

NRCWA

ANNUAL REPORT

2001-2002



National Research Centre for Women in Agriculture
(Indian Council of Agricultural Research)
1199, Jagamara, PO : Khandagiri
BHUBANESHWAR-751 030 (ORISSA) INDIA

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Hindi Summary

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PREFACE

National Research Centre for Women in Agriculture (NRCWA) has been set up with the mandate of highlighting gender issues in agriculture and undertaking research, extension and training activities that have impact on the life of women involved in agriculture and allied fields.

Advances have been made in the research projects that have given implications in the areas of technology generation, refinement and policy formulation.

The Annual Report of the Centre brings out the highlights of its research, training and extension activities carried out during the year 2001-2002 as well as the achievement made towards infrastructural development, faculty development and recruitment of staff.

I would like to express my deep sense of gratitude to Dr Panjab Singh, Secretary, DARE, Govt. of India and Director General, ICAR for his guidance and sustained support. I sincerely thank Dr P. Das, DDG(AE) and Dr B.S. Hansra, ADG (AE) for their kind support.

I wish to compliment my colleagues for making efforts to give their best in the constrained environment of a developing institute. My appreciations are for all the scientific, technical and administrative staff for their co-operation in developing the centre and in bringing out this report.

My special appreciation is for Dr B.N. Sadangi, Principal Scientist (AE) for compiling this report, for Dr S.K. Srivastava for Hindi translation of the Executive Summary, for Mr. V. Ganesh Kumar for processing & designing the information and for Miss Rina Das for manuscript typing. The consistent support of Dr G. Singh, Director, CIAE, Bhopal for nurturing the sub-centre of NRCWA, very effectively, is deeply appreciated.

**HEMA PANDEY
DIRECTOR**



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EXECUTIVE SUMMARY

The research and training programmes of National Research Centre for Women in Agriculture (NRCWA), Bhubaneswar during 2001-02 have made significant progress in realizing the commitments of the centre. The approved research projects were in different stages of implementation and interim results came out to meet the needs in technological empowerment and policy formulation for farmwomen. Besides the involvement of the centre in the research and training, the scientists have given their gender expertise in different forums held in different places of the country. Meaningful exchanges have taken place between the scientists of the centre and Iowa University, Ames, USA to enrich the research proposals and develop need based projects for the benefit of the centre.

Data obtained from the research project entitled “Development and testing of extension methods for farm-women in Eastern India” revealed the existing farming systems and major enterprises of the farm women, their differential exposures to extension messages received and unfulfilled information needs of the farm women. This would surely help to design training curriculum and suitable competency development programme for grass root extension functionaries and information delivery strategy for farmwomen. “A gender study in agricultural and household economy of tribal of Orissa” undertaken in a densely populated tribal pocket of Kandhamal District provided data on immense potentiality of tribal farm women to increase the household economy and suitable interventions in this direction. Field trials conducted with active involvement of farmwomen in fish culture under the project “Studies on technological need in empowering women in aquaculture” have shown that in small backyard ponds women can harvest 5 tons/hect. fish annually. The farm women are found interested in happa breeding of carps as well as nursery raising in their backyard ponds. These findings would contribute to the entrepreneurship development programmes in fishery for rural women. Improved cultivars of moong, groundnut, sweet potato, tomato, chilli, brinjal and okra crops were evaluated at farmers fields so as to introduce the same in different farming system under the project entitled “Identification and improvement of farming systems suited to farm women in Eastern India”. Rice being the principal crop in coastal Orissa, precise and objective methods have been employed under the project “Standardization of women specific field practices in rice for Orissa” to determine the participation of women in different operations starting from nursery raising to harvest and post-harvest operations. This information may help the scientists and other stakeholders to develop

further studies for technological empowerment of women. Women's health in rural areas being the major concern for their efficiency in farming, the data available in the project entitled "Occupational health hazards among farmwomen of coastal agro ecosystem" will guide all concerned to manage the health hazards of the farm women. Validation of ITKs in the perspective of farmwomen particularly in storage of pulses was also undertaken in the project "Improvement in storage practices of seeds and grains of important crops with women perspective". The National Agricultural Technology Projects on "Empowerment of women in agriculture" and "Management of coastal agro eco system affected by Super Cyclone" have given the scientists enormous scope to disseminate the technologies in farm and allied sectors and study the parameters in growth and development of the farm women. The research at the sub-centre, CIAE, Bhopal has given due emphasis for developing farm implements for groundnut decortications.

The important mandate of the centre with respect to conducting trainer's training programme in women perspective and developing training module has been augmented. The trainings conducted in the year covered important areas such as vegetable nursery management, seed production husbandry, planting management in rice, techniques of teaching adults and improving extension services, care and management of new born calves and entrepreneurship development among farm women. The sub-centre organized two important trainers' training programmes on primary agro processing technologies and empowerment of women in agriculture. Under the various projects farmers and farm women were also trained in various aspects such as management of nutrition garden, seed extraction and agro-processing.

Consistent efforts were made for construction of administrative-cum-laboratory building, enrichment of library, creating Hindi awareness and creation of facilities for research work during the year. Human resource development and capacity building of the staff was given due importance.

THE INSTITUTE

Brief history



The Working Group in Agricultural Research and Education constituted by the Planning Commission for the formulation of the Eighth Five Year Plan (1992-97) in its report recommended for establishment of a National Research Centre for Women in Agriculture (NRCWA) during the Eighth Five Year Plan. Accordingly, the Indian Council of Agricultural Research has established the NRCWA in the month of April 1996 at Bhubaneswar. Since then the NRCWA is functioning in a rented building. The Sub-centre of NRCWA is located at the campus of CIAE, Bhopal.

Mandate and Objectives

Main centre

- to create a comprehensive database and act as repository of relevant information on all aspects of women in agriculture;
- to strengthen the use of gender analysis in research and technology development to ensure that women s' as well as men s' agricultural enterprises and operations are fully considered for defining research programmes and setting priorities;
- to collaborate in women-specific research, education and technology assessment and refinement with relevant national and international organisations and promoting these in various situations;
- to develop training modules and imparting training and publication of manuals for sensitizing gender related issues in research/ programme/ policy development;
- to develop and test women specific models for technology transfer that are to be promoted through regular extension agencies by collaborating with SAUs /ICAR Institutes;
- to promote women specific technology for reducing drudgery on women in farming operations including post harvest and home management;
- to provide leadership and sponsor training programmes in order to strengthen the knowledge and skill related to gender implications in farming systems approach for the researchers and extension personnel; and
- to provide consultancy services within the country on women-specific research/project/programme development.

Mandate

"to develop technologies appropriate to farm women of different production systems and to disseminate it, backed by the increased sensitivity and capability of research, extension and development of specialists addressing the issues pertaining to gender implications in agriculture and allied activities"

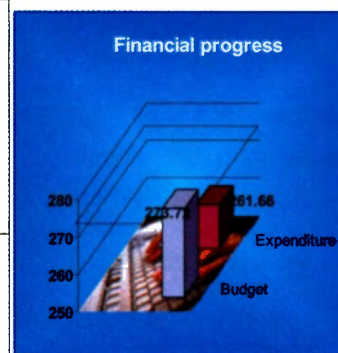
Sub-Centre

- to identify and quantify women's contribution in various agricultural and allied activities for measuring drudgery faced by women in agriculture;
- to create an ergonomical data base on women workers for use in design of equipment/work space;
- to identify, assess and refine available agricultural engineering technologies for farmwomen;
- to assess health hazards in some important crop production/processing and allied activities and suggesting ways to minimize those hazards;
- to prepare video films and other publicity materials on improved equipments/technologies for women in agricultural and allied activities for extension work.

Budget and Expenditure (Main and Sub centre)

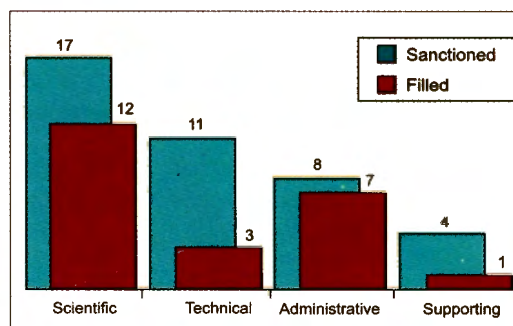
Sl. No.	Head of Account	Budget	R.E.	Expenditure
A. Recurring				
1.	Estt. Charges	40.00	40.89	40.89
2.	Traveling Allowances	3.50	4.05	4.05
3.	HRD	3.00	0.64	0.64
4.	Contingency	27.00	11.21	11.21
Total (A)		73.50	56.79	56.79
B. Non-recurring				
1.	Equipments	5.00	10.40	10.40
2.	Works	193.06	192.58	192.58
3.	Vehicle	0.50	0.00	0.00
4.	Library	1.16	1.06	1.06
5.	Furniture/Livestock	0.50	0.83	0.83
Total (B)		200.22	204.87	204.87
Total (A+B)		273.72	261.66	261.66

(Rs. in Lakhs)



Manpower

Category	Sanctioned	Filled	Vacant
Scientific	17	12	5
Technical	11	3	8
Administrative	8	7	1
Supporting	4	1	3
TOTAL	40	23	17



Scientific Staff

Sl. No.	Discipline	Sanctioned Strength			In position as on 31.3.2002		
		Scientist	Sr. Scientist	Pr. Scientist	Scientist	Sr. Scientist	Pr. Scientist
1	DIRECTOR	RMP (1)	-	-	RMP (1)	-	-
2	Agricultural Economics	1	-	-	1	-	-
3	Agricultural Entomology	-	1	-	-	1	-
4	Agricultural Extension	-	1	1	-	-	1
5	Agronomy	-	-	1	-	-	1
6	Farm Machinery and Power	-	1	-	-	-	-
7	Food and Nutrition	1	-	-	1	-	-
8	Child Development	-	1	-	-	-	-
9	Home Development Resource Management	-	-	1	-	-	1
10	Livestock Production and Management	-	-	1	-	-	-
11	Dairy Technology	-	1	-	-	1	-
12	Fish Processing Technology	-	1	-	1*	-	-
13	Horticulture	2	1	1	2	1	-
Total		4	7	5	5	3	3

* One scientist (F&F) working against the post of Senior Scientist (Fish Processing Technology)

Technical Staff

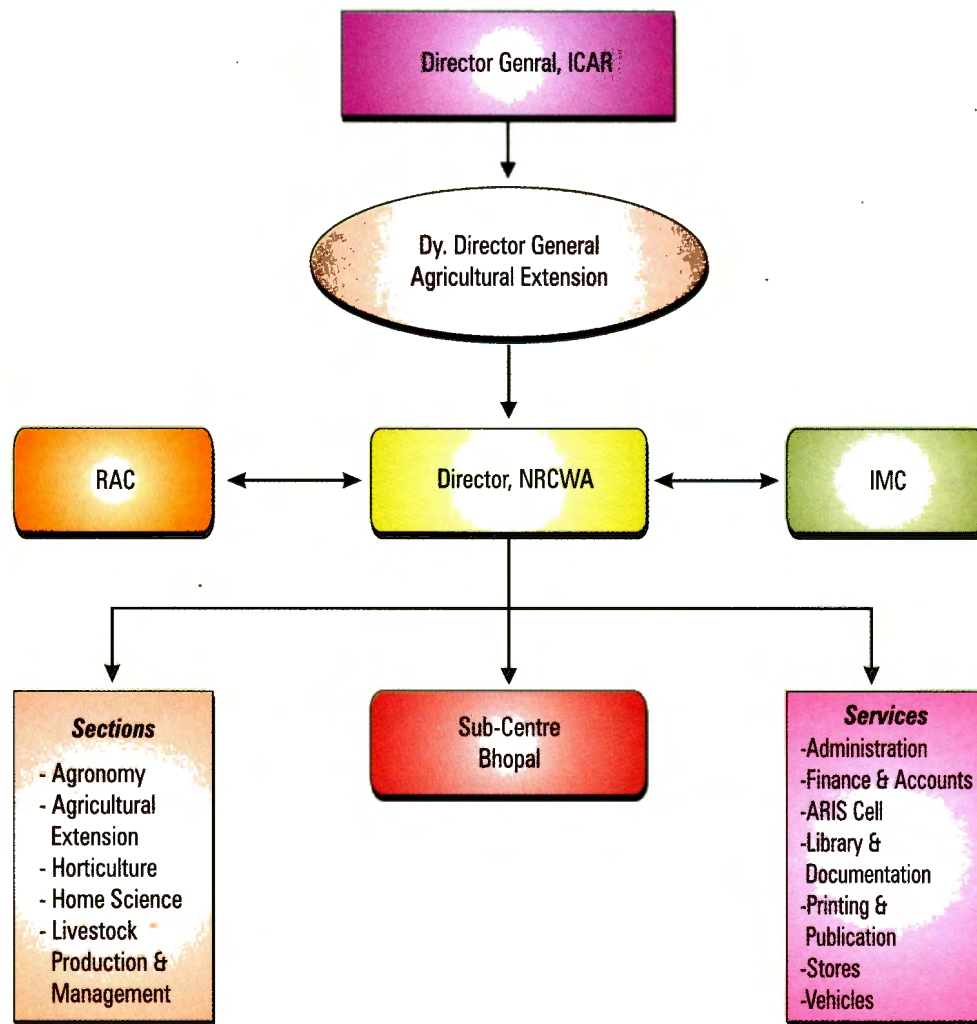
Designation	Sanctioned Post	In position as on 31.3.2001
Technical Assistant (T-II-3)	9	2*
Technical (T-1)	2	1

*One Technical Assistant (T-4) joined on transfer against the post of T-II-3, one T-II-3 has been posted at Sub-centre, CIAE, Bhopal.

Administrative Staff including Supporting

Designation	Sanctioned post	In position as on 31.3.2002
Asstt. Administrative Officer	1	1
Asstt. Finance and Accounts Officer	1	0
Personal Assistant	1	1
Sr. Clerk	2	2
Stenographer, Gr-III	2	2
Jr. Clerk	1	1
S.S.G.1	4	1
Total	12	8

Organogram of NRCWA



Research Accomplishments



Development and Testing of Extension Methods for Farmwomen in Eastern India

(B.N. Sadangi, H.K. Dash and P.K. Sahoo)

It was planned in the project to study the exposure of farmers and farmwomen to extension services in Training and Extension for Women in Agriculture (TEWA) and non-TEWA areas for developing extension model and standard methods for farmwomen.

Exposure of farmwomen to extension services under male and female agricultural extension worker in coastal tract

Data collected from village Budhipara under Lady Village Agricultural Worker (LVAW) and village Kakrudrapura under Village Agril Worker (VAW) brought out the extent involvement of farmwomen in different farming systems and enterprises, difference in exposure to extension, messages received by the women from LVAWs and their unfulfilled information needs. The findings on the above aspects would furnish vital facts in developing extension model appropriate for farmwomen in transfer of technology.

Farming systems and major enterprises taken by farmwomen

It reveals from data given in Table 1 that farmwomen were found involved in 12 different farming systems. Rice+Vegetable+Livestock was taken by highest percentage of farming women (20) followed by Rice+Livestock+Post harvest (17.5%) and Livestock+Veg+Post harvest (17.5%). The major enterprises, which were taken in the systems in the descending order were rice (75%), livestock (67.5%), vegetable cultivation (57.51%) and post harvest (44.5%)

Table 1: Existing farming systems of farmwomen in coastal-eco-system

Sl. No.	Identified farming systems	Frequency (N=40)	%	Major Enterprise	Extent
1.	Rice only	6	15	Rice	75%
2.	Rice+Livestock+Post harvest	7	17.5	Livestock	67.5%
3.	Rice+Pulses+Fishery	2	5		
4.	Rice+Pulses+Livestock+Veg+ Fruit	1	2.5	Vegetable	57.5%
5.	Rice+Livestock+Pulses+Post harvest	2	5	Post-harvest	44.5%
6.	Livestock+Veg+Post Harvest	7	17.5		
7.	Livestock+Veg	2	5		
8.	Rice+Veg+Post harvest+Mushroom	1	2.5		
9.	Rice+Vegetable	1	2.5		
10.	Rice+Veg+Pulses+Post harvest	2	5		
11.	Rice+Veg+Livestock	8	20		
12.	Vegetable only	1	2.5		

Data on the above aspect would provide clues in designing training curriculum and suitable competence development programme for grass root extension functionaries and information delivery strategies in the extension model meant for farmwomen.

Differential exposure of farmwomen to extension

How farmwomen under male and female managed grass root agricultural extension services are aware of the extension functionaries, their supportive role and maintain contact with them need examination. Whether both groups are at par with each other or there is significant difference between VAW and LVAW so far as exposure of farmwomen to extension is concerned. The data in Table 2 bring out findings on the above aspects.

Table 2: Knowledge of farmwomen on extension agency and their role under Village Agricultural Worker (VAW) and Lady Village Agricultural Worker (LVAW)

Sl. No.	Name of the extension agency	Know the grass root worker		Know the superior officer		Know the supportive role of grass root worker/supervisor	
		Farmwomen under VAW (n=20)	Farmwomen under LVAW (n=20)	Farmwomen under VAW (n=20)	Farmwomen under LVAW (n=20)	Farmwomen under VAW (n=20)	Farmwomen under LVAW (n=20)
1.	Department of Agriculture	(60) 12	(80) 16	(5) 1	(60) 12	(9) 45	(80) 16
2.	Department of Animal Husbandry	14 (70)	15 (75)	25 (5)	13 (65)	60 (12)	13 (65)
3.	Department of Horticulture	0	0	0	0	0	0
4.	Department of Fisheries	0	0	0	7 (35)	0	2 (10)
5.	Health and Family Welfare Department	(75) 15	(80) 16	(1) 5	0	14 (70)	(65) 13

(Figures in parentheses indicate percentage)

It was observed that the percentages of farmwomen who knew the LVAW, the supervisor of LVAW and their supportive role were 80, 60 and 80 respectively, which were much higher than the percentage of farmwomen under VAW. Both the groups of farmwomen were all most at par with each other with respect to animal husbandry and health and family welfare departments. As horticulture and fishery departments had no grass-root functionaries, the awareness knowledge of farmwomen for these departments did not provide much implication.

Table 3: Intensity of contact of farmwomen with extension functionaries in TEWA and Non-TEWA villages

Sl. No.	Name of the extension functionaries	Intensity of contact (Mean score) in TEWA village (N=20)	Rank	Intensity of contact (Mean score) Non-TEWA village (N=20)	Rank	Difference ("Z" value)
1.	VAW/LVAW	3.05	I	0.30	III	4.3**
2.	Livestock inspector	1.65	III	1.35	II	0.32 N.S.
3.	Fishery Extension Officer	0.55	IV	0	-	-
4.	Auxiliary Nurse Mid-wife (ANM)	2.05	II	1.65	I	0.38 N.S.

The data on intensity of contact of farmwomen with different extension functionaries in two different situations has been shown in Table 3. It reveals that farmwomen had significantly higher contact with LVAW than women with VAW. The significance of 'Z' value at 0.01 level derived from Wilcoxon-Mann-Whitney test very rightly substantiated the above conclusion. No. significant difference was found between the two groups with respect to other extension functionaries. The LVAWs posted under TEWA project maintained significantly higher frequency of contact with farmwomen than the VAWS under T and V system.

Broad areas of message received by farmwomen from LVAW

Pilot studies conducted elsewhere have identified eight broad areas in which LVAWs used to deliver messages. The selected respondents under LVAWs were asked to rate the quantum of message they got in each identified area in a five point continuum. The finding of the analysis is presented in Table 4.

Table 4: Perceived level of messages received by farmwomen from LVAWs

Sl. No.	Broad areas of message	Mean score (n=20)	Rank
1.	Rice and other cereals	3.18	II
2.	Pulses and oil seeds	2.00	V
3.	Vegetable cultivation	2.62	III
4.	Fruit and flower gardening	2.25	IV
5.	Mushroom cultivation and compost making etc.	3.387	I
6.	Post harvest and value addition	1.12	VI
7.	Livestock management including fishery	0.62	VIII
8.	Agricultural implements	1.06	VII

The quantum of message received on mushroom cultivation was perceived to be the highest followed by rice and other cereals, vegetable cultivation, fruit and flower gardening, pulse and oil seeds, post harvest and value addition, agricultural implement and livestock management including fishery.

It emerged from the foregoing discussions that although livestock and post-harvest are the two major enterprises of the farmwomen in the systems, the LVAWs had failed to deliver the messages as evident from the very low mean scores. On probing many respondents have expressed that LVAWs in spite of their frequent contact have not given the needed messages on the two vital areas. When farmwomen were asked "Why they did not get message on livestock from Livestock Inspector?". They stated that Livestock Inspector/Veterinary Doctor primarily come to visit their farm for treating the animals/poultry birds. They charge fees and give prescription but no communication takes place. On post-harvest and value addition farmwomen also assessed that they have nothing to learn from the LVAW so far as traditional value added products are concerned and what so ever messages they got on fruit and vegetable preservation and curry powder making etc. were not found beneficial as marketing of the products was totally risky.

A gender study on agriculture and household economy of tribal of Orissa (H.K. Dash and B.N. Sadangi)

Work Participation Rate (WPR) which is the proportion of working population to total population, is of great importance for the level of economic activity. WPR depends on such factors as age and sex composition, attitude to work, availability of work etc. Thus, it varies across different socio-economic, cultural and ethnic groups. A sample study in G.Udaygiri block of Orissa under the project 'A Gender Study on Agriculture and Household Economy of Tribal of Orissa' has thrown up some pertinent issues/questions to ponder over.

Concept of WPR is important in analyzing household poverty. But more importantly, it is the intra and inter-household variation in work participation that counts much. This is so because overall WPR conveys nothing as to how these workers are distributed among different families and how many days of productive works are available to the workers. Further, within a household how many men and women are productively involved and to what extent are also important in analyzing household income and family welfare.

The present study attempts to assess the number of productive days available to men and women as family and wage labour by splitting the year into different cropping seasons and dividing each cropping season into different phases depending upon crop activities. Under each activity number of working days availed by men and women separately was ascertained.

Overall work participation rate (WPR) among 'Kandha' tribes was found to be 53.11% while for male it was 54.64% and for female 51.78%. Women workers, however, constituted 52.25% of total workers irrespective of their sectoral involvement.

Table 5: Operation-wise work availability in Kharif rice

Phases	Month	Operations	Max. Days engaged	Remarks
Land preparation and Transplanting	June, July, August	Ploughing and puddling	32	Only men
		Manuring	6	Mostly women
		Transplanting	24	Only women
Intercultural operations	September-October	Weeding etc	8	Both men and Women
Harvesting	November-December	Harvesting and transport	40	Mostly women

The above table indicates that in land preparation, majority of days were contributed by men. Women were involved in manuring and leveling. In transplanting, it was all women's business. In harvesting, mostly women were involved as family labour as well as wage labour. It was observed that during harvesting period, women contributed more than men in terms of number of days to harvesting. While a woman contributed a maximum of 38 days, a man contributed maximum of 20 days only. The maximum number of productive days available to a male worker during Kharif season was 52 days while in case of women it was 78 days. The actual number of productive days available to these, however, could be much less.

Table 6 : Work availability to men/women in a year

Particulars	Maximum number of days engaged	
	Men	Women
Agriculture sector		
(a) Kharif season (Rice)	52	78
(b) Other crops (Turmeric, vegetable etc.)	20	30
Non-agriculture	48	30
Total	120	138

Analysis of WPR, which is the proportion of workers (considering persons of age group 15-60 yrs) to total population indicated that majority of workers both male and female were marginal workers

Next to rice, turmeric was an important crop of the area wherein workers were engaged for 20-30 days in land preparation, sowing, inter-cultural operations and harvesting. Otherwise there was not much demand for labour in agriculture.

In non-agricultural sector, rural development works in certain areas are the source of employment for tribal workers. But opportunities are very limited. During this lean season while a male worker was found to be involved for a maximum of 48 days, a woman was found to be involved for a maximum of 30 days.

Taking both agricultural and non-agricultural sectors together, a male worker was found to get a maximum of 120 days of work while a woman got 138 days of work. In reality number of productive days available would be much less than what was maximum possible.

For women of certain hillock villages, collection of wood from the forest was an important activity during lean period. For some women, sale of fuel wood in nearby market was an important source of livelihood, while majority of women collected wood for their own purpose.

The general observations made out of the study are:

- Of the total population 58.85% belonged to working age group 15-60 years.
- In the age group of 10-15 years female far exceeded male in numbers i.e. 72% of this age group was female.
- Majority (60%) of the tribal families were small families (family size up to 5).
- Of the total families 47.5% did have children below 5 yrs. This means in such families the women lost significant proportion of productive working days. Importantly in case of 78.94% of such families (i.e. 37.5% of total number of sampling families) there happened to be single woman worker.
- Among 'Kandha' families 35% were landless and approximately 65% of families primarily found dependent on wage labour.
- Paddy, the main crop of tribal is grown in low lands whereas turmeric, a spice crop is grown by Kandhas in high and sloppy lands which they call 'Padar'
- Analysis of WPR to total population indicated that majority of both male and female were marginal workers.
- Significantly the WPR among Kandha female was found to be much higher than the WPR for female at all India level
- Despite high WPR among Kandha tribes, wide spread poverty among them was a cause of concern
- Lack of sufficient job opportunities in agriculture due to low cropping intensity and in non-agriculture sector was the main reason for low earning and poor living condition of tribals
- In agriculture the contribution of women far exceed than that of men. This was because, for men while land preparation being the principal activity they had very limited involvement in other activities. On the other hand, women had a total involvement in transplanting and major involvement in other activities.
- During lean season including off-days during a cropping season, for women in general and poor in particular from hillock villages, collection of firewood and other produces from the forest was an important activity. This was reported as the primary source of some women who sell firewood in nearby markets and earn approximately Rs.15-20 per day.
- Poverty among tribal households found to have its root in the intra and inter-household variation in work availability along with quantum work available in different parts of the year.

Thus it could be concluded that considering the state of agriculture in tribal areas in terms of very low percentage of irrigated area, absence of modernization, low cropping intensity and availability of sufficient workforce, agricultural development may be an important strategy to strengthen the household economy of tribals.

Studies on technological need for empowering women in rural aquaculture

(P.K. Sahoo and B.N. Sadangi)



It was aimed to put the technologies before the women and to study their preference, adoption, constraints and technological refinement needed to make the technology women friendly. Different technologies transferred to the selected women through demonstration and training were carp culture, carp breeding, nursery raising including pond management and feed management, fresh water prawn (*Macrobrachium rosenbergii*) culture along with carp polyculture.

Production of table size fish

Semi intensive fish culture was taken up during the year 2001-02 by women in their backyard ponds (10 ponds). Different management practices adopted by farmwomen in a modified way as per their resources and facilities available were as follows:

- Before stocking, aquatic weeds of all ponds were cleaned manually by the participating women during the leisure time.
- Lime was applied @ 200 kg/hectare.
- As netting of ponds is required during pond cleaning, fries harvest, fish harvest etc., farmwomen were motivated and hand to hand trainings were imparted to a group of 10 women to develop their technical skill in netting. Fifty per cent of the participating women were found to adopt the skills. Young girls were found to be more enthusiastic to learn and practise.
- Cow dung application was adopted as per the availability and dose was limited to a level where they perceived it safe for use of water for various domestic purposes.
- No fertilizer was applied by the farmwomen.
- Fries of rohu, catla, mrigala (2:1:2) were stocked at the rate of 15000/ha.
- Kitchen waste and some farm by-products and rice bran were used as supplementary feed.
- The final harvest data obtained only for 8 ponds were analyzed because other ponds were severely affected by drought leading to complete drying of ponds.
- The average production obtained was 5 tonnes/hactare.

Table 7: Production of table size fish

Name of The Growth Parameter	Category	No. of Ponds	Average
Annual harvest (yield)	2 - 4 ton/hact.	3	5 ton./hact.
	4 - 6 ton/hact.	5	
	Above 6 ton.	0	

N.B. Two ponds are severely affected by drought and no yield could be recorded.

Happa breeding of carp: The prime requirement for successful pisciculture is the quality fries and fingerlings. To arrange fries and fingerlings from outside agency is the main constraints for women (as per discussion with women farmers). Keeping this in mind, breeding and nursery raising of carp were undertaken in the village during the monsoon season of 2001 to make them self sufficient with respect to fingerling requirement for their ponds and generate income.

Ten enthusiastic women out of 20 who were previously exposed to the breeding technology during the training programme at Central Institute of Freshwater Aquaculture (CIFA) were selected for the programme. Brood fishes of Rohu were procured from CIFA and happa breeding was undertaken following ovaprim injection with active participation of the women farmers.

In this experiment 12 lts. of fertilized eggs were collected after 8 hrs. of injection and were transferred to hatching happas. Good amount of hatchlings could not be obtained due to bad weather and poor water quality of the pond. However, the process created self confidence among the farmwomen to take up the activity in a more perfect way in the next season.

Nursery raising: Another important aspect of fish culture is to grow healthy fries in nursery. Nursery raising also can be taken up as an income generating activity by individual farmwomen. This was tried with participation of women.



Spawn of Jayanti rohu, a genetically improved variety, developed by CIFA were reared in two separate ponds of 0.01 ha and 0.006 ha. The spawns were supplied by the Genetic and Biotechnology division of CIFA and the rearing was taken up with the objective to (i) examine how women farmers learn and practise the nursery management by utilizing their own household resources, (ii) assess the performance of this particular strain of rohu in farmers field.

Nursery pond preparation : Weeds were removed manually and ponds were netted to remove unwanted fishes and harmful insects. Lime @ 200 g/ha was applied. Before two days of stocking a mixture of cow dung and soaked groundnut oil cake were applied for development of plankton bloom. Fifty thousand spawns were stocked in each pond and were reared for 48 days. Farmwomen were asked to give powdered groundnut oil cake and rice polish (*chuda kunda*) (1:1 ratio), but it was observed that the rearing was mainly done with kitchen waste and rice polish. Six thousand fries of average 2 gm. body weight were harvested from 1st pond (0.01 hectare) where as 5,000 fries of 1 gm. body weight harvested from 2nd pond (0.006 ha). The growth difference was under study which would identify the management practices and socio-cultural conditions responsible for the above variation.

Prawn culture

In the month of October 2001 for the first time 15 days old prawn larvae (PL 20) of *M. rosenbergii* were experimentally introduced to 5 backyard ponds at the @ 2500/hect. Women reluctantly accepted the prawn larvae because women perceived larvae to be very small for rearing and they were not aware of prawn culture and its feasibility in rural ponds.

In the month of June 2002 one pond of size 0.08 hect was harvested. The average weight of the prawn harvested was 160 gm. But, a very low harvest was recorded. However, the entire catch was used for family consumption. Women derived great satisfaction even though economic benefits of prawn culture was not realized by them. However, this created a lot of awareness among farmwomen and they were highly motivated to undertake the fresh water prawn culture along with carp poly culture. This has stimulated the women folk to enquire more and more about prawn culture along with carp poly culture.

Fish culture by women group in community pond

Ten women, who are member of Mahila Samiti are motivated to take up the village panchayat pond on lease to undertake table size fish production. Fries of Indian major carps released in the month of Sept., 2000 and the harvest was done in May, 2001. The production was very poor. Technical, physical and socio-cultural constraints for the low production are under study.

Improvement in backyard poultry farming for farmwomen of different categories

(K.S. Risam)

The project, which aimed at studying the suitability of RIR chicks under scavenging condition, was taken up with active participation of 21 farmwomen belonging to different social caste and land holding categories. The growth, egg production and egg weight of the RIR chicken were analyzed and reported. The present analysis was made with respect to survival rate of chicks.

Table 8: Survival rate of RIR chicken under backyard conditions

Age group	Male		Female		Total	
	Number	%age	Number	%age	Number	%age
4-5 weeks	24 (24)	100.00	178 (182)	97.80	202 (206)	98.06
5-6 weeks	23 (24)	95.83	171 (178)	96.07	194 (202)	96.04
6-8 weeks	22 (23)	95.65	165 (171)	96.49	187 (194)	96.39
8-20 weeks	15 (22)	68.18	93 (165)	56.36	108 (187)	57.75
20-25 weeks	12 (15)	80.00	81 (93)	87.10	93 (108)	86.11
Overall	12 (24)	50.00	81 (182)	44.51	93 (206)	45.15

N.B. Figures in parenthesis are number of birds available at the beginning of age group.

Table 9: Causes of mortality in RIR chicken under backyard conditions

Cause	Number	Percentage
Enteritis	17	15.04
Predation	19	16.81
Super cyclone	77	68.14

The percentage survival among different age groups and causes of mortality in chickens under backyard rearing conditions are given in tables 4 and 5, respectively.

The average survival rate of chicken in age groups of 4-5, 5-6, 6-8, 8-20 and 20-25 weeks were observed to be 98.06, 96.04, 96.39, 57.75 and 86.11 percent, respectively. The lowest survival rate (57.75 per cent) observed in age group of 8-20 weeks was mainly due to death of birds by devastation caused during super cyclone. It has shown its after effects on next age group as well.

The sex wise survival rates were found to be 50.00 and 44.51 per cent for males and females, respectively. The main causes responsible for mortality were observed to be enterities (15.04%), predation (16.81%) and collapsing of houses during super cyclone (68.14%).

The survival rates were not computed after 25 weeks of age because some of the farmwomen sold/ consumed the birds due to financial stress after super cyclone.

Standardization of women specific field practices in rice for Orissa (M.P.S. Arya and L.P. Sahoo)

Participation of women under rice cultivation

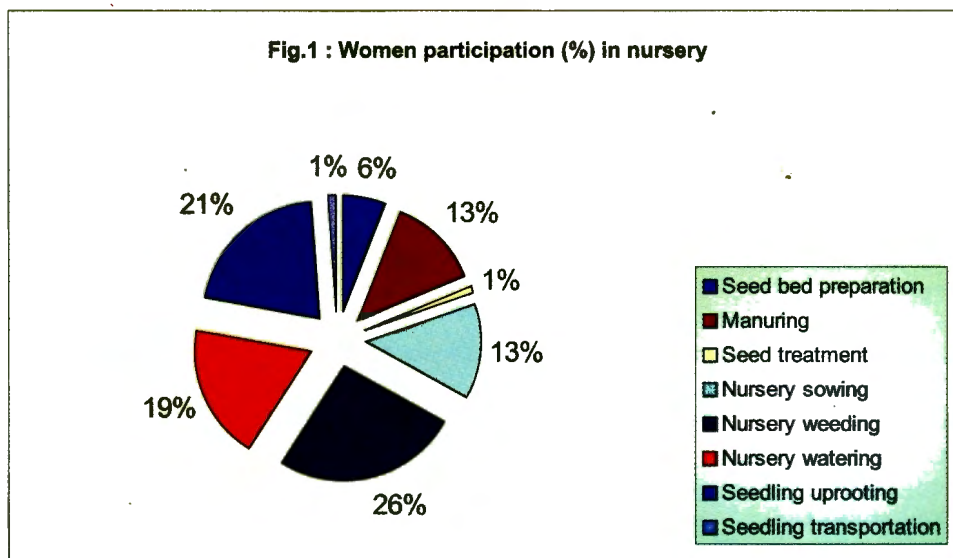
The data on the participation of women in different field operations in rice was collected from 15 farmwomen in three villages namely, Basant pedi, Jagamara and Khamang sasan in Khurda district. The data collected were then compiled hours and percent wise. Participation of men and women under different categories of field operations was also studied. The hour-wise distribution of participation was subjected to statistical analysis of 'variance' so as to determine the validity of the statement.

Table 10: Participation of women in rice farming

Operations	Woman		Man		Participation (%)	
	Hrs	Variance	Hrs	Variance	Woman	Man
Nursery raising						
Seed bed preparation	3.20	30.74	19.67	158.10	13.99	86.01
Manuring	4.80	45.60	11.67	40.81	29.14	70.86
Nursery sowing	4.73	35.35	12.00	108.71	28.27	71.73
Nursery weeding	11.60	97.83	8.93	172.78	56.50	43.50
Watering in nursery	7.67	135.10	10.17	147.77	42.99	57.01
Uprooting of seedling	10.60	196.11	12.53	138.70	45.83	54.17
Transporting seedlings	0.17	0.42	9.27	83.35	1.80	98.20
Field preparation						
Ploughing and leveling	1.00	15.00	18.87	451.55	5.03	94.97
Breaking of clods	2.53	56.27	9.03	81.52	21.89	78.11
Removal of grasses and stubble	12.20	258.31	5.20	36.46	70.11	29.89
F.Y.M. application	1.47	10.41	14.80	107.03	9.04	90.96
Fertilizer application	0.00	0.00	19.67	139.67	0.00	100.00
Pre sowing irrigation	0.67	3.10	6.67	95.52	9.13	90.87
Intercultural operations						
Transplanting	43.13	1843.41	22.60	549.40	64.63	35.37
Ridge making	1.00	15.00	8.73	144.50	10.28	89.72
Irrigation	0.00	0.00	16.80	177.46	0.00	100.00
Fertilizer top dressing	0.00	0.00	6.67	149.10	0.00	100.00
Weeding	17.47	340.41	6.20	31.03	73.51	26.49
Herbicidal application	0.00	0.00	6.07	80.64	0.00	100.00
Hoeing	1.67	41.67	4.00	113.50	29.45	70.55
Handling sprayers	0.00	0.00	4.40	81.44	0.00	100.00
Harvest and post harvest operations						
Harvesting	26.13	1262.55	24.80	646.03	51.31	48.69
Carrying to threshing floor	1.33	12.38	18.67	216.38	6.55	93.45
Drying of harvest	16.07	212.07	4.53	39.84	78.01	21.99
Threshing	11.73	223.64	17.33	256.95	40.36	59.64
Winnowing / cleaning	17.53	202.98	3.47	54.55	83.48	16.52
Carrying produce to house	4.07	47.35	13.87	92.98	22.69	77.31
Drying of produce	12.53	131.84	1.20	6.00	91.26	8.74
Storage of seeds and grains	5.40	40.97	3.00	25.71	64.29	35.71
Preparation of produce for market	3.27	33.78	11.60	130.97	21.99	78.01
Seed treatment [Storage]	0.20	0.31	8.87	137.84	2.21	97.79
Care of seeds at home	6.20	52.03	0.00	0.00	100.00	0.00
Total	228.37	-	341.29	-	40.01	59.99

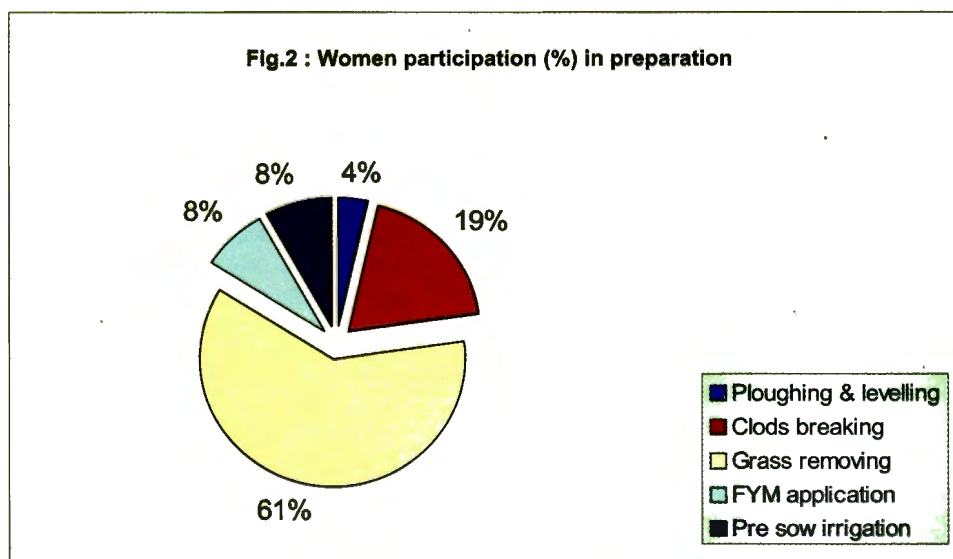
Participation in nursery raising

The data were collected on seven items i.e., seed bed preparation, manuring, nursery sowing, weeding, watering, uprooting seedlings and transporting seedlings to the main field. The average participation of women and men in all the seven operations was 33.45 and 66.55 per cent, respectively. The women out participated the men in nursery weeding having 56.50 per cent participation. Women also participated almost equally in watering of nursery (42.99%) and uprooting of seedlings (45.83%). Out of 126.58 total hours given to nursery raising, 42.34 hours were shared by the women. Relative participation of women in nursery raising is given in Fig. 1.



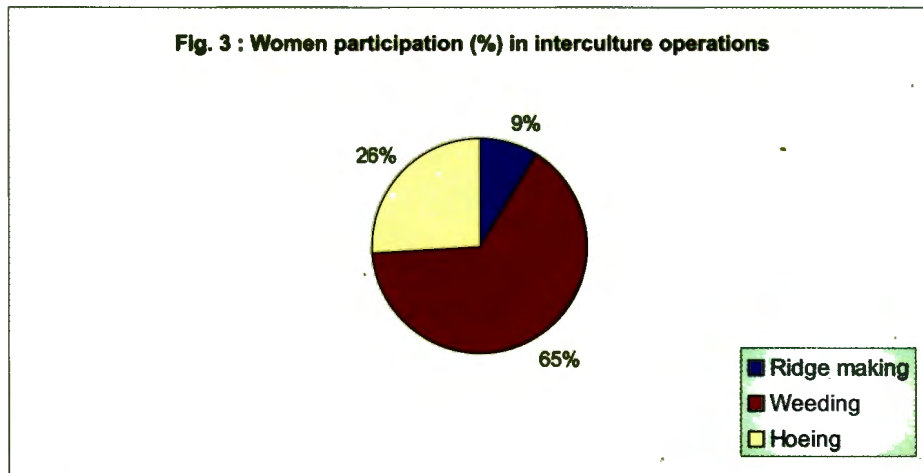
Participation in field preparation

Field preparation (main plot) included in the study were ploughing and levelling, breaking of clods, removal of grasses and stubbles, farm yard manure application, fertilizer application and pre sowing irrigation. On an average 92.11 hours were spent both by the men and women in field preparation. The contribution of men and women was 17.87 hours (19.40 %) and 74.24 hours (80.60%), respectively. The contribution of women in removal of grasses and stubbles was higher (70.11%) than men while in other operations men contributed higher than women. Relative participation of women in field preparation is given in Fig. 2.



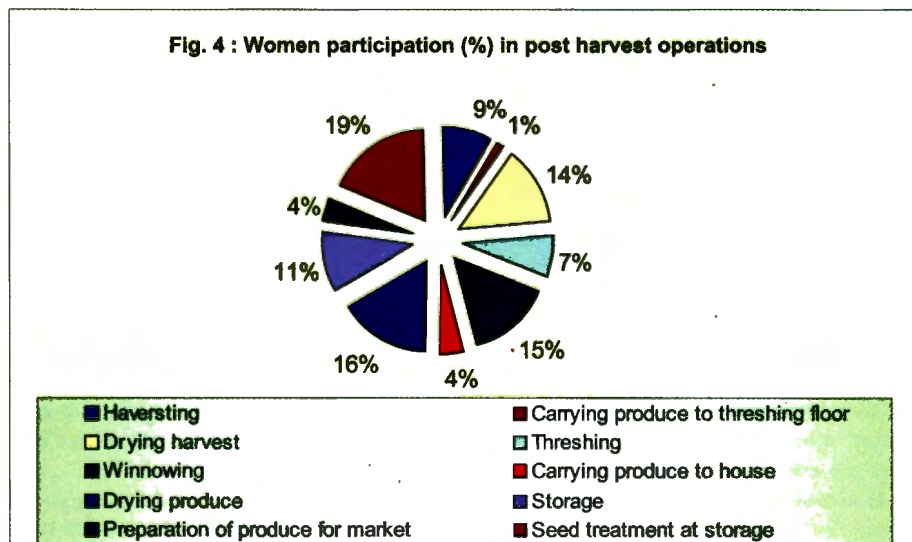
Participation in planting and intercultural operations

Nine operations i.e. transplanting, ridge making, irrigation, fertilizer top dressing, weeding, herbicidal application, hoeing, handling of sprayers and water collection for spraying were included in inter cultural operations. The total hours spent in these operations were 139.67, which was shared by both women (63.20 hours) and men (76.47 hrs). Out of all the nine operations there were two operations i.e. transplanting and weeding where women had 64.63 per cent and 73.51 per cent contribution, respectively. Relative participation of women in planting and intercultural operations is given in Fig. 3.



Participation in harvest and post harvest operations

Eleven operations i.e. harvesting, carrying harvesting to the threshing floor, drying of harvest, threshing, winnowing and cleaning, carrying produce to house, drying of produce, storage of seeds and grains, preparation of produce for marketing, seed treatment before storage and over all care of seeds and grains at home were included in this group. The total hours contributed in these operations were 211.80 out of which 104.46 hours (49.32%) were shared by the women and rest 107.34 (50.68%) by the men. There were six out of eleven operations in which women contributed more than the men. These were harvesting (51.31 %), drying of harvest (78.01%), winnowing and cleaning (83.48%) drying of produce (91.26%), storage of seeds and grains(64.29%) and care of seeds and grains at home (100.00%). Relative participation of women in harvest and post harvest operations is given in Fig. 4.



Evaluation of rice varieties under direct sown puddle soils

The important varieties suited to coastal region of Orissa were tested in Khrif 2001 on the fields of farmers' for their adaptability under direct sowing under puddle condition. The testing was aimed at finding a suitable option of transplanting which involves a lot of drudgery components in it. Pre germinated seeds were broadcasted in the puddle soil. The testing was done on the plots of 40 m² area in 3 replications. The results indicated (Table 9) that varieties Sebati and Kharvel proved to be superior under such conditions, both yielding 30 q/ha over Gajapati (22.50 q/ha) and Lalat(25.83 q/ha).

Table 11: Yield of rice varieties under direct sown puddle soils

Name of varieties	Yield q/ha
Lalat	25.83
Gajapati	22.50
Sebati	30.00
Kharvel	30.00

Thus, from the available information, it could be concluded that women contributed in almost all the activities right from nursery raising to the post-harvest activities in rice. In some of the activities like drying of produce including grains, winnowing and cleaning the women participation gone over 75%. Transplanting and harvesting, however, got the maximum average hours i.e. 43.13 and 26.13 /women/ season, respectively. This showed the importance of women in rice production. On the other hand, the alternative methods of rice sowing using germinated seedlings in puddled soil with appropriate varieties like Sebati and Kharvel produced good result for reducing the drudgery of transplanting to a greater extent.

Occupational health hazards among farmwomen of coastal agro ecosystem

(Hema Pandey, Suman Agarwal and Abha Singh)

Occupational health hazards have been referred to as the uneasiness, physical discomfort, aberrations and injuries experienced by women, in doing a task/operation related to household, agriculture, animal husbandry, fishery etc. In order to observe and assess health hazards in different major occupations such as rice cultivation, vegetable cultivation, pulse and oilseed cultivation, livestock management, fishery and agro-processing, five coastal districts of Orissa were selected as locale for the present study. Villages/ areas dominated with the said activities were identified through consultations with departmental officers of the state and referring districts. From each village/area 40 women involved in different occupations were selected randomly as respondents. For the purpose of data collection interview schedule was prepared, pre-tested and modified as per need. The schedule included information like women participation in various activities and symptoms of hazards experienced by them. Data were collected from 79 respondents belonging to Kendrapara and Puri Districts of Orissa.

Table 12: Health hazards faced by farmwomen (N-79)

Sl.No.	Activities	Hazards reported by women in %
1.	Farm activities	
	1. Seed bed preparation	Waist pain (25%) and injury (19%)
	2. Transplanting	Backache (42%), Injury (19%), Cold and cough (19%) and hand pain (16%)
	3. Harvesting	Backache (21%)
2.	Post harvest activities	
	1. Transporting	Leg pain (26%), head ache (16%)
	2. Threshing	Hand pain (48%), injury (26.5%)
	3. Crop drying	Head ache (43%), Eye irritation (27%), injury (16%)
	4. Shelling	Hand pain (27%)
	5. Parboiling	Back ache (40%), hand pain (35%)
	6. Storage	Hand pain (27%), skin infection (66%)
3.	Livestock management	
	1. Feeding animals	Waist and hand pain (31%)
	2. Shed cleaning	Waist pain (41%), hand pain (38%)
	3. Fodder collection	Waist pain (26%), leg pain (33%)
	4. Milching	Hand pain (47%)
	5. Chaff cutting	Hand pain (35%)

Analysis of data revealed that during seed bed preparation 25% of women suffered back pain and 19% had injury. Transplanting was a difficult task where in 42% women suffered with back ache, 19% injury, cold and cough, and 16% had hand pain. In the activity of harvesting 21% women reported of suffering back ache. While transporting the produce 26% had leg pain and 16% reported headache. During threshing women suffered with hand pain (48%) and injury (26.58 %). Drying the crop was also a difficult activity where in 43% women had headache, 27% reported irritation in the eyes and 16% of injury. During par boiling 40% women suffered back ache. Storage activity led to skin infection in 66% women.

In the area of livestock management women faced waist and hand pain (31%) while feeding animals, waist pain (41%), hand pain (38%) while shed cleaning, waist pain (26%) and leg pain (33%) while collecting fodder, hand pain (47%) while milching animals and chaff cutting hand pain 35%.

The activities wherein more than two hazards were observed are transplanting and drying of crops. This necessitates priority consideration for technology generation to reduce the drudgery in the above sectors.

Identification and evaluation of interactive learning modules for dissemination of homestead technologies (Suman Agarwal, Hema Pandey and Abha Singh)

Homestead activities performed by farmwomen

In order to find out the involvement of farmwomen in homestead activities, a base line survey was conducted in the village 'Khamang Sasan'. Thirty farmwomen were interviewed randomly to gather the required information. The responses of the farmwomen were substantiated with the personal observations. Qualitative analysis of the collected information revealed that besides the household and on farm activities, farmwomen were involved in various homestead activities. Details of activities performed by farmwomen have been given in table below :

Table 13 : Different activities performed by farmwomen

Sl. No.	Household activities	Farm activities	Homestead activities	
			Activities related care of animals	Other homestead activities
1.	House cleaning	Weeding and hoeing	Fodder collection	Parboiling of paddy
2.	Utensil cleaning	Transplanting	Feeding animals	Vegetable growing
3.	Fetching water	Harvesting	Shed cleaning	Other post harvest operations
4.	Child care	Threshing	Animal bathing/ cleaning	
5.	Cooking food	Winnowing	Milching	Poultry
6.	Washing cloths	-	-	Pisciculture
7.	Fuel collections	-	-	Bee keeping

The main homestead activities of farmwomen are:

- Par-boiling of paddy
- Home gardening or vegetable growing
- Care and maintenance of animals
- Other post harvest operations like dehusking /pounding, decorticating, drying, storage etc.
- Poultry
- Pisciculture
- Bee-keeping

Keeping in view the homestead activities in which farmwomen are involved, a standard method has been employed for the development of modules. Since, parboiling of paddy is one of the main homestead activity performed by women in Orissa, women perform this activity in conventional way, which causes strain and leads to body pain, eye irritation and headache. Therefore, efforts have been directed to develop an interactive learning module for the use of improved technology available for this purpose i.e. paddy parboiling unit. Module related to this includes objectives and method, advantages and cost effectiveness of the unit. Besides this, attempts have also been made to develop a module for sensitization of farmwomen for income generation.

Improvement in storage practices of seeds and grains of important crops with women perspective

(L.P. Sahoo and M.P.S. Arya)

Farmwomen use different indigenous methods for storing seeds. Some of these methods were collected and documented. An attempt was made here for validating the ITKs by taking laboratory experiments. Seeds were collected from farmers from the areas where the ITKs were in practice. The seeds were tested for initial quality before storing by indigenous methods.

Assessment of initial quality of seeds

The initial quality assessment of the green gram seeds was made with respect to:

- Moisture content of seeds
- Electrical conductivity of seed leachate
- Germination percentage
- Field emergence percentage
- Seed vigour

The results so obtained are presented in the following tables.

Table 14: Assessment of seed quality before storage

Crop	Moisture content (%)	Electrical conductivity (mmho/cm)	Germination percentage (%)	Field emergence (%)
Green-gram (<i>Vigna radiata</i>)	9.72	0.55	94	53
Arhar (<i>Cajanas cajan</i>)	10.45	0.36	91	57
Radish (<i>Raphanus sativus</i>)	10.25	0.54	81	50

Table 15: Assessment of seed quality (vigour) before storage

Crops	Speed of germination	Root length (Avg.)	Shoot length (Avg.)	R/s ratio avg.
Mung	11.04	7	14	0.472
Arhar	7.67	4.2	11.25	0.409
Radish	7.9	3.2	6.8	0.47

Moisture content of all seeds were tested and found that seeds were properly dried and had good germination percentage. However, the field emergence percentage was less. Vigour and other parameters were studied and it was found that seeds had normal vigour. Four parameters were taken to assess the vigour of seeds. Those were seed germination, root/shoot ratio, root length and shoot length. Seed vigour was measured by using the standard formula. After testing the initial quality, seeds were stored using different treatments.

Indigenous storing methods (Treatments)

Green gram seeds were stored in three different methods such as

- Seed+Begunia leaf+Cow dung ash
- Seed+Neem leaf
- Seed+Naguari leaf

Seeds were stored in the above methods for 6 months. The efficiency of different methods with respect to germination percentage and moisture content were studied and findings were shown in the table given below.

Table 16 : Comparison of different indigenous treatments/materials for storing seeds

Treatments	Parameters for testing storability of seed		
	Germination (%)	Moisture content (%)	Loss in germination percentage than the initial storage (%)
Seed+Begunia leaf+Cow dung ash	82 (94)	9.6	12.76
Seed+Neem leaf	74 (94)	9.7	21.27
Seed+Naguari leaf	72 (94)	9.68	23.4
Control (Seeds treated with chemical)	81 (94)	9.75	13.8

Figures in parentheses indicate the initial germination percentage of mung seed before storage.

It was found that seeds treated with Begunia leaves and cow dung ash had no increase in moisture content and there was minor loss in germination percentage and it was at par with control. Thus, the initial observation reveals that this method of seed storage was better under village conditions.

Identification and improvement of farming systems suited to farmwomen in Eastern India

(M.P.S. Arya, L.P. Sahoo and B.K. Killadi)

The field testing was made on different vegetable and field crops under different farming systems and land holding size. The results achieved during 2001-2002 are given in the following heads.

Evaluation of mung (*Vigna radiata*) under different farming systems

Rice being the basic crops of eastern coastal region, winter/ summer mung was tested in the 'rice-horticulture -pulse' and 'rice -pulse' farming systems after the harvest of rice. Popular variety of mung K851 was sown on the fields of fifteen farmwomen belonging to marginal, small, medium and large land holdings under farmer's practice. The yield was recorded by the farmwomen itself. The data recorded from the farmwomen was statistically analyzed using 't' test. The result recorded on yield under different farming systems (Table-17) revealed that it was below normal and there was no significant difference in the yield of both the farming systems i.e. 'rice- horticulture -pulse' and 'rice -pulse' during this year. The grain yield of mung was, however, varied with the land holding size. The yield recorded under large land holding was significantly higher (9.30 g/ha) than that of marginal (3.13 g/ha) and small (2.99 or/ha) land holdings. The yield recorded under medium and large land holdings was found at par.

Evaluation of groundnut (*Arachis hypogaea*)

Groundnut variety AK12-24 was raised in the field of 15 farmwomen during rabi 2001. The crop was raised under 'rice-horticulture-groundnut' and 'rice-groundnut' farming systems and was tested in marginal, small and medium land holdings. The yield of crop was recorded from the farmwomen and was then subjected to 't' test. Data in table-17 shows that neither farming system nor holding size had any significant effect on the yield of groundnut.

Table 17: Yield (q/ha) of mung and groundnut under different farming systems

Particulars	Mung	Groundnut
Farming systems		
Rice- horti- pulse/G. nut (FS1)	3.42	10.15
Rice- pulse/ G. nut (FS2)	4.34	11.35
Holding size		
Marginal (HS1)	3.13	11.48
Small (HS2)	2.99	8.59
Medium (HS3)	4.86	11.45
Large (HS4)	9.38	-

'T' at 0.05 P	Mung	Groundnut
FS1&FS2	0.686	0.764
HS1&HS2	0.074	1.426
HS1&HS3	0.904	0.017
HS1&HS4	2.530*	-
HS2&HS3	1.769	1.412
HS2&HS4	3.314*	-
HS3&HS4	2.303	-

Evaluation of vegetables

Vegetable nursery growing is women friendly and can help in reducing the cost of cultivation. But farmwomen do not adopt scientific method of growing and have limited knowledge on varieties of vegetable crops. A plan was made to empower the women in nursery management of vegetable crops and know their preference for varieties. Twenty-five farmwomen from the adopted village were selected for nursery raising of different vegetables such as tomato, chilli and brinjal who were divided into 4 compatible groups. Each group selected its leader and identified the land for nursery. After completion of nursery the investigator found much variation in the quality of seedlings. Matrix scoring was employed to evaluate the performance of each group and the factors associated with active involvement of the members. The factors identified by the larger group were:

- Interest among group members
- Group cohesion
- Good leadership
- Apprehension for unequal distribution

Table 18: Yield (t/ha) of vegetables under different farming systems

Variables	Sweet potato	Tomato	Chilli	Brinjal	Okra
Farming System					
Rice/horti/pulse (FS1)	19.00	20.50	15.00	20.00	9.38
Rice/horti/ groundnut (FS2)	11.25	16.67	20.00	13.75	15.80
Rice/horti (FS3)	11.00	13.71	10.00	8.25	10.16
Land less (HS1)	12.30	15.00	-	15.00	19.50
Marginal (HS2)	12.00	18.00	-	-	11.25
Small (HS3)	10.00	15.00	-	-	20.00
Medium (HS4)	13.50	15.28	15.00	16.43	9.70

'T' at 0.05 P	Sweet potato	Tomato	Brinjal	Okra
FS1 and FS2	3.018*	0.830	2.88	1.07
FS1 and FS3	3.258*	1.737	4.690*	0.21
FS2 and FS3	0.111	0.690	2.53	1.08
HS1 and HS2	0.201	0.400	-	4.150*
HS1 and HS3	0.201	0.000	-	0.205
HS1 and HS4	1.273	0.098	0.890	5.900*
HS2 and HS3	1.162	0.334	-	3.600*
HS2 and HS4	1.803	0.460	-	0.936
HS3 and HS4	2.745*	0.280	-	4.749*

In tomato crop considering the yield or productivity of the crops no significant difference was observed among different farming system and farmers of different holding size (Table-18). However, the yield of tomato in rice/horti/pulse system was little higher than other systems. In case of brinjal, there was significant difference in yield of brinjal in rice/horti/pulse system than rice/horti system.

In case of direct planted vegetable crop like okra there was significant difference in yield among different holding sizes

The performance of sweet potato was evaluated in different farming systems and farmers of different holding size. The productivity was highest in rice-horti-pulse system and it was significantly higher than the other two systems i.e. Rice-Horti-Groundnut and Rice-mung. However, the productivity was significantly higher in medium land holdings than small land holding, though sweet potato gave substantial yield in wastelands and little care in inter-cultural and manuring improved the yield. People with medium holdings invested some money and had taken more care.

In all the cases the small farmers had less yield. The cause may be that the farmers with small holdings are more engaged in rice cultivation. Where as marginal and landless farmers are interested in backyard vegetable growing for home consumption and medium farmers show interest in vegetable cultivation for market purpose. Moreover a farming system more compatible with the rice crop can be more suitable for farmers with small land holding.

Nutritional security

The promotion of nutritional security in the families starts with production of crops and acquisition of knowledge and skills on balanced diet preparation. Farmwomen participating in the project were exposed to nutrition education programme on balanced diet, food sanitation etc. Demonstrations on value addition i.e preparation of papad from suji and sagu, potato chips, groundnut, chikhi were also organized.

Projects under NATP

Empowerment of women in agriculture (Suman Agarwal and K.S. Risam)

National Research Centre for Women in Agriculture, Bhubaneswar, Orissa, is one of the co-operating centre among seven co-operating centres of the Mission Mode NATP on "Empowerment of Women in Agriculture".



The project aims at information and technological empowerment of farmwomen with focus on drudgery reduction and development of agro based entrepreneurial skills among farmwomen using participatory approach to facilitate them for enhancing family's income involving self-help women groups. Following are the specific objectives of the project:

Objectives

- To identify and promote need based drudgery reducing tested technologies in agriculture and animal husbandry.
- To assess the impact of drudgery reducing technologies.
- To introduce entrepreneurial activities for economic empowerment of women in agriculture.
- To enable women groups to develop into viable units for self-reliance and self-sustenance.
- Providing support to farmwomen by developing linkages with the local organizations help.

Progress

Locale

The district Puri, which is in the coastal tract of the state, was selected for the project. Out of 11 blocks of the district, Pipili and Nimapara blocks were selected purposefully. Four villages namely Siula, Konjar, Matiapada and Govindpur of the Pipili block and Renchsasan, Bhanapur, Haripur and Dalbhanapur of Nimapara Block were covered under project. Two villages namely Govindpur of Pipili and Dalbhanapur of Nimapara block were kept as control villages.

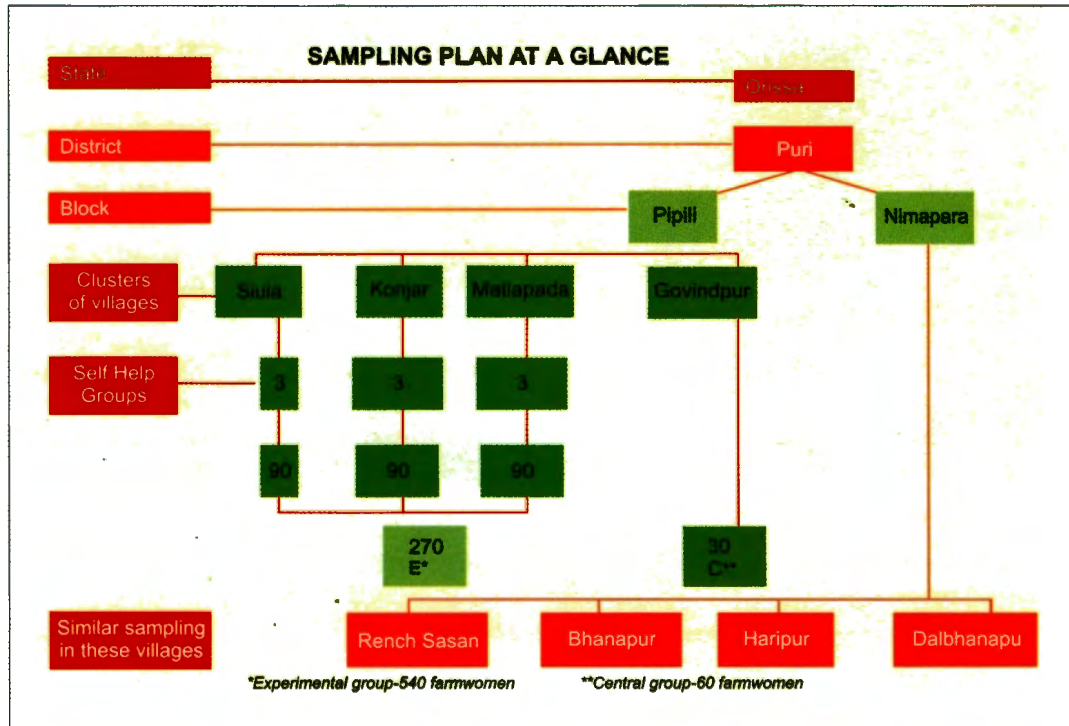
Background information

The background of the villages with respect to topography, demography, agriculture, social living and infrastructure was studied by employing different tools such as social map and PRA. Sampling plan was drawn up to meet the requirement of the experimental design.



Sample Plan

From the selected villages 600 Farmwomen, who were found involved in agriculture and animal husbandry and belonged to small and marginal farm families were identified through bench mark survey of the villages. These farmwomen were organized into 20 self help groups. Out of these, 18 self-help groups were experimental groups and 2 SHGs were control groups. Each self help group consisted of 30 farmwomen. There were nine SHGs in three experimental villages of each selected blocks. In each control village one self help group was formed.



Interventions to empower the women groups have been designed and actions such as capacity building, launching of enterprises will be taken up in the coming year.

Management of coastal agro eco system affected by Super Cyclone (Hema Pandey, Suman Agarwal, H.K. Dash, Abha Singh and Bharati Killadi)

National Research Centre for Women in Agriculture is a co-operating centre under this project. The broad objectives of the project include:

- Nutritional status assessment of the families and suitable intervention.
- Intervention through development of nutritional garden in the homestead areas of the families.
- Preparation of material for nutrition education to the farm families.

Nutritional status assessment of the families

One hundred twenty families were selected randomly from the village 'Kakan' for the assessment of nutritional status. Structured interview schedule for assessing the nutritional status of farm families was prepared, pre-tested and finalized. Data collection was completed for 70% families. The collected data is being coded, tabulated for analysis and assessment of nutritional status.

Intervention through development of nutritional garden in the homestead areas of the families

Nutritional garden in the homestead area of the families provide immediate food and nutrition security to the family. Therefore, for providing nutritional security 120 nutritional gardens were laid out in the backyard of families severely affected by cyclone. About 100 sq.ft. (10' x 10') area in the homestead of each family was identified for the development of nutritional gardens.



The layout of the plots was completed for planting of vegetable crops and fruit plants.

So far 120 nutritional garden were laid. The detailed yearly plan of sowing the vegetables had been drawn up. The following vegetable and fruit crops were planted in the garden as given in Table 16 during the period under report.

Table 19: Vegetable crops grown from February to April 2002

Crop	Variety
Vegetable crop	
Sweet potato	Gauri
Cucumber	Barsati long
Pumpkin	Baida bati
Bitter gourd	Priya
Watermelon	Sugar baby
Basella	Local
Amaranthus	CO 1
Tomato	BT 10
Okra	Utkal Gaurav
Chilli	Utkal Ava
Fruit crop	
Banana	Chakrakeli
Papaya	Co 6

As evident from the above table 10 vegetable crops and 2 fruit crops were taken. Selected women were given necessary orientation regarding nursery bed preparation, plant protection and critical inputs. Sowing of seeds in the nursery bed was done for the crops like tomato and chilli. After 4 weeks these seedlings were transplanted in the main plots in the backyard. Crops like cucumber, bitter gourd, pumpkin, watermelon, basella, amaranthus and okra were sown in the field and management practices were taken up as per recommendations for Orissa conditions.

Pits of 1x1x1.5 m were prepared in one corner of backyard and banana suckers and papaya seedlings were planted.

Intercultural operations like mulching with straw and irrigation were given for better management of crops.

It was found that watermelon was tolerant to salt and was suitable for this area. Crops like sweet potato, cucumber, pumpkin, bitter gourd, tomato, okra, chilli, basella and amaranthus met the day-to-day nutritional/vegetable requirement of the family and the yield was satisfactory.

Besides development of 120 nutrition garden in the homestead areas of the farm families of the village Kakan, in the first phase, one model nutrition garden in each selected village of Erasama and Astarang Block is also being developed. So far 12 model kitchen gardens were laid out in the villages of Astarang

and Ersama Block and women having the model kitchen garden were given necessary training in growing vegetables in scientific manner along with the critical inputs.

Training on management of nutritional garden

Table 20: Trainings for management of kitchen gardens

Area	Village	No. of training	Number of Participants
Awareness	Astarang Block	5	159
Generation for development of nutrition garden	Manduki, Sunder		
	Ersama Block	4	48
	Kakan Ward No 20 and 21		

Table 20 gives information on demonstrations conducted for the farmwomen for developing the nutritional garden.

Preparation of material for nutrition education for the farm families

A folder is being developed for imparting training on scientific method of managing the nutrition garden the folder also gives the package of practices for growing vegetables and fruits in the nutrition garden. In addition, folders on importance of balance diet and low cost recipes are also being prepared.

ICAR ad-hoc project

Studies on women in agriculture in India with special emphasis on crop production technologies

(M.P.S. Arya and Y.V.R. Reddy)

The NRCWA, Bhubaneswar is a co operating centre of the project; while CRIDA, Hyderabad is the lead centre of the project. The objectives of the project are:

- To study the utilization pattern as well as comparative earnings of women workers vis-a- vis men workers in farming activities.
- To know the existing skills and knowledge in agricultural practices and sources for such knowledge and also views of women about new technology to avoid drudgery of work.
- To examine the extent of participation of women in decision making in agriculture as well as patten of decision making in agriculture.
- To study the impact of new technology on increase of production and on creating greater potential for employment and also to investigate the contribution of women labour in household income in different regions.
- To examine the regional differences/ variations in role of women in agriculture under different knowledge situations and identity factors responsible for large variations in their participation rate.

As per approved technical programme 3 villages of advance, average and backward categories were selected. The names of these three villages are Basantpedi in Baliyanta block; Andharava in Bhubaneswar block and Harekrishanpur in Jatni block, respectively. Seventy-five women, 15 each from landless, marginal, small, medium and large land holdings were randomly selected in each village. The data collection of 75 families belonging to Basantpedi village for one season has been completed. Data from other two villages and seasons are being collected.

Bhopal Sub-centre

Comparison of heart rate responses of groundnut decortications using improved (seating and standing type groundnut decorticators) and local method

Measurement of physiological cost during operation of seed treatment drum

An experiment was carried out on a seed treatment drum of 40g capacity. Three women workers participated in the study and data on heart rate were taken. During the operation, seeds of soybean and pigeon-pea were treated with Thiram. Each time 25 kg of the seeds were filled and the heart rate data on three subjects were taken. The trial duration was six minutes as this was the time required for mixing the seed properly with the chemicals. The values for mean working heart rate and HR (increase in heart rate over rest) were 114.7 beats/min and 30.5 beats/min respectively. The women workers felt the equipment comfortable and easy for operation.



Design refinement in sitting type groundnut decorticator for women workers

Based on the data generated in the experiment on ergonomical evaluation of sitting type groundnut decorticator, design refinements were carried out in the prototype for better ergonomical performance. These included increase in handle length from 32 to 37 cm, increase in stool height from 20 to 32 cm and change in wooden base design for easy packing and transport. The modified unit has been fabricated and is under testing.

Trainings

Trainer Trainings

The centre organized the following trainers' training programmes for the Scientists/ Extension functionaries of the ICAR Institutes/ SAUs /State Departments of Agriculture, Horticulture, Animal Husbandry and Fishery to sensitize them on the productive roles of women farmers and train them on application of appropriate technologies in agriculture and allied fields.



Table 21: List of trainer's trainings conducted

Title of the training	Duration	Training Co-ordinator	No. of participants
Main Centre			
Gender specific vegetable nursery management and seed production husbandry for large, small and marginal holdings	14 th –16 th June, 2001	Dr S.N. Pandey, Principal Scientist (Horticulture)	8
Planting management in rice for sustainable production	26 th -28 th July, 2001	Dr M.P.S Arya, Principal Scientist (Agronomy)	3
Techniques of teaching adults with emphasis on farmwomen	31 st July-2 nd Aug., 2001	Dr B.N. Sadangi, Principal Scientist (Agricultural Extn.) and Dr H.K. Dash, Scientist (Agricultural Eco.)	5
Care and management of new born calves women's domain	20 th -22 nd Nov., 2001	Dr K. S. Risam, Principal Scientist (LP&M)	6
Entrepreneurship development among farm women	26 th Nov., -1 st Dec., 2001	Dr(Miss) Suman Agarwal, Principal Scientist (HDRM)	15
Techniques of improving extension services for farmwomen	12 th -15 th Feb., 2002	Dr B.N. Sadangi, Principal Scientist (Agricultural Extn.) and Dr H.K. Dash, Scientist (Agricultural Eco.)	8
Sub-centre			
Primary Agro Processing Technologies	18 th – 22 nd July 2001		
Empowerment of women in agriculture	22 nd –24 th January 2002		30

Farmers/Farmwomen trainings



Under the research projects the centre organized the following training programmes for the farmwomen on different need based areas.



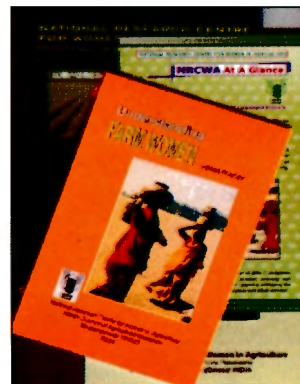
Table 22: Farmers training conducted

Sl. No.	Title of the training	No. of training	No. of participants
Main centre			
1.	Awareness generation for development of nutrition garden	9	207
2.	Seed extraction of tomato	1	20
Sub-centre			
3.	Primary agro processing technologies	1	

Publications

Research papers

- Arya, M.P.S. and Singh, R.V. (2001). Response of amaranath (*A. hypochondriacus* L) to levels and times of nitrogen application. *Indian Journal of Agronomy*, 46 (1): 186-189.
- Damodaran, T., Attri, B.L., Medhi, R.P., Nair, Sujatha A. and Alex Leena (2001). Studies on post-harvest management of sapota (*Achras zapota*) cv. Cricket Ball during storage. *Indian J. Hort.* 58(4): 342-345.
- Mohanty, T., Sadangi, B.N. and Swain, P (2001). Cooking energy consumption in rural areas, A socio-economic evaluation. *Journal of Extension Education*, OSEE, 3 (1 and 2) : 45-50 (Pub. in 2001).
- Sadangi, B.N. and Singh, R.P. (2001). Difference in needs for achievement between rural entrepreneurs and non-entrepreneurs. *Journal of Extension Education*. OSEE, 4(1 and 2) : 18-23.



Popular Article/Technical Bulletin

- Agarwal, Suman and Risam, K.S. (2001) Parwarik Khad Avam Poshan Surakshta Ghar Ke Pichwarda Main Murghi Palan Ka Mahetav, *Kheti*, 54 (8) : 9-10.
- Arya, M.P.S. and Pandey, Hema (2001), "Technology for Farmwomen", *Indian Farming*, 51(4) : 22-25 and 30.
- Pandey, Hema (2001), "Bhuk va garibi ki jang- dhaal bani naari", *Kheti*, 54(7) : 13-16.
- Saha Geeta, S, Raj M. and Saha, G.S. (2001). Development of rural women in Andaman and Nicobar Islands, *Khadigramodyog*, 47(9) :317-323.
- Saha Geeta, S, Raj M. and Saha G.S. (2001). Saga of enduring success- tailoring and women development, *Agricultural Extension Review* 13(4): 21-22.

Congress /Conference /Seminar Papers

- Dash, H.K., Sahoo, P.K. and Sadangi, B.N. (2002) : Ecological and economic changes in and around Chilika – Perceptions of fisher folks, Souvenir, International Workshop on Restoration of Chilika Lagoon, organized by CDA, pp. 12-13.
- Pandey, H. and Agarwal, S. (2001): Nutrition garden for family food security. National Seminar on Bio-diversity, Environment and Food Security: Prospects and Challenges, organized by Botanical Society of Orissa in collaboration with Central Rice Research Institute, December 21-22, CRRRI Cuttack.
- Pandey, H.(2001) : Role of rural women in agriculture. National Seminar on "Gender Issues-Women in Agriculture and Management" organized by TNAU, Coimbatore during 20th - 22nd August, 2001.
- Pandey, H.(2001) : Role of women in agriculture and need for women empowerment, National training for the facilitators of "Central Sector Scheme on Women in Agriculture Programme" on 24.11.2001.
- Arya, M.P.S. and Pandey, H (2002). Transplanting of rice by women – An assessment of drudgery components. Paper presented at "National symposium on agriculture in changing global scenario", held at IARI, Pusa, New Delhi, Feb. 21-23, 2002 P. 265.
- Pandey, H, Sadangi, B.N., Sahoo, P.K. and Dash, H.K. (2001) Women fish traders of Chilika- Prospects and Problems, Women in Fisheries, *Indian Society of Fisheries Professionals*, 2002, Mumbai, India pp. 74-83.

- Sahoo, P.K., Sadangi, B.N. & Dash, H.K. (2001). Women as strategic partner for bio-conservation of Chilika Lake. National Workshop on Integration of fish biodiversity conservation and development of fisheries in North-eastern regions through community participation. Organised by NBFGR, Lucknow & North-eastern Council, Shillong, 12-13 December, 2001. pp: 120-122.

Book

- Pandey, H. (2001) "Understanding Farmwomen", NRC for Women in Agriculture (ICAR), 2001.

Radio Talks

- Dr B.N. Sadangi, Principal Scientist (AE) delivered two talks on "Mahilamananka Pain Kutira Silpa" on 26.1.2002 and 17.8.2002 in All India Radio, Cuttack.
- Mrs. L.P. Sahoo, Scientist (S.T.) delivered a talk on "Profitable Cultivation of Leafy Vegetables" in All India Radio, Cuttack.
- Ms Nidhi Agarwal, Agricultural Engineer, NRCWA Sub-centre, Bhopal, delivered a talk on "Agricultural training of farmwomen for their self employment" on 10.5.2001.

Ongoing Research Projects

Sl. No.	Name of the Project	Date of launching	Investigators
Main centre			
1.	Development and testing of extension methods for farmwomen in Eastern India	August, 99	Dr B.N. Sadangi, Dr Hema Pandey, Dr M.P.S. Arya, Dr P.K. Sahoo, Dr H.K. Dash
2.	A gender study on agriculture and household economy of tribal of Orissa	August, 99	Dr H.K. Dash, Dr B.N. Sadangi
3.	Studies on technological need for empowering women in rural aquaculture	August, 99	Dr P.K. Sahoo, Dr B.N. Sadangi
4.	Improvement in backyard poultry farming for farmwomen of different categories	August, 99	Dr K.S. Risam
5.	Identification and improvement of farming systems suited to farmwomen in Eastern India	August, 99	Dr M.P.S. Arya, Dr B.N. Sadangi, Dr Suman Agarwal, Dr P.K. Sahoo, Dr H.K. Dash, Mrs L.P. Sahoo, Mrs Abha Singh
6.	Occupational health hazards of farmwomen in coastal Orissa	May, 2000	Dr Hema Pandey, Dr Suman Agarwal, Mrs Abha Singh
7.	Standardization of women specific field practices in rice in Orissa	May, 2000	Dr M.P.S. Arya, Mrs Laxmi Priya Sahoo
8.	Identification and evaluation of interactive learning modules for dissemination of homestead technologies	May, 2000	Dr Suman Agarwal, Dr Hema Pandey, Mrs Abha Singh
9.	Improvement in storage practices of seeds and grains of important crops with women perspective	May, 2000	Mrs Laxmi Priya Sahoo, Dr M.P.S. Arya
NAT Projects			
10.	Management of coastal agro-eco system affected by Super Cyclone	June, 2001	Dr Hema Pandey, Dr (Miss) Suman Agarwal, Dr H.K. Dash, Mrs Abha Singh, Dr Bharati Killadi
11.	Empowerment of women in agriculture	October, 2001	Dr (Miss) Suman Agarwal, Mrs. L.P. Sahoo
Sub-centre			
12.	Comparison of heart rate responses of groundnut decortications using improved (seating and standing type groundnut decorticators) and local method		

Participation in Seminars/ Workshops/ Conferences

- Dr (Mrs) Hema Pandey, Director and Dr B.N. Sadangi, Principal Scientist (AE), attended a workshop on "Incidence and nature of the male out-migration in major rainfed rice farming environments" held on 21st –22nd July 2001 at IARI, New Delhi organized by International Rice Research Institute, Phillipines.
- Dr H.K. Dash, Scientist (Agricultural Eco.) attended a workshop on "Institutionalization of priority assessment in SAUs and ICAR Institutes "on 28th – 29th Sept., 2001 at CRRI, Cuttack.
- Dr Hema Pandey, Director, attended the International Conference on Women in Fisheries at CIFE, Mumbai during 11th –12th Nov 2001 and presented a paper entitled "Women fish traders of Chilika- Prospects and Problems".
- Dr Hema Pandey, Director, attended the National training for the facilitators of "Central Sector Scheme on Women in Agriculture Programme" on 24th Nov. 2001 and delivered the lecture on "Role of women in agriculture and need for women empowerment".
- Dr H.K. Dash, Scientist (AgriculturalEco.) attended the International Workshop on "Restoration of Chilika Lagoon" organized by Chilika Development Authority in collaboration with Wetlands International – South Asia Indian Institute of Tourism and Travel Management from 18th – 20th Jan., 2002 at Bhubaneswar.
- Dr P.K. Sahoo and Mrs L.P. Sahoo attended National conference on "Women scientists and technologist's role in national development" organized by Ministry of Women and Child Development and Department of Bio-technology, Govt. of India, from 8th – 9th March, 2002.

Other activities

Celebration of World Food Day

The World Food Day 2001 was celebrated on 16.10.2001 in the adopted village of the centre. The



theme of the celebration was protection of coconut from black headed caterpillar. A meeting of the farmwomen was organized to emphasize the release of parasite (Bracon hebarter) to control heavy infestation of cater pillar. Demonstration was organized for identification and release of parasite.

Rajabhasa Programmes

During the year, some basic facilities were created. These include purchase of Hindi typewriter, loading of Krishna font (hindi typing) in all the computers, developing

Hindi based letter heads, stamps etc. Short and simple programmes, such as, Aaj ka shabd and Hindi wall hanging writings etc. were introduced to familiarize Hindi among the staff members.

Hindi Chetna Diwas was celebrated on 20.9.2001 in which competitions on various aspects were organized and prizes were given to the successful staff members of the centre. In all five competitions were held and 12 employees were given prizes.



Important meetings

Research Advisory Committee

The Research Advisory Committee meeting held on 19.6.2001 under the Chair-personship of Dr (Mrs) Pankajam Sundaram. The committee reviewed the progress of the research projects of the centre and gave suggestions for improving the research output.



Institute Management Committee

The Institute Management Committee meeting was held on 18.6.2001 and considered various proposals and took decisions for efficient management of the centre.

Visit of Iowa Scientists to NRCWA

Dr Mary Littrell and Dr Mary Winter, Scientists, Iowa State University, Ames, USA, visited NRCWA, Bhubaneswar from 18th – 23rd Feb., 2002 and attended several rounds of discussion with the scientists of this centre. After meetings and field visits, four research project proposals entitled "Documentation and impact analysis", "Value-added agricultural products" and "Gender sensitization of scientists and extension functionaries" were developed for collaboration between NRCWA and Iowa University.



QRT visit

The first Quinquennial Review Team (QRT) of the centre was constituted with the following members:

Name and Address	Designation
Prof. A. Mukhopadhyay, Ex-Vice Chancellor, Assam Agricultural University 151- Akansha Udyan-II Rai Bareilly Road, Lucknow 226 025	Chairperson
Dr. S.K. Arora, Ex-Dean, HAU 748-Sector, 15 A, Hisar 125 001. (Haryana)	Member
Dr. (Mrs) Sumita Roy, Prof. Deptt. of Home Science Extension Education, College of Home Science Punjab Agricultural University, Ludhiana (Punjab)	Member
Dr. VS Kulhari Ex-Prof. (Extn), RAU, 48- Gopalbari, Jaipur (Rajasthan)	Member

The Quinquennial Review Team visited the sub-centre at CIAE, Bhopal during 22nd – 23rd February 2002 to review the progress of the sub-centre.

Human Resource Development

- Dr M.P.S. Arya , Principal Scientist (Agronomy) attended ICAR training on “IPR and WTO Awareness” held at DRR, Hyderabad from July 10 – 12, 2001.
- Dr P.K. Sahoo, Scientist (Fish and Fishery Sc.) attended Summer school on “Culture based capture fisheries development” from 18th July 2001 to 17th August 2001 at Central Inland Capture Fisheries Research Institute, Barrackpore.
- Dr (Mrs) P.K. Sahoo, Scientist (Fish and Fishery Sc.) was awarded 3rd prize in a Photo contest on “Women in fishery” organized by Asian Fishery Society, Philippines.
- Shri Babu R.K., Sr. Clerk, attended a training on “Reservation Policy of Govt. of India” held at CRRI, Cuttack, from 4th – 5th Feb. 2002.
- Miss Rina Das, Stenographer, Gr-III- is attending training on Hindi Typing and Stenography at O/o The Accountant General, Bhubaneswar.

Personnel

Sl.No.	Name	Designation
1.	Dr Hema Pandey	Director
2.	Dr K.S. Risam	Principal Scientist (LP&M)
3.	Dr B.N. Sadangi	Principal Scientist (AE)
4.	Dr M.P.S Arya	Principal Scientist (Agronomy)
5.	Dr Suman Agarwal	Principal Scientist (HDRM)
6.	Dr Alok Jha	Senior Scientist (Dairy Technology)
7.	Dr S.K. Srivastava	Senior Scientist (Entomology)
8.	Dr B.L. Attri	Senior Scientist (Horticulture)
9.	Dr P.K. Sahoo	Scientist (Fish and Fishery)
10.	Dr H.K. Dash	Scientist (Agricultural Economics)
11.	Mrs.L.P. Sahoo	Scientist (Seed Technology)
12.	Mrs. Abha Singh	Scientist (Food and Nutrition)
13.	Dr (Mrs) Bharati Killadi	Scientist (Horticulture)
14.	Mrs. Geeta Saha	T-4
15.	Ms. Nidhi Agarwal	T-II-3*
16.	Shri B.C. Sahu	T-2
17.	Shri Dilip Kar	Asstt. Administrative Officer
18.	Shri N.V.R.N. Murty	Asstt. Finance and Accounts Officer
19.	Shri V. Ganesh Kumar	Personal Assistant
20.	Ms. Rina Das	Stenographer Gr-III
21.	Mrs. Parisima Sen	Stenographer Gr-III
22.	Mr. M. Radhakrishnan	Sr. Clerk
23.	Mr. Babu R.K.	Sr. Clerk
24.	Mrs. Bishnupriya Moharana	Jr. Clerk
25.	Mr. Biswanath Biswala	S.S.G.1

* At sub centre of NRCWA located at CIAE, Bhopal.

Our New Colleagues

Sl. No.	Name	Joined on
1.	Dr Alok Jha, Senior Scientist (Dairy Technology)	26.12.2001
2.	Dr S.K. Srivastava, Senior Scientist (Entomology)	22.03.2002
3.	Dr B.L. Attri, Senior Scientist (Post Harvest Technology)	26.03.2002

Farewell

Sl. No.	Name	Relieved on
1.	Shri N.V.R.N. Murty, Asstt. Finance and Accounts Officer transferred to NRC Meat, Hyderabad	28.09.2001
2.	Dr K.S. Risam, Principal Scientist (LP&M) selected as Head, NTRS, CSWRI, Kullu	29.01.2002

सार-संक्षेप (Summary in Hindi)

कृषि में महिलाओं पर राष्ट्रीय अनुसंधान केन्द्र, भुवनेश्वर, ने शोध एवम् प्रशिक्षण कार्यक्रम वर्ष 2001-02 में केन्द्र के उद्देश्यों के पूर्ण करने में सार्थक योगदान दिया है। संस्तुत शोध योजनायें कार्यान्वयन के विभिन्न पड़ावों पर थीं और उनके द्वारा प्राप्त परिणाम कृषि महिलाओं में तकनीकी सशक्तीकरण एवम् नीति निर्धारण के अनुरूप थे। केन्द्र के शोध एवम् प्रशिक्षण कार्यक्रम के अतिरिक्त केन्द्र के वैज्ञानिकों ने देश के विभिन्न स्थानों पर आयोजित विभिन्न कार्यक्रमों में अपनी लैंगिक विशेषज्ञता का योगदान दिया है। केन्द्र के वैज्ञानिकों तथा आइ.ओ. ए. विश्वविद्यालय, एम्स, अमेरिका, के बीच केन्द्र के लिये आवश्यकता अनुरूप शोध योजनायें तैयार करने व उनके समृद्धिकरण हेतु सार्थक आदान प्रदान हुआ है।

‘पूर्वोत्तर भारत में कृषि महिलाओं के लिए प्रसार के विभिन्न तरीकों के विकास एवम् परीक्षण’ परियोजना के अन्तर्गत कृषि महिलाओं से सम्बन्धित विभिन्न कृषि प्रणाली और प्रमुख उद्यम, प्राप्त प्रसार संदेशों का उत्तरीय खुलासा और उनकी अनुपूरित आवश्यकताओं से सम्बन्धित आँकड़े प्राप्त हुये। ये आँकड़े निश्चित रूप से साधारण प्रसार कार्यकर्ताओं और कृषि महिलाओं में सूचना स्थानान्तरण रणनीति से सम्बन्धित प्रशिक्षण पाठ्यक्रम और उचित सक्षमता विकास कार्यक्रम बनाने में मददगार होंगे।

‘उड़ीसा में जनजातीय महिलाओं के लिए कृषि एवम् घरेलू आमदनी’ सम्बन्धी अध्ययन सघन जनजातीय जनसंख्या वाले कंधमाल जिले में किया गया जिससे जन जातीय महिलाओं में घरेलू आमदनी बढ़ाने की विपुल शक्ति और इस दिशा में समुचित हस्तक्षेप करने से सम्बन्धित आँकड़े प्राप्त हुए।

‘जलीय खेती में महिलाओं के सशक्तीकरण के लिये तकनीकी आवश्यकता’ सम्बन्धी परियोजना में कृषि महिलाओं के सक्रिय भागीदारी से किये गए क्षेत्रीय परीक्षण में पाया गया कि घर पिछवाड़े छोटे तालाब से महिलाये 5 टन प्रति हेक्टेयर वार्षिक मछली का उत्पादन कर सकती हैं। कार्पस का हापा प्रजनन व घर के पास तालाब में मछलियों के बीज बनाने में कृषि कार्यरत महिलाओं की रुचि पाई गई। ग्रामीण महिलाओं के लिये यह परिणाम मछली पालन में उद्यमता विकास कार्यक्रम में लाभकारी होंगे।

‘पूर्वी भारत के कृषि महिला अनुरूप कृषि पद्धतियों के चयन एवं सुधार’ नामक परियोजना में मूँग, मूँगफली, शकरकन्द, टमाटर, मिर्च, बैंगन व भिन्डी की उन्नत किस्मों का किसानों के खेत पर मूल्यांकन किया गया जिससे उन्हें विभिन्न कृषि पद्धतियों में सम्मिलित किया जा सके।

समुद्रतटीय उड़ीसा में धान मुख्य फसल होने के कारण, उड़ीसा में धान उत्पादन में महिला विशेष प्रक्षेत्र क्रियाओं का मानकीकरण' नामक शोध परियोजना के अन्तर्गत यथार्थ और वस्तुपूरक विधियों का समन्वय महिलाओं को पौध उत्पादन से लेकर कटाई तथा कटाई उपरान्त विभिन्न क्रियाकलापों में भागीदारी को पता करने का अध्ययन किया गया। इससे प्राप्त सूचना वैज्ञानिकों एवम् अन्य विकास से सम्बन्धित सस्थाओं के लिये महिलाओं में तकनीकी सशक्तीकरण से सम्बन्धित अध्ययन में लाभदायक हो सकती है।

कृषि को प्रभावी बनाने के लिये ग्रामीण क्षेत्रों की महिलाओं के स्वास्थ्य' का संबन्ध होने से 'तटीय कृषि परिस्थितिकी तंत्र में कृषि महिलाओं के बीच व्यावसायिक स्वास्थ्य जोखिम' नामक शोध परियोजना से प्राप्त आँकड़े कृषि महिलाओं के स्वास्थ्य जोखिम प्रबन्धन में अवश्य मार्गदर्शन प्रदान करेंगे।

'महिलाओं के लिये मुख्य फसलों के बीज एवम् अनाज के लिये भण्डारण विधियों में सुधार' नामक परियोजना में दलहनों के भण्डारण से सम्बन्धित देशी तकनीकी ज्ञान का मूल्यांकन भी किया गया। 'कृषि में महिलाओं का सशक्तीकरण एवम् महा चक्रवात से प्रभावित समुद्र तटीय कृषि परिस्थितिकी तंत्र प्रबन्धन' नामक राष्ट्रीय कृषि तकनीक परियोजना से वैज्ञानिकों को कृषि महिलाओं के विकास के विभिन्न आयामों के अध्ययन, प्रक्षेत्र एवम् अन्य सहयोगी क्षेत्रों में तकनीकी हस्तान्तरण में महत्वपूर्ण सफलता मिली है। इस केन्द्र के केन्द्रीय कृषि अभियान्तिकी संस्थान भोपाल पर स्थित उपकेन्द्र ने मूँगफली छिलाई सम्बन्धी प्रक्षेत्र उपकरण के शोध एवम् विकास पर बल दिया है।

केन्द्र के एक अन्य प्रमुख उद्देश्यत् 'महिलाओं से सम्बन्धित प्रशिक्षक प्रशिक्षण कार्यक्रम' के अन्तर्गत वर्ष के दौरान सब्जी पौधशाला प्रबन्धन, बीज उत्पादन, धान में रोपण प्रबन्धन, प्रसार सेवाओं में सुधार एवम् प्रौढ़ शिक्षा तकनीक, नवजात बछड़ों की देखभाल एवम् प्रबन्ध तथा कृषि महिलाओं में उद्यम विकास आदि से सम्बन्धित प्रशिक्षण आयोजित किये गये। उपकेन्द्र पर दो मुख्य प्रशिक्षक प्रशिक्षण, प्राथमिक कृषि संवर्धन तकनीक एवम् कृषि में महिलाओं का सशक्तीकरण, आयोजित किये गये। विभिन्न परियोजनाओं के अन्तर्गत कृषक एवम् कृषि महिलायें भी पोषक गृह वाटिका प्रबन्धन, बीज निष्कर्षण और कृषि संवर्धन के विभिन्न पहलुओं पर प्रशिक्षित की गईं।

वर्ष के दौरान प्रशासनिक एवम् प्रायोगिक भवन निर्माण, पुस्तकालय समृद्धिकरण, हिन्दी के प्रति जागरूकता और शोध कार्यों के लिये सुविधायें सृजित करने में नियमित प्रयास किये गये। मानव संसाधन विकास व कर्मचारियों की दक्षता वृद्धि पर भी उपयुक्त ध्यान दिया गया।



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