

वार्षिक प्रतिवेदन ANNUAL REPORT



2022



भाकृअनुप - केन्द्रीय कृषिरत महिला संस्थान
(भारतीय कृषि अनुसंधान परिषद)
भुवनेश्वर - 751 003, ओडिशा, भारत

ICAR- CENTRAL INSTITUTE FOR WOMEN IN AGRICULTURE
(Indian Council of Agricultural Research)
Bhubaneswar - 751 003, Odisha, India



OBJECTIVE

Emerge as a leading centre for gender research and serve as a catalyst for gender mainstreaming and women empowerment in agriculture to realize enhanced productivity and sustainability of agriculture



MISSION

Generate and disseminate knowledge to promote gender sensitive decision making for enhancing efficiency and effectiveness of women in agriculture



MANDATE

Research on gender issues in agriculture and allied fields. Gender-equitable agricultural policies/ programmes and gender-sensitive agricultural-sector responses. Co-ordinate research on Home Science



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ICAR-CIWA ANNUAL REPORT 2022

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OBJECTIVES

01

Undertake studies to assess agricultural technologies, programmes, institutions and policies to refine these with a gender perspective

02

Create and maintain gender disaggregated databases to understand the dynamics and the effect of gender roles in different agro-ecological and production systems for strategic planning

03

Characterize and understand drudgery and safety related issues of farmwomen and improve their work efficiency

04

Develop gender sensitive, resilient and sustainable agricultural models and institutional innovations for nutrition and livelihood security

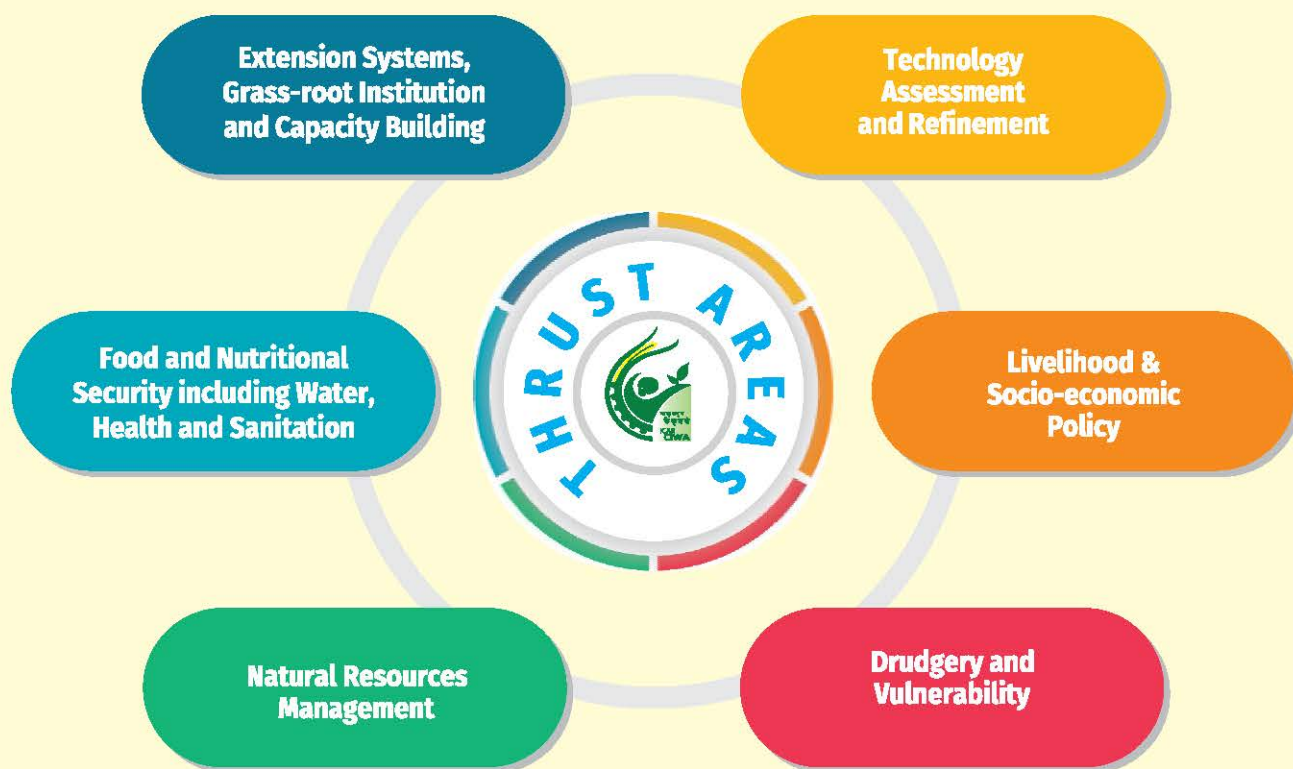
05

Documentation and knowledge management of gender studies in agriculture

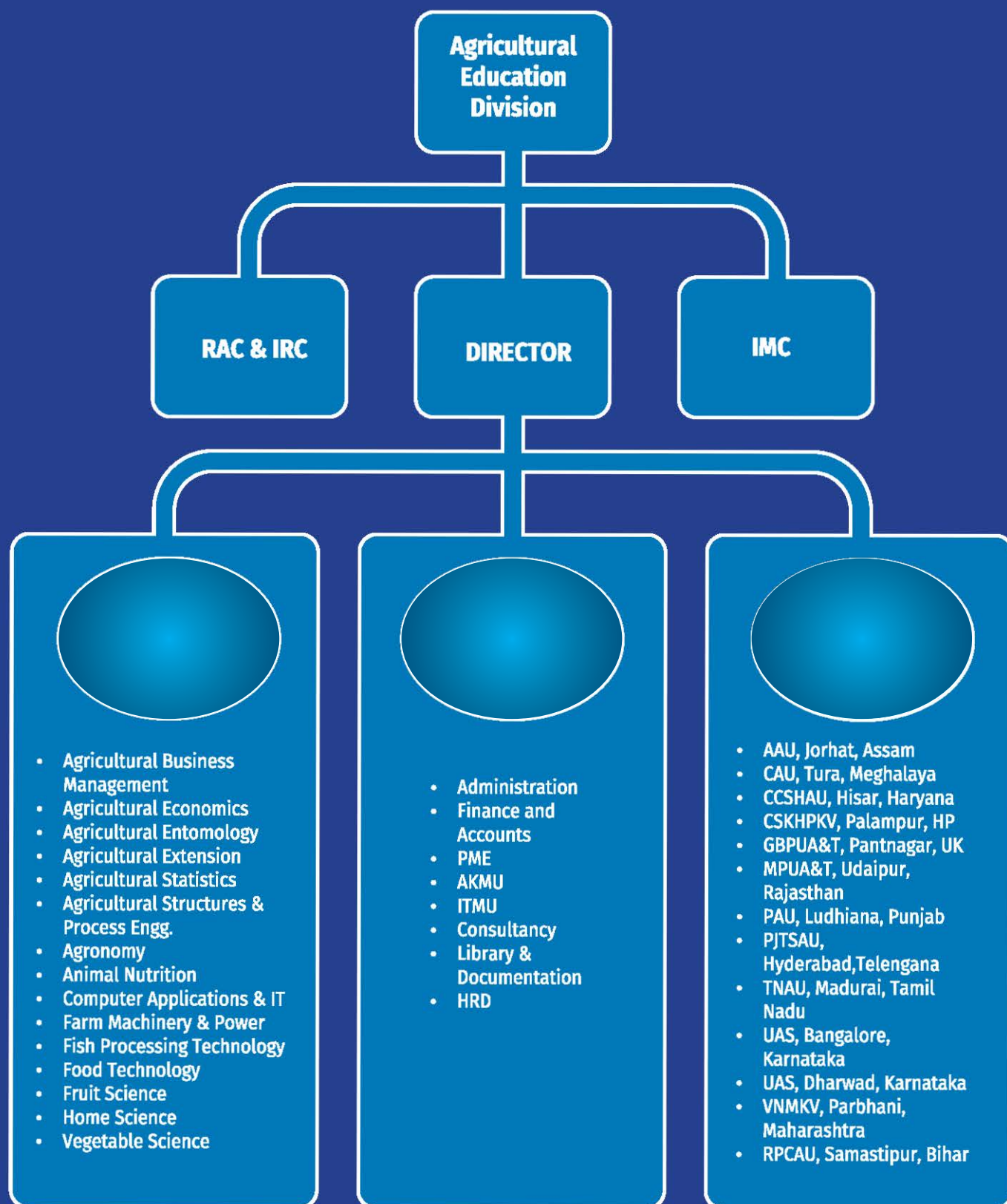
06

Capacity building of various stakeholders to address gender issues in agriculture





ORGANOGRAM



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PREFACE

Women farmers of India are the harbingers of structural transformation of agriculture in the country. There are various facets of women in agriculture. They are not only food producers or entrepreneurs, but also are the custodians of our biodiversity. They are living at the intersection of social, economic, technological and legal deprivations. Hence, mainstreaming and empowering women requires a concerted effort by research organizations, policy makers and respective central and state governments. In India, the role of women, gender issues and the need to create opportunities for women were recognized long ago by the development planners and policy makers. As a result, successive plans witnessed several programmes and mechanisms to address the problems of women. The ICAR-Central Institute for Women in Agriculture (ICAR-CIWA), Bhubaneswar along with its network of 13 AICRP on Women in Agriculture Centres has been consistently working to understand the role and problems of women in agriculture, and based on research outputs, it regularly provides inputs to researchers and policy makers for gender responsive decision making. During the year 2022, the institute has made significant strides towards achieving the goal of gender equality through its research, extension and capacity building activities.

Time-use surveys are useful for addressing gender disparities that exist in agriculture and allied sectors. State wise participation, time spent and contribution of men and women in agriculture and allied activities in India were studied through analysis of Time Use Study (TUS 2019). The study revealed that in rural areas, 22.4% of women (age 6+ years) and 34.6% of men (age 6+ years) participate in agriculture and allied activities, including crop and livestock sector, spending on an average 233 min/day and 330 min/day, respectively. Gender Fact Sheet (GFS) has been conceptualized as an online platform for showcasing gender facts happening in different agricultural institutions. An online database on progressive women farmers of India is also being developed. Under AICRP on Women in Agriculture, a database on the role of women in agriculture in three selected zones viz: AEZ 4 (hot semi-arid eco region with alluvium-derived soils), AEZ 7 (hot semi-arid eco-region with red and black soils) and AEZ 8 has been developed. Research has been undertaken to assess the gender inclusiveness in the schemes and programmes, implemented by Department of Animal Husbandry and Dairying. A model has also been developed for improving livelihood of women dairy farmers through strengthened cooperative linkage. A Multi Agency Participatory Model has been implemented through establishment of Custom Hiring Centres to improve the livelihood of women farmers. The impact analysis of watershed interventions has been carried out across 12 different AER's for the participation, accessibility and adoption of resource conservation practices by farm women. The district-wise data of Farm Power Availability (FPA; kW/ha: 2016-17) was mapped and farm power availability was observed to be higher in the Lower Gangetic plain region, Middle Gangetic plain region, Upper Gangetic plain region and Trans-Gangetic plain region. Under entrepreneurship development, five successful women led enterprises in small scale poultry production were established. A Women Farmer Interest Group was also formed with establishment of a Common facility centre equipped with equipments

for fish processing activities. As an enterprise, a women SHG of Sorana village, under Chilika block in Khordha district has started 'Chilka Foodline' and has been linked with Falcon Chilka fish retail chain for marketing. The intervention on feeding goats with bypass protein holds promise to be adopted by goat farmers to increase the profitability of their enterprise. A Gender Sensitive Agri-Nutri Farming System Model (G-SAN Model) has been developed by innovative extension approaches and intervention through technologies viz. high protein paddy, nutri-rich vegetables and improved feeding practices. A women friendly multipurpose Integrated Vertical Nutri-Farming System (IVNFS) model was developed to grow nutritious vegetables along with mushroom cultivation or poultry farming for year-round dietary diversity to the rural households. It can be successfully adopted by farm families and self help groups as well. Development of 10 nutri-smart villages covering 300 farm families of four districts is being implemented through participation of rural women with technological interventions to bridge the nutrition gap. Under the theme of Climate Resilient Agriculture, women friendly Climate Smart Agriculture Technologies (CSAT) and practices has been demonstrated in 27 villages of seven Minor Irrigation Projects (MIPs) in three blocks of Keonjhar district of Odisha. A concept has been developed on Gender Responsive Integrated Homestead Aqua-horticulture (GRIHA) as a climate resilient approach. Ergonomic studies have also been undertaken through research projects under AICRP on Women in Agriculture centres and AICRP on Ergonomics and Safety in Agriculture to assess the drudgery involved in fish vending, goat rearing activities and in the use of finger guards and digging tool.

During the year 2022, the institute organized 84 capacity building programmes under various research projects and SCSP programme, benefitting 3800 women farmers and farm women. AICRP on Women in Agriculture reached around 17000 women farmers including children through the various capacity building programmes and awareness campaigns. Seminars, webinars, workshops and talks on gender perspective were also organized by ICAR-CIWA during the year in collaboration with other reputed institutions. The scientific and technical staff of the Institute participated in 52 national and international webinars/ seminars/ meetings/ workshops to enrich their knowledge. Twenty villages from Puri, Khordha, and Cuttack district in Odisha were adopted and various skill trainings, demonstrations, field visits and scientist-farmer interface were organized under flagship program of Mera Gaon Mera Gaurav (MGMG). Five Custom Hiring Centres/ Common Facility Centres were

established to empower women farmers/ farm women through entrepreneurship development. The institute has brought out 28 research papers, 2 technical bulletins, 27 popular articles and 2 policy briefs during the year. Through participation in various exhibitions across the country, ICAR-CIWA showcased the women friendly technologies developed by the institute for the benefit of stakeholders. Under the aegis of Azadi ka Amrut Mahotsav, Nationwide Interaction program with Hon'ble Prime Minister, awareness programme on Nutri Sensitive Agriculture and Agri Startup Conclave *Kisan Sammelan* were organized. Institute also celebrated important days like International Day of Yoga, Mahila Kisan Diwas, World Food Day, Constitution Day, Agricultural Education Day, Women in Agriculture Day, Hindi *Pakhwada*, Vigilance Awareness Week. The *Swacchta Abhiyan* programme was organized on a mission mode to create awareness among the staff and various stakeholders about the cleanliness and its health benefits.

I am indebted to the Director General, ICAR and Secretary, DARE for paving the way for furthering the research on addressing gender issues in agriculture by providing all the facilities and the budget required to undertake the research, extension, capacity building and developmental activities. Dr R.C. Agarwal, DDG (Agricultural Education) and Dr P.S. Pandey, ADG (EP&HS) have been a constant source of support and inspiration. I express my gratitude to the Chairman and members of the RAC for their critical but valuable comments in rejuvenating the research activities of ICAR-CIWA. I express my thanks to the Chairman and Members of the QRT not only for critically evaluating the activities and progress of the institute but also for their guidance in overhauling the research and extension activities of the institute. The ICAR-CIWA team will keep its untiring efforts to showcase its excellence for mainstreaming and empowerment of women in agriculture. I strongly believe that this report will be useful for the farmers, extension functionaries, academicians, policy makers etc who are working for bringing transformation in the lives of women in agriculture and allied sectors in the country. I feel honoured in presenting this ICAR-CIWA Annual Report 2022 to the readers.

