cum demonstration and now 80 farmwomen are motivated and inspired. With their effort, the Sri Laxmi SHG (15 members) of Jaripada village has come forward to take up the enterprise in a large scale and has got a sanction of Rs. 2.5 lakhs from Gramya Bank, Tangi. During Tribal Fair of Orissa organized in Exhibition Ground, Bhubaneswar, the particular group shared their success story in the presence of the Governor of Orissa.

Case study II: Rice Processing by using improved Parboiling Unit

The SHG 'Braja Sundar Pur' in a village of Nuagaon Block under Naya Garh district was formed in 2005 with Smt. Sukanti Pradhan as President of the group. All the 15 members were from the backward class. From the day of its inception they were involved only in making monthly contribution and taking loan from their common fund with minimum interest as and when needed. They had no income generating activities in the group. In 2008, the Scientists of DRWA, Bhubaneswar visited the place and introduced the technology of rice processing. The members were imparted training-cum-demonstration on use of Parboiling unit developed by CRRI, Cuttack, as an income generating activity. They were very much convinced with the technology. Subsequently, at the initial stage, the group purchased 12 bags of paddy during harvesting period @ Rs.500 per bag with total investment of Rs.6000. After processing, a quantity of 684 kg of rice was sold @ Rs. 12 per kg worth Rs.8208 with net profit of Rs.2208. In addition, the non-members of the village had used the technology on rental basis @ Rs.10 per day which yielded Rs.400 per year. Now three of the group members have suggested modifying the Parboiling unit into half its capacity, which will be easy for domestic use. In the mean time, a NGO named "Mahila Club" had come forward to help the SHG in providing finance, if necessary, and in marketing of the produce. Now, they are producing the parboiled rice and the NGO helps in selling it in local markets. So the enterprise of rice processing has proved a successful intervention for women empowerment.

Resource base, traditional knowledge and participation of farm women in livestock production

A K Misra ,P K Sahoo & Abha Singh

This is an inter-institutional project. Besides, DRWA the other participating institutes are IVRI, Izatnagar, UP (Dr (Mrs.) Hema Tripathi), NRC on Pig, Guwahati, Assam (Dr Nihar Ranjan Sahoo, Dr H. Chaudhary, Dr (Mrs) P. Kaushik), NRC on Mithun, Jharnapani, Nagaland (Dr A Mech, Dr R K Singh, Dr A Dhali).

Objectives

- Study the resource base, perception and traditional knowledge of farm women in livestock production
- Examine the involvement of farm women of different social groups in decision making related to resource utilization, livestock management and marketing of livestock and their products
- Identify potentials and constraints of farm women related to livestock production
- Test and refine appropriate livestock interventions suitable for enhancing livelihood of farm women on selected locations

Progress

A two day workshop was conducted on 22-23 August 2008 at DRWA in which detailed technical programme and sampling plan for the survey was finalized. A number of PRA tools, including rapport build-up, participatory social mapping, changing trend/time line, activity profiles for men and women, seasonal calendars, preference ranking and scoring, focus group discussions, field observations and semi-structured interview were employed for obtaining the required information. One district from each state is selected based on the livestock population and proximity to research station. From each district, one block and from each block two villages were selected for in-depth study. Participatory methodology with focused group discussion with men and women was used for collection of data. The selected locations have contrasting characteristics in terms of demography, climate, rainfall, cropping and livestock production systems (Tables 25 & 26).

Table 25. Agro-climatic, demographic and socio-economic characteristics of the selected locations

Location/state	Orissa	Uttar Pradesh	Assam	Nagaland
District	Puri	Bareilly	Kamrup	Phek
Block	Sakhi Gopalpur	Bithri Chainpur	Rani	Pfeutsero
Village	Jaipur	Kalapur	Noorgaon	Thüvopisümi
Rainfall, mm	1408(1100-1900)	1096(800-1200)	1896(1500-2600)	1257(1200-2500)
Climatic zone	Coastal	Semi-arid	Semi-arid	Hill & Mountains
Major cropping system	Rice, pulses, oil seeds, jute, and turmeric in Rice production system	Wheat, rice and sugarcane production system Wheat in Rabi and paddy, maize,bajra, jowar in kharif crop season	Rice production system	Rice, maize, millets, chillies, ginger, oilseeds, pulses, beans (Jhum and terrace system)
Plantation crops	Coconut, Banana, Papaya, Cashew	Mango, Pomegranate, Litchi	Cashew, Banana, Papaya	Peach, Plum, Banana, Guavas, Pine apple,
Livestock production system	Dairy, Small ruminant and Backyard poultry	Buffalo, Cattle and Goat	Pig, Backyard poultry, Cattle, goat	Pig, Backyard poultry and Mithun
No. of households	180	121	65	515
Dominant community	SC/Behra	BC/Yadav's	BC/SC/ST	Chaksang and Pochury tribes of Mongoloid race
Population	980	955	658	500
Male %	51.0	50.8	52.8	54.0
Female %	49.0	49.2	47.2	46.0
Literacy %	60.0	49.0	74.2	71.3
Male	70.0	57.0	76.2	75.3
Female	50.0	42.0	69.4	67.8

Table 26. Number of livestock in the selected villages

Livestock	Jaipur	Kalapur	Noorgaon	Thüvopisümi
Cattle	380	98	71	10
Buffaloes	-	320	-	-
Goats	187	35	33	15
Mithun	-	-	-	300
Pig	680	-	33	500
Rabbit	-	-	37	100
Poultry	5000	57	177	5000
Duck	120	-	18	200
Dog	-	-	-	400

DRWA, Bhubaneswar

PRA was conducted in Jaipur village of Sakhigopal block in Puri district. The analysis revealed that farm women keep mixed species of animals depending on availability of crop residues, common grazing lands and family labour. Small and marginal farmers generally keep sheep and goats; whereas medium and big farmers keep large ruminants. The main purpose for rearing livestock was to earn income and provide economic stability to the farming systems. Small ruminants and poultry have been primarily kept as mobile assets, which can be disposed (if need arises) in any place and at any time of the year. The productivity of livestock was affected adversely by number of causes. The main constraint faced by the farmwomen was high cost of feed and medicines. Low production potential of the native breeds, non-availability of services (veterinary, credit, seed, etc) in time and high incidence of diseases have been mentioned as other reasons for low productivity of livestock.

Feeding, watering, and cleaning of shed were predominantly chores for women. Grazing, sale of animal and attending to sick animals including taking them to the veterinary dispensary were men's tasks. Women in the study area were enormously influential in shaping decisions in their private family domain, on almost all matters related to sheep and goat rearing, although these decisions are often expressed/acted upon in public by the men in the family. It was observed that women and children involved in sheep and goats grazing were extremely knowledgeable about the shrubs, trees, grasses, and weeds suitable for their animals. They were also found to have good knowledge about household cures and medicines for treating small ruminants.

Women are allowed to play a limited role in economic activities inside and outside the house. Traditionally the chores related to care and management of livestock is shared between men and women in the family. Milking, grazing of animals in common forest, movement of animals to markets or handling of animals for health care are the chores of the men. The women tend to the fowl, pigs, goats, and stall feeding and cleaning of the animals. Hence, care and management of livestock are gender specific. Although exact data is not available, the livestock sector provides substantial employment to men and women in rural areas. The recent development of organizing women into diary cooperative societies has opened the gates for women to participate in development activities.

Participatory action research was initiated in Kantamalim village of Khurda district of Orissa to develop, refine and disseminate improved technological model for enhancing productivity of small ruminants with farm women. The interventions introduced for increasing productivity of small ruminant are (i) Capacity building of farm women through village women link worker (ii) Castration and replacement of males among farmers' flock for breed improvement (iii) Vaccination and deworming to reduce mortality and morbidity, and (iv) Supplementary feeding of concentrate made from locally available feed resources.

Supplementary feeding of home made concentrate is a new practice, growing in importance with an increasing number of small ruminants being fed home made supplements. On an average 20 % higher gain in body weight of lambs/kids was recorded due to supplementation of homemade concentrate as compared to farmers practice. Replacement of male buck/ram has resulted in better stock. Castration of male lambs/kids resulted in more gain in body weight and fetched 20-25% higher price than the un-castrated one because consumers prefer meat from castrated animals. Implementation of scheduled prophylactic health measures has reduced mortality from 33 to 7 % and most of the farmers reported an increase of 25 - 30 % in growth rate in the animals between 6 and 12 months of age in their flocks.

Training on vaccination and deworming of sheep and goat and supplementary feeding of small ruminants for higher productivity was conducted for farm women in Kantamalim village of Khurda district and rearing of backyard poultry and duck and *Azolla* production and its multiple uses in Jaipur village of Puri district. Rearing of duck and chick were taken up by farmwomen after they were imparted training in duck/ poultry in Jaipur village of Puri District. It has been established that *Azolla* can be supplemented for backyard poultry along with other foodgrains and kitchen waste. *Azolla* supplementation did not have any adverse effect on egg production and

health. The technology of *Azolla* feeding was successfully transferred to the farmers' fields and they have started supplementing *Azolla* in the poultry feed. It was found highly palatable by both growing and laying ducks and hens. *Azolla* supplementation in ducks @ 100-200 g/duck/day could replace 25-35% concentrated feed.

An average increase of 1.25 l/d in milk yield was observed due to supplementation of groundnut cake in the concentrate mixture fed to crossbred cattle.

The fodder production technology was demonstrated round the year at DRWA farm for capacity building of various stakeholders. Fodder crops grown in the fodder demonstration plots were cowpea, maize, sorghum, pearl millet, oat, berseem, lucerne, siratro, stylo, clitoria, hybrid napier (Co-1, Co-2, NB-2). Ensiling of mixed grasses at flowering stage was also under taken at DRWA research farm.

NRC on Pig, Gawahati

PRA was conducted in Noorgaon village of Rani block in Kamrup district. The farm women who participated in the PRA were primarily practicing mixed farming. Livestock production and agriculture was their major source of income generation. Both men and women are involved in livestock rearing. Women play important roles in protecting natural resources by teaching their children about the environment and the traditional customs of appropriate use and protection of natural resources, as perceived by community members. Women account approximately for two third of all labour required in livestock enterprises. Although women participate in animal husbandry, they are also occupied with many household tasks such as taking care of the family's food and clothing needs and ensuring the health of the children and other family members. Men usually do most of the work outside and away from the home, particularly herding animals, participating in meetings and business management. However, almost all of the men's work is seasonal. In contrast, women's work is continuous during the day and during the year, particularly cleaning and feeding of animals, taking care of children and housekeeping.

By and large, cattle, buffalo, sheep and goats are reared under traditional system (extensive) of management, i.e. the animals are let loose throughout the day and in the evening they are tied in animal shed made of locally available materials. The cultivation of quality grass/fodder is rare and the quantity is inadequate. Because, the smaller land holdings are devoted to cultivation of food crops as first priority and the

cultivation of fodder gets least priority. Pigs are reared predominantly by the tribals and pork is gaining popularity day by day. The local variety of pig is black in colour, but it has a small body size, poor growth rate and low prolificacy giving poor returns. Farmers' choice on pig breeds was studied by using the matrix ranking. The farmers are rearing two types of pigs and have preference of black colour breeds, 1) local non-descript, and 2) improved crossbred. Each breed had advantages for particular traits. For example, the desi pigs were most resistant to disease and most adapted to scavenging condition and poor quality feeds. Improved pig had the more growth rate, prolificacy and market value.

The farmers identified 10 constraints currently limiting piggery development in their area. Women are very much interested to rear pig but construction of pig sty is a major problem whereas according to men, finance is becoming major constraint. Other constraints mentioned by them are inadequate scientific knowledge, and lack of good quality breed/piglets (Table 27).

Table 27. Gender wise problem ranking(on a 10 point scale) in pig rearing

Problem	Women	Men
Improved strain/breed	******	*********
Feed	********	******
Disease	*******	*****
Market	*******	**
Capital	*****	**********
Govt. scheme	*****	*******
Vet facilities	******	********
Scientific technologies	*********	*********
Construction of sty (pig house)	**********	***
Production of piglet	******	****

NRC Mithun, Jharnapani

PRA was conducted at Phosuphoda village of of Phek district. Animal husbandry is a tradition with the Naga's life from time immemorial and symbolic to the health and wealth of a Naga family. Rearing of pig is the usual practice in every family whether poor or rich. The demand of meat is increasing year by year due to population growth and rise in income. The living standards of the people are also going up resulting in increased demand of meat year after year. But the production is not sufficient to meet the growing demand due

to low productivity of local breeds and to meet the demand livestock are imported from outside the State. Most of the farmers rear 2-3 pigs in their backyard. They procure piglet from Dimapur @ Rs 3000/ piglet of 2 month old and after 7 months they are sold @ Rs 130/ kg. They use red soil in the shed with assumption that it contains iron. The commonly used non conventional feed resources to pig are Colocasia leaves, stem and tubers, Jack fruits, Sweat potato, Pumpkin, Baur (Conyza auriculata), tapioca (leaves and tubers), banana, etc.

The major constraints perceived by the farmers were non availability of quality piglet and feed, inadequate knowledge of scientific feeding, housing and health cover measures. Poor economic status of the farmers was also a major constraint for adopting scientific technologies regarding pig rearing.

Meat preference by women and men was studied separately. Both men and women prefer black colour pig/dog. White breed across the valley is not accepted by the people. People consider that such kind of pig is not good for family or village. Order of meat preference is: Dog< Pork<Chicken<beef< mutton.

IVRI, Izatnagar

PRA was conducted in Kalapur village of Bareilly district. The village is dominated by the Yadav community. Over 90 % of the households were engaged in agriculture and animal husbandry. There were 75 tube wells and 2 ponds in the village. The local institutions in the village were gram panchayat, primary school, village cooperative society, temple, self help group and an NGO.

The time spent and involvement of rural women in the livestock production activities revealed that irrespective of the socio economic status, rural women spent more than 3 hours per day on performing dairying related activities. The rural women participation was found high in the areas of feeding animals, management and preparation of livestock products. Their extent of participation was medium in case of health care and low in fodder production and breeding related activities. Women were not involved in the marketing of cattle and buffaloes. Decision making pattern showed that women belonging to the nuclear families were much more involved as compared to those who belonged to the joint families with respect to cattle and buffalo production activities including the adoption of technologies / practices.

Network project on enhancing livelihood of rural women through livestock production

A. K. Misra and P.K. Sahoo

Realising the need for evolving appropriate technologies and management systems to improve the productivity of livestock and to provide sustainable livelihood opportunities to the farm women, a network project was initiated during the year.

Objectives

1. Assessment of socio-economic conditions, women's role, gender issues, policies and programmes in livestock production

2. Identification and refinement of appropriate technologies to address the gender needs
3. Facilitate appropriate institutional mechanism and capacity building for up-scaling of appropriate technologies

Network Centres

1. Directorate of Research on Women in Agriculture, Bhubaneswar, Orissa
2. Indian Veterinary Research Institute, Izatnagar, Uttar Pradesh
3. Veterinary College and Research Institute, (TANUVAS), Namakkal, Tamil Nadu
4. PG Institute of Veterinary and Animal Sciences, (MAFSU), Akola, Maharashtra
5. ICAR Research Complex for NEH, Umiam, Meghalaya

Progress of Work

The Launching Workshop of network project was conducted at DRWA, Bhubaneswar on 20-21 January 2009. Principal Investigators and Co- Principal Investigators of the cooperating Centres attended the workshop. The technical programme, survey schedule, survey procedures, and methodology for identification and refinement of women specific technologies of livestock production were discussed in detail. A frame work for project implementation including the technical programme was finalized.

Network project on development of expert systems for agriculture and animal husbandry

The project was initiated during 2008-09 with DRWA functioning as the Lead centre for corodrination of the project activities. The other network centres are, Zonal Coordinating Unit, Zone VIII, Karnataka; Directorate of Extension Education, TNAU, Coimbatore and Directorate of Extension Education, TANUVAS, Chennai.

The project aims to develop expert systems for facilitating instant decision making process of the farmers through ICT enabled mechanism. The expert system will also be synergized with the existing KVK e-linkage system for its implementation.

A Brainstorming session was organized at Zonal Project Directorate, Zone VIII, Bangalore on 15 December 2008 for sorting out the roles and responsibilities of the network partners. The first stakeholders meeting of the project was held at DRWA on 16 December 2008, wherein the technical programmes and budgetary issues were discussed and finalized.

Directorate of Extension Education, TNAU reported that the contents on the various harvest and postharvest practices and activities with respect to rice, sugarcane, banana under precision farming, ragi and coconut had been generated and content validation was in progress. Hardware and software requirements for development of the expert system are identified and their procurement process is in progress.

Progress of work at Sub-centre

A study on **Ergonomical interventions in developing hand operated maize dehusker-sheller for farm women** was initiated.

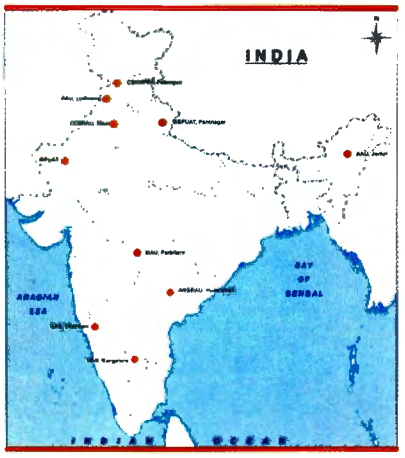
Data on position of cobs from 225 standing crop of maize (variety JM 216) has been collected to analyse the situation of workers while plucking it from the plants in field itself. About 96 per cent plants were having 2 cobs whereas 24.9 per cent plants were having 3 cobs, 1.8 per cent plants with 4 cobs and only 0.44

per cent plants with 5 cobs. Majority of cobs were between elbow height and metacarpal-III height of 5th percentile values.

Data on physical properties of JM 216 variety of dry cobs (un-dehusked and dehusked cobs) were collected for getting base data in terms of length, number of cob having stalk or not, length of cob with and without stalks, weight of un-dehusked cob, maximum diameter of cob, number of grain lines in dehusked cob, grains per dehusked cob, 1000 grain weight, grain size etc. The data will be utilized for designing hand operated maize dehusker-sheller for farm women. A random sample of 200 un-dehusked cobs were taken for this study. On an average, 91.5% un-dehusked cobs were having stalk of 40.3 $\pm$ 24.2 mm length and 10.9 $\pm$ 2.0 mm diameter. Mean total length of un-dehusked cob was 210.3 $\pm$ 22.7 mm with average maximum diameter of 53.1 $\pm$ 4.1 mm. Average weight of un-dehusked cob was 178 $\pm$ 31.1 g. The 1000 grain weight of dry cob was 269.3 g. About 85.5 per cent dehusked cobs do not have grain up to its full length. On an average, 14-15 grain lines were observed in each cob with 36 $\pm$ 7 grains in each line having size of 10.34 $\pm$ 0.67 mm in length, 8.48 $\pm$ 0.81 mm breadth and 4.26 $\pm$ 0.6 mm thickness.

A preliminary experiment on commercial maize dehusker-sheller was conducted. Data on power consumption in dehusking-shelling of maize cobs at different feed rate in commercially available motor operated maize dehusker-sheller at CIAE, Bhopal were collected. The peripheral speed of drum was kept to 5.36 m/s. The power consumption up to feed rate of 100 kg/h was found to be less than 100 W. This indicated that hand operated maize dehusker-sheller could be developed having 80 to 100 kg capacity/h.

ALL INDIA COORDINATED RESEARCH PROJECT ON HOME SCIENCE



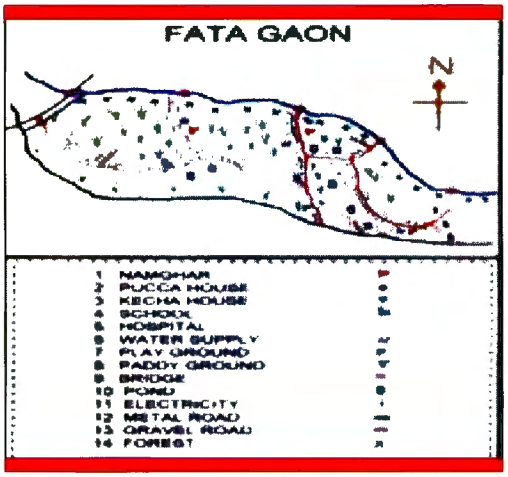
The All India Coordinated Research Project (AICRP) on Home Science is coordinated by Directorate of Research on Women in Agriculture with nine centres(CCSHAU, Hisar; PAU, Ludhiana; UAS, Dharwad; MPUA&T, Udaipur; ANGRAU, Hyderabad; GBPUA&T, Pantnagar; MAU, Parbhani; AAU, Jorhat; and CSKHPKV, Palampur) located in different State Agricultural Universities of the country. The project combines basic, applied and strategic research in five major disciplines of Home Science namely Food and Nutrition, Clothing and Textiles, Family Resource Management, Human Development and Home Science Extension Education. Each discipline has specific thrust of research that has been knitted together to focus attention on empowerment of women in agriculture for enhancing the quality of life of farm families. The project focuses on development of gender specific database, training modules for farm women, technology interventions for drudgery reduction in agriculture, nutritional security and health promotion of farm families, promoting vocational skills amongst adolescent girls, value addition to under-utilized natural fibre resources and empowerment of rural women for livelihood security. A three day Annual Workshop of Project was held at CCSHAU, Hisar from 18 to 20 February, 2009, where in progress of work and achievements during 2007-08 and 2008-09 were reviewed and presented. Technical programmes for the ensuing year and plan of action were also finalized. A brief summary of progress of work and salient achievements made during the year 2008 – 09 are presented hereunder.

1. Gender specific data base of farm families

- The disaggregated gender specific data were collected from 1760 households covering 3520 respondents(men and women in equal numbers) during 2008-09. The data on personal profile of the respondent, roles and responsibilities and access to and control over resources of male and female were collected pertaining to major agricultural activities such as farming, post harvest management, horticultural crop production, livestock management, fisheries and homestead resources. The data on demographic and economic factors including, family size and composition, education, occupation details, agriculture related movable and immovable assets and also the household assets etc were also collected.
- In most of the selected households, education was up to middle school, highest being in Punjab (49%) followed by Assam (42%).
- Farming was found to be the main occupation for more than 65 per cent households in six states namely Himachal Pradesh, Punjab, Assam, Uttarakhand, Haryana and Rajasthan.
- About half of the sampled households in Andhra Pradesh and about 61% in Karnataka were labourers
- Most of the women respondents reportedly performed the farm related activities jointly with male members in all the states, with highest percentage (52%) was in Andhra Pradesh.
- With regard to responsibility, majority of the rural women had partial responsibility in farm related activities.

- The highest percentage (32%) of sampled women have complete access to farm related resources belonged to Karnataka followed by Himachal Pradesh (28%).
- Only an estimated 9% of the women respondents reportedly had complete control over the resources
- Role of women was significant in post harvest activities such as threshing, drying, winnowing and cleaning and majority of the respondents performed the activities jointly with male
- The survey revealed, in general, women held only partial responsibility in post harvest management activities
- Participation of women in horticultural activities among the selected households was observed only at the study centres of few states namely Harayana, Uttarakhand, Assam and Himachal Pradesh.
- An estimated 27 per cent of women respondents in Haryana reported independent participation in horticultural activities
- In Assam 62 percent of female respondents reportedly performed the horticultural activities jointly with male.
- In Himachal Pradesh about 34 per cent rural women participated independently in processing of horticultural produce and taking complete responsibility in cutting and budding
- All the surveyed women of Haryana performed either one or all the activities such as irrigation, application of manure, grading and processing of horticultural produce independently and have held the complete responsibility in all these activities.
- About 38% of women respondents claimed complete access to resources pertaining to horticulture activities
- Even though the women reportedly had access to the resources, they did not have the control over the resources which limited their decision making power to avail the goods and services.
- Among the surveyed women belonging to Uttarakhand, Rajasthan, Himachal Pradesh and Punjab, a high percentage of women participated independently and jointly with male members.
- Women's participation was negligible in grazing and breeding of animals.
- However, their participation was high in the activities such as cleaning and maintenance of the cattle shed, feeding of animals, fodder management, excreta management and care of sick animals
- The survey revealed that women were free to use the livestock and its products within the boundaries of home but buying or selling or breeding was not within their control for majority of the female respondents.
- About 2% of the surveyed families (Assam, Haryana, Himachal Pradesh and Karnataka) were involved in fisheries related activities and women's participation was only marginal except in Assam.
- Significant participation of women was observed in homestead related activities at all the centres.
- The female members were performing homestead garden related activities such as nursery raising, irrigation, application of manure, harvesting etc independently.
- It was observed that there was an ample scope and need for knowledge dissemination regarding vegetable cultivation and related post harvest technologies for livelihood and nutritional security among the rural women
- The data pertaining to homestead related resources revealed that rural women had better access and control over homestead resources

2. Development of gender specific extension methodologies and training modules



Each centre has adopted five villages and the techniques such as village mapping, transect walk, and Venn diagram were employed to understand the village layout, learn about village resources and figure out social composition of the village, to depict the physical and social features of the village including the resources and infrastructural facilities and also for depicting the participants perception of relations between local groups and organizations and their linkages with local institutions.

The disadvantaged groups of rural women and young girls have been identified for the purpose of capacity building. Various activities were undertaken for capacity building of women groups in terms of enhancement of knowledge and imparting skill. Lectures and discussions were held to enhance the leadership and decision making abilities of rural women and make them aware of the development programmes of the government. Trainings were organized for rural women and adolescent girls in adopted villages to equip them with various skills so that they can start small scale enterprise for their livelihood security.

Linkages had been developed with different organizations such as: Medicinal and Aromatic plant sections of the Universities, Department of Horticulture, Mushroom Research and Development Centre, Ministry of Non-Conventional Energy Sources, NGOs, Cooperative Banks, Nationalised Banks, Department of Forest, Block development offices, District Rural Development Agencies, NABARD and State Institute of Rural Development.

3. Technology intervention for drudgery reduction in agriculture

A sample of 1800 respondents (pooled over all the centres) was interviewed for assessing drudgery prone activities and technology priorities in agriculture from the nine centres. Based on the perceived priority, technologies were introduced to the farm women and men in the adopted villages. The technologies were mechanical winnower, mat nursery, spreading tool, improved sickle, harvest bag, ring and plier cutter, improved hand weeders, improved cap, hand rake, row seeder, neem seed pulverizer, capron, clod breaker, fodder collector, paddy thresher, gopal khore, stubble collector, trishul weeder, cotton stalk puller, jowar harvester, groundnut stripping frame,

maize sheller, naveen dibbler, bamboo hand hoe set, fertilizer broadcaster, wheel hoe, potato picker, saral khurpa, groundnut decorticator, cotton bag, dibble and fertilizer trolley. These technologies were prioritized for validation in the field and were mostly used towards land tillage, plant protection and leveling operations. Most of the implements used by women are conventional sickles and Khurpas. The technologies were introduced to farm women and men in a phased manner by covering one village per year. Linkages were established with line departments and technology access is being done through village resource centres.

Intervention programmes for the transfer of improved technologies

Drudgery reducing, work efficient, safe and improved technologies were transferred to the farm women through effective intervention programme. Awareness, knowledge, and preference for adoption of technology was evaluated through post tests. The awareness programmes conducted covering two villages in each centre indicated that there was significant improvement in the awareness status among the respondents and they were able to name the technologies with its functions over the post tests conducted in adopted villages. Significant improvement in understanding the features of technologies with its skill and procurement details was also recorded. Data collected on subjective responses on their drudgery experiences indicated that there was significant positive change in the drudgery perception score due to technologies used by them namely khurpa, weeder, improved sickle, spreading tool, wheel hoe, cot bag, hand rake etc. Improved sickle is the technology which was found to be readily adopted by farmers in almost all the centres. The other technologies adopted by farmers by purchase were gopal khore and trishul weeder. The reasons for not accepting the technology for purchase were found as due to needed modifications in the technology, price reduction and suitability of technology for the purpose. The impact of technology on drudgery reduction of women was studied in terms of reduced ergonomic cost. Ergonomic cost was calculated by measuring heart rate, energy expenditure, total cardiac cost of work and physiological cost of work. Reduction in the muscular stresses was also measured with the use of improved tools.

Ergonomic assessment of Head Load Manager

This technology was fabricated by ANGRAU, Hyderabad for reducing drudgery in the manual head loading of vegetables while transporting and it relieves drudgery by shifting the loads on heads to shoulders and back muscles.

Ergonomic assessment of bamboo based enterprise

Among the selected enterprises bamboo enterprise was found to be more drudgery prone and was selected for ergonomic assessment. The conventional method of activity was studied. The activity of cleaning and smoothening the bamboo strips with darat was carried out for 30 minutes. Average resting heart rate was 87.22 bpm whereas, during activity heart rate increased to 97.13 bpm. During the recovery period the heart rate was 82.97 bpm. The total cardiac cost of work was 254.86

beats. The results also showed that there was reduction in the grip strength of both the hands of the worker. The grip strength of the right hand was more as the activity involved more movement of the right hand as compared to the left hand.

Empowerment of women for resource management

Data were collected from women self help groups on three resources such as fuel, water and income and their awareness on managerial practices to improve the existing status by empowerment measures has been examined. Results indicated that status of awareness of women on the three resources was less and there was potential to improve the same by disseminating information and technologies. Trainings were conducted for the women self help groups in the adopted villages on fuel and energy saving methods. The fuel saving devices such as improved cook stoves, solar cooker, indigenous solar dryer were demonstrated to the women.

4. Nutritional security and health promotion of farm families.

Nutrition garden was promoted among two hundred and seventy farm families in the nine centres to create awareness and motivation about the role of micronutrients in the diet. Different season-wise crop rotation was prepared in different centres. Seeds and seedlings were procured from university and local markets and distributed among the selected families. Other inputs like vermicompost, neem oil, neem cake were supplied to the beneficiaries in different centres based on individual needs.

Nutrition education and awareness through information, education and communication (IEC) programmes for improving health and nutrition of farm families

A total of 374 numbers of IEC (Information Education and Communication) programmes were conducted on various aspects such as general health and nutrition, health hygiene and sanitation, balanced diet, different food groups, nutritional requirement by various age groups, nutritional deficiencies and importance of green leafy vegetables. In the training programme 20, 403 number of respondents participated.

Promoting food based enterprise among farm women for livelihood security

A total of 163 training programmes on food preparation, processing and preservation, drying of fruits and vegetables, pickles, chutneys and squashes making, value added products from locally available foods and papad making etc. were conducted in the 45 adopted villages for rural women and adolescent girls for promoting food based enterprises. A total of 5790 number of beneficiaries participated in the training programme.

Processing and quality evaluation of region specific under utilized foods to combat micronutrient deficiency (anaemia)

An iron rich product named as Lehyam was developed by using seventy locally available unconventional green leafy vegetables. Various formulations were prepared using items like lime juice,

ginger extract, amla, dry dates, ghee, sugar, cumin seeds, garden cress seeds, saffron, cinnamon and cardamom. The standardization of the product developed with different combinations of ingredients, the analysis of nutrient composition of the product formulations were carried out by all centres. Formulation of lehyams using screened and locally available iron rich greens was carried out. The iron content of the selected vegetables ranged from 0.38 mg to 173.16 mg. Formulated products were tested for acceptability by trained panels and overall acceptability ranged from 2.7 to 8.7 based on 9 point hedonic scale. Nutrient composition of the lehyam and also nutrient composition per serving basis was carried out. The per serving basis was 20 g/person/day.

5. Promoting vocational skills amongst adolescent girls

A total of 258 adolescents attending High school (Boys136 and girls 122, IX X class) were selected. Two check lists were developed to find out the awareness levels of the selected sample with regard to vocational courses offered by Intermediate Board of Vocational Education and need based vocational skill training courses offered by Khadi Gramodyog Maha Vidyalaya, Khadi and Village Industries board. The check list (developed based on the vocational courses offered by Intermediate Board of Vocational Education), focused on the following areas:

- Business and Commerce
- Health and Para medical
- Home science
- Agriculture and Veterinary
- Humanities
- Engineering and Technical courses
- Computers
- The check list (based on the vocational skill training courses offered by state Khadi and Village Industries Board), focused on the following areas:
- Forest based industry
- Agro based and Food processing industry
- Polymer and Chemical based industry
- Rural engineering and Bio technology
- Textile industry
- Service industry

The above check lists were administered to a sample 129 adolescents to know their awareness levels with regard to various vocational courses available and the skills need to be developed for taking up a vocational course as a viable enterprise. Results indicated lack of awareness among the selected adolescents. Based on the results, orientation training programmes were conducted along with demonstrations on viable economic enterprises.

Exploring the region specific vocational skills to be promoted and developing need based vocational module for promoting vocational skills

Need based vocational module was developed in regional language for promoting vocational skills for viable enterprises among selected rural adolescent girls. The package included both short term and long term training programmes for economic empowerment. List of few vocational courses which were found most suitable for the rural adolescents are given below:

Pre-School Teacher Training	Skills / competencies needed
	❑ Organization and management of pre school centres ❑ Preparation of teaching aids ❑ Preparation of suitable supplementary diets for pre school children ❑ Establish and maintain creche / care centres
Computer Graphics and Animation	**Skills / competencies needed**
	❑ DTP operator and designer. ❑ Animation and graphics development. ❑ Computer operator. ❑ Junior computer programmer. ❑ Computer maintenance contractor. ❑ Computer hardware technician.

Development of training modules for alternate care of young children of agricultural labourers

Training modules were developed of young children of below 3 years age group.

Module I: Training modules for alternate care of young children of agricultural labourers

From each adopted village, 15 young mothers were selected to find out their awareness with regard to child care and development. The awareness levels of the sample (farm mothers) with regard to child care and development was assessed through checklists.

The check list mainly focused on finding out their knowledge with regard to the following areas of child care and development:

- Developmental milestones of children (below 3 years)
- Toys and other play material that could be used for stimulating optimum development in children
- Role of conducive home environment for optimizing development in children
- Knowledge with regard to antenatal and neonatal care
- Knowledge with regard to infant nutrition, hygiene and health

Results revealed that majority of the mothers (77%) did not have the basic knowledge with regard to child care and development. The educational modules which were already developed during the X Five Year Plan period (2002-2007) were translated into regional language by each of the nine centres. These modules were used for training the farm mothers in organizing developmentally appropriate play activities for young children. The five educational modules are :

1. Understanding developmental milestones of infants (birth to 36 months) and stimulatory environment:
2. Toys and other play material for stimulating optimum development in infants)birth to 36 months
3. To Provide stimulating home environment for infants and young children for their optimum development.
4. Antenatal and neonatal care
5. Infant nutrition, hygiene and health

Supportive material was developed for training young mothers and adolescent girls on child care and development. Training was given to the TOTs, Anganwadi workers and adolescent girls on child care and development. Home based training programme was organized for young mothers (adopted villages) for organizing developmentally appropriate activities for young children and also attending to their nutritional and health needs.

Module - II: Development of training modules (alternate care) of young children of agricultural labourers and farm women for providing quality learning environment for pre-schoolers

From each village 15 mothers with preschool children were selected. A check list was developed to find out the awareness levels of mothers (having preschool children) regarding the need and importance of early childhood care and education. Results revealed adequate awareness with regard to the need and importance of early childhood care and education in majority of the sample (87%). However, the attendance in Anganwadi Centre (AWC) was not up to the mark. Neither the Anganwadi worker nor the mothers made any efforts to send their children to AWC on regular basis. The quality of preschool education was not very satisfactory. Some of the parents (37%) were found to send their children to private schools, near to their village along with older siblings.

Based on the situation, training module on early childhood care and education was developed for training the TOTs, young mothers and adolescent girls on preschool education. Workshop was conducted on preparation of low cost early childhood care and educational play material. An exhibition was also arranged at ICDS project level to exhibit the developed material related to early childhood care and education. Training was given to the TOTs, mothers and adolescent girls in organizing quality activities for preschool (3-6 years) children.

Module - III: Development of training modules for early intervention for prevention of developmental delays

From each centre about 15 to 20 children (below 3 years) having a risk or with developmental delay were selected. A total of 20 mothers of young children (below 3 years) was selected for intensive training in conducting developmentally appropriate intervention programme for young children with developmental delay by each centre. Check list was developed to find out the knowledge levels of the sample with regard to the following areas:

- Concept of developmental delay
- Developmental milestones
- Different types of disabilities and delays in children
- Developmental competencies of children (below 3 years)
- Role of parents in providing developmentally appropriate intervention programme for children with developmental delay
- Causes for developmental delays and disabilities.

Results revealed lack of awareness among the mothers with regard to the above areas. Based on the results, intervention module for training the TOTs, young mothers and adolescent girls in organizing developmentally appropriate activities for children with developmental delay was initiated.

Social and educational empowerment of adolescent girls and young women of farm families.

A total of 1041 adolescent girls and young mothers were selected from 45 adopted villages of the nine centres. The indicators viz. knowledge index, legal awareness, knowledge regarding infant development, menstrual problems and personality aspects viz mental health, inter personal relations, self esteem, social skills, decision making, communication skills were tested.

i. Knowledge index

The indices of knowledge regarding nutrition, health, general knowledge and child rearing practices were analysed. It was observed that majority of the adolescents from Parbhani, Hyderabad, Jorhat, Udaipur, Ludhiana and Pantnagar had low knowledge regarding health and nutrition, reproductive and child health, general knowledge and awareness, and scientific child rearing practices followed by the adolescents in medium category whereas very few of them had higher knowledge.

ii. Legal awareness

All (adolescents and young mothers) obtained low scores in legal aspects which cover fundamental rights, rights related to women and girls, dowry, rape and work related laws. It was also found from the individual interviews that most of them were not aware of the fundamental rights and other legal and marital rights pertaining to their protection such as child marriage, marriage laws, inheritance of property, divorce work related laws etc. The results revealed that majority of girls (86.1%) had very less knowledge about legal aspects followed by 13.4 per cent of the girls with medium knowledge of legal aspects. Very few of them (0.4%) had higher knowledge about legal aspects. Therefore, there is a need to provide information on rights, laws and other legal aspects related to marriage, divorce, child labours, child rights in order to educate them and improve their knowledge regarding legal protection measures.

iii. Knowledge on Infant Development Index (KIDI)

All (Young mothers) obtained better scores with regard to knowledge in infant development. It covers parenting skills, safety and hygiene, norms and milestones, growth and development principles. Regarding knowledge of infant development index majority (90.9%) of the young women had better knowledge and very few (9.1%) of them had poor knowledge. On comparison between states young women of all the states viz, Haryana, Andhra Pradesh, Uttarakhand, Himachal Pradesh, Karnataka and Maharastra were in higher proportions ranging from 75 to 100 per cent in better knowledge category, whereas majority of the young women of Himachal Pradesh, Maharastra followed by Karnataka had better knowledge and few of them had poor knowledge regarding infant development (Table 28).

Table 28. Distribution of young women regarding knowledge of infant development Index (KIDI)

State	KIDI				TOTAL	
	Pre I		Pre - II			
	Better	Poor	Better	Poor	Pre - I	Pre - II
Karnataka	89 (74.8)	30 (25.2)	-	-	119 (100.0)	-
Haryana	25 (100.0)	-	62 (100.0)	-	25 (100.0)	62 (100.0)
Himachal Pradesh	151 (97.4)	4 (2.6)	155 (100.0)	-	155 (100.0)	155 (100.0)
Maharastra	39 (84.8)	7 (15.2)	37 (80.4)	9 (19.6)	46 (100.0)	46 (100.0)
Andhra Pradesh	75 (100.0)	-	-	-	75 (100.0)	-
Assam	-	-	44 (100.0)	-	-	44 (100.0)
Uttarakhand	30 (100.0)	- -	-	30 (100.0)	-	
Combined	409 (90.9)	41 (9.1)	298 (97.1)	9 (2.9)	450 (100.0)	307 (100.0)

iv. Income Generating Activities

The results showed that majority of the adolescents and young women fell in the low category. The similar trend was observed between states. These results indicated a need to empower adolescents and young women to take up income generating activities.

v. Personality

Personality aspects include interpersonal relationships, communication skills, self esteem, social skills and mental health. The interpersonal relations with parents, siblings, friends, neighbours and group at pretest showed that majority of the adolescents were in the high category. The trend was similar in all the centers except for Parbhani and Hyderabad where majority of them were in the medium category.

vi. Mental health

The results revealed that the adolescents and young women had sound mental health. But a large proportion of them had low scores on perception of reality, integration of personality and in autonomy.

- 55 per cent obtained average scores in positive self evaluation.
- 69 per cent obtained low scores in perception of reality.
- 97 per cent obtained low scores in integration of personality.
- 100 per cent obtained low scores in autonomy.
- 72 per cent obtained average scores in group oriented attitude.
- 71 per cent obtained average scores in environmental mastery.
- Over all 77.6 per cent were in medium category followed by 16.4 per cent in low category. Only 5.4 per cent were in high category.

vii. Social skills

Regarding social skills among the adolescents, majority of them belonged to medium category (51.2%). Only 22.5 per cent were in the high category.

viii. Self esteem

From the distribution of adolescents and young women by levels of self esteem presented in Table 29, it was observed that 59 per cent of the sample obtained average scores in self-esteem followed by 36.7 per cent in low score category. It was revealed through the personal interviews that most of the rural girls were external oriented, had very low opinion about self, expected lot of approval from others and showed high level of dependency on others in solving simple problems. A sample of 1030 adolescent girls assessed on self esteem revealed that, majority of them were in the medium category (59%) followed by low category. Only 4 per cent of them had developed high self esteem

ix. Communication skills

The results revealed that majority of the adolescent girls and young women (57.5 %) were having very low levels of communication skills followed by 35.2 per cent in medium category. Only 7.2 per cent of the total sample had high communication skills.

Table 29. Distribution of adolescents by levels on personality aspects

Components	Pre- test I			Pre- test II		
	Low	Medium	High	Low	Medium	High
Mental health	220 (16.4)	1044 (77.6)	80 (5.95)	31 (5.8)	477 (89.7)	18 (3.4)
Social skills	355 (26.2)	693 (51.2)	305 (22.5)	136 (19.8)	436 (63.5)	109 (15.9)
Self esteem	386 (36.7)	620 (59.0)	45 (4.3)	166 (30.9)	358 (66.7)	7 (1.3)
Communication skills	778 (57.5)	476 (35.2)	98 (7.2)	518 (75.4)	160 (23.3)	3 (0.4)

6. Value addition to under-utilized agro and animal based fibre resources for enterprise development

Data related to availability of underutilized agro and animal based fibre resources, prevalence of technologies in fibre/extraction/ process, product development, their present status and gender involvement in utilization were collected from 1800 respondents (200 respondents from each state). From the collected data, it was observed that the selected respondents were engaged in farm related activities, fibre extraction, product making, sheep/cattle rearing, shearing, spinning, weaving, leaf plate making, tailoring, silk rearing and rope making as primary and secondary occupations in different states.

The various types of products which were prepared by the respondents from these fibres using different techniques are given in Table 30.

Table 30. Types of products made and techniques used

State	Products made	Fibre used	Techniques used
Andhra Pradesh	Ropes, door mats, bags, wall hangings, pot holders, table mats, baskets, jhula, travel bags and kambalis	Mesta, banana and jute Deccani wool	Braiding and macramé weaving
Assam	Rope	Jute	Twisting
Haryana	Khes and chader, blankets, durries, bed side runners, rajai, foot mat, towels, sweaters, caps, pillow tufting and quilt.	Silk and wool	Weaving, macramé and knitting
Himachal Pradesh	Ropes, doors mats, bags, wall hangings, pot holders, table mats and baskets Shawls, strolls, muffler, caps, patti, ropes and shawls	Buil, palm leaves, mulberry leaves and twigs Wool, goat hair and rabbit hair	Twisting, knitting, macramé and weaving
Karnataka	Dress material, saris, caps, mats, ropes, bags, wall hangings, pot holders, table mat, key chain and agriculture implements.	Cotton, jute, banana, hemp, coir, sisal, sweet corn wool and silk	Braiding, twisting, knitting, macramé and weaving
Maharastra	Ropes, sumbha, mungse blankets and carpets	Sisal, ambada and Wool	Twisting, weaving and
Punjab	Ropes, floor mat, door mat, cane and mulberry basket small and large, khes, durries and bed sheets.	Babbar grass, paddy straw, hemp, palm leaves, mulberry stem and cotton(Pod)	Braiding, twisting, macramé, Weaving
Rajasthan	Carpet, aasan, ropes, cart bags, hand bags, durries and cot.	Goat hair Macramé,	Braiding, twisting and weaving
Uttarkhand	Folder, bags, wall hangings, tea coaster, cap, flower pot, ropes and mat	Bhimal and rambas	Braiding, twisting and macramé,

For preparing the products from agro based and animal fibres seventy percent of the respondents invested the capital on purchasing machines and tools, raw materials etc. One fourth of the respondents spent the working capital on labour and fifteen per cent of the respondents spent on transportation and other items. While making the products the respondents faced the constraints such as lack of financial assistance, demand, skilled labour, raw materials, problem with the machines used for extraction and technical expertise in all the states. The respondents sold their prepared fibre based products on their own, shops, exhibitions, government agencies, cooperative societies and through private organizations. However, one fourth of the respondents expressed their problems such as difficulty in transportation and marketing, providing high rate of commission to the middle men in selling their products. Many of the respondents suggested that they required the assistance from the government agencies for the development of the technology and sale of the products. They required the help in different areas like training, planning and design development, financial assistance and marketing facilities.

7. Utilization of degradable & non-degradable farm/home waste

Utilization of degradable farm/home waste

The degradable farm wastes such as fibres residues like banana, jute, mulberry, sisal, hemp and wastes like cotton linters and tailor cuttings etc. were utilized for making hand made paper and paper products. The natural, recyclable, fibrous materials were made into pulp by hand pounding and subsequently by mechanical defibrillation which is 100 per cent non polluting process. These fibres were tinged by natural dyes and non

Sisal fibre extraction

Hand made paper products

toxic sizing and fixing agents. Then the pulps were sieved and pressed hard to squeeze out water and then dried in the shade. After careful surface coating, smoothening and glazing of the surface calendaring was done. The uneven edges of the paper then trimmed to the required sizes. After careful packing, the material was delivered to the customer. Products like envelopes, file covers, greeting cards, wedding cards, folders and fort folios, carry bags and photo albums were developed.

Utilization of non-degradable farm waste for production of utility fabrics

The non degradable farm waste such as polyethylene was collected from the farms in the nine states. The products were prepared from this by bonding process. Bonding is a process of making composite fabrics by sandwiching with the use of adhesive or other means. The serviceable portion of torn or worn out fabrics was cut into regular shapes, cleaned and made ready for bonding. The polyethylene sheet was sandwiched in between two fabric layers and exposed to heat and pressure either by use of hot iron / lamination / fusing. The bonded sheets were then made into useful articles. The products made from bonded fabrics were big shoppers, hand bags, water repellent products like rain coat, kids wear, bonded diapers, bibs and baby sheets, refrigerator covers and table mats, apron, baby hood, gloves and mattress.







The detailed information on the type of waste, technique used and products made have been presented in Table 31.

Table 31. Utilization of degradable -non degradable farm /home waste

State	Identified degradable - non degradable farm /home waste	Products made	Techniques used
Andhra Pradesh	Sisal fiber	Handicrafts like wall hangings, table mats, hand bag, basket, jewellery box, fruit bowel etc.	Braiding , pleating and macramé, natural synthetic dyeing and rope
	Sisal fibre waste	Hand made paper making, carry bags, holders, files, gift boxes, lamp shades, scribbling pads, photo frames big shoppers etc.	rope making Hand made paper making bonding, stitching and value addition.
	Fertilizer bags (Urea)	Urea bags-big shoppers, hand bags.	
Assam	Banana waste fibre Jute and Polyethylene	Folders, notebooks, visiting cards Bags and folders	Paper making bonding technique
Himachal Pradesh	Plastic polyethylene	Water repellent products like rain coat, kids wear, bonded diapers, bibs and bay sheets, refrigerator covers and table mats	Thermal bonding and lamination
Haryana	Cotton linters Reused wool Old garments Leftover new fabrics (velvet) Under utilized sarees	Durries, foot mats, mopes, dusters and mattresses. Blankets, suit case covers, traveling bags, shopping bags, bed side runners, foot mats. Floor coverings, hand fans and shopping bags, quilted bed spreaders	Shoddy/yarn making non woven ,knitting stitching , quilting and weaving

Table 31. Contd..

State	Identified degradable - non degradable farm / home waste	Products made	Techniques used
Karnataka	Agricultural wastes and residues such as paddy straw, flower petals, banana, jute, mulberry, hemp and waste such as cotton linters, tailor cuttings waste torn banian materials and waste papers etc. polyethylene bags, nylon sarees	Files, paper bags, pen holders, Jewellery box, paper lamps, sheets, letter pads etc. Phone mats, wall panels, envelopes	Hand made paper making Crochet or knitting and bonding
Maharastra	Scrapes of jean fabric Polyethylene, old cotton fabric	Chart paper, files and stencils sheets	Paper making bonding
Punjab	Polythene and fertilizer bags	Apron, bib, raincoat, bag, hood, gloves and mattress.	Sand witched and stitching
Rajasthan	Unused clothes	Folders, baby feeder, bibs, baby sheets, table clothes, fridge cover, apron	Bonding
Uttarkhand	Polythene, cotton-polyester blended fabrics	Fridge top cover, table mates, baby sheet and bib.	Bonding technique

8. Empowerment of rural women

A study was undertaken to find out the prevalent clothing practices in the adopted villages of each state. A total of 450 respondents were surveyed in the nine states. Regarding the clothing practices 54 percent of the respondents preferred to wear shirts of blended fabric followed by polyester (37.0%), synthetic (36.0%), cotton (27.0%) and woolen shirts (13.0%). Forty seven per cent of the respondents wore cotton vests during winter season. Sweaters and jackets of acrylic blended material were preferred than woolen sweaters and jackets.

Study highlighted that the rural women were not much equipped with better clothing practices. This led to the development of relevant training modules so that rural women can be equipped with required knowledge. For this purpose training modules related to care and renovation practices and enterprise development were developed in local vernacular language. The developed modules have been presented in Table 32.

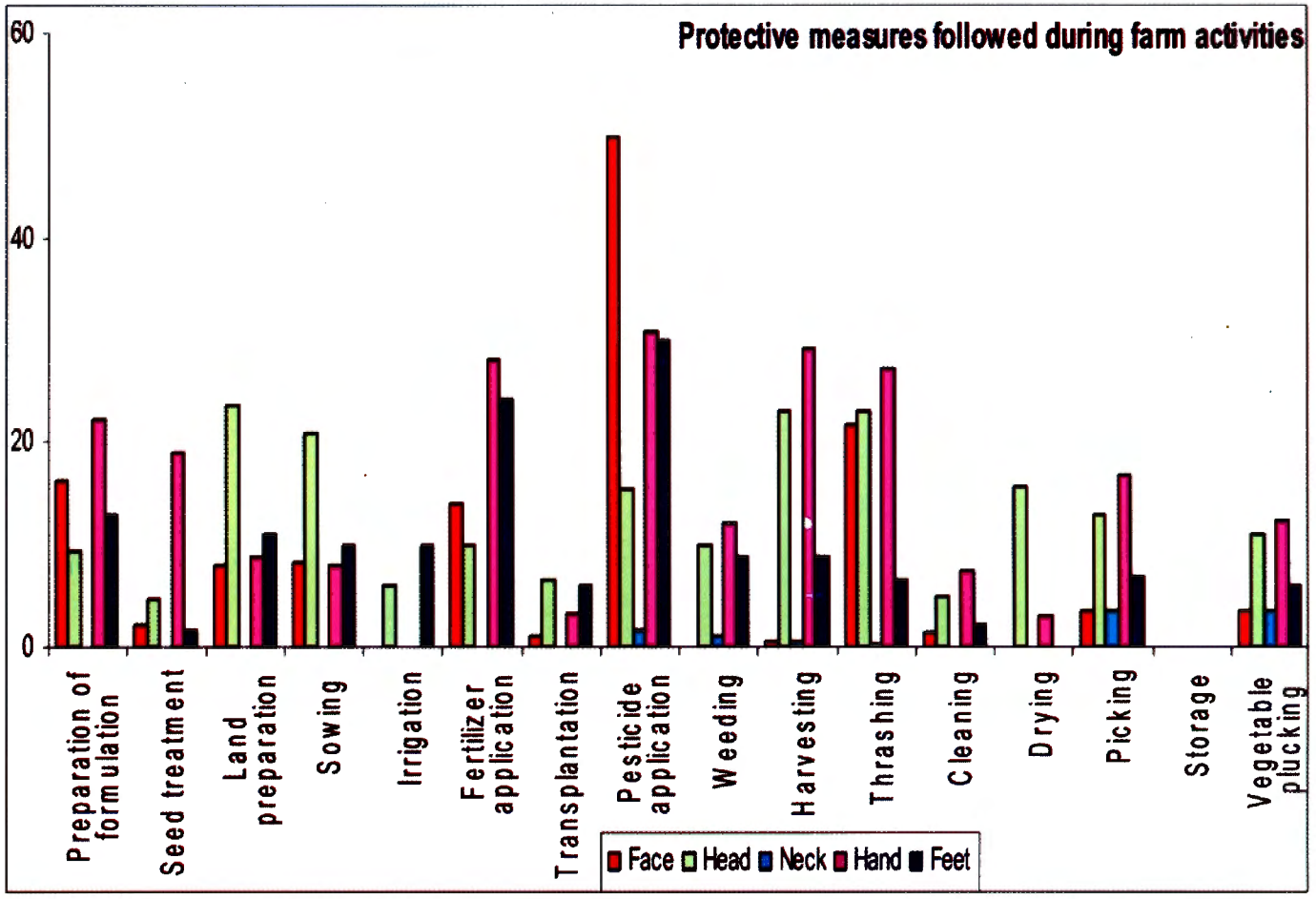
Table 32. Modules developed for women empowerment/enterprise development

State	Title of the Module
Assam	Care of woolen clothing, stain removal and natural dyes
Andhra Pradesh	Sisal fibre , garment construction and value addition
Karnataka	Appropriate clothing practices
Haryana	Bandhej ke naye teknik (Easy technique of tie and dye for novel effect) Batik ki saral vidhiyan (Easy technique for Batik)
Himachal Pradesh	Tie and dye, Block printing, Starches Stain removal Care of woolen garments Embroideries
Maharastra	Tie and dye
Punjab	Tie and dye
Rajasthan	Sources of natural dyes and marketability
Uttarkhand	Methods of stain removal Washing and ironing of clothes Care and storage of garments

To combat occupational health hazards through portable and protective clothing

The agricultural workers are commonly exposed to toxic pesticides that cause serious health problems, due to lack of suitable protective clothing. Protective clothing represents a major tune of defense for millions of farm workers and pesticide mixer personnel against contamination by pesticides. Hence an attempt was made to study the mode of pesticide application for different farming systems and the fabric barrier properties to pesticide residues. The data were collected from 270 respondents from nine states. Majority of the respondents working with pesticides were agricultural labourers and 43.7 per cent belonged to farming activity as primary occupation, 6.3 per cent of the respondents were agricultural labour.

Majority of the respondents worked with pesticides at morning hours (46.0%) and in early morning hours (33.0%), whereas, 24 per cent of respondents were exposed to these chemicals whole day. While



working with pesticides, majority of the respondents (54.9%) used garments with Polyster /Cotton blend followed by cotton (46.0%). Medium fitted garments were most preferred followed by loose fitted garments. During pesticide application about 50 per cent of the respondents protect their body parts such as head, face, neck, hand and feet. Majority (32.0%) used turban/caps, rubber shoes (13.0%) frequently whereas, masks for nose and mouth, goggles, chemically resistant aprons and gloves were occasionally used by few respondents.

More than half of the respondents never used gloves, masks, goggles, aprons, face shields and coveralls while using pesticides. Majority of the respondents (76.3%) applied pesticide/herbicide/ weedicides mainly for plant protection purpose, whereas, nearly 35 per cent respondents used these chemicals for seed treatment and 31.7 per cent used them for soil preparation. The major health problems experienced by the respondents in pesticide application were headache, nausea, vomiting, running noise, dizziness, sweating, skin irritation and itching etc. Deformed finger tips, deformed nails and gradual loss of vision were some of the major problems faced by less than 15 per cent of the respondents in less than one year and 1-2 year period.

Capacity building for micro-enterprise on natural dyes, dyeing and printing, weaving, embroidery, tailoring and fibre handicrafts for economic empowerment

Several training programmes were organized for adolescent girls and women self help groups on hand embroidery, tie and dye, block printing, vegetable and leaf printing, spray printing, weaving, soft toy making, cloth bag making, fibre handicrafts, garment construction, fabric painting, designing for textiles, use of different yarns in weaving, carpet making, knitting of mufflers, socks and sweaters and making natural dyed banana handicrafts, dyeing and printing with natural dyes etc. Consequent to the trainings, groups of women established enterprises related to preparation of tie and dye dress materials, hand embroidery, patchwork, tie and dye block printing. Few self help group women had initiated garment designing at home scale level and also supplied their products to the local shops.

Training on use of waste fabric pieces for flower making

EXTERNALLY FUNDED PROJECTS

I. Department of Biotechnology

Project : Economic up-liftment of rural women through integrated fish farming.

Principal Investigator: P.K. Sahoo

Objectives

1. To train 300 women in integrated fish farming viz. duck-fish, poultry-fish, horticulture-fish and mushroom-fish.
2. To develop entrepreneurship skill among the beneficiaries through integrated fish farming and preparation of various value added products.
3. To assist women in making SHGs,
4. To assist the beneficiaries in marketing their produce.

Summary of progress

The project is in operation in three blocks of Puri and Cuttack districts of Orissa and covers a total of 251 beneficiaries and about 6.0 ha water area. Before transferring the necessary technologies to the farmers, a base line study was conducted to know the socio-economic condition, knowledge level, attitude of the beneficiaries towards integrated fish farming and skills in fish farming, marketing and accounting etc.

So far 251 women beneficiaries were adopted under the project Out of 251 beneficiaries 232 belong to different SHGs and have taken the community pond onlease. Composite carp culture with scientific management was taken up in all ponds and the women were trained in the culture procedure. Different steps for culture such as weed eradication, removal of weed and predatory fishes, pond fertilization, multi-tier species stocking, supplementary feeding were undertaken in each pond in a participatory mode. Ducklings and poultry birds were introduced for integration as per the resource availability and choice of the women group. Women were trained in procuring of one day old chicks and ducklings, their brooding, vaccination and management, so that they can manage the system independently. So far highest fish production recorded was 2.5 t/ha and fish-cum-duck integration is adopted by three groups and fish-cum-poultry integration is adopted by individual farmer.

Under the project training and necessary demonstrations in relevant areas too have been conducted to impart skill to the participants, and to sensitize the participants making them know the process of doing the activities. All the 251 women were trained in scientific fish culture. 45 women were trained in one day duckling brooding and care, managing the fish-cum-duck integration. 85 women were trained in one day poultry brooding, poultry vaccination and care. 20 women were trained in raising horticulture crops like banana, papaya and drum stick in bundh of pond. For the first time azolla culture was introduced in village Jaypur to supplement the feeding of ducks and fishes. A group of 15 women was trained in azolla culture and rabbit rearing.

In addition, regular visits to villages, interaction and meetings with beneficiaries for monitoring project activities, building their confidence and motivating them for greater involvement in project have been the hall mark of project

II. National Agricultural Innovation Project(NAIP)

Project : Visioning, Policy Analysis and Gender

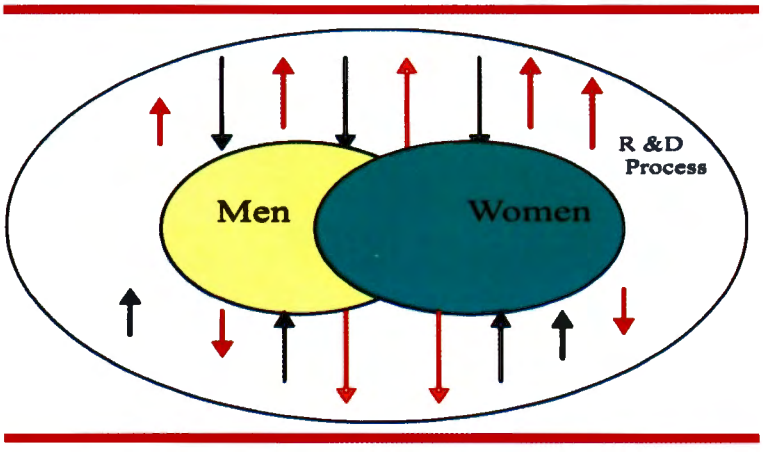
Principal Investigator: Krishna Srinath

Co-PIs: B.N. Sadangi, H.K. Dash

The project aims at strengthening gender role in agricultural research and development by documenting the experiences and lessons learnt from various studies and facilitating collaborate actions with stakeholders.

Progress of work

A conceptual framework to depict the relationship between Gender and Agricultural R &D was developed. According to the framework, there are two ways that we can look at gender in the context of agriculture R & D as depicted in the schematic diagram. First, effects of R & D process on gender as indicated



by inward arrows (in black colour) and second, gender role in R & D process as indicated by outward arrows (in red colour). The details of which are explained below.

How R & D process affects men and women?

A very common area of research in this context is impact of agricultural research and development on gender. For example, how the structural, technological and institutional changes have affected men and women. Studies on gender impact analysis have attempted to understand the process in different situations. One of the much discussed and debated findings has been differential impact of R & D on men and women - whether it is in sharing of benefits, work burden, changes in gender role etc. and reasons thereof. Such studies are useful for programme development and policy formulation to create wider and equitable gender impact by taking care of both the supply and demand side shortcomings.

How gender affects agricultural R & D process?

Here focus is on gender as a factor in R&D process. The objective is to see how men and women do participate in R & D process and influence the outcomes. How they are different in managing the situation. In other words, we have to characterize the situations to explain the level and diversity of gender participation. What should we do to make men and women more effective?

In this approach we can focus on case studies, evaluation studies like performance of men and women managed systems and enterprises. Some useful theme areas could also be gender role, participation and contribution in agriculture and allied sectors and their dynamics under varying situations to understand gender implications in research and development. Outputs from such studies would be useful to design interventions for strengthening gender role in agricultural development and develop gender based R&D models.

A two-day consultation with officials of Department of Agriculture, Government of West Bengal was held on 25-26 August, 2008 in Kolkata to explore the collaborative areas on gender.

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8. सन्तोष कुमार श्रीवास्तव, नरेश बाबू, गीता साहा एवं सुमन अग्रवाल (2008). वर्मी वाश महिलाओं के लिए उभरता हुआ उद्यम, सार पुस्तिका, क्षेत्रीय वैज्ञानिक संगोष्ठी - कृषि महिलाओं में उद्यमता का विकास , 10 सितम्बर 2008, कृषि में महिलाओं पर राष्ट्रीय अनुसंधान केन्द्र, भुवनेश्वर, उड़ीसा, पृष्ठ-13.

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10. Srivastava, S.K., Babu Naresh and Saha, Geeta (2009). Neem for health care and pest care. *Sabujima,* **17:** 58-63.

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1. Agarwal, Suman; Saha, G. and Harapriya (2009). Bee keeping – a profitable enterprise for farmwomen.

2. Arya, M.P.S., Naresh Babu, Srivastava, S. and Sarangi D.N. (2008) Krishi Mahila Sasaktikaran, Barta No.-3, *Paniparba Chass* (Oriya). NRCWA, Bhubaneswar

3. Mishra, S., Sadangi, B. N. & Arya, M. P. S. (2009). Gender sensitive approaches for mushroom cultivation (English), No. 10, pp. 1-16.

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5. Dash, H.K., Krishna Srinath and B.N. Sadangi, (2009). Understanding gender perspective in agricultural research and development gender note (2) under NAIP, Directorate of Research on Women in Agriculture, Bhubaneswar, pp 1-4.

6. Singh, A. (2009). Leaflet for farm women on Food sanitation and conservation of nutrients during cooking" in Oriya.

7. Srinath. K., Sadangi, B.N. & Tripathi, P.C. (2008). Profile – National Research Centre for Women in Agriculture for agricultural sustainability, food and economic security and equity, *ICAR News*, 14(1):9-12.

8. Sadangi, B.N. & Behera, B.C. (2008). Methods of fertilizer application in crops (in Oriya), Women Empowerment Message No.7, Published by Director, NRCWA, Bhubaneswar.

9. Sadangi, B.N. & Behera, B.C. (2008). Methods of weed management in crops (in Oriya), Women Empowerment Message No.5 ,Published by Director, NRCWA, Bhubaneswar.

10. Sadangi, B.N. & Behera, B.C. (2008). Role of NRCWA in empowering women in agriculture (in Oriya), Women Empowerment Message No.9, Published by Director, NRCWA, Bhubaneswar.

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12. Sadangi, B.N., Dash, H.K. & Mishra, S. (2009). Strategy for gender sensitive extension in agriculture and allied fields. Technical Bulletin-11, Published by Director, DRWA, Bhubaneswar. pp.1-35.

13. Dash, H.K., Srinath, K. & Sadangi, B.N. (2009). Understanding gender perspective in agricultural research and development (Gender Note-2). Published by Director, DRWA, Bhubaneswar.

Papers presented at conference/ seminar/workshop

1. Mishra, S. & Sadangi, B.N. (2008). Mushroom in livelihood system of rural women. Abstract in the International Seminar on Strategies for improving livelihood security of rural poor at ICAR Research Complex, Goa, Pp.24-27.

2. Mishra, S. & Sadangi, B.N. (2008). Mushroom as micro-enterprise for economic and nutrition security of farmwomen. Abstract in the 3rd Indian Horticulture Congress 08 on new R&D initiatives in horticulture for accelerated growth & prosperity at OUAT, Bhubaneswar.

3. Sadangi, B.N. (2008). Time utilization patterns of the gender in different farming systems. In Souvenir of Golden Jubilee celebration and National Seminar on Innovative extension strategies for agricultural development and rural prosperity. Pp.207-08.

4. Sahoo, L.P., Singh, A., Sadangi, B.N. & Behera, B.C. (2008). Evaluation of homestead nutritional garden-cum-seed production unit for improving nutrition and seed security of farm families. Abstract in the 3rd Indian Horticulture Congress 08 on new R&D initiatives in horticulture for accelerated growth & prosperity at OUAT, Bhubaneswar. P. 85-86.

5. Agarwal, S. and Srinath, Krishna (2008). *Krishirat Mahilao Main Udamita Ka Vikas – Swam-Sahayata Samuhao Ke Bhumika*. Abstract of Regional Seminar on *Krishirat Mahilaon Main Udhyamta Kaa Vikas*, held at Bhubaneswar on 10th Sept, 2008 organized by N.R.C. on Women in Agriculture.

6. Arya, M.P.S. (2009). Evaluation of varieties for weed suppression/tolerance in rice- groundnut cropping system. Paper presented at Symposium on Resource management in crops and cropping systems under changing climate held at OUAT, Bhubaneswar on 7-8 May 2009.

7. Arya, M.P.S. and Sarangi, D.N. (2009). Gender perception of farmers' families in rice production activities under coastal region of Orissa. Paper presented at Symposium on Resource management in crops and cropping systems under changing climate held at OUAT, Bhubaneswar on 7-8 May 2009 and published in Souvenir P: 136-137.

8. Babu, N., Attri, B.L and Srivastava, S.K. (2008). Organic and inorganic input management in banana for nutritional security of farmwomen. Abstract. "*3rd Indian Horticulture Congress 2008*" organized by The Horticultural Society of India New Delhi, from November 6-9, 2008, at OUAT, Bhubaneswar. : 182.

9. Mishra, S. & Sadangi, B. N. (2008). Published abstract on Mushroom in livelihood system of r u r a l women during International Seminar on Strategies for improving livelihood security of rural poor, at ICAR Research Complex, Goa from 24-27, Sept. 2008.

10. Mishra, S. & Sadangi, B. N. (2008). Published abstract on Mushroom as micro-enterprise for economic and nutritional security of farm women during 3rd Indian Horticulture Congress 2008 on New R & D initiatives in horticulture for accelerated growth and prosperity at OUAT, Bhubaneswar from 6-9, November, 2008.

Presentations in Conference/Symposia/Seminars/other Fora

1. Singh, A and Attri, B.L. (2008). Rural women in nutrition garden- a means of livelihood security. International seminar on Strategies for improving livelihood security of rural poor during 24-27 September 2008 at ICAR Research Complex, E/a, Old Goa.

2. Attri, B.L. and Singh, A. (2008). Studies on shelf life and quality of different vegetables at room temperature and zero energy cool chamber. 3rd Indian Horticulture Congress during 6-9 November, 2008 at OUAT, Bhubaneswar.

3. Sahoo, L.P;Singh, A;Sadangi, B.N. and Behera, B.C. (2008). Evaluation of homestead nutrition garden cum seed production unit for improving nutrition and seed security of farm families. 3rd Indian Horticulture Congress during 6-9 November, 2008 at OUAT, Bhubaneswar.

4. आभा सिंह, प्रभाती कुमारी साहू एवं अरूण कुमार मिश्र (2008). समन्वित मत्स्य पालन द्वारा ग्रामीण महिलाओं में जीविकोपार्जन एवं पोषण सुरक्षा क्षेत्रीय वैज्ञानिक संगोष्ठी - कृषिरत महिलाओं में उद्यमता का विकास, 10 सितम्बर, 2008 कृषि में महिलाओं पर राष्ट्रीय अनुसंधान संस्थान.

5. बृजलाल अत्री एवं आभा सिंह (2008). फल एवं सब्जी मूल्यवर्धन द्वारा महिलाओं में उद्यमता का विकास .

6. अरूण कुमार मिश्र, प्रभाती कुमारी साहु एवं आभा सिंह (2008). पशधन विकास द्वारा ग्रामीण महिलाओं का सशक्तिकरण

7. Mishra, A.K, Sahoo,P.K, Singh, A. and Srinath, K. (2009). Participatory action research to promote productivity of small ruminants with farm women.

8. Srivastava, S. K., Babu, Naresh and Krishna Srinath (2009). Empowering farmwomen in safer pest management in Abstract. *5Th International Conference on Biopesticides: Stakeholders' Perspective*, organized by Society for Promotion and innovation of Biopesticides in collaboration with The Energy and Resource Institute (TERI) from 26 – 30 April, 2009, at India Habitat Centre, Lodhi Road, New Delhi: 193-194.

9. Srivastava, S.K., Babu, Naresh and Attri, B.L. (2008). Gender-friendly management of banana fruit scarring beetle (*Besilepta subcostatum* Jacoby). Abstract. "*3rd Indian Horticulture Congress 2008*" organized by The Horticultural Society of India New Delhi, from November 6-9, 2008, at OUAT, Bhubaneswar. : 180.

10. Saha, G.; Agarwal, Suman; Srivastava, S.K. and Babu, Naresh (2008*). Madhumakhi Palan Krishirat Mahilaon main Udhyamta Vikas ke Liye Prakrati Kaa Anmol Vardan* (in Hindi). Abstract of Regional Seminar on *Krishirat Mahilaon Main Udhyamta Kaa Vikas*, held at Bhubaneswar on 10th Sept, 2008 organized by N.R.C. on Women in Agriculture, P 20.

11. Srivastava, S.K; Babu, Naresh; Saha, Geeta; and Agarwal, Suman (2008). *Vermiwash mahilaon Ke liye Ubharta hua Udham* (in Hindi). Abstract of Regional Seminar on *Krishirat Mahilaon Main Udhyamta Kaa Vikas*, held at Bhubaneswar on 10th Sept, 2008 organized by N.R.C. on Women in Agriculture, P 13.

12. Tripathi, P C, Sankar,V, and Lawande, K.E. (2008). *Pyaj ke sasyottar prabandhan me mahilao ke liye udamita ki sambhavanayen. Kshetriya Vaigyanik Goshthi* (Hindi) held at NRCWA. Abstract, pp. 6.

13. Tripathi,P.C. (2008). Role of horticulture in gender mainstreaming. Poster presented at 3rd Indian Horticulture Congress .Abstract, pp. 456.

Participation of Scientists in Conferences, Meetings, Workshops, Symposia, / seminar etc. in India and Abroad

1. Suman Agarwal participated in Regional Seminar on Krishirat Mahilaon Main Udhyamta Kaa Vikas (in Hindi), held at Bhubaneswar on 10th Sept, 2008 organized by N.R.C. on Women in Agriculture.

2. Suman Agarwal participated in the Annual Workshop of All India Coordinated Research Project on Home Science, held at CCSHAU, Hisar on 18-20 February, 2009

3. Suman Agarwal participated in collaborative Training cum workshop on 'Gender analysis and its application in sustainable rural livelihood security 'organized by International Rice Research Institute and NRCWA under component III of NAIP from 5-7 September, 2008 held at NRCWA, Bhubaneswar.

4. Suman Agarwal attended programme for 'Eastern Zone Stakeholders Meet – Strategy for gender Sensitive extension in agriculture and allied field' on 31st January 2009 at NRCWA, Bhubaneswar.

5. H.K.Dash participated in State level consultation on National foreign trade policy and draft state agriculture policy 2007: Challenges and opportunities for small and marginal farmers held at CYSD, Bhubaneswar on June 25, 2008.

6. H.K.Dash participated in Training and workshop on procurement procedures of World Bank' under National Agricultural Innovation Project held at Water Technology Centre for Eastern Regions, Bhubaneswar on July 1-2, 2008.

7. H.K.Dash participated in Workshop on Forecasting future technological needs for rice crop in India held at CRRI, Cuttack on 28-29 July 2008.

8. H.K.Dash participated in NRCWA-IRRI collaborative Training-cum-workshop on Gender analysis and its application in research on sustainable rural livelihood security held at NRCWA, Bhubaneswar on 5-7 Sept. 2008.

9. H.K.Dash participated at National level citizen's submit on Budget priorities and human development – A case of Orissa Jointly organized by CYSD & Department of A&A Economics, Utkal University on 29 November, 2008.

10. H.K.Dash participated in Review Meeting of expenditure and procurement under World Bank aided project - NAIP held at NIRJAFT, Kolkata on 25 February 2009.

11. H.K.Dash participated in Project Monitoring and Advisory Committee (PMAC) Meeting of V-PAGe sub-project of NAIP to present the progress under gender component held at NCAP, New Delhi on 27-28 February, 2009.

12. M.P.S Arya participated in Training-cum-Workshop on Gender analysis and its application in sustainable rural livelihood security organized by IRRI, Philippines in collaboration with NRC for Women in Agriculture, Bhubaneswar on 5-7 September, 2008 at NRC for Women in Agriculture, Bhubaneswar.

13. M.P.S Arya participated in Training-cum-Workshop on Intellectual property and technology management held at NIRJAFT, Kolkata on 16-18 October, 2008.

14. S P Singh participated in Workshop on Gender Analysis- Under NAIP held at NRCWA, Bhubaneswar on 5-7 Septmber, 2008.

15. S P Singh participated in Regional Workshop on Farm mechanization for small holder agriculture in the SAARC Countries held at CIAE, Bhopal on 22-24 September, 2008.

16. S P Singh participated in National Conventional of Agricultural Engineers and National Seminar on Emerging trends of agricultural engineering for farm mechanization of hilly regions, held at CSKHPKV, Palampur on 20-21 January, 2009.

17. S P Singh participated in XVIII Annual Workshop of AICRP on Home Science held at CCSHAU Hisar on 18-20 February, 2009.

18. S P Singh attended the National Workshop on Reorienting activities of home scientists in KVKs held at SVBPUAT, Meerut on 19 March 2009.

Participation in radio talks / TV programme / Kisan Mela/Exhibitions/ news paper coverage

1. B.N. Sadangi delivered a talk on *Krusijibi Mahilanka pain Jatiya gabesana Kendra* (Role of National Research Centre for farmwomen) broadcast on 26.05.2008 at 7.30 pm in Krishi Sansar, AIR, Cuttack.
2. Sabita Mishra delivered a talk on "Self employment through mushroom enterprise" on 20.4.2008 at AIR, Cuttack.
3. Sabita Mishra participated in Live Phone-in programme of DDK, Bhubaneswar on "Krushimadhyamare Mahila Saktikaran" on 13.3.2009.
4. Sabita Mishra , coordinated and installed a stall of DRWA in the Kisan Mela held on the occasion of the Foundation day of CRRI, Cuttack on 23 April, 2008.
5. Sabita Mishra , coordinated and installed a stall of DRWA at Saradhabali, Puri organized by ICAR.
6. Sabita Mishra , coordinated and installed a stall of DRWA in the State Agriculture *Krishi Mahostva*, held at Bhubaneswar 19-21, February, 2009.

Meetings Attended by Krishna Srinath, Director

1. Second meeting of State Level ICAR–SAU coordination committee at WTCER, Bhubaneswar, 9 April 2008.
2. Seminar on IPR at OUAT, Bhubaneswar, 17 – 18 April 2008.
3. Workshop on Forecasting future technological needs for rice in India at CRRI, Cuttack, 28 – 29 July 2008.
4. One day Exhibition and Workshop under the DelPHE project Improving livelihood security of Women Self Groups (SHGs) involved in livestock rearing through capacity building in gender at NIRD, Hyderabad, 29 August 2008.
5. IRRI-NRCWA collaborative training-cum-workshop on gender analysis and its implication in sustainable rural livelihood security, Bhubaneswar 05 – 07 September 2008.
6. Meeting of XI EFC at ICAR, New Delhi, 9 September, 2008.
7. First Task Force meeting on Convergence and Coordination of Government programmes/ Schemes for Gender Equality and fighting social evils Chaired by Secretary, Department of Rural Development, 22 September 2008.
8. ASRB Foundation Day and Workshop at New Delhi, 4 November, 2008.
9. Third Indian Horticulture Congress organized by Horticulture Society of India 2008 at OUAT, Bhubaneswar, 6 November 2008.

10. National Workshop on Extension strategies for fisheries development: Reorienting the services delivery and support system at CIFE, Mumbai, 8 November, 2008.

11. Meeting of the XVI Extension Council at CIFE, Mumbai as Member, 9 November 2008.

12. National Consultation on Strengthening women's voice on Budget 2009-2010 organised by Ministry of Women and Child Development at WWF Auditorium, Lodhi Estate, New Delhi, 12 November, 2008.

13. The Inaugural session of VIII Indian Fisheries Forum at Eastern Zonal Cultural Centre, Salt Lake, Kolkata, where NRCWA participated in the exhibition, 22 November, 2008.

14. Twenty-eighth Convocation of OUAT as Member, Board of Management Bhubaneswar, 01 December 2008.

15. Meeting on Strengthening gender in NAIP, Component – 3 Projects with World Bank Representatives at New Delhi, 10 December 2008.

16. Workshop on Management and monitoring of field trial of Genetically Engineered crops at OUAT, Bhubaneswar, 03 January 2009.

17. Meeting on Mega Seed Project of ICAR at New Delhi, 05 January 2009.

18. Indian Science Congress at NEHU, Shillong and presented invited lecture, 06 January 2009.

19. Conference of the Directors of the ICAR Institutes at New Delhi, 15 - 16 January 2009.

20. Chaired the Technical Session in the National Seminar on Rural India Developmental Alternatives : Sectoral Convergence for Livelihood Security at CIRG, Makhdoom, Mathura, 17 January 2009.

21. As Chief Guest delivered Valedictory address in the training programme Coconut Patta Painting at Coconut Development Board, Khurda, 30 January 2009.

22. XVIII Workshop of AICRP on Home Science at CCSHAU, Hissar, 18 – 20 February, 2009.

23. The meeting of Management and Monitoring Committee for Women in Agriculture, Department of Agriculture and Cooperation at New Delhi, 5 March 2009.

24. Delivered a talk on Strengthening the role of Home Scientists of KVKs at Conference of Directors of Extension of SAUs at NASC Complex, New Delhi, 13 March 2009.

25. Meeting with CGIAR Centres involved in IFAD facility grant for Component 3, NAIP (ICAR) at IRRI-Delhi office, 18 March 2009.

26. Served as resource person the KVK Home Scientists Workshop at Meerut, 19 – 20 March 2009.

27. Visited Sub-centre of DRWA located at Bhopal and delivered a lecture on Women in Indian Agriculture – An overview in the Trainers' Training Programme on Improving farm tools and equipment for farm women, 25 March 2009.

Awards and Recognitions

1. Dr. Krishna Srinath, Director has been conferred Fellowship of the Academy of Science, Engineering and Technology(F.ASET) by the Academy of Science, Engineering and Technology for outstanding contribution for furthering knowledge systems in service of the society to improve the quality of life of people. The award was conferred to her by Shri Kranmay nanda, Minister of Fisheries, West Bengal on 22 November 2008 at Kolkata.

2. Dr.B.N. Sadangi, Principal Scientist received Dr.K.N. Singh Memorial Award, 2008 of Indian Society of Extension Education, New Delhi, for excellence in Extension research on 20 December 2008 in the National Seminar held at RAU, Pusa, Bihar from Hon'ble Minister of Agriculture, Government of Bihar.

3. Indian Society of Agricultural Engineers (ISAE) has awarded Er. S P Singh, Senior Scientist, with the Distinguished Service Certificate for year 2007-08 during 43rd Annual Convention of ISAE at BAU, Kanke Ranchi from Feb 15-17, 2009.

Human Resource Development (Training availed by Divisional Scientist/ Technical Staff/ Administrative Staff)

1. Abha Singh attended Winter School on Advanced Tools & Techniques for Project Formulation, Implementation & Evaluation at Department of Extension Education, College of Agriculture, O.U.A.T., Bhubaneswar from 5-25 January 2009.

2. Nidhi Agarwal attended the course on Mainstreaming gender concerns in agriculture conducted by National Institute of Agriculture Extension Management, Rajendra Nagar, Hyderabad at WALMI Hills, Kaliasore Dam, Kolar Road, Bhopal from 19-23 January, 2009.

3. Dr. S.K.Srivastava, Sr.Scientist, Entomology, attended Phase-1 of Advanced International Training Programme on Pesticide management and pesticide risk reduction at Stockholm and Svalov, Sweden from 5.05.2008 to 30.05.2008. During training programme he also attended HARDI Spraying course at Denmark and awarded Diploma certificate by HARDI International Denmark on 20.5.08.

4. Dr. S.K.Srivastava, Sr.Scientist, Entomology, attended Phase-2 of Advanced International Training Programme on Pesticide management and pesticide risk reduction at Cape Town, South Africa from 17.09.2008 to 28.09.2008.

Demonstration of Seed treatment methods at Svalov, Sweden (Phase-1)

Group photograph of participants' at Cape Town, South Africa (Phase-2)

ON-GOING RESEARCH PROJECTS

In-house Projects

1. Development of gender information system for agriculture
2. Technological empowerment of farmwomen for family sustenance
3. Refinement of storage pest management techniques in selected cereals, pulses, condiments and spices with gender perspective.
4. Refinement and development of horticulture based cropping models for gender mainstreaming
5. Technological empowerment of farmwomen in production of quality seeds and planting materials of vegetables
6. Participatory evaluation of low cost weaning mix
7. Assessment and refinement of aquaculture technologies for gender mainstreaming
8. Designing gender sensitive extension model and testing its efficacy
9. Livelihood security through entrepreneurial activity among farm families
10. Capacity building of Women Agricultural Labourers (WALs) for increasing efficiency in agro-enterprises
11. Resource base, traditional knowledge and participation of farm women in livestock production

Network projects

1. Gender issues in rice based production system and refinement of selected technologies in women perspective
2. Assessment of gender issues and identification and refinement of selected women specific technologies in horticultural crops
3. Enhancing livelihood of rural women through livestock production
4. Development of expert system for crop and animal enterprises

Sponsored Projects

Sponsor	Project title	PI/Co-PIs
NAIP	Visioning, Policy Analysis and Gender (V-PAGE)	Krishna Srinath, B.N. Sadangi and H.K. Dash
DBT	Economic upliftment of rural women through integrated fish farming.	P.K. Sahoo

Distinguished Visitors

1. Dr Mohan Joseph Modayil, Member ASRB, New Delhi on 7 June 2008.
2. Prof. K.V. Devaraj, Former Vice Chancellor, UAS Bangalore on 9 June 2008.
3. Dr SAH Abidi, Former member, ASRB, New Delhi on 9 June 2008.
4. Dr M Y Kamal, Former Vice Chancellor, SKUAST, Srinagar, J&K on 9 June 2008.
5. Dr Mruthyunjaya, National Director, NAIP on 5 September 2008.
6. Dr Mangala Rai, Director General ICAR, New Delhi on 27 September 2008.
7. Dr P Das, DDG, AE, ICAR, New Delhi on 27 September 2008.
8. Dr A K Singh, DDG, NRM, ICAR on 27 September 2008.
9. Dr P L Gautam, DDG, Crop Science, ICAR on 27 September 2008.
10. Dr S P Tiwari, DDG, Education, ICAR on 27 September 2008.

Workshops /trainings/winter school/ women's day

❖ A 21 days **winter school** on **Participatory Research for Mainstreaming Gender Concerns in Agriculture** sponsored by ICAR was organized during 4-24 December 2008 with following objectives:

- To expose the participants to the concepts and approaches of participatory research and gender analysis in agriculture
- To enable the participants acquire the skills for undertaking participatory research and gender analysis in their project
- Demonstrate to the participants the various women friendly tools and techniques for maximizing the productivity of agriculture, and
- To facilitate discussion among the participants for developing action plan for participatory research with gender perspectives

Twenty three participants (12 female and 11 male) from various organizations viz, State Agricultural Universities, ICAR Institutes, Krishi Vigyan Kendras and State Government officials from states of Jammu & Kashmir, Himachal Pradesh, Uttar Pradesh, Jharkhand, Orissa, West Bengal, Meghalyaya, Maharashtra, Karnataka and Tamilnadu have attended the winter school. Shri U P Singh, Secretary-cum-Commissioner, Agriculture, Government of Orissa inaugurated the Winter School.

Thirty one sessions including seventeen guest lectures on various themes of participatory research and gender analysis were covered by the eminent scientists and gender experts. The sessions covered were: genesis of gender concepts, gender issues in agricultural research and development, gender analysis tools and techniques, women friendly technologies, approaches for gender mainstreaming and gender action plan. Practical sessions on participatory techniques and tools for data collection, azolla production, preparation of balanced feed from locally available resources, data handling and analysis, preparation of gender plan etc. were organized. Participants had actively interacted and learnt the various skills required for preparation of gender action plan. The forenoon sessions were conducted to buildup the knowledge of the participants on participatory research and gender analysis. The afternoon sessions were devoted for using the tools and techniques, which focus on transfer of skills.

Prof. D.P. Ray, Vice Chancellor, Orissa University of Agriculture and Technology, Bhubaneswar delivered the valedictory address and distributed the certificates to the participants.

❖ The Launching Workshop of **Net Wok project on Gender issues in rice based production system and refinement of selected technologies in women perspective** was conducted during 28-30 December, 2008, on formulation, refinement and finalization of technical programme for 2009-10 and

it was decided to conduct survey so as to assess the status of various issues to be under taken in the project.

- The Launching workshop of Network Project on **Assessment of gender issues and identification and refinement of selected women specific technologies in horticultural crops** was conducted at DRWA, Bhubaneswar during 12-13 January 2009. The Project was launched by Dr. R.T. Patil, Director, CIPHET, Ludhiana. The project is aimed to identify the issues related to women in horticultural crops and refinement of women friendly technologies. There are five ICAR institutes including DRWA, Bhubaneswar, IIHR, Bangalore, CTCRI , Trivandrum, CISH Lucknow and CIPHET Ludhiana and one agricultural university namely, GBPUAT, Hill campus Ranichouri in the project. The PI and CO-PI of five network centres participated in the workshop. The project planning, targets and area of survey etc. were finalized in the workshop.

- The Launching Workshop of network project on **Enhancing Livelihood of Rural Women through Livestock Production** was conducted at DRWA, Bhubaneswar on 20-21st January 2009 under the Chairmanship of Dr. S.P.S. Ahlawat, Director & Vice-Chancellor, Indian Veterinary Research Institute, Izatnagar. Principal Investigators and Co- Principal Investigators of the cooperating Centres attended the workshop. The technical programme, survey schedule, survey procedures, and methodology for identification and refinement of women specific technologies of livestock production were discussed in detail. A frame work for project implementation including the technical programme was finalized.

- A workshop on strengthening gender component in sustainable rural livelihood security subprojects under NAIP was held on 7-8 July, 2008. Twelve scienstists including six scientists from CRIDA, Hyderabad, VPKAS, Almora, BAU, Ranchi and OUAT, Bhubaneswar attended the programme.

- A three day Annual Workshop of AICRP was held at CCSHAU, Hisar from 18 to 20 February, 2009, where in progress of work and achievements during 2007-08 and 2008-09 were reviewed and presented. Technical programmes for the ensuing year and plan of action were also finalized.

- A three day training-cum-workshop on **Gender analysis and its application in sustainable rural livelihood security** was organized on 5-7 September, 2008. Thirty two participants from 10 livelihood consortia under NAIP including scientists of DRWA participated in the programme. Dr. Thelma Paris, Gender Expert at IIRI was the key facilitator. Dr. Krishna Srinath, Director and the scientists namely, Dr. B.N. Sadangi, Dr.M.P.S Arya and Dr. H.K. Dash of DRWA were the resource persons.

- The Sub-centre of DRWA, organized one day training programme on **Suitable Improved Farm Implements for Rural Farm Women** to farm women of Semrikala village of Bhopal district on 5.11.2008 in collaboration with KVK. 25 farmwomen of Semrikala village of Bhopal district participated in the training.

- A Trainers' Training Programme on **Improved tools and equipment for farm women** was organized by the Sub-centre from March 23-27, 2009 at CIAE, Bhopal. Eleven participants from five states namely, Punjab, Madhya Pradesh, Maharashtra, Gujarat and Uttar Pradesh participated in the training. Three participants were from state university, one from ICAR institute, two from private KVKs and five were from the state department of agriculture.

- A review meeting was held on 12-13 June, 2008 under V-PAGe to identify new areas for incorporation under the project and strengthen gender component of V-PAGe. The National Coordinator, NAIP Dr.N.T.Yaduraju, the World Bank representative Dr. Satish and ten scientists from DRWA, NCAP and IARI participated in the porgramme.

- Women in Agriculture Day was celebrated on 4 December, 2008 where in 150 women involved in agriculture and allied sectors took part. An exhibition was conducted in which the ICAR institutes and relevant departments of the state and central government erected stalls depicting the various research and developmental activities carried out by them. The farm women evinced keen interest and were very impressed. Later, they also actively participated in ***scientist-farmers interactive session*** where in the issues and problems raised by them were clarified. The scientists from Regional Centre of CARI, CHES, Regional Station of CTCRI, WTCER, CRRI and CIFA participated in the discussion.

Important meetings

Research Advisory Committee

The 10th Research Advisory Committee meeting of the DRWA was held on 30 March 2009. Dr (Mrs) Puspa Gupta, Chairperson and other members Dr Manas Mohan Adhikary, Dr Krishna Srinath, Dr (Mrs.) Vijaya Sethi, Dr V.K. Tewari, Dr (Mrs.) Usha R. Mehera and Dr B.N. Sadangi (Member Secretary) attended the meeting. The Committee confirmed the proceedings of the 9th RAC meeting and reviewed the achievements under ongoing research projects including externally funded ones. The committee gave project-wise as well as general recommendations for enhanced output through effective implementation of research projects.

RAC meeting in progress

Institute Research Committee (IRC)

The 6th IRC meeting was held on 16 October 2008. The Committee reviewed the progress of work in various projects and accorded approval for the new projects.

Institute Management Committee (IMC)

The eleventh meeting of IMC was held on 30 March 2009. The IMC reviewed the progress in finance, administrative and technical matters and expressed its satisfaction over the efforts made by the Directorate in those matters.

Hindi Chetna Divas/week:

1. Organised a Regional Seminar on Krishirat Mahilaon Main Udhyamta Kaa Vikas, on 10th Sept, 2008.
2. Organized Hindi Chetna Divas/week on 14th September 2008.

हिन्दी राजभाषा रिपोर्ट

निदेशालय में हिन्दी कार्यान्वयन समिति की नियमित तिमाही, बैठकें आयोजित की गई। केन्द्र के सदस्यों द्वारा हिन्दी के प्रयोग में आने वाली कठिनाईयों के समाधान हेतु नियमित कार्यशालाएं आयोजित की गई।

निदेशालय में हिन्दी चेतना सप्ताह भी सितम्बर 2008 में मनाया गया। इस अवसर पर एक क्षेत्रीय वैज्ञानिक संगोष्ठी का आयोजन दिनांक 10 सितम्बर 2008 को किया गया। इस संगोष्ठी में 25 वैज्ञानिकों ने भाग लिया। यह वैज्ञानिक भुवनेश्वर स्थित भारतीय कृषि अनुसंधान परिषद के विभिन्न केन्द्रों, राष्ट्रीय बागवानी बोर्ड व केन्द्रीय नारियल विकास बोर्ड इत्यादि केन्द्रों से आये थे। संगोष्ठी का उद्‌धाटन डा. अश्वनी कुमार, निदेशक, पूर्वांचल जल प्रोद्योगिकी केन्द्र, भुवनेश्वर द्वारा किया गया। संगोष्ठी में 16 शोध पत्रों को दो तकनीकी सत्रों में प्रस्तुत किया गया। इस अवसर पर शोधलेखों की एक सार पुस्तिका भी प्रकाशित की गई। इस संगोष्ठी से निम्न संस्तुतियाँ उभर कर आयी:

1. महिलाओं के उद्यमता विकास के लिए उनके तकनीकी ज्ञान को बढ़ाने के लिए विभिन्न प्रशिक्षणों की बहुत आवश्यकता है, जिससे उनका तकनीकी कौशल बढ़ सकें।

2. कृषिरत महिलाओं को उपयुक्त उपँजाउ जमीन को उपलब्ध कराने की अति आवश्यक है। जिससे वह कृषि से संबन्धित निर्णय स्वंय ले सकें। इसके लिए आवश्यक है कि जमीन उनके नाम पर हो। या उनके पति के नाम के साथ-साथ उसकी पत्नी का नाम भी हो।

3. रंगीन मछली पालन व सामान्य मछली पालन महिलाओं के लिए उपयुक्त व्यवसाय है इसमें महिलाओं के लिए उद्यमता विकास की बहुत ही संभावनाएं है। परन्तु इसके लिए उन्हें उचित प्रशिक्षण देने की आवद्यकता है जिससे उनका कौशल विकसित हो सके और वह इसे उद्यम के रूप में अपना सकें।

4. महिलाओं में उद्यमता विकास के लिए स्वंय सहायता समूह बहुत सहायक होते है। अत: इस विधि के द्वारा महिलाओं में उद्यमता विकास कर उनका सशक्तिकरण किया जाना चाहिये।

5. कंद फसलों के पदार्थो से मूल्यवर्धक खाद्य पदार्थ तैयार करने का कार्य एक अच्छा व्यवसाय हो सकता है। इसमें महिलाओं में उद्यमता विकास के बहुत अवसर है।

6. बागवानी से सम्बन्धित कार्यो द्वारा महिलाओं में उद्यमता विकसित करने की अनेक संभावनाएँ है। इसमें मुख्य है पौधशाला लगाना, फल एवं सब्जी प्रसंस्करण इत्यादि। इसके अलावा नारियल जो तटीय क्षेत्रों में बहुतायत में उपलब्ध है, महिला उद्यम का एक महत्वपूर्ण हिस्सा बन सकता है।

7. रसायनों के अन्धाधुंध प्रयोग को कम करने के लिए वर्मीवास द्वारा महिलाएं न केवल पर्यावरण हितैषी कार्य कर सकती हैं बल्कि इसे अपनाकर आय भी अर्जित कर सकती हैं।

8. ग्रामीण महिलाएं मधुमक्खी पालन को एक सशक्त उद्यम के रूप में अपना कर अपनी आय बढ़ा सकती हैं।

9. समन्वित मछली पालन अनूसूचित जातियों की महिलाओं के लिए उत्तम उद्यम हो सकता है। परन्तु इसके लिए महिलाओं को उपयुक्तता प्रशिक्षण की आवश्यकता है, जिससे उनका तकनीकी ज्ञान व कौशल विकसित हो सके।

10. मत्स्य बीज उत्पादन महिलाओं के लिए उद्यमता विकास का अच्छा क्षेत्र हैं। मोती पालन भी अच्छा उद्यम हो सकता है।

हिन्दी चेतना दिवस

केन्द्र में हिन्दी चेतना दिवस का आयोजन दिनांक 14 सितम्बर 2008 को किया गया। इस दिवस को मनाने के लिए तीन प्रतियोगिताओं का आयोजन किया गया जैसे हिन्दी इमला, निबन्धलेखन प्रतियोगिता, हिन्दी में अधिक से अधिक शुद्ध शब्द सीमित समय में लिखना इत्यादि। इन प्रतियोगिताओं में केन्द्र के सभी सदस्यों ने भाग लिया। केन्द्र के हिन्दी व अहिन्दी भाषी सदस्यों के लिए अलग अलग प्रथम, द्वितीय व तृतीय पुरस्कार दिये गये। तथा सभी प्रतियोगिओं को संत्वना पुरस्कार दिये गये इस अवसर पर केन्द्र की निदेशिका, डा. कृष्णा श्रीनाथ ने सभी सदस्यों से अधिक से अधिक हिन्दी में कार्य करने का अनुरोध किया, जिससे कि केन्द्र में हिन्दी राजभाषा की अच्छी प्रगति हो सके।

ACRONYMS USED

AAU	Assam Agricultural University
AICRP	All India Coordinated Research Project
ANGRAU	Acharya NG Ranga Agricultural University
ARIS	Agricultural Research Information Systems
BAU	Birsa Agricultural University
CARI	Central Avian Research Institute
CCSHAU	Chaudhary Charan Singh Haryana Agricultural University
CHES	Central Horticultural Experimental Station
CIAE	Central Institute of Agricultural Engineering
CIBA	Central Institute of Brackishwater Aquaculture
CIFA	Central Institute of Freshwater Aquaculture
CIPHET	Central Institute of Post-Harvest Engineering and Technology
CISH	Central Institute For Subtropical Horticulture
CRIDA	Central Research Institute for Dryland Agriculture
CRRI	Central Rice Research Institute
CSKHPKV	Chaudhary Sarwan Kumar Himachal Pradesh Krishi Vishvavidyalaya
CTCRI	Central Tuber Crop Research Instituute
CYSD	Centre for Youth and Social Development
DBT	Department of Biotechnology
DRWA	Directorate of Research On Women in Agriculture
DSST	Division of Seed Science and Technology
EDB	Ethylene di-bromide
GBPUAT	Govind Ballabh Pant University of Agriculture and Technology
HRD	Human Resource Development
IARI	Indian Agricultural Research Institute
IASRI	Indian Agricultural Statistical Research Institute
ICAR	Indian Council of Agricultural Research
ICDS	Integrated Child Development Services
IEC	Information, Education and Communication

ACRONYMS USED

IIHR	Indian Institute of Horticulture Research
IMC	Institute Management Committee
IRC	Institute Research Council
IRRI	International Rice Research Institute
IVRI	Indian Veterinary Research Institute
MAFSU	Maharashtra Animal & Fishery Sciences University
MPUA&T	Maharana Pratap University of Agriculture & Technology
NAIP	National Agricultural Innovation Project
NEH	North East Hill
NGO	Non Governmental Organisation
NHRDF	National Horticultural Research and Development Foundation
NRCWA	National Research Centre for Women in Agriculture
OBC	Other Backward Caste
OSSC	Orissa State Seeds Corporation
OUAT	Orissa University of Agriculture and Technology
PME	Project Monitoring and Evaluation
PRA	Participatory Rural Appraisal
RAC	Research Advisory Committee
SC	Scheduled Caste
SHG	Self Help Group
TANUVAS	Tamil Nadu University of Veterinary and Animal Sciences
TNAU	Tamil Nadu Agricultural University
TOT	Training of Trainers
UAS	University of Agricultural Sciences
VPEW	Village Para Extension Worker
VPKAS	Vivekananda Parvatiya Krishi Anusandhan Sansthan
WAL	Woman Agricultural Labourer
WTCER	Water Technology Centre for Eastern Region

PERSONNEL

(As on 31.3.2009)

Sl. No.	Name	Designation
1.	Dr Krishna Srinath	Director
2.	Dr M. Srinath	Principal Scientist (Statistics)
3.	Dr Biswanath Sadangi	Principal Scientist (Agril Extn.)
4.	Dr Mahendra Pal Singh Arya	Principal Scientist (Agronomy)
5.	Dr Suman Agarwal	Principal Scientist (HDRM)
6.	Dr Prakash Chandra Tripathi	Principal Scientist (Horticulture)
7.	Dr Arun Kumar Mishra	Principal Scientist (LPM)
8.	Dr Santosh Kumar Srivastava	Senior Scientist (Entomology)
9.	Dr Pravati Kumari Sahoo	Senior Scientist (Fish & Fishery)
10.	Er Shiv Pratap Singh	Senior Scientist (FMP)*
11.	Dr Sabita Mishra	Senior Scientist (Agril Extn.)
12.	Dr Naresh Babu	Senior Scientist (Horticulture)
13.	Dr Hemanta Kumar Dash	Scientist Senior Scale (Agril Economics)
14.	Smt. Laxmipriya Sahoo	Scientist Senior Scale (Seed Technology)
15.	Smt. Abha Singh	Scientist Senior Scale (Food & Nutrition)
16.	Smt. Geeta Saha	Technical Officer (T-5)
17.	Smt. Nidhi Agarwal	Technical Assistant (T- 4)*
18.	Sh. Debendra Nath Sarangi	Technical Assistant (T-3) Crops Science
19.	Sh. Manoranjan Prusty	Technical Assistant (T-3) Horticulture
20.	Sh. Prajnanu Ranjan Sahoo	Technical Assistant (T-3) Fishery
21.	Sh. Bhikari Charan Behera	Technical Assistant (T-3) Agril Extn.
22.	Sh. Bishnu Charan Sahu	Technical Assistant (T-2)
23.	Sh. Sunil Kumar Das	Assistant Finance & Accounts Officer
24.	Sh. V. Ganesh Kumar	Assistant Administrative Officer
25.	Smt.Rina Das	Personal Assistant
26.	Smt. Parisima Sen	Stenographer Gr-III
27.	Smt. Bishnupriya Moharana	Senior Clerk
28.	Sh. Sanjay Kumar Singh	Senior Clerk
29.	Sh. Biswanath Biswal	S.S.G.1

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