(Dr Mridula Devi)
Director, ICAR-CIWA

कार्यकारी सारांश

महिला किसान कृषि का अदृश्य चेहरा हैं और अब उन्होंने समावेशी सतत विकास प्राप्त करने के लिए नीति निर्माताओं, शोधकर्ताओं और विकास संगठनों का ध्यान आकर्षित किया है। भारतीय कृषि अनुसंधान परिषद, कृषि और किसान कल्याण मंत्रालय, भारत सरकार के तत्वावधान में भा.कृ.अनु.प.-केंद्रीय कृषिरत महिला संस्थान, भुवनेश्वर भारत का विश्व में अपनी तरह का पहला संस्थान है जो विशेष रूप से कृषि में महिलाओं से संबंधित अनुसंधान के लिए समर्पित है। संस्थान का दृष्टिकोण लिंग अनुसंधान के लिए एक अग्रणी केंद्र के रूप में उभरना है और कृषि की उत्पादकता और स्थिरता को बढ़ाने के लिए कृषि में महिला सशक्तिकरण के लिए एक उत्प्रेरक के रूप में कार्य करना है। संस्थान, देश भर के 12 राज्यों में 13 राज्य कृषि विश्वविद्यालयों में कृषि में महिलाओं पर अखिल भारतीय समन्वित अनुसंधान परियोजना के साथ-साथ अखिल भारतीय स्तर पर में अपने अधिदेश को संबोधित करने के लिए विभिन्न अनुसंधान परियोजनाओं को कार्यान्वित कर रहा है। अनुसंधान, कृषि और संबद्ध क्षेत्रों में लैंगिक मुद्दे, बेहतर पोषण, आजीविका सुरक्षा, व्यावसायिक स्वास्थ्य खतरों एवं श्रम साध्य कार्यों में कमी और क्षमता निर्माण के माध्यम से कृषि में महिलाओं को सशक्त बनाने के लिए लिंग-समान कृषि नीतियां/ कार्यक्रम और लिंग-संवेदनशील कृषि-क्षेत्र प्रतिक्रियाओं पर केंद्रित है। वर्ष 2022 के दौरान, संस्थान ने विभिन्न आंतरिक, बाह्य वित्तपोषित, अंतर-संस्थागत, सहयोगी और समन्वित माध्यमों से अनुसंधान और विस्तार आधारित गतिविधियां शुरू की हैं। वर्ष 2022 के दौरान प्राप्त संस्थान की मुख्य उपलब्धियों का सारांश नीचे दिया गया है।

समय उपयोग अध्ययन के विश्लेषण के माध्यम से भारत में कृषि और संबद्ध गतिविधियों में पुरुषों और महिलाओं की राज्यवार भागीदारी, समय व्यतीत और योगदान का अध्ययन किया गया। अध्ययन से पता चलता है कि ग्रामीण क्षेत्रों में 22.4 प्रतिशत महिलाएं (6+ आयु) और 34.6 प्रतिशत पुरुष (6+ आयु) फसल और पशुधन क्षेत्र सहित कृषि और संबद्ध गतिविधियों में भाग लेते हैं वहीं महिलाएं औसतन 233 मिनट प्रतिदिन और पुरुष 330 मिनट प्रतिदिन कृषि और संबद्ध गतिविधियों में संलग्न रहते हैं। कृषि में व्यस्त कुल जनशक्ति में से 38.7 प्रतिशत महिलाएं हैं, और (61.3) पुरुष हैं। कृषि में योगदान का आंकलन जनसंख्या की भागीदारी दर को प्रतिदिन खर्च किए गए समय के साथ गुणा करके और उसके बाद पुरुषों और महिलाओं के सापेक्ष हिस्से की गणना करके किया गया। यह देखा गया कि कृषि में आवश्यक कुल समय में महिलाओं का योगदान 30.8 प्रतिशत और पुरुषों का 69.2 प्रतिशत है। उत्तराखंड में फसल और पशुधन दोनों क्षेत्रों में महिलाओं का योगदान पुरुषों की तुलना में अधिक पाया गया। लक्षद्वीप में कृषि में महिलाओं का सबसे कम योगदान (6.3%) था, इसके बाद बिहार (13.2%) और पश्चिम बंगाल का स्थान था।

सरकारी योजनाओं और कार्यक्रमों में लैंगिक समावेशिता का

आंकलन करने के लिए, 13 भारत सरकार के पशुपालन और डेयरी विभाग (2020-21) की केंद्रीय योजनाओं का अध्ययन किया गया। विभिन्न योजनाओं में नामांकित महिला लाभार्थियों की संख्या की पहचान करने के लिए मिशन शक्ति, ओडिशा और पशु चिकित्सा विज्ञान और पशुपालन निदेशालय, ओडिशा के साथ संबंध स्थापित किया गया। योजनाओं के मूल्यांकन से पता चला है कि महिला-उन्मुख पशुधन विकास कार्यक्रमों की प्रभावकारिता बढ़ाने के लिए पशु चिकित्सा शिक्षा, अनुसंधान और सेवा वितरण प्रणालियों में लैंगिक पक्षपात को संबोधित करने की आवश्यकता है। महिला सशक्तिकरण के लक्ष्य को प्राप्त करने के लिए, महिला डेयरी उद्यमियों, सहकारी समितियों, आदि के लिए विशिष्ट सब्सिडी को विभिन्न योजनाओं में शामिल करने की आवश्यकता है। महिलाओं की आजीविका पर संगठित डेयरी क्षेत्र की भूमिका के आंकलन में छोटी धारक महिला डेयरी किसानों के लिए प्रमुख दूध विपणन चैनलों की पहचान की गई। मजबूत सहकारी संबंध के माध्यम से महिला डेयरी किसानों की आजीविका में सुधार के लिए एक मॉडल विकसित किया गया है।

विभिन्न कृषि संस्थानों में होने वाले लिंग तथ्यों को प्रदर्शित करने के लिए एक ऑनलाइन मंच के रूप में जेंडर फैक्ट शीट की अवधारणा की गई है। फैक्ट शीट में विभिन्न विषयों पर लिंग संबंधी अलग-अलग डेटा प्राप्त करने की संकल्पना की गई है जैसे कि अनुसंधान परियोजनाएं, प्रौद्योगिकियां, प्रशिक्षण और क्षमता निर्माण, बजट उपयोग, कर्मचारियों का स्वरूप (स्टाफिंग पैटर्न), प्रगतिशील किसानों या उद्यमियों में परिवर्तित किसानों की संख्या, छात्र नामांकन और उत्तीर्ण छात्रों की स्थिति (पास आउट), राष्ट्रीय योजना लाभार्थी, महिलाओं के लिए विशिष्ट बुनियादी ढांचा आदि। भारत की प्रगतिशील महिला किसानों पर एक डेटाबेस भी विकसित किया जा रहा है। डेटाबेस को उपयोगकर्ताओं के अनुरूप (यूजर फ्रेंडली) इस तरह से बनाया गया है कि प्रगतिशील महिला किसानों की सूची नामवार या क्षेत्रवार या विषयवार खोजी जा सकती है।

महिला किसानों की आजीविका में सुधार के उद्देश्य से उड़ीसा के पुरी जिले में मल्टी एजेंसी पार्टिसिपेटरी मॉडल के माध्यम से मसाला प्रसंस्करण पर कस्टम हायरिंग सेंटर की स्थापना की गई है। ओडिशा के पुरी जिले के निमापारा ब्लॉक में 'भार्गबी महिला मशरूम उत्पादक संघ' का गठन किया गया है, जिसमें छह पंचायतों के 22 गांवों को शामिल करते हुए 631 कृषि महिलाओं (47 महिला स्वयं सहायता समूह) को शामिल किया गया है। लिंग संवेदनशील दृष्टिकोण के माध्यम से, उनकी आजीविका में आमूल-चूल परिवर्तन संभव हो रहा है क्योंकि प्रत्येक समूह मशरूम की खेती से एक महीने के अंदर लगभग 1.5 लाख रुपये का लाभ प्राप्त कर रहा है। आजीविका विविधीकरण के लिए महिलाओं को मुर्गी पालन जैसे वैकल्पिक आजीविका विकल्पों से परिचित कराया जा रहा है। भारत के 12

विभिन्न कृषि पारिस्थितिकी प्रदेश में मूल्यांकन किए गए वाटरशेड कार्यक्रमों से पता चला कि कृषि गतिविधियों से संबंधित निर्णय लेने में महिलाओं की भागीदारी केवल 10% थी। प्रभाव विश्लेषण जिसे वाटरशेड हस्तक्षेपों के कार्यान्वयन के बाद पीने के पानी, चारा और ईंधन की लकड़ी के संग्रह में क्रमशः 88.5%, 36.9% और 29.5% की महत्वपूर्ण कमी दर्शाता है। उन्नत उच्च उपज वाली किस्मों, सिंचाई के पानी की उपलब्धता आदि के कारण अधिशेष उत्पादन संभव हुआ जिसके कारण परिवारों द्वारा अपने उपयोग हेतु खरीद में कमी आई। कृषि शक्ति उपलब्धता (एफ.पी.ए; किलोवाट/हेक्टेयर: 2016-17) का जिला-वार डेटा कृषि-जलवायु क्षेत्रों के अनुसार मैप और विभाजित किया गया। इन मानचित्रों के माध्यम से यह अनुमान लगाया जा सकता है कि निचले गंगा के मैदानी क्षेत्र, मध्य गंगा के मैदानी क्षेत्र, ऊपरी गंगा के मैदानी क्षेत्र, ट्रांस-गंगा के मैदानी क्षेत्र में कृषि शक्ति की उपलब्धता अधिक है।

उद्यमिता विकास के तहत, उड़ीसा के पुरी जिले के निमापारा ब्लॉक में छोटे पैमाने पर कुक्कुट उत्पादन में पांच सफल उद्यमिता इकाइयां स्थापित की गईं। बकरी पालन क्षेत्र में, कृषि महिलाओं की आजीविका में सुधार के लिए तारादेवी फार्मर्स प्रोड्यूसर कंपनी लिमिटेड, जाजपुर और माहिरा फार्मर्स प्रोड्यूसर कंपनी लिमिटेड, खोरधा और मानिकस्टु एग्रो प्राइवेट लिमिटेड, कालाहांडी नामक तीन एफपीओ के साथ लिंकेज स्थापित किया गया। "ओम साई" महिला किसान हित समूह का गठन कनमना गांव, अस्तरंगा में प्रसंस्करण गतिविधियों के लिए उपकरणों से लैस एक सामान्य सुविधा केंद्र (सीएफसी) की स्थापना के साथ किया गया। एक उद्यम के रूप में, खोरधा जिले के चिल्का ब्लॉक के अंतर्गत सोराना गांव के साई बाबा एस.एच.जी ने 'चिल्का फूडलाइन' शुरू किया है जिसे विपणन के लिए फाल्कन चिल्का मछली आपूर्ति श्रृंखला, भुवनेश्वर से जोड़ा गया है। स्थानीय रूप से उपलब्ध मूंगफली तेल की खली/केक के फॉर्मेलिहाइड उपचार (1.2%) के माध्यम से बकरियों की बाईपास प्रोटीन खिलाने पर प्रायोगिक अध्ययन के परिणामस्वरूप शरीर के कुल वजन में वृद्धि (8.5 किलोग्राम) और औसत दैनिक वजन में वृद्धि (70.83 ग्राम / दिन) हुई। यह हस्तक्षेप, बकरी पालकों द्वारा अपने उद्यम की लाभप्रदता बढ़ाने के लिए अपनाया जा सकता है।

एक जेंडर सेंसिटिव एग्री - न्यूट्री फार्मिंग सिस्टम मॉडल (जी-सैन मॉडल) को नवीन विस्तार दृष्टिकोण, जैसे संवेदीकरण, कौशल विकास और प्रौद्योगिकियों के माध्यम से अभिसरण और हस्तक्षेप को एकीकृत करके विकसित किया गया है। एकीकृत वर्टिकल न्यूट्री-फार्मिंग सिस्टम मॉडल को ग्रामीण परिवारों को साल भर आहार विविधता प्रदान करने के लिए मशरूम की खेती या कुक्कुट पालन के साथ-साथ पौष्टिक सब्जियां उगाने के लिए विकसित किया गया। इस मॉडल के माध्यम से, सब्जी + मशरूम घटक, 50 किलो मशरूम के साथ 80 किलो सब्जियां प्रदान करता है जबकि सब्जी + पोल्ट्री घटक, 2016 अंडे के साथ 80 किलो सब्जियां और 35 किलो मांस और 125 किलो अपशिष्ट प्रति वर्ष प्रदान करता है। ग्यारह आई.एफ.एस मॉडल को ओडिशा के 10 कृषि पारिस्थितिकी

क्षेत्र में लैंगिक परिप्रेक्ष्य पर विश्लेषण और मूल्यांकन किया गया। मॉड्यूल संख्या 8 में अधिकतम महिला भागीदारी (227 दिन) देखी गई उसके बाद 7 (197 दिन) जिसमें डेयरी उद्यम के साथ-साथ किचन गार्डनिंग संलग्न थी। लिंग के दृष्टिकोण से, आई.एफ.एस. प्रणाली में किचन गार्डनिंग एक छोटा लेकिन महत्वपूर्ण हस्तक्षेप है। कुल मिलाकर, अधिकतम पुनर्चक्रण कृषि पारिस्थितिकी क्षेत्र 1, 2, 9 और 4 आई.एफ.एस. मॉडल में था जहां महिलाओं की भागीदारी अधिकतम देखी गयी।

ग्रामीण महिलाओं की भागीदारी से न्यूट्री-स्मार्ट गांवों के विकास की परिकल्पना की गई है। ओडिशा के चार जिलों (पुरी, खोरधा, कटक, जगतसिंहपुर) के 300 कृषक परिवारों को शामिल करते हुए 10 गांवों में पोषण अंतर को पाटने के लिए तकनीकी हस्तक्षेपों को कार्यान्वित किया जा रहा है ताकि होमस्टेड कृषि और पोषक-उद्यान के माध्यम से कुपोषण को दूर करने के लिए पोषण संबंधी जागरूकता को बढ़ावा दिया जा सके। आजीविका संवर्धन मॉडल, पोषण सुरक्षा मॉडल और उद्यमिता संवर्धन मॉडल नामक तीन मॉड्यूल विकसित किए गए, जिन्होंने लाभ अर्जित किया और कृषि महिलाओं के बीच इक्विटी लाने, उद्यमिता को बढ़ावा देने और महिलाओं के सशक्तिकरण को बढ़ावा देने के लिए समूह आधारित उत्पादन के लिए जागरूकता पैदा की। चिन्हित कृषक महिला समूह के कृषि-उद्यमी दृष्टिकोण को मजबूत करने के लिए एक महिला किसान उत्पादक संगठन (डब्ल्यू.एफ.पी.ओ.), "अनन्या फार्मर प्रोड्यूसर कंपनी लिमिटेड" का संगठन किया गया।

जेंडर रेस्पॉन्सिव इंटीग्रेटेड होमस्टेड एक्वा-हॉर्टिकल्चर (गृहा) पर एक अवधारणा को आजीविका विविधीकरण की दिशा में एक टिकाऊ जलवायु लचीला दृष्टिकोण के रूप में विकसित किया गया है। यह अवधारणा बदलती जलवायु परिस्थितियों में पोषण सुरक्षा को बढ़ाने के लिए परिवार के पास उपलब्ध संसाधनों के उपयोग पर केंद्रित है। यह संकल्पना कृषक हित समूहों में महिलाओं के संघ पर भी ध्यान केंद्रित करती है ताकि घरेलू जल-बागवानी उत्पादन के प्रबंधन में उनकी क्षमता में सुधार किया जा सके और सामूहिक प्रयासों के माध्यम से जलवायु परिवर्तन के झटकों को सहन किया जा सके। क्लाइमेट रेजिलिएंट एग्रीकल्चर की थीम के तहत, ओडिशा में क्योंकि के तीन ब्लॉकों में 7 लघु सिंचाई परियोजनाओं (एमआईपी) के 27 गांवों में महिलाओं के अनुकूल जलवायु स्मार्ट कृषि प्रौद्योगिकियों (सीएसएटी) और प्रथाओं का प्रदर्शन किया। तकनीकी हस्तक्षेपों ने संपत्ति पर महिलाओं के बढ़ते नियंत्रण, निर्णय लेने में भागीदारी, ज्ञान, व्यवहार में परिवर्तन, दृष्टिकोण, जागरूकता, सशक्तिकरण और बढ़ी हुई आर्थिक स्थिति, खाद्य सुरक्षा और पोषण पर प्रभाव डाला।

ओडिशा के चार जिलों (पुरी, बालासोर, कोरापुट और झारसुगुड़ा) में किए गए एगोनोमिक अध्ययन से पता चला है कि दूर-दराज के क्षेत्रों से होने वाली महिला कृषि श्रमिकों के पास कृषि-उपकरण/उपकरण नहीं थे और वे अधिकांश श्रम साध्य कृषि गतिविधियों

में शामिल हैं। महिलाएं घरेलू काम और जानवरों की देखभाल, विपणन, बच्चों और बड़ों की देखभाल और आय सृजन गतिविधियों जैसे अवैतनिक कार्य में संलग्न थे। ओडिशा के मछली बाजारों में एक जांच ने मछली प्रसंस्करण में महिलाओं की भागीदारी और सफाई, डीस्केलिंग, छीलने, काटने जैसे कार्यों में उनके सामने आने वाली कठिनाइयों का अध्ययन किया। अपनाए गए आसन मुख्य रूप से उकडू बैठना और बैठना था जिसके परिणामस्वरूप पीठ के निचले हिस्से, कंधे, घुटनों में दर्द होता था। केवल स्वदेशी उपकरण जैसे पनीकी और स्थानीय निर्मित डीस्केलर जो हाथ और उंगली के कटने की ज्यादा संभावना होती है उन्ही उपकरणों का इस्तेमाल किया जाता है। आई.सी.ए.आर-सी.आई.एफ.टी, फिश डीस्केलर की महिलाओं हेतु अनुकूलता का भी अध्ययन किया गया, जिससे पता चला कि डीस्केलर ऑपरेशन के लिए इस मशीन को चलने के लिए आवश्यक, कार्डियक लागत, हस्तचालित उपकरण की तुलना में कम थी।

कृषि में महिलाओं पर अखिल भारतीय समन्वित अनुसंधान परियोजना के तहत तीन चयनित क्षेत्रों में कृषि में महिलाओं की गतिशीलता और भूमिका का विश्लेषण करने के लिए एक डेटाबेस रिपोर्टिग विकसित की गई: कृषि पारिस्थितिकी क्षेत्र 4: जलोढ़-व्युत्पन्न मिट्टी के साथ गर्म अर्ध-शुष्क पारिस्थितिकी क्षेत्र, कृषि पारिस्थितिकी क्षेत्र 7 : गर्म अर्ध- लाल और काली मिट्टी और कृषि पारिस्थितिकी क्षेत्र 8 के साथ शुष्क पारिस्थितिक क्षेत्र: लाल दोमट मिट्टी के साथ गर्म अर्ध-शुष्क क्षेत्र। डेटाबेस में कृषि, बागवानी, वानिकी, पशुधन और डेयरी खेती में महिलाओं की भागीदारी शामिल थी। कृषक महिलाओं के आजीविका पैटर्न का आंकलन किया गया और पाया गया कि कई पहलुओं के लिए आजीविका सुरक्षा स्तर या तो कम या मध्यम थे। उद्यम के संबंध में, कृषि पारिस्थितिकी क्षेत्र 4 के लगभग सभी उत्तरदाताओं (99%) को उद्यमिता से संबंधित सरकारी योजनाओं के बारे में कोई जानकारी नहीं थी। कृषि पारिस्थितिकी क्षेत्र 8 और कृषि पारिस्थितिकी क्षेत्र 7 में 85.2% उत्तरदाताओं के लिए धान फसल आधारित उद्यम था। हालांकि, कृषि पारिस्थितिकी क्षेत्र 4 में महिलाओं के बीच विनिर्माण सबसे पसंदीदा उद्यम था। दक्षता/ क्षमता की कमी, उद्यम विकास के लिए बुनियादी बाधा थी। परिवार संसाधन प्रबंधन विभाग, वीएनएमकेवी, परभणी और पंजाब कृषि विश्वविद्यालय द्वारा विकसित दो तकनीकों यानी फिंगर गार्ड (नखल्या) और खुदाई उपकरण का परीक्षण और सत्यापन किया गया। केंद्रों द्वारा पहचानी गई समस्याएं इस प्रकार थी: सरकार तक महिलाओं की कम पहुंच, योजनाएं, वित्तीय सहायता, सब्सिडी, विस्तार सेवाएं, श्रम साध्य कार्यों को आसान बनाने वाले उपकरण, फसल पैटर्न, बाजार, इत्यादि। मूल्यवर्धन, आईपीएम, आईएनएम, मशरूम की खेती, मधुमक्खी पालन, डेयरी, पशुधन, वर्मीकम्पोस्ट, चारा कैफेटेरिया और कठिन परिश्रम कम करने वाली प्रौद्योगिकियां इत्यादि आवश्यकता आधारित प्रौद्योगिकियां थी। जलवायु के

प्रभाव पर किए गए अध्ययन में महिलाओं ने अपनी प्रतिक्रिया व्यक्त की और बताया कि वन्यजीवों के हमले की घटनाओं में वृद्धि, और फसलों में रोग कीड़ों और कीटों की घटनाओं में वृद्धि हुई है साथ ही लचीले विकल्प के रूप में इंटरक्रॉपिंग के तरीकों, ऑफ सीजन में सब्जियां उगाने और मिट्टी के वाष्पीकरण को कम करने के लिए मल्लिंग की आवश्यकता को भी उजागर किया।

मानव संसाधन विकास के तहत, वैज्ञानिक और तकनीकी कर्मचारियों ने अपने ज्ञान को समृद्ध करने के लिए 52 राष्ट्रीय और अंतर्राष्ट्रीय वेबिनार/ संगोष्ठियों/ बैठकों/ कार्यशालाओं में भाग लिया। संस्थान की गतिविधियों के माध्यम से इकतीस क्षमता निर्माण कार्यक्रमों का समन्वय किया गया जबकि कृषि महिलाओं के सशक्तिकरण के लिए अनुसूचित जाति उप-योजना के तहत 53 कार्यक्रमों का आयोजन किया गया। अन्य प्रतिष्ठित संस्थानों के सहयोग से लैंगिक परिप्रेक्ष्य पर कई सेमिनार, वेबिनार, कार्यशाला और वार्ता का आयोजन किया। तकनीकी बैकस्टॉपिंग के लिए संस्थान के साथ-साथ अनुसूचित जाति उप-योजना के तहत विभिन्न कार्यक्रमों में क्रमशः कुल 1804 और 2035 किसानों/ कृषि महिलाओं ने भाग लिया। विभिन्न कृषि गतिविधियों में लगी अनुसूचित जाति की ग्रामीण महिलाओं को मुख्यधारा में लाने और सशक्त बनाने के लिए अनुसूचित जाति उप-योजना के तहत पांच कस्टम हायरिंग सेंटर स्थापित किए गए। 12 राज्यों में फैले 13 केंद्रों के साथ कृषिरत महिलाओं पर अखिल भारतीय समन्वित अनुसंधान परियोजना, विभिन्न क्षमता निर्माण कार्यक्रमों और जागरूकता अभियानों के माध्यम से बच्चों सहित लगभग 17000 महिला किसानों तक पहुंची। ओडिशा में पुरी, खोरधा और कटक जिले के बीस गांवों को मेरा गांव मेरा गौरव (एम. जी.एम.जी) के प्रमुख कार्यक्रम के तहत अपनाया गया और विभिन्न कौशल प्रशिक्षण, प्रदर्शन, फील्ड दौरे, बातचीत, महत्वपूर्ण आदानों का वितरण और कस्टम हायरिंग सेंटर की स्थापना की गई। महिला किसानों के सर्वांगीण विकास के लिए संस्थान ने वर्ष के दौरान 28 शोध पत्र, 2 तकनीकी बुलेटिन, 27 लोकप्रिय लेख और 2 नीति सार (पौलिसी ब्रीफ) प्रकाशित किए हैं। भा.कृ.अनु.प.-सीवा ने विभिन्न हितधारकों के लाभ के लिए प्रौद्योगिकियों के प्रदर्शन के लिए देश भर में विभिन्न प्रदर्शनियों में भाग लिया। आजादी का अमृत महोत्सव के बैनर तले, माननीय प्रधान मंत्री के साथ राष्ट्रवापी बातचीत कार्यक्रम, पोषक संवेदनशील कृषि पर जागरूकता कार्यक्रम और कृषि स्टार्टअप कॉन्क्लेव किसान सम्मेलन आयोजित किए गए। संस्थान ने अंतर्राष्ट्रीय योग दिवस, महिला किसान दिवस, विश्व खाद्य दिवस, संविधान दिवस, कृषि शिक्षा दिवस, कृषि में महिलाएं दिवस, हिंदी पखवाड़ा, सतर्कता जागरूकता सप्ताह भी मनाया। स्वच्छता और इसके अलावा स्वास्थ्य लाभों के बारे में जागरूकता पैदा करने के लिए मिशन मोड पर स्वच्छता अभियान कार्यक्रम आयोजित किए गए।



Executive Summary

Women farmers are the invisible face of agriculture and now they have attracted the attention of policy makers, researchers and developmental organizations to achieve inclusive sustainable development. ICAR-Central Institute for Women in Agriculture (ICAR-CIWA) under the aegis of Indian Council of Agricultural Research, Ministry of Agriculture and Farmers Welfare, GoI, is an institution first of its own kind in the World dedicated exclusively to research related to women in agriculture. The Institute is implementing various research projects to address its mandate - Research on gender issues in agriculture and allied fields; Gender-equitable agricultural policies/programmes and gender-sensitive agricultural-sector responses in pan India mode along with the AICRP on Women in Agriculture centres at 13 State Agricultural Universities in 12 states across the country to empower women in agriculture for their improved nutrition, livelihood security and drudgery reduction, occupational health hazards and capacity building. During the year 2022, the Institute has undertaken research and extension based activities through various in-house, external funded, inter-institutional, collaborative and coordinated modes. The salient achievements of the Institute are summarized below.

State wise participation, time spent and contribution of men and women in agriculture and allied activities in India was studied through analysis of Time Use Study (TUS 2019). The study showed that in rural areas 22.4 per cent women (age 6+) and 34.6 per cent men (age 6+) participate in agriculture and allied activities including crop and livestock sector, spending on an average 233 min/day by women and 330 min/day by men. Of the total (wo)manpower engaged in agriculture, 38.7 per cent are women, while rest i.e. 61.3% are men. Contribution in agriculture was assessed by projecting the participation rate to population, multiplying with time spent per day and thereafter, calculating the relative share of men and women. It was observed that women contribute 30.8 per cent and men 69.2 per cent of the total time required in agriculture. In Uttarakhand, women's contribution was found to be higher than men in both crop and livestock sector. Lakshadweep had the lowest contribution of women in agriculture (6.3%) followed by Bihar (13.2%) and West Bengal.

In order to assess the gender inclusiveness in Government schemes and programmes, 13 Central Government schemes in Department of Animal Husbandry and Dairying (2020-21) were studied. Linkage was established with Mission Shakti, Odisha and Directorate of Veterinary

Science and Animal Husbandary, Odisha to identify the number of women beneficiaries enrolled in various schemes. Evaluation of the schemes revealed that there is a need to address the gender biasness in veterinary education, research and service delivery systems to enhance the efficacy of women-oriented livestock development programmes. Specific subsidies for farm women dairy entrepreneurs, cooperatives, etc. need to be included in the different schemes to realise the goal of women empowerment in the sector. In an assessment of role of organised dairy sector on livelihood of women, major milk marketing channels for the small holder women dairy farmers were identified. A model has been developed for improving livelihood of women dairy farmers through strengthened cooperative linkage.

Gender Fact Sheet (GFS) has been conceptualized as an online platform to display gender facts happening in different agricultural institutions. The fact sheet envisions to acquire gender disaggregated data on various themes viz. research projects, technologies, training and capacity building, budget utilization, staffing pattern, number of farmers transformed to progressive farmers or entrepreneurs, student enrolment and pass out, national scheme beneficiary, specific infrastructure for women etc. A database on progressive women farmers of India is also being developed. The database has been made user friendly in such a way that the list of progressive women farmers can be searched, name wise or area wise or subject wise.

Custom Hiring Centre on Spice Processing has been established through a Multi Agency Participatory Model in Puri district of Odisha with the objective of improving the livelihood of women farmers. 'Bhargabi Women Mushroom Producer Federation' has been formed in Nimapara block under Puri district of Odisha involving 631 farm women (47 WSHGs) covering 22 villages from six Panchayats. Through the gender sensitive approach, a radical change in their livelihood is being made possible as each group is earning a profit of around Rs.1.5 lakh/month through paddy straw mushroom cultivation. For livelihood diversification, women are being introduced to alternate livelihood options like poultry farming. Watershed programmes assessed across 12 different AER of India revealed that women's participation in decision making related to agricultural activities was only 10%. The impact analysis indicated a significant reduction of 88.5%, 36.9% and 29.5% in time in collection of drinking water, fodder and fuel wood, respectively after implementation of watershed interventions. Introduction of improved

high yielding varieties, availability of irrigation water etc. led to additional production, which resulted in reduction in household expenditure on purchase of those items. The district-wise data of Farm Power Availability (FPA; kW/ha: 2016-17) was mapped and segmented according to Agro-climatic zones. Through these maps, it could be deduced that the farm power availability is higher in the Lower Gangetic plain region, Middle Gangetic plain region, Upper Gangetic plain region, Trans-Gangetic plain region.

Under entrepreneurship development, five successful entrepreneurial units were established in small scale poultry production in Nimapara block of Puri District, Odisha. In goat rearing sector, linkage was established with three FPOs named Taradevi Farmer's Producer Company Limited, Jajpur and Maheera Farmer's Producer Company Limited, Khordha and Manikstu Agro Private Limited, Kalahandi to improve the livelihood of farm women. "Omm Sai" Women Farmer Interest Group was formed with the establishment of a Common Facility Centre (CFC) equipped with equipments for processing activities in Kanamana village, Astaranga. As an agri-venture, a women SHG of Sorana village, under Chilika block in Khordha district has started 'Chilka Foodline' and has been linked with Falcon Chilka retail fish supply chain for marketing. Experimental studies on feeding goats with bypass protein through formaldehyde treatment (1.2%) of locally available ground nut oil cake resulted in a higher total body weight gain (8.5kg) and average daily weight gain (70.83g/day). This intervention holds promise to be adopted by goat farmers to increase the profitability of their enterprise.

A Gender Sensitive Agri-Nutri Farming System Model (G-SAN Model) has been developed by integrating innovative extension approaches, viz., sensitization, skill development and convergence and intervention through technologies viz. high protein paddy, nutri-rich vegetables and improved cattle feeding practices. The Integrated Vertical Nutri-Farming System (IVNFS) model was developed to grow nutritious vegetables along with mushroom cultivation or poultry farming to provide diet diversity throughout the year. Through this model, the vegetable + mushroom component provides 80 kg of vegetables along with 50 kg of mushroom while the vegetable + poultry component provides same 80 kg vegetables along with 2016 numbers of eggs and 35 kg meat and 125 kg of litter per year. Analyzed and assessed eleven IFS models on gender perspective for 10 Agro Climatic Zones (ACZ) of Odisha. The maximum women participation (227 days) was observed in the models with the components of crops, horticulture, kitchen garden, fisheries, poultry, dairy and goat rearing due to dairy

enterprise as well as kitchen gardening. From the gender perspective, kitchen gardening is a small but significant intervention in IFS system. Overall, maximum recycling was in IFS models where the participation of women is maximum i.e. IFS models of ACZ 1, 2, 9 and 4.

The development of Nutri-Smart villages has been envisaged with the participation of rural women. Technological interventions to bridge the nutritional gap is being implemented in 10 villages covering 300 farm families of four districts (Puri, Khordha, Cuttack, Jagatsingpur) of Odisha for promoting nutritional awareness to reduce malnutrition through homestead agriculture and nutri-garden. Three modules viz., Livelihood Enhancement Model, Nutritional Security Model and Entrepreneurship Promotion Model were developed, which generated profits and created awareness to bring forth equity, promote entrepreneurship and realization of empowerment of farm women in agriculture. A Women Farmer Producer Organization (WFPOs) i.e., "Ananya Farmer Producer Company Limited" was formulated to strengthen the Agri-entrepreneurial approach of the identified farm women cluster.

A concept on Gender Responsive Integrated Homestead Aqua-horticulture (GRIHA) has been developed as a sustainable climate resilient approach towards livelihood diversification. The concept focuses on the utilization of resources available with the household to enhance the nutritional security under the changing climatic conditions. The concept also focuses on the federation of women into farmer interest groups to improve their capacity to manage the homestead aqua-horticulture production and to bear the shocks of changing climate through group efforts. Under the theme of Climate Resilient Agriculture, women friendly Climate Smart Agriculture Technologies (CSAT) and practices were demonstrated in 27 villages of 7 Minor Irrigation Projects (MIPs) in three blocks of Keonjhar in Odisha. The technological interventions led to increased control of women over assets, participation in decision-making, increased knowledge, changes in behaviour, attitude, awareness, empowerment and enhanced economic status, food security and nutrition.

Under AICRP on Ergonomics and Safety in Agriculture, ergonomic studies were carried out in four districts (Puri, Balasore, Koraput and Jharsuguda) of Odisha. The study revealed that the female agricultural workers, being from remote areas did not possess agri-tools/implements and are involved in most drudgery prone agricultural activities. In addition, the women performed more unpaid work such as cooking, house cleaning, washing clothes, utensils and animal upkeep, marketing, caring

children and elders, and income generation activities. An investigation in fish markets of Odisha updated women's involvement in fish processing and the difficulties faced by them in operations like cleaning, descaling, peeling, cutting. The postures adopted were predominantly squatting and sitting resulting pain in lower back, shoulder, knees. Only indigenous tools like paniki and local made descaler were used by them which makes cuts the hand and finger causing infections. Vending was done by women in open air with increased risk of exposure to pollution. Physiological study on ICAR-CIFT fish descaler was also carried out which indicated that cardiac cost for descaler operation was lower than that of hand tool.

Under AICRP on Women in Agriculture, a database on the role of women in agriculture in three selected zones viz: AEZ 4: Hot semi-arid eco region with alluvium-derived soils, AEZ 7: Hot semi-arid ecoregion with red and black soils and AEZ 8: Hot semi-arid ecoregion with red loamy soils was developed. The database included women's participation in agriculture, horticulture, forestry, livestock and dairy farming. The assessment of livelihood pattern of women revealed that the level of livelihood security was either low or moderate. With respect to entrepreneurship development, 99% of the respondents in AEZ 4 had lack of awareness about government schemes related to entrepreneurship. In AEZ 8, 12% of the respondents had enterprise in the area of coir making, milk retailer and in AEZ 7, sericulture and paddy was the crop based enterprise for 85.2% respondents. However, manufacturing was the most preferred enterprise among women in AEZ 4. Lack of proficiency/ competence was deduced as the basic constraint for enterprise development. Two technologies i.e., finger guards (Nakhalya) and digging tool developed by VNMKV, Parbhani and Punjab Agricultural University were tested and validated to reduce drudgery in farm women. Integrated Pest Management, Integrated Nutrient Management, mushroom cultivation, bee keeping, dairy, livestock, vermicomposting, fodder cafeteria drudgery reducing technologies etc. were identified as some of the areas where women needed technological backstopping. Study on the impact of climate revealed both negative and positive changes such as increased incidence of wildlife attack, increased incidence of diseases, insects

pests in crops and increased adoption of intercropping, off season cultivation of vegetables and adoption of mulching to reduce soil evaporation, respectively.

Under the Human Resource Development, the scientific and technical staff participated in 52 national and international webinars/seminars/meetings/workshops to enrich their knowledge. Thirty one capacity building programmes were coordinated through institute activities while 53 programmes were organized under SCSP for the empowerment of farm women. Many seminars, webinars, workshops and talks on gender perspective in collaboration with other reputed institutions were also organised. A total of 1804 and 2035 farmers/farm women participated in different programmes under the institute as well as Scheduled Castes Sub-Plan, respectively for technical backstopping. Five Custom Hiring Centres were established under SCSP for mainstreaming and empowerment of SC rural women engaged in various agricultural activities. AICRP on Women in Agriculture with the 13 centres spread around 12 states reached around 17000 women farmers including children through the various capacity building programmes and awareness campaigns. Twenty villages from Puri, Khordha, and Cuttack district in Odisha were adopted under flagship program of Mera Gaon Mera Gaurav (MGMG) and various skill trainings, demonstrations, field visits, interactions, distribution of critical inputs for holistic development of women farmers. The Institute has published 28 research papers, 2 technical bulletins, 27 popular articles and 2 policy briefs during the year. ICAR-CIWA participated in various exhibitions across the country to showcase the technologies for the benefit of different stakeholders. Under the banner of Azadi Ka Amrit Mahotsav, Nationwide Interaction program with Hon'ble Prime Minister, awareness program on Nutri Sensitive Agriculture and Agri Startup Conclave Kisan Sammelan were organized. Institute also celebrated International Day of Yoga, Mahila Kisan Diwas, World Food Day, Constitution Day, Agricultural Education Day, Women in Agriculture Day, Hindi Pakhwada and Vigilance Awareness Week. The Swacchta Abhiyan programme was organized on mission mode to create awareness on cleanliness and its health benefits.



1. INTRODUCTION

1.1 Historical perspective

The Working Group on Agricultural Research and Education, constituted by the Planning Commission for the formulation of the 8th Five Year Plan (1992-97), recommended the establishment of a 'National Research Centre for Women in Agriculture' (NRCWA). Accordingly, the NRCWA was established in April 1996, at Bhubaneswar (Odisha) under Indian Council of Agricultural Research, New Delhi. Keeping in view the role of women in integration of farm and household activities, All India Coordinated Research Project on Home Science (AICRP on HS) started in the 6th Five Year Plan (1980-85) and merged with NRCWA in 2007. The NRCWA was further upgraded as 'Directorate of Research on Women in Agriculture' (DRWA) in 2008 and renamed as 'ICAR-Central Institute for Women in Agriculture' (ICAR-CIWA) in the year 2014 under 15th Expenditure Finance Committee meeting of 12th Five Year Plan (2012-17). The AICRP (HS) has now been renamed as AICRP on Women in Agriculture. Since its inception, the Institute has been undertaking research on issues affecting women and their opportunities in agriculture.

1.2 Research area

ICAR-CIWA emphasizes upon participatory action research in various technology based thematic areas involving farm women to verify appropriateness of farm technologies and further refinement to make them women friendly. It works to catalyze and facilitate research and development institutions to bring farm women perspectives in their research and development programmes. The research projects implemented by ICAR-CIWA have yielded significant gender related information, knowledge, data, models, modules, checklists and practices which can be used for identifying interventions and designing programmes for farm women and other stakeholders. The institute being unique in nature, serves to address issues related to women in agriculture in the areas of natural farming, integrated farming system, integrated pest management, drudgery, livestock, fisheries, extension methodologies and entrepreneurship development.

Given the crucial linkage between women and agricultural growth, the ICAR vision of achieving ample production of nutritious and safe foodstuff for feeding its ever growing population would be possible only if gender issues in agriculture is addressed along with underpinning the attitude, attention, awareness, knowledge and capability of women to handle the changes in agriculture.

1.3 Ongoing activities

Capacity building of all the stakeholders are being organized through various workshops, trainings and sensitization programmes for development functionaries, research scientists/ managers, teachers and KVKs scientists/ SMSs who are directly or indirectly associated with empowerment of farm women at different places in the country. The Institute is honoured to have very renowned professionals in the Research Advisory Committee who provide direction to the scientists to carry out need based research programmes for empowerment of farm women in agriculture. The Institute Management Committee (IMC) is constituted and mandated by the ICAR, which supervises the performance of the Institute. Besides these, based on mandate, there are a number of internal committees and cells for running an efficient and decentralized management of the Institute.

1.4 Infrastructure facilities

The Institute is having round the clock broadband/ optical fibre cable based internet connectivity over Local Area Network. It has a well-developed Agricultural Knowledge Management Unit with facilities of internet and latest data analysis software like SAS and SPSS. An institute video conferencing system has been installed having capacity of about 30 Persons. Besides, the Institute has a conference hall with seating capacity of 150 and two committee rooms with seating capacity of 40 each in addition to a well-equipped training hall with the provision of LCD and other audio-visual aids. The research farm of the institute is of 32 acres including 15 acres area under different horticultural and field crops as well as livestock and

fisheries. There are well developed demonstration units for various agro-enterprises including horticulture based cropping models, vermicomposting unit, integrated fish-poultry-duck-unit and ornamental fish unit. The Institute Technology Management Committee (ITMC) chaired by the Director of the Institution, is the decision making body for IP related matters/ progress/ concerns. Institute Technology Management Unit (ITMU) works as secretariat for ITMC at ICAR-CIWA. Well-equipped laboratories in the field of agronomy, entomology, ergonomics, post-harvest technology, horticulture, seed technology, animal science, fisheries and gender data centre are available in the Institute. There are 13 residential quarters in the Institute campus with Type-VI (1), Type-V (2), Type-IV (2), Type-III (6) & Type-II (2) quarters. The trainees'

hostel can accommodate 25 participants for various training programmes. The women farmers' hostel can accommodate 28 women participants for various training programmes. The technology block has an exhibition cum meeting room with a seating capacity of approximately 300 persons, while the training cum conference hall can accommodate approximately 100 persons. The institute has a very good library with more than 2000 books/ research journals/ CAB CD ROM database, Agricola database in the field of gender and women studies to facilitate researchers and students.

The information pertaining to cadre strength as on December 2022 is given in table 1.1

Table 1.1 Details of cadre strength as on 31.12.2022 (ICAR-CIWA)

Post	Sanctioned Post (2022)	In Position
Research management position	1	1
Scientific	20	17
Technical Posts	13	10
Administrative	14	7
Skilled Support Staff	1	1
Total	49	36

1.5. Right To Information (RTI)

Transparency was facilitated through suo moto disclosures of information made through Institutes website. A total of twelve queries under Right to Information Act were replied during the period.

Category	Total Number of applications received	Number of applications received		Number of cases transferred to other PAs	Decisions where requests/ appeals accepted	Amount of Regn. Fee collected (Rs.)
		Directly from the applicants	Transferred from other PAs			
Requests	12	12	0	0	12	120

2. RESEARCH ACHIEVEMENTS

2.1. ICAR- CIWA RESEARCH PROJECTS

RESEARCH PROGRAMME-1: CREATE, CHARACTERIZE, CLASSIFY AND MAINTAIN THE REPOSITORY OF DATA TO ANALYSE THE DYNAMICS AND ROLE OF WOMEN IN DIFFERENT SECTORS OF AGRICULTURE

2.1.1. Studies on Sectoral Contribution of Women in Agriculture and Allied Sectors (2020-2023)

Anil Kumar, Ananta Sarkar, Tanuja S. and Neetish Kumar

Time Use Study (TUS) provides an important insight into the participation and contribution in different activities. Unit level data with over 10.68 million records of the TUS-19 study was looked into to assess the state wise participation, time spent and contribution of men and women in agriculture and allied activities in India.

Participation: The study revealed that in rural areas of India, 22.4 % women (age 6+) and 34.6 % men (age 6+) participate in agriculture and allied activities including crop and livestock sector, spending on an average 233 min/day by women and 330 min/day by men. Sector wise estimates revealed that in crop sector, 13.3 % of women participate spending 274 min/day as against 28.9 % rural men with 330 min/day. Similarly, for the livestock sector, participation was 10.7% with 129 min/day for women and 10.8 % with 147 min/day for men. Among states and UTs, Gujarat had the highest male participation in agriculture (45.8%). In fifteen states and UTs, male participation was more than the national average (34.6%). Among states and UTs, Himachal Pradesh had the highest female work participation in agriculture (46.4%) and Lakshadweep (4.7%) had the lowest. Nineteen states and UTs had female participation more than the national average (22.4%). Sector wise participation depicts that gender parity is more in livestock sector (10.8% male, 10.7% female) than the crop sector (28.9% male, 13.3% female). States with higher work participation of male in agriculture were due to relatively more involvement of men in crop sector and the states with higher female participation were due to their higher participation in the livestock sector.

Time spent: Among states and UTs, Telangana had the highest time spent by female in agriculture (349 min) and the lowest was observed in Lakshadweep (79 min).

Participation (relative share of men and women in agriculture): Of the total (wo)manpower engaged in agriculture, 38.7 per cent are women, the rest (61.3%) being men. Share of women in livestock sector is much higher (49.1%) as compared to crop sector (31.1%). Considering agriculture as a whole, the highest share of women was observed in Goa (72.6%). Five states and UTs had higher relative share of women participation than men. In crop sector also, the highest share of women was in Goa (74.5%) whereas, in livestock sector Rajasthan (69.2%) had the highest share of women of the total (wo)manpower engaged in the sector. Uttarakhand is the only state having higher share of women in all the three categories i.e. overall agriculture, crop and livestock sector.

Contribution: Contribution in agriculture was arrived by projecting the participation rate to population, multiplying with time spent per day and thereafter, calculating the relative share of men and women. It was observed that women contribute 30.8 per cent and men 69.2 per cent of the total time required in agriculture. In crop sector alone, women's time contribution was 27.2 per cent as against 72.8 per cent by men. In livestock sector women's time contribution was 45.8 per cent as against 54.2 per cent by men. This substantiates the general perception that women contribute on a much higher scale in livestock management activities in the country than that of crop

production activities. The contribution and participation of men and women in agriculture is shown in Fig. 2.1-2.6. Among states and UTs, Himachal Pradesh had the highest contribution of female in agriculture (57.5%) followed by Uttarakhand (56.1%) and Goa (52.4%) and in these three states, the contribution of women were higher than men. Contribution of women was higher than men in Goa, Uttarakhand, Dadra & Nagar Haveli and Daman & Diu and UTs in crop sector. The eight states in which

women's contribution was higher than men in Livestock sector are Himachal Pradesh, Rajasthan, Gujarat, Uttarakhand, Haryana, Mizoram, Arunachal Pradesh & Tripura. In Uttarakhand, women's contribution was found to be higher than men in both crop and livestock sectors. Lakshadweep had the lowest contribution of women in agriculture (6.3%) followed by Bihar (13.2%) and West Bengal (15.2%).

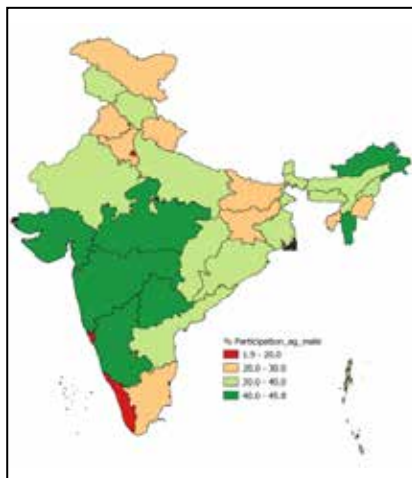


Fig 2.1

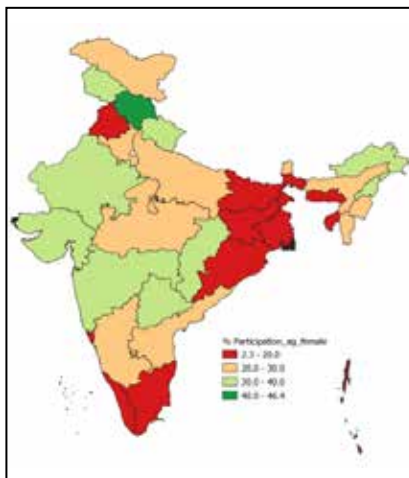


Fig 2.2

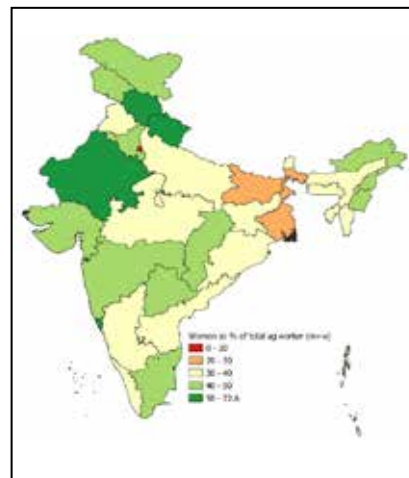


Fig 2.3

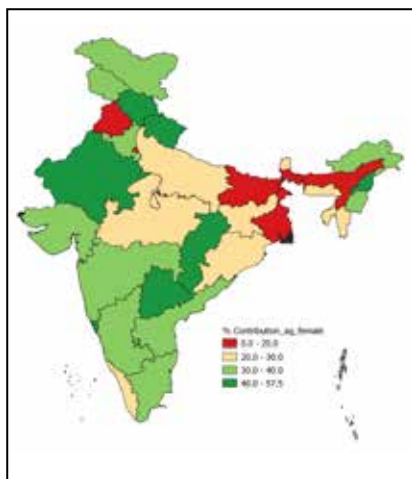


Fig 2.4

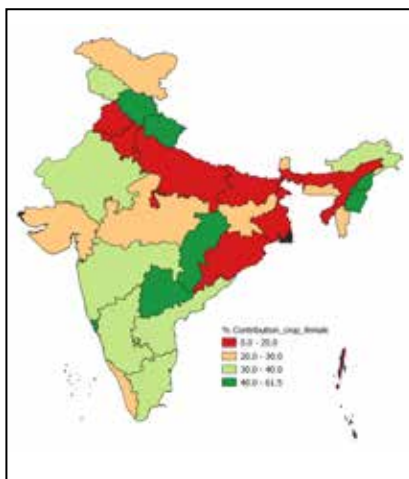


Fig 2.5

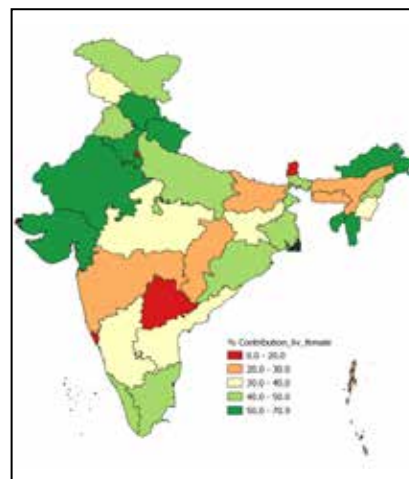


Fig 2.6

Fig. 2.1-2.6 State wise participation and contribution of rural men and women in agriculture in India (2019)

2.1.2. Gender Mainstreaming through Government Schemes in Animal Husbandry Sector for Empowering Farm Women (2021-24)

Biswanath Sahoo and Anil Kumar

The study was undertaken to evaluate government programmes and schemes in animal husbandry sector with a gender perspective. Central Government schemes in Dept. Animal Husbandry and Dairying (2020-21) with budgetary allocation of Rs. 3007.89 crore were evaluated. The analysis of the different schemes with respect to gender inclusiveness is given in table 2.1.

The study of a total of 16 schemes on Animal Husbandry sector under Govt. of Odisha revealed that emphasis is given on support to women and WSHGs in Broiler Farming (500 Bird Capacity), Broiler Farming (1000 Bird Capacity) in

deep litter system, azolla cultivation, fodder cultivation, goat farming(100+5) and establishing mini poultry feed mill etc. The linkage was established with Mission Shakti, Odisha and Directorate of Veterinary Science and Animal Husbandry, Odisha, Cuttack to identify the number of women beneficiaries enrolled in various schemes, SHGs, FPOs for gender mainstreaming through various interventions in livestock sectors. Evaluation of schemes showed that there is a need to address the gender biasness in veterinary education, research and service delivery systems to enhance the efficacy of women-oriented livestock development programmes.

Table 2.1 Comparative analysis of different schemes with respect to gender inclusiveness

S.N	Name of the Schemes	Observations
1	Dairy Entrepreneurship Development Scheme	Priority is given to project being implemented in cluster mode covering dairy farmers/women in SHGs/Co-operatives/Producer companies.
2	Entrepreneurship for Breed development of Rural Poultry	One time 50% capital subsidy of the total project cost is provided with maximum subsidy up to Rs. 25 lakh for each unit. Priority is given to FPOs/FCOs/SHG/JLG/Individuals.
3	Entrepreneurship for Breed development in Small ruminant sector (Sheep and Goat)	FPOs/ FCOs/ SHG/ JLG/ Individuals are given priority with 50% capital subsidy up to Rs. 50 lakh in two installments. No gender specific provisions.
4	Entrepreneurship in Feed and Fodder Development	100% incentivization for production of all categories of fodder seed production by ICAR, NSC, IFFCO, KRIBHCO, NAFED and Central Agencies, SAU, Hindustan Insecticides Limited (HIL), State Govt., dairy co-operatives etc. 50% of the total project cost with subsidy upto Rs. 50 lakh is provided to the beneficiaries through State implementing agencies. No gender specific provisions.
5	Sub Mission on Innovation and Extension	100% funding provided by the Central Govt., & DAHD for creating awareness on the Schemes.
6	Support to Farmers for Broiler Farming (500 Bird Capacity) under Deep Litter System in Individual Mode	Women/ SC / ST are included under the list of prospective beneficiaries.

7	Support to Farmers for Broiler Farming (1000 Bird Capacity) under Deep Litter System in WSHG Mode	Provision for women farmers to apply for assistance
8	Support to Farmers for Layer Farming (1000 Bird Capacity) in Cage System in Individual Mode	Migrants / SC / ST people can apply
9	Livelihood Support to Farmers through Rural Backyard Poultry rearing	Small/ Marginal/ Landless/ SC/ ST/ individuals of WSHG
10	Goat Development & Scientific Breeding through Goat Artificial Insemination	Willing farmers / Entrepreneurs / individuals WSHG / SC & ST can apply
11	Support to Farmers for Crop Residue Enrichment	Capacity of 10 qtl. paddy straw/ crop residue per unit
12	Support to Farmers for Azolla Cultivation	Women farmers /SC & ST are among the prospective beneficiaries
13	Support to Farmers for Seasonal Fodder Cultivation	SC/ ST/ Women farmer/ MPCs/ SHG members/Goshala are the prospective beneficiaries
14	Goat Farming through Women SHGs	Women Self Help Group (WSHG) can only apply
15	Establishment of Small Scale Poultry Hatchery	Any entrepreneur can apply.
16	Establishment of Mini Poultry Feed Mill	Individual beneficiaries/ WSHGs can apply.

2.1.3. Development of Integrated National Information System for Women in Agriculture (DINISWA) (2020-2023)

Ananta Sarkar and Neetish Kumar

Gender Fact Sheet (GFS) has been conceptualized as an online platform for showcasing gender facts happening in different agricultural institutions (Fig. 2.7). The fact sheet includes gender disaggregated data on various themes viz. research projects, technologies, training and capacity building, budget utilization, staff pattern, number of farmers transformed entrepreneurs, student enrolment and pass out, national scheme beneficiary, specific infrastructure for women etc. Altogether 15 major questionnaire columns have been incorporated along with need based sub questions. Accordingly, the HTML table was created to meet the requirement. One table was created for storing information about the respondent institute and some basic details about it. Total 90 textboxes, fields were designed using HTML, PHP & Javascript and connected to the database using MySQL. Respondent institutes need to first fill the basic details and then the questions related to women related data.

Few fields in this form are mandatory. After filling all the details the information can be downloaded in form of excel sheet.

A Database of Progressive Women Farmers has been developed (Fig. 2.8). The database has been updated with recent information from 190 progressive women farmers across the different states in the country. The database has been enriched with search facility so that list of progressive women farmers can be searched by name wise or area wise or theme wise. The search page has been created for the progressive farm women database using four criteria i.e. by name of the progressive farm women, by state, by district and by their area of specialization. If the search matches with the criteria then list appears in the form of radio button. After clicking the radio button, the detailed information about the women farmer can be obtained.

GENDER FACTSHEET (AGRICULTURE)

Name of The Institute

Type of The Institute

Year (Please select the year)

1. Research Projects

Total Number

Related to Women

2. Technologies Generated

Total Number

Related to Women

3. Staff Details

Scientific (Men)

Scientific (Women)

Fig. 2.7 Front end of the gender fact sheet database

SEARCH FOR PROGRESSIVE WOMEN FARMERS

Name

"OR"

State

District

"OR"

Area of interest

S.No	Name	Village	State	Mobile
1	Usha Devi	Gohani, Rath	UTTAR PRADESH	
2	Usha Devi	Gohani	UTTAR PRADESH	
3	Usha Tamang	Sherpa Gaon	WEST BENGAL	
4	Usha Rani	Sangaur	HARYANA	

Fig. 2.8 Search page of progressive women farmers' database



Fig. 2.9 Details of the farm women after search

RESEARCH PROGRAMME-2: STANDARDIZATION OF TECHNIQUES FOR LIVELIHOOD ANALYSIS AND GENDER MAINSTREAMING IN AGRICULTURE

2.1.4. Integrating Gender Dimensions for Improvement of Livelihood through Empowerment (2020-2023)

Sabita Mishra and Anil Kumar

A Multi-Agency Participatory Model for development of women entrepreneurship in spice grinding has been developed (Fig. 2.10) by involving the Partners like: ICAR-CIWA, NGO-VJSS, WSHG and Village Core Group. The specific roles and responsibilities are assigned to each agency involved in the model. The activities are: ICAR-CIWA (technology support), NGO (raw materials and marketing support), WSHG (activity support in spice making) and village Core Group (monitoring and supervision support). In addition, livelihood analysis of the farm women of Pedajalaripeta village in Visakhapatnam Urban block under Visakhapatnam district of Andhra Pradesh was conducted. The data revealed that, all the respondents belong to OBC category and landless whose major livelihood source was fishing. Majority of them had

nuclear family system (96%), male as family head (95%) and house in the name of men (100%). The women were involved in fresh fish marketing and, dry fish processing and marketing whereas the male members do coastal fishing with motorized fishing crafts. The days of employment of farm women was found to be 250 days per year with the wage rate of Rs. 400 to 600/ day. They face various issues like: lack of access to institutional credit, marketing, storage and year round employment. However, for the improvement of livelihood, the farm women have suggested for (i) Access to institutional finance as presently they depend on private money lenders, (ii) Marketing facility & storage facility and (iii) Alternate livelihood and financial aid during fishing ban period (15 April to 15 June).

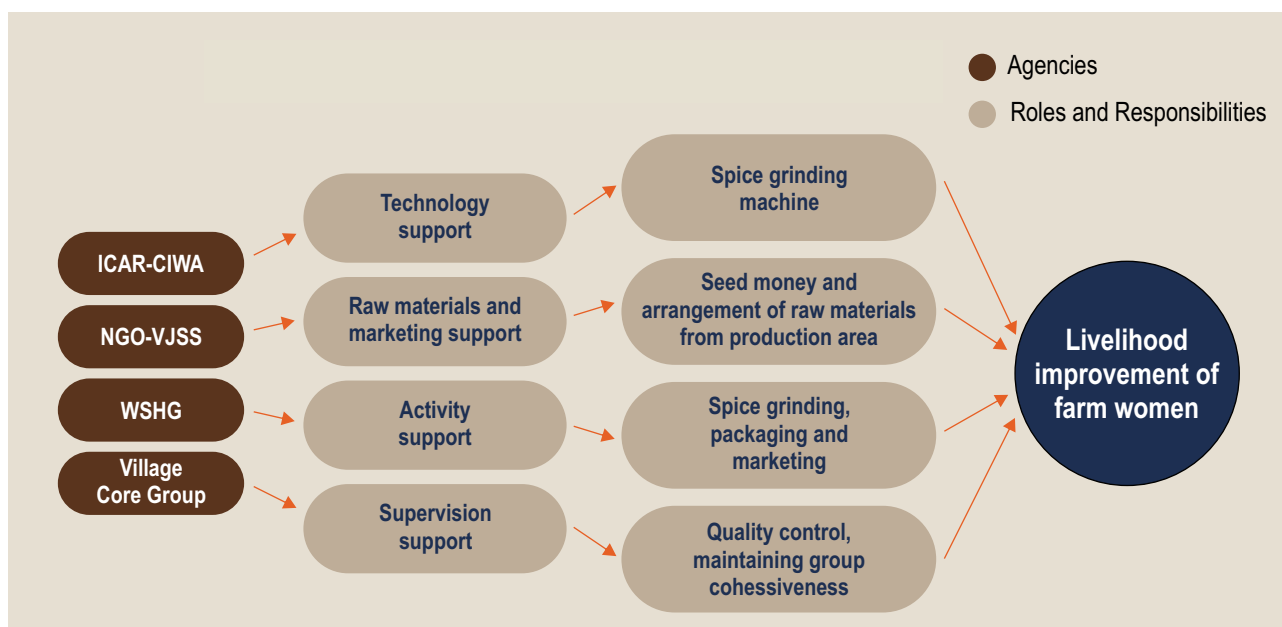


Fig. 2.10 Multi agency participatory model on women entrepreneurship in spice processing

‘Bhargabi Women Mushroom Producer Federation’ was formulated in Nimapara block under Puri district of Odisha involving 631 farm women (47 WSHGs) covering 21 villages from five Panchayats. The federation has developed 15 mushroom units with bank credit assistance

(Rs.10 lakh per SHG). Each SHG is earning Rs. 2.40 lakh per month with a profit of Rs.1.53 lakh against Rs.0.87 lakh investment from a unit of 75 ft x 35 ft size with 1200 beds (straw mushroom) of three tier system (Fig. 2.11).



Fig. 2.11 Women entrepreneurs in mushroom farming

As per the farmers need, duck farming was popularised among Scheduled Caste fisher women in Jaguleipadar, Kanas under Puri district through skill training and demonstration. They were facilitated with critical inputs like ducklings, feeder pots, drinkers etc and vaccination arrangement was also made. As a result of the intervention, women are earning Rs. 17800/- from a unit

of 20 ducks with a profit of Rs.15800/- per year against an investment of Rs.2000/-. The family nutrition and income were observed to be enhanced over pre-intervention. The duck rearing was perceived as a profitable occupation for small, marginal and land less farm women which needs less investment, provides leisure time employment, good manure, egg and meat for the family.

2.1.5. Assessment of Role of Organised Dairy Sector on Livelihood of Women (2021- 2023)

Arpita Mohapatra, Biswanath Sahoo and Chaitrali S. Mhatre

In Odisha, organised dairy sector includes OMFED and 13 private dairies, who receive only 15% of total milk production. Here, more than 75% of marketable surplus is received by unorganized sector which has been continued to be the major player in the milk supply chain system. During this study period, existing milk marketing channels were identified for the small holder women dairy farmers (Fig. 2.12).

Women contribute significantly in the livestock sector. They invest 5 to 6 hours in a day for care and management of dairy animals. As per the study, major time (1.5h) was spared by women for shed cleaning and cow dung collection (Fig. 2.13). The level of difficulty in performing different activities of livestock care and management as perceived by the women was also assessed (Fig. 2.14). Fodder collection followed by milking were perceived as the most difficult activities by them. The lack of or

the diminishing pasture lands make fodder collection a difficult task. Women perceived milking of cattle as a drudgery prone activity because of the posture they have to adopt.

Women in dairy sector face many challenges which force them to quit traditional dairy farming. Improving the linkages of women with organized dairy sector could help to reduce market related risks. Linking women to financial institutions through Government schemes will help to overcome the financial constraints faced by them. Liaisoning with veterinary departments, NDDB and by capacity building through fodder farming, setting up biogas plants and low cost feed production will aid the women in tackling production related constraints. A model for improving livelihood of women dairy farmers through strengthened cooperative linkage has been developed.

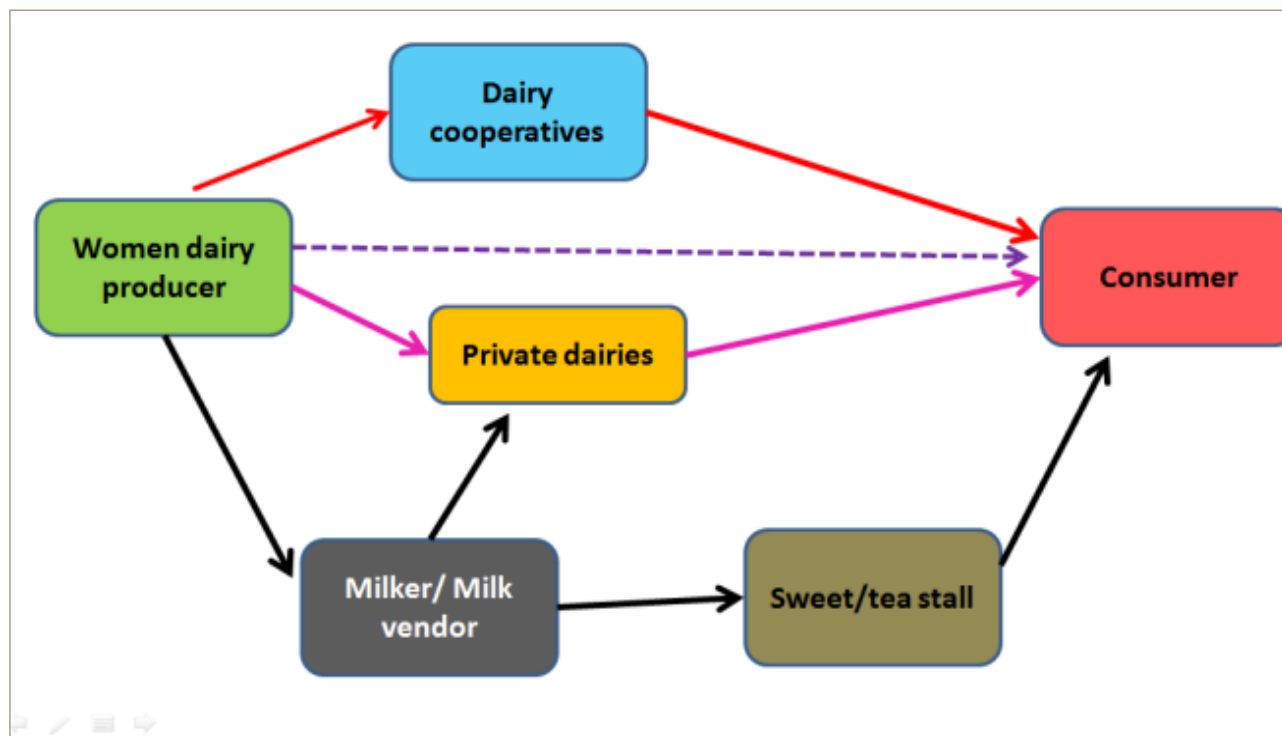


Fig. 2.12 Existing milk marketing channels in study areas

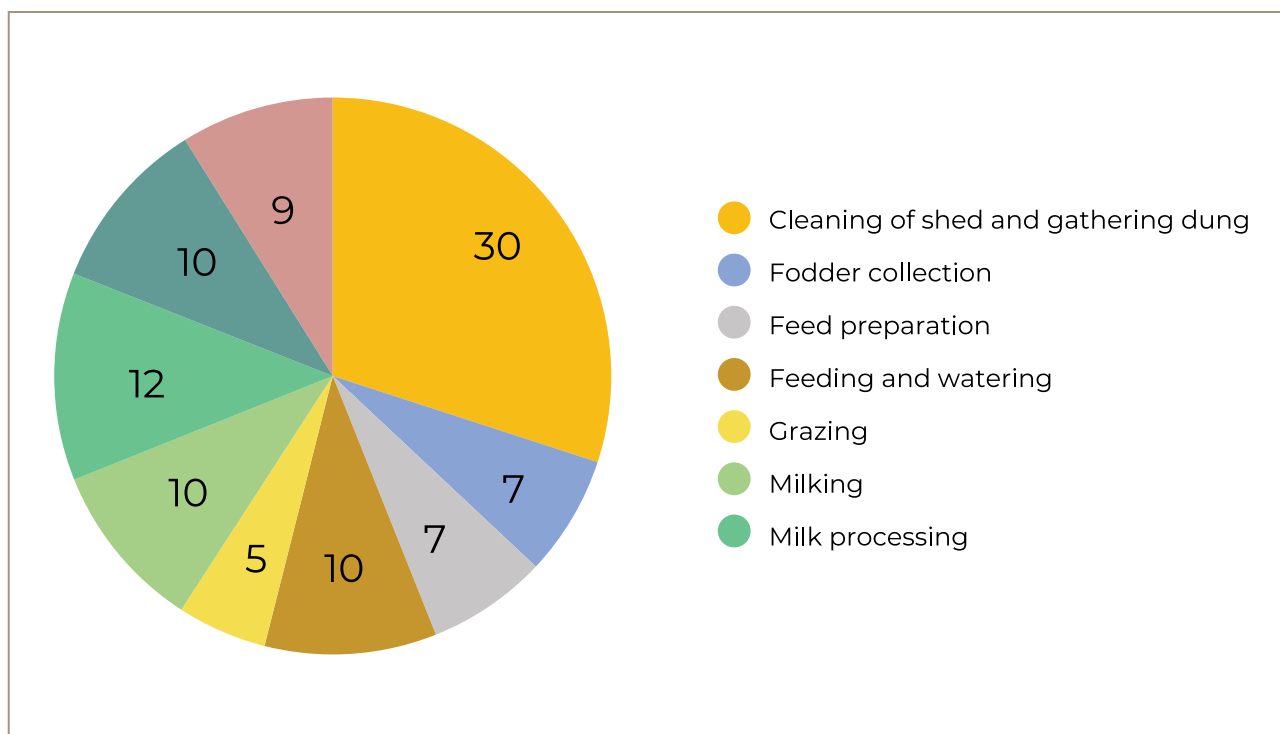


Fig. 2.13 Time use by women (%) in dairy farming activities (N=120)

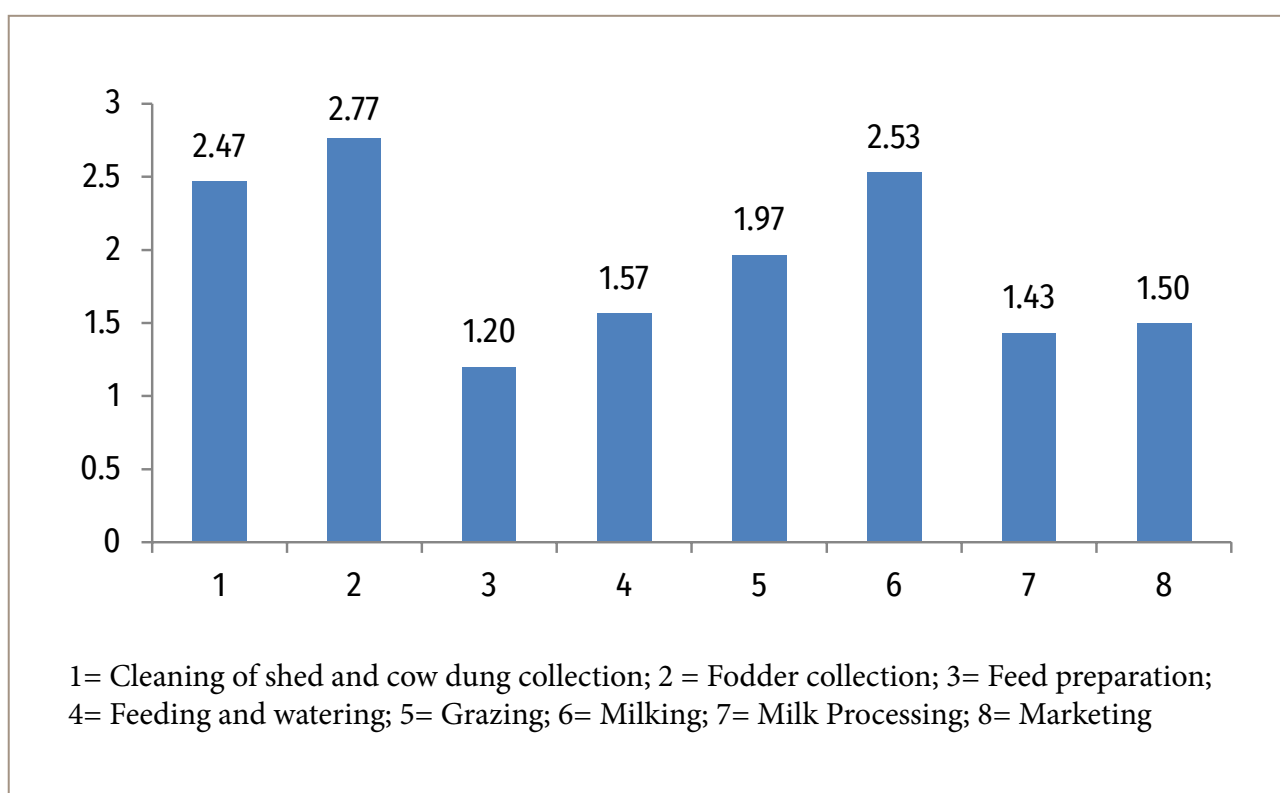


Fig. 2.14 Difficulty level of different activities as perceived by women dairy farmers

Dairy cooperatives have both strength and weakness. Strength includes its farmer friendly nature. It receives milk twice daily and has regular and weekly milk payment system. As it is under government control there is always a scope of convergence with allied departments. Weaknesses include the competitions from private dairies. There are about 13 private dairies operating in Odisha.

They are procuring milk at a higher price. Therefore, for getting higher return farmers are reorienting towards private dairies. The dairy cooperative of Odisha either need to increase the milk procuring cost from farmers or need to subsidise the input and production cost (feed, bank loans, vaccination or treatment) to tackle the competition from the private sector (Fig. 2.15).

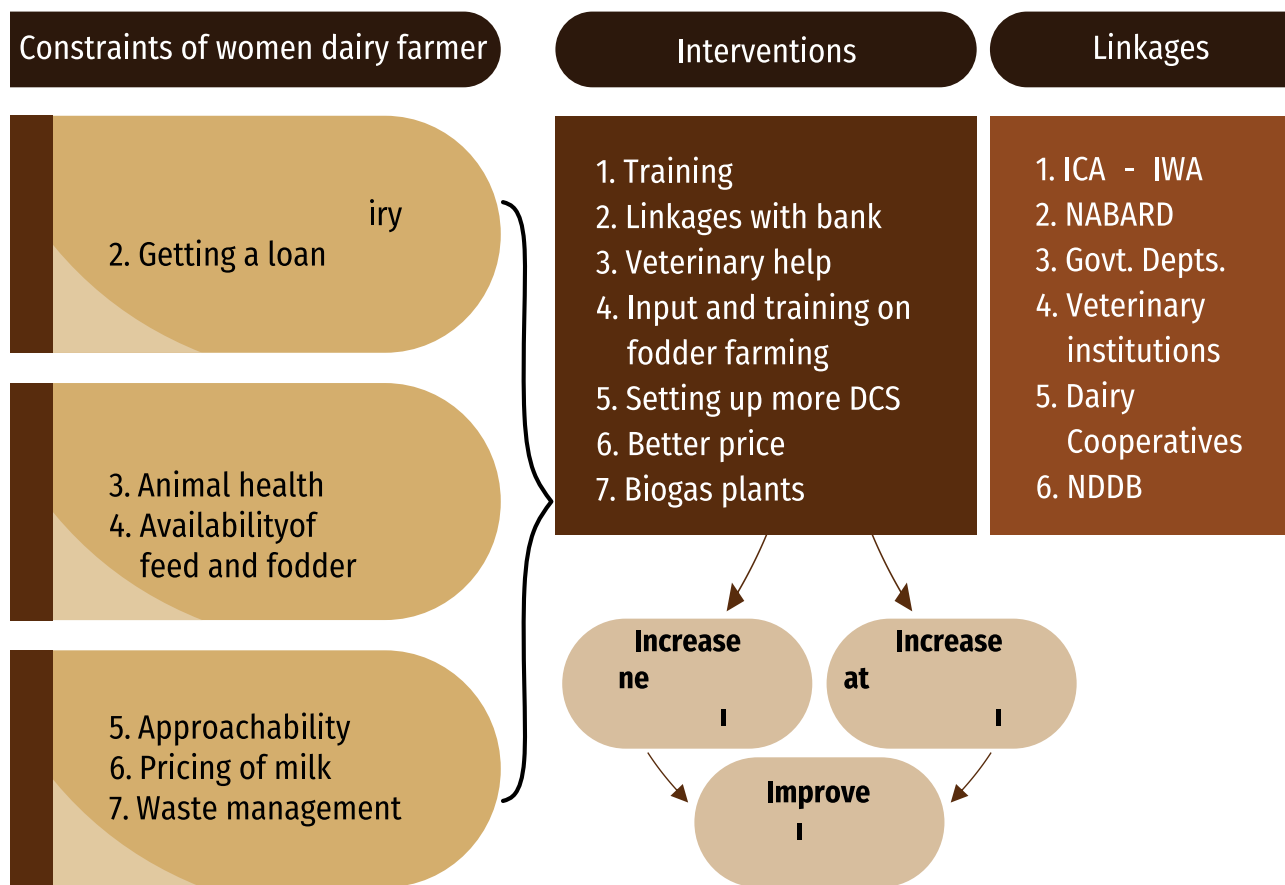


Fig. 2.15 Model for improving livelihood of women dairy farmers through strengthened cooperative linkage

2.1.6. Women Empowerment through Watershed Development Programmes in Different Agro-Ecological Regions of India (2021-24) (ICAR-CIWA-IISWC, Dehradun collaborative Project)

Praveen Jakhar and Sabita Mishra

The gender perspective in watershed development programmes is of vital importance as gender equality is one of the focal issue in SDGs. Watershed programmes were assessed across 12 different agro ecological regions of India (Fig. 2.16) for the participation, accessibility and adoption of resource conservation practices by farm women. Household data was collected from 720 farm women, who are the inhabitants of 35 villages spread over 12 AERs of India viz. Northern Plain, Khatiawar Plateau,

Deccan Plateau B, Deccan Plateau R, Eastern Plateau – B, Eastern Plateau – O and Western Himalayas. The gender based information provides multifold results on farm women issues viz. SHG formation, women inclusivity, training programme undergone, nutrition, drudgery, diversification and women self dependence etc. The database can be accessed through Gender Knowledge System portal.

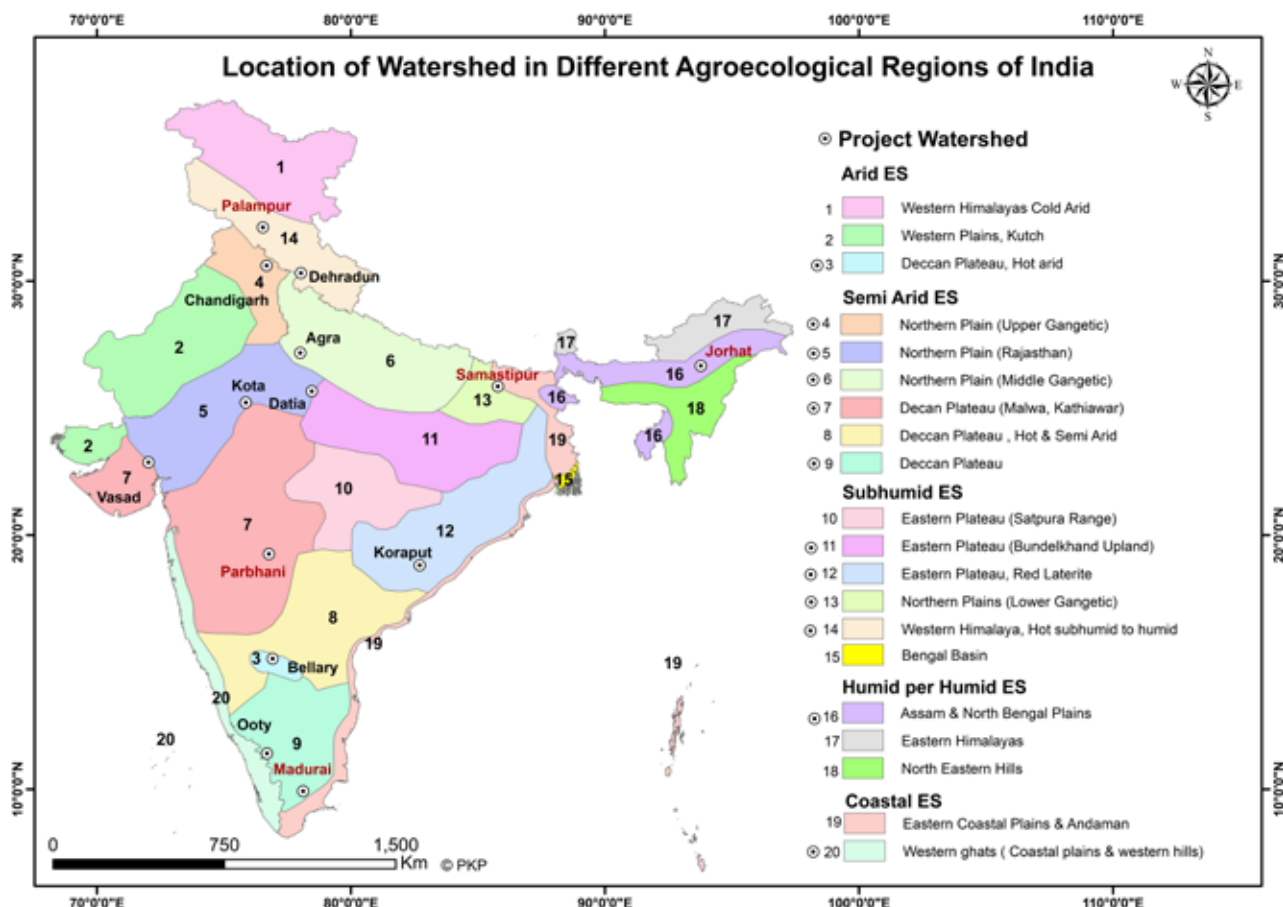


Fig. 2.16 Watersheds (O) in different AER studied for database and impact assessment

The watershed programmes studied under the project were executed in a cumulative area of 4636 ha in 35 villages spread over in 12 AERs of India having culturally diverse human population with sex ratio of 1.05. Eighty-eight SHGs are working in different watersheds which reinforce the role of women and SHG in the sustainability of the programme as well as contributing to livelihood security of women. The perception analysis revealed that involvement of women in decision making related to agricultural activities of watershed was only 10% as against 67% by men. Among the major farm activities women generally participated in decisions related to post harvest processing (30%) followed by use decision on use of conserved germplasm (12.1%). Whereas joint decision-making was maximum for post-harvest activities (41.4%) followed by crop planting selection (40%). This analysis indicates the need for women inclusivity in watershed

development programmes for sustainable resource management.

Analysis of technology impact revealed that watershed intervention has greatly reduced the time, effort and quality in multiple ways (Table 2.2). The impact analysis (pre and post project) indicates a significant reduction of 88.5%, 36.9% and 29.5% in time in collection of drinking water, fodder and fuel wood, respectively after implementation of watershed interventions (water resource development, afforestation, introduction of fodder grasses etc.). Watershed interventions (introduction of improved high yielding varieties, availability of irrigation water etc.) also led to surplus production resulting in decrease in purchase to the tune of 39.1% for paddy, 50.9% for wheat, 36.2% for pulses and 45.4% for oilseed, respectively.

Table 2.2 Impact assessment of watershed intervention on different women related variables (N=720)

Sl. No.	Variables	Unit	Pre-Project	Post-Project	Change (%)	Mean	SD	t-value
1	Water collection time	Minutes per day	48.38	3.95	88.58	42.85	17.0	15.95**
2	Fodder collection time	Minutes per day	171.8	108.3	36.94	63.45	80.5	4.98**
3	Fuelwood collection time	Minutes per day	159.0	112.0	29.56	47.00	56.8	5.23**
4	Livestock	No.	6.1	5.4	11.48	0.70	8.1	0.55
5	Milk availability	Per animal per day	3.9	3.79	2.88	0.11	3.5	0.21
6	Rice purchase	Kg per year	381.3	232.0	39.15	149.3	164.2	5.75**
7	Wheat purchase	Kg per year	400.0	196.3	50.94	203.8	192.9	6.68**
8	Pulses purchase	Kg per year	52.7	33.6	36.29	19.1	13.8	8.79
9	Oil seed purchase	Kg per year	303.4	165.6	45.41	137.8	86.0	10.13

** Significant at 5% level

RESEARCH PROGRAMME 3: COMMUNITY-BASED TECHNOLOGICAL INTERVENTIONS FOR FOOD, NUTRITION AND LIVELIHOOD SECURITIES AND ENTREPRENEURSHIP DEVELOPMENT FOR FARM WOMEN

2.1.7. Entrepreneurship Development among Rural Women through Value Addition and Product Diversification of Food Crops (2020-2023)

Sachidananda Swain, Lipi Das, Jyoti Nayak and Tania Seth

Processing of cashew is manual and highly labour intensive process. Cashew processing industries in India is highly unorganized and scattered constituting 90 per cent of women labour force. Mechanization in cashew processing is picking up slowly. Several attempts to mechanize cashew nut shelling have recorded little success, low whole kernel out turn being a major problem for the industry. Keeping all this in view, the experimental study has been undertaken to optimize processing parameters for enhancing whole kernel recovery using mechanized cashew processing unit

The cashew processing unit consists of roasting section

(through super heated steam), drying section (cabinet dryer), cutting/splitting section (automatic, power operated) and peeling section (through pneumatic air pressure by compressor). The variables chosen for the study experiments were boiling pressure (P), and peeling time (t). Table 2.3 gives the levels of variables in actual units. 13 experiments were performed using Response Surface Methodology (RSM) using a commercial statistical package Design Expert, version 8.0.6.

Experimental design and model developed with optimization for higher whole kernel recovery from cashew is as follows:

The second-order polynomial response surface model (Eq. (1)) was fitted to each of the response variables (Y_k).

$$Y_k = b_{k0} + \sum_{i=1}^2 b_{ki} X_i + \sum_{i=1}^2 b_{kii} X_i^2 + \sum_{i=j=1}^2 b_{kij} X_i X_j \quad (1)$$

Where, b_{k0} , b_{ki} , b_{kii} and b_{kij} are constant, linear, quadratic and cross-product regression coefficients of the model, respectively; X_i and X_i^2 represent the independent variables.

Table 2.3 Level of variable in actual unit

Variable	Levels (Actual)
Pressure (kg/cm ²)	5, 6, 7
Peeling time (sec)	15, 25, 35

The Whole Kernel Recovery (WKR), half kernel and broken kernels varied from 53.21 to 64.58%, 22.56 to 32.47% and 4.49 to 23.87% respectively. With the increase in steam pressure, the whole kernel and half kernel continuously increased

up to 6 kg/cm² and then decreased. The regression equation describing the effect of process variables on WKR, half kernels and broken kernels in terms of actual levels of the variables is

WKR = -57.18 +29.21* Pressure+2.43* Peeling time+0.033* Pressure * Peeling time-2.43* Pressure²-0.052611* Peeling time²

Half kernels = -59.32+25.54*pressure+1.33 peeling time+0.02 pressure*peeling time -2.19 pressure² - 0.03 peeling time²

Broken kernels = 158.55 - 37.60*pressure - 3.02* peeling time - 0.06 pressure*peeling time +3.20 pressure²+0.07 peeling time²

Table 2.4 ANOVA for different model

Source	F-value (Whole kernels)	F-value (Half kernels)	F-value (Broken kernels)
Model	45.90***	7.05**	10.39***
A-Pressure	6.40**	0.2166	0.3896
B-Peeling time	0.015**	6.31	2.38
AB	0.459	0.046	0.189
A ²	42.76	10.12**	9.11**
B ²	200.24***	21.96**	44.29***
Residual			
Lack of Fit	2.47	5.15	2.20
R ²	0.97	0.83	0.88

*, ** -Significant at 5% and 1% level, respectively

From ANOVA (Table 2.4), it could be concluded that in case of WKR, only quadratic model is significant at $p \leq 0.01$ with coefficient of determination (R^2) > 0.97 for steam pressure, whereas both linear and quadratic model are significant ($p < 0.05$, $p \leq 0.01$) for peeling time. On the other hand, only quadratic model is significant for half and broken kernels. Steam pressure and peeling time were both positively affected WKR, although the former was dominant as evident from corresponding regression coefficients and F-values. At higher steam pressure, the WKR were higher due to the generation of more heat penetrating to the cashew nut kernel thereby loosening the outer shell at greater depths without causing much collapse in the cellular structure of cashew nuts, leads to less shrinkage ratio. It is seen that the whole kernel undergone high rate of friction at peeling section to remove outer brown layer. The reason may be more centrifugal force inside the peeling chamber with increased peeling time might have led to more shearing force between cashew nut and

the peeling wall causing more damage to whole kernels. At higher steam pressure and peeling time, the WKR and half kernels was again crushed inside peeling chamber led to broken which is undesirable. So, optimization of process variables is imperative for higher whole kernel and half kernel recovery.

The numerical optimization finds a point that maximizes the desirability function. The goal-seeking begins at a random starting point and proceeds up the steepest slope to a maximum. Only one solution was obtained with the desirability values. The values of all the responses corresponding to optimum steam pressure and peeling time was found to be within the range of experimental values. The result indicated that steam pressure of 6.06 kg/cm² and peeling time of 24.07 sec is the optimum parameters for maximum whole kernel recovery (63.6 %), maximum half kernel (31.2 %) with minimum broken (7.9%) having desirability value of 0.87.

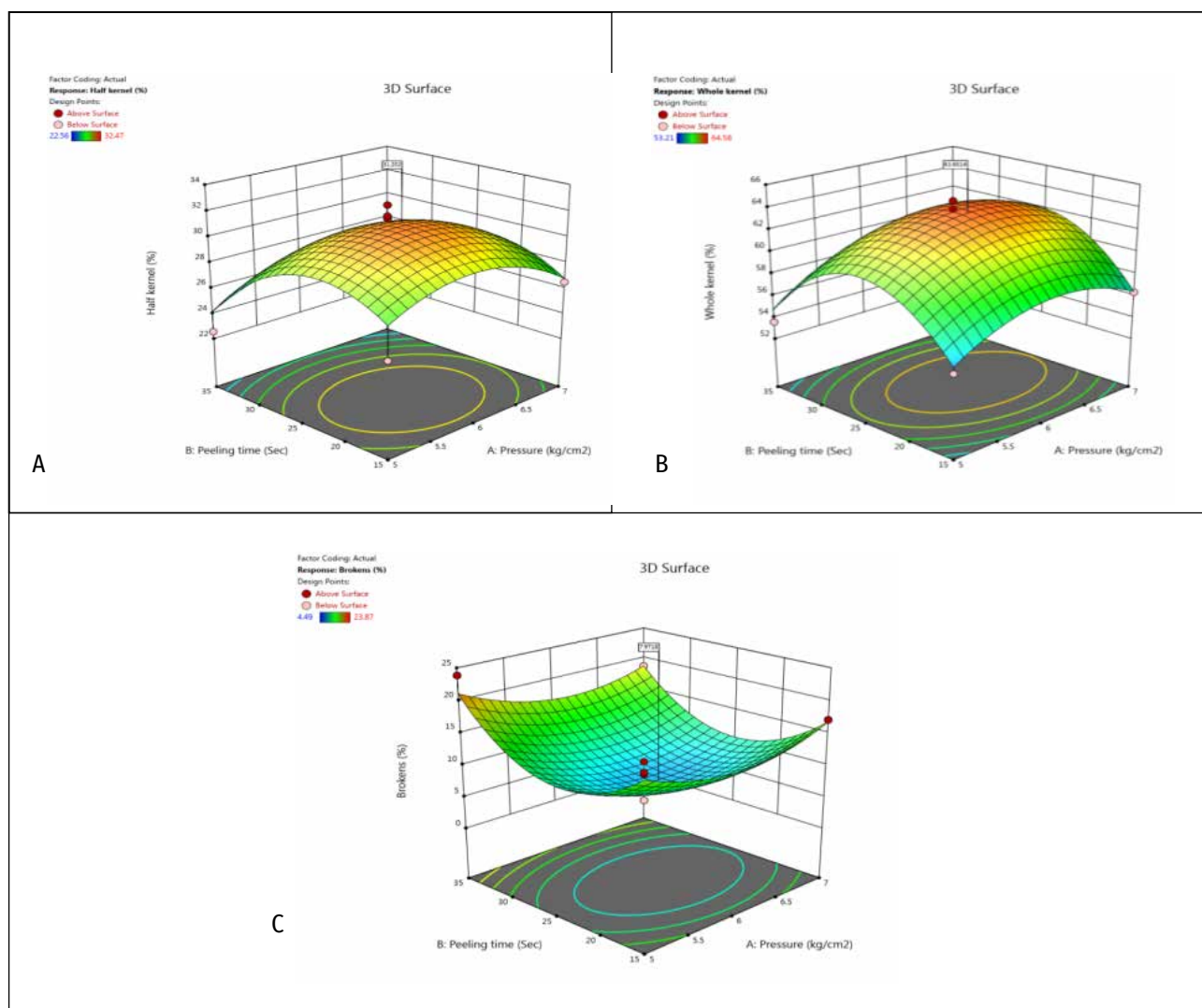


Fig. 2.17 Effect of pressure and peeling time on A. Whole kernel recovery; B. Half kernel recovery and C. Brokenness

2.1.8. Development of Women Entrepreneurship in Livestock and Fisheries Sector for Promoting Gender Equity and Strengthening Livelihood (2020-23)

Tanuja S, Arun Kumar Panda, Lipi Das and Biswanath Sahoo

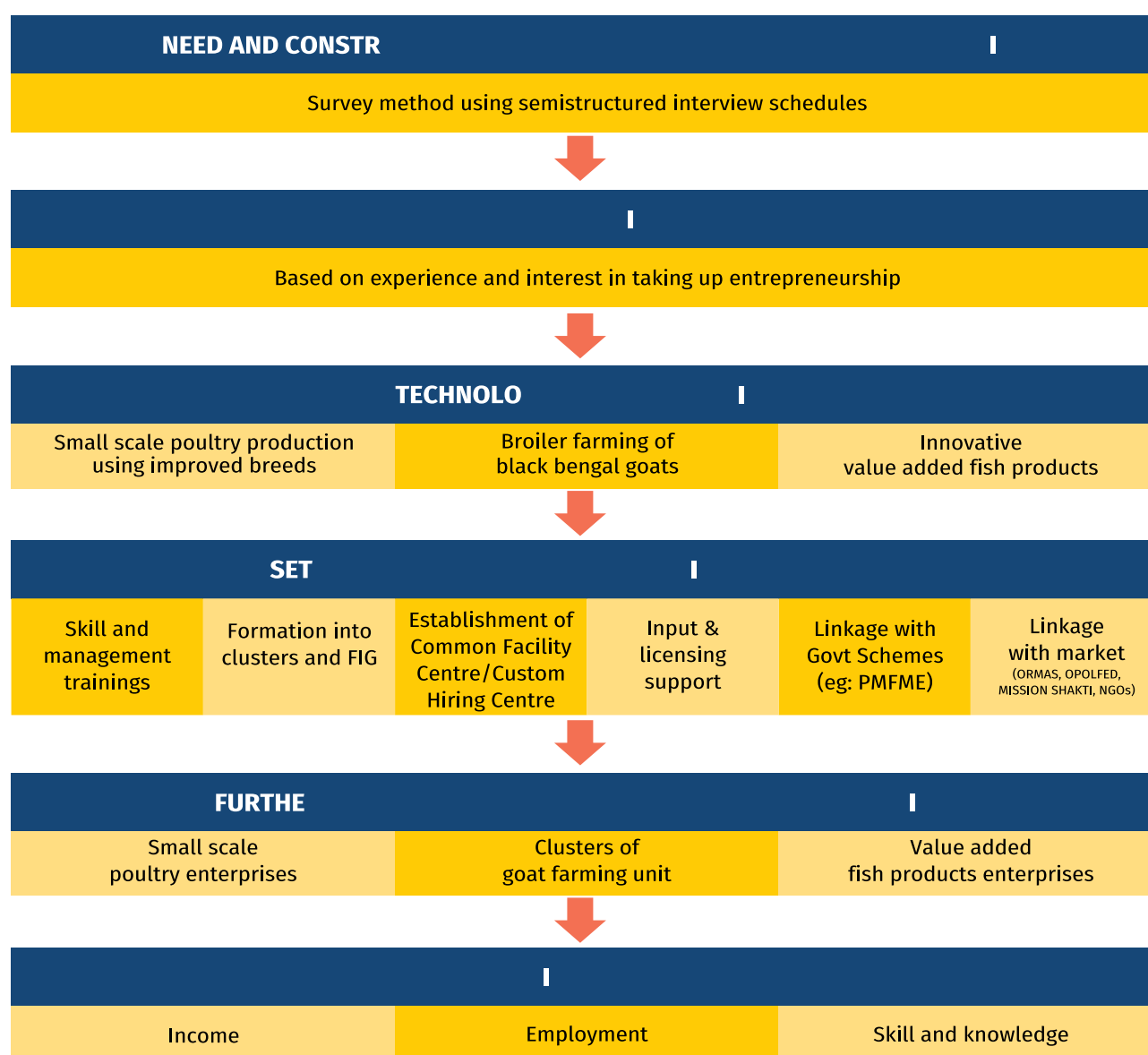
Based on resource availability and interest among rural women, the formation of following women owned enterprises were facilitated through technological backstopping, capacity building and skill development and provision of critical inputs in the selected villages of the districts mentioned in Table 2.5.

Subsequently a methodology for developing entrepreneurship among rural women through small scale poultry production, goat farming and production of value

added fish products has been developed (Fig. 2.18). Role of women and entrepreneurial avenues in goat farming was done through a SWOT analysis. Lower market price of the animal was ranked as the major constraint according to the study. The information on entrepreneurial needs and constraints faced by fisherwomen (N=200) has been collected from Puri and Khordha districts. Capacity building on fish processing, credit linkage and marketing was the most needed support for fisherwomen

Table 2.5. Category of livestock and fisheries enterprises in selected districts

Districts	Category of enterprises
Puri	Small Scale Poultry + Value added fish products
Khordha	Small Scale Poultry + Value added fish products+ Goat farming
Jagatsinghpur	Small Scale Poultry + Goat farming
Jajpur	Small Scale Poultry + Goat farming
Cuttack	Goat farming
Ganjam	Goat farming

**Fig. 2.18 Methodology for entrepreneurship development among rural women in small scale poultry production, goat farming and value added fish products**

Women entrepreneurship development through small scale poultry production

The prospective women entrepreneurs were given training on care and management of chicks, their housing, feeding, disease management, vaccination of birds and market linkage for making the poultry production a successful enterprise (Fig. 2.19). Five successful entrepreneurship units in small scale poultry production were established

in Nimapara block of Puri district, Odisha. Each poultry unit had 200 birds and the entrepreneurs are earning a profit of Rs 85200/- from the units. The prerequisites for small scale poultry enterprise through intensive rearing system is given in table 2.6.



Fig. 2.19 Facilitating women farmers with critical inputs for small scale poultry farming

Table 2.6 Prerequisites for small scale poultry enterprise through intensive rearing system of Vanraja

Particulars	Total (Rs.)
Expenditure per cycle	
Chick cost @ Rs.35/ birds	7000
*Rearing cost of male birds from 4 to 12 weeks of age @ Rs. 30 /bird	6000
*Rearing cost of female birds from 4 to 72 weeks of age @ Rs. 250 /bird	25000
Medicine/vaccine/labour	10000
Total	48000
Income	
Sale of males at 15 weeks (1.5 kg body weight) @ Rs. 200/kg - total 90 birds	18000
Sale of eggs (180 eggs/bird) @ Rs 6/- per egg	97200
Sale of culled birds (2.0 kg body weight) @ Rs. 100/kg	18000
Total	133200
Profit (Income – Expenditure)	85200

Women entrepreneurship development through improved goat farming

Broiler goat rearing- a women friendly technology was developed at ICAR-CIWA in which 15 to 30 days old kids (1.8-2.1 kg live weight) with higher birth weight were selected for proper feeding and management for 6 months which resulted in 22% improvement in growth rate of kids. Twelve goat farming units with 30-40 goats/unit following the broiler goat rearing technology have been started by women beneficiaries of Cuttack, Jajpur, Khordha and Jagatsinghpur districts with the Black Bengal bucks and does supplied from ICAR-CIWA (Fig. 2.20). Training was imparted to 235 farm women for entrepreneurship development in goatery sector by creating linkages with FPOs named Taradevi Farmer's Producer Company Limited, Kabirpur, Jajpur and Maheera, Farmer's Producer Company Limited, Balipatna, Khordha, Manikstu Agro Private Limited, Kalahandi and Women SHG groups, Bhanjanagar, Ganjam. Various nutritional interventions i.e feeding of balanced ration, mineral mixture, and cultivation of

perennial fodder (Yashwant, Hybrid napier, CO-4, IGFR-6) followed by feeding of total mixed ration (Concentrate: roughage:30:70) were popularized in the project villages. Assessment of the impact of these interventions revealed that the adoption rate of the different interventions was 45-50%. The improvement in productive performance in terms of growth rate and feed efficiency through above technologies was 20-25%.

As farm women rarely practice feeding of concentrate mixture, feeding of bypass protein through formaldehyde treatment (1.2%) of locally available ground nut oil cake was undertaken as a viable method and a validation trial in goat farm of ICAR-CIWA was conducted as an in vivo study of 120 days on ten male Black Bengal goats (body weight: 5.09 ± 0.35 kg) of average 4 months old. Total body weight gain (kg) (8.50) and average daily gain (g/day) (70.83) was higher in goats fed with bypass protein.



Fig. 2.20 Women owned goat farming units under broiler goat rearing system

Entrepreneurship development among rural women through value addition of fish

Interested women farmers belonging to two SHGs of Kanamana, Astaranga and five SHGs from Sorana, Khordha were given skill trainings on preparation and packaging of various value added fish products. Subsequently a Women Farmer Interest Group 'Omm Sai' has been formed at Kanamana village, Astaranga block, Puri district with 21 women members to help them to better exploit the available resources so as to increase their income by joining together. The existing women

an SHG, Sai baba from Soran village, Khordha started an enterprise on value added fish products namely 'Chilika Food Line'. Linkage for marketing of their products has been established through discussion with Falcon Chilka Group, Bhubaneswar. The women owned enterprise has included prawn papad, prawn pickle and dry fish in their product profile.

A Business Model Canvas on value added fish products



Fig. 2.21 Inauguration of Common Facility Centre and Women Farmer Interest Group

owned enterprise 'Fishlikes' included 'fish pickle' also among their product list after nutritional analysis of the product at ICAR-CIWA. Based on consumers' preference, the enterprise shifted from pouch packing of pickle to bottle packing. This has improved the appearance of the product and eliminated the problem of product loss through leakage of oil. In order to facilitate the processing activities by women, a Common Facility Centre (CFC) was established in the Kanamana village, Astaranga (Fig. 2.21). The CFC was equipped with equipments for processing like solar dryer, feed pelletiser, packaging machines, utensils, etc. The Common Facility Centre is also functioning as the focal point of trainings in the village. After gaining the required skill,



Fig. 2.22 Value addition of prawn in the Common Facility Centre

enterprise has been prepared to assist the existing women owned enterprises or the prospective ones in aligning their activities and by illustrating the potential trade offs.

Key Partners • Raw material suppliers • Retail sellers • Financial Institutions • Technological institutions- Incubators, Research organizations • State Government Organisations- Fisheries Department, Mission Shakti, ORMAS • Media- Print Electronic, Online	Key activities • Production • Marketing • Skill enhancement • Licensing& branding • Advertisement	Value propositions • Ready to eat/cook • Innovative • Reasonable price • Attractive packaging • Hygienic • Traceability	Customer relationships • Provide customer samples • Customer feedback and action upon it • Discounted prices • Order via Mobile Phone • WhatsApp /Message	Customer segments • Age groups from children to old age • Rural and urban • Restaurants • Bakeries/Cafes etc)
	Key resources • Human- Women Farmer Interest Groups, Master trainers, Producer Groups, SHGs • Physical-Raw material, Building, Machineries • Technological- ICAR-CIWA, ICAR-CIFA • Financial- Beneficiary capital		Channels • Distributor • Retailers • Advertisement in print online and electronic media • Online platforms (Amazon, flipkart etc) • Exhibitions, Melas	
Cost Structure • Fixed Cost • Variable cost • Loan Interest		Revenue streams • Sale through retailer • Sale through exhibitions • Sale through online platforms		

Fig. 2.23 Business Model Canvas for Small Scale Value Added Fish Products

RESEARCH PROGRAMME 4: VULNERABILITY FRAMEWORK AND DRUDGERY REDUCTION FOR WOMEN IN AGRICULTURE

2.1.9 Study of Farm Equipments and Tools for Drudgery Reduction of Women in Agriculture (2020-2023)

Chaitrali Shashank Mhatre, Jyoti Nayak

An “Agro-climatic zone” is a land unit in terms of major climates, suitable for a certain range of crops and cultivars. The country has been divided into 15 resource development regions consisting of 14 in the main land and one in the Islands of Bay of Bengal and Arabian Sea. These are Western Himalayan division, Eastern Himalayan division, Lower Gangetic plain region, Middle Gangetic plain region, Upper Gangetic plain region, Trans-Gangetic plain region, Eastern plateau and hill region, Central plateau and hill region, Western plateau and hill region, Southern plateau and hill region, East coast plain and hill region, West coast plain and hill region, Gujarat plain and hill region, Western plain and hill region and Island region. The district-wise

data of Farm Power Availability (FPA; kW/ha: 2016-17) was mapped and split as per the Agro-climatic zones. Through these maps, it can be observed that the farm power availability is higher in the Lower Gangetic plain region, Middle Gangetic plain region, Upper Gangetic plain region, Trans-Gangetic plain region. Out of 15 zones the data for FPA of 14 is available and was mapped accordingly. The data was analyzed and it was found that the seven zones had high FPA (Fig. 2.25-2.31), five had medium FPA (Fig. 2.32-2.36) and 2 had low FPA (Fig. 2.37-2.38). The highest FPA was 4.58 kW/ha for Trans-Gangetic plain region, while the lowest was 0.8 kW/ha for Eastern Himalayan division. Given below is the summary of the FPA and its correlation.

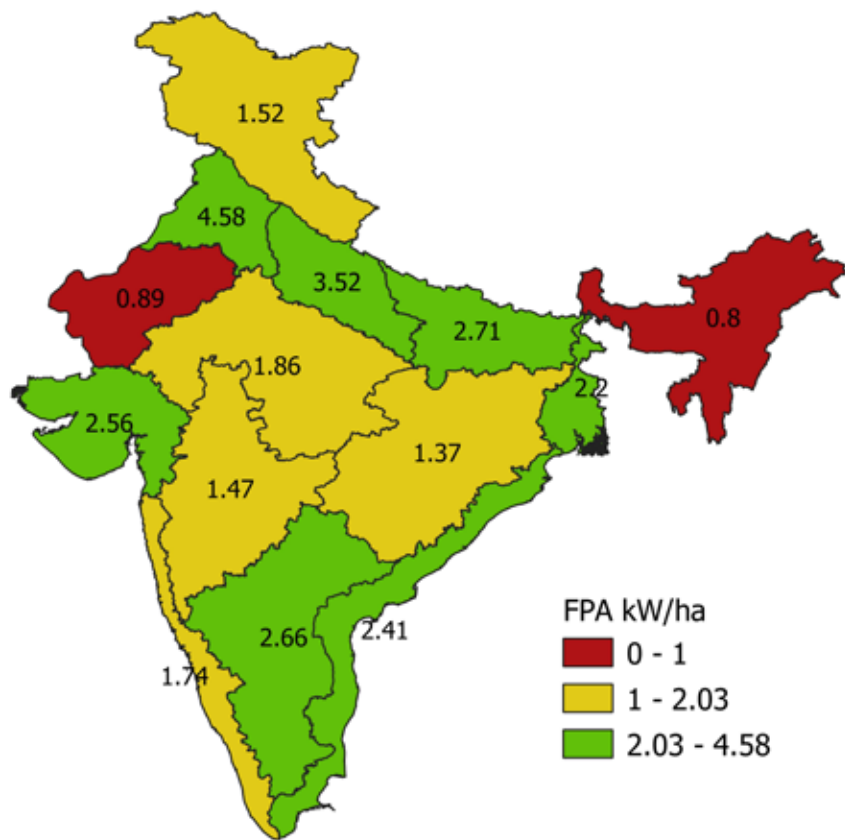


Fig. 2.24 FPA (kW/ha) represented Agro-climatic regions/zones wise in India

A. Agro-climatic zones with high farm power availability (>2.03 kW/ha):



Fig. 2.25 Lower Gangetic plain region

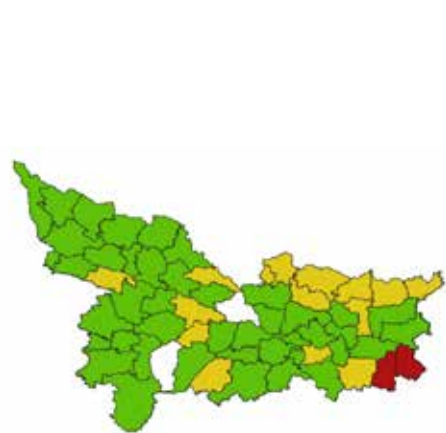


Fig. 2.26 Middle Gangetic plain region



Fig. 2.27 Upper Gangetic plain region



Fig. 2.28 Trans-Gangetic plain region



Fig. 2.29 Southern plateau and hill region

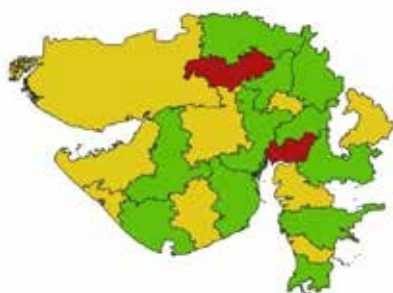


Fig. 2.30 Gujarat plain and hill region

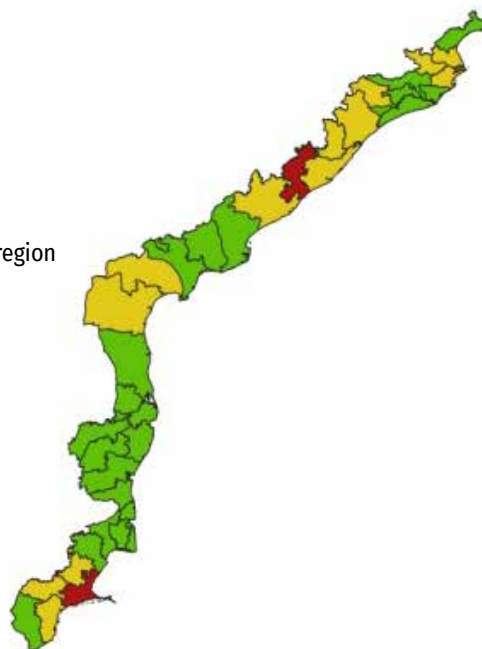


Fig. 2.31 East coast plain and hill region

B. Agro-climatic zones with medium farm power availability (2.03 to 1 kW/ha):

The zones with medium FPA are Western Himalayan division, Eastern plateau and hill region, Central plateau and hill region, Western plateau and hill region and West coast plain and hill region, with 1.52, 1.37, 1.86, 1.47 and 1.74 kW/ha respectively. These zones have moderate temperature, rainfall and soil ranges for agriculture thus, having lower need for higher mechanization.



Fig. 2.32 Western Himalayan division

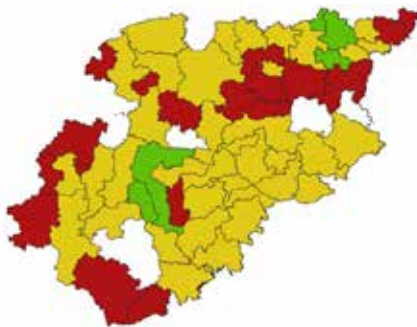


Fig. 2.33 Eastern plateau and hill region

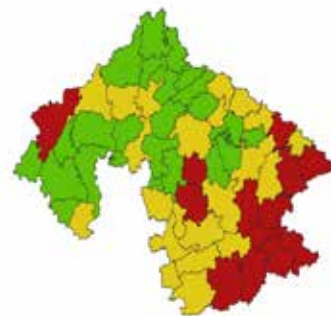


Fig. 2.34 Central plateau and hill region



Fig. 2.35 Western plateau and hill region



Fig. 2.36 West coast plain and hill region

C. Agro-climatic Zones with Low Farm Power availability (< 1 kW/ha):

The zones with low FPA are Eastern Himalayan division and Western plain and hill region, with 0.8 and 0.89 kW/ha respectively. These zones have unfavorable temperature, rainfall and soil ranges for agriculture thus, having limiting need for higher mechanization.



Fig. 2.37 Eastern Himalayan division



Fig. 2.38 Western plain and hill region

RESEARCH PROGRAMME NO. 5: ASSESSMENT, REFINEMENT AND POPULARIZATION OF GENDER FRIENDLY TECHNOLOGIES AND SKILL ENHANCEMENT OF FARM WOMEN

2.1.10 Designing and Development of Gender Sensitive Agri-Nutri (GSAN) Farming System Model (2019-22)

Lipi Das, Biswanath Sahoo, Praveen Jakhar and Tania Seth

Gender equality is a global and national priority. Women are important stakeholders in agricultural development, their mainstreaming and empowering has to go a long way in increasing agricultural production and productivity. Innovative extension approach (1. sensitization, 2. skill development and 3. convergence) was adopted to develop the GSAN Farming System Model. The approach is highly effective in identifying the Gender-sensitive indicators, which provides measurement of gender-related changes over time. Using the approaches and indicators, efforts were made to bridge the gender gaps by generating

significant economic outcomes and by ensuring nutrition and livelihood security.

G-SAN Model Validation: There is an intricate linkage between agriculture and household nutrition, with women being the key stakeholder. Therefore, the G-SAN Model (Fig. 2.39) focuses on agriculture as tool for addressing the question of nutrition and income. A “Gender Sensitive Agri-Nutri Farming System Model” is an approach for infusing nutrition enriched diet into the dietary pattern of the farm families encouraging them to cultivate sufficient



Fig. 2.39 Gender Sensitive Agri-Nutri farming system model

vegetable, fruits, pulses in their farms/kitchen gardens with the active involvement of women farmers. The main components of this model are nutri-farming system, agri-nutri education, skill upgradation and institutional convergence.

During the inception of the project, baseline data was collected and gender gap was assessed for formulation of technological interventions for higher productivity and income. The pooled data analysis (Table 2.7) signifies the impact of different technological interventions viz. high protein paddy, nutri-rich vegetables and improved feeding practices for increasing milk yield of cattle as a part of Nutri-smart technological interventions in the five operational villages. The improved high yielding rice varieties CR Dhan-312 and CR Dhan-409 and protein rich rice variety CR Dhan-311 (Fig. 2.40) increased the rice yield by 54.3%. Although there was increase in cost

of cultivation by 36.5% but the net returns increased to the tune of 75.7% (Rs 57,060 Rs/ha). The income from homestead vegetable garden got doubled which can be attributed to better market connectivity as well as agri-nutri education. Package of improved feeding practices to the livestock improved milk yield by 18.9% and net returns by 54%. To enhance the efficiency of field operations, women SHG based Custom Hiring Centre (CHC) and Farmers' Interest Group (Fig.) were established. Overall, it can be concluded that the G-SAN Model had a significant positive impact on different socio-economic parameters for women empowerment. The model generated profits and awareness among the Women Farmers' Group namely "Ananya Mahila Bikas Samiti" in Cuttack for the cluster-based (five villages) production and motivated them to replicate the model in the different locations of the cluster.



Fig. 2.40 Field trials of improved high yielding rice varieties in farmers field

Table 2.7 Impact assessment of different technological interventions under G-SAN Model (N=50)

	Units	Pre-Project	Post-Project	Mean difference	Per centage change	SEm	T-test
Paddy yield	q/ha	38.67	59.66	20.99	54.3	0.598	37.08
Cost of Production	Rs./ ha	38,635	52,753	14,118	36.5	147.8	95.00
Gross Returns	Rs./ ha	71,108	1,09,814	38,706	54.4	971.0	38.90
Net returns	Rs./ ha	32,473	57,060	24,587	75.7	965.9	24.57
BC Ratio		1.84	2.08	0.24	13.0	0.019	12.11
Vegetables yield	q/ha	6.54	7.44	0.90	13.8	0.200	3.28
Cost of Production	Rs./ ha	61,924	1,25,465	63,541	102.6	1067	60.39
Gross Returns	Rs./ ha	97,287	3,01,805	2,04,518	210.2	1569	132.85
Net returns	Rs./ ha	35,363	1,76,339	1,40,976	398.7	1880	76.62
BC Ratio		1.25	2.40	1.15	92.0	0.030	27.08
Milk yield	Ltr/Day	10.6	12.6	2.00	18.9	0.044	47.81
Cost of Production	Rs./Day	198.9	261.2	62.3	31.3	1.947	31.96
Gross Returns	Rs./Day	316.8	442.7	125.9	39.7	2.007	62.90
Net returns	Rs./Day	117.9	181.5	63.6	53.9	1.234	51.83
BC Ratio		1.6	1.70	0.11	6.9	0.009	12.44

2.1.11. Design and Development of Gender Sensitive Integrated Vertical Nutri-Farming System (IVNFS) for Household Nutrition and Income (2020-2023)

Tania Seth, Arun Kumar Panda and Chaitrali S. Mhatre

As per ICMR guidelines, recommended daily intake of vegetables is 300 g (GLV : 50 g; Other vegetables : 200 g; Roots & Tubers : 50 g) for an individual. The integrated vertical nutri-farming system (IVNFS) model was designed with the objective of growing nutritious vegetables along with mushroom cultivation or poultry farming for ensuring year round diet diversity to the rural households. The

vertical troughs in the system are designed in such a way that vegetables can be grown at different heights. The orientation of IVNFS model in North-South direction facilitates the troughs of one side to get ample morning sunlight from east, while the troughs on other side fetch the afternoon sunlight from west. The crop calendar for beneficial combinations of the vegetable crops to be

cultivated throughout the year in the different troughs of the IVNFS models has been developed (Table 2.8). The combinations of the vegetable crops were selected

for Eastern India. However, the choice of crops can be selected based on the agro-climatic conditions.

Table 2.8 Vegetable crop calendar

Trough	Season		
	Pre-Kharif	Kharif	Rabi
Bottom trough	Amaranthus, Water Spinach	Water Spinach, Amaranthus	Palak, Fenugreek
Middle trough	Cowpea	Cowpea	French bean
Upper trough	Brinjal	Colocasia, Brinjal	Radish/Carrot, Tomato

- The IVNFS Model I (Vegetable + Mushroom) can be used for vegetable cultivation in vertical troughs along with paddy straw mushroom and oyster mushroom cultivation (Fig. 2.41). The model provides year round supply of around 80 kg vegetables along with 50 kg of paddy straw mushroom and oyster mushroom.
- The IVNFS Model II (Vegetable + Poultry) can be utilized for year round vegetable cultivation in vertical troughs and rearing of dual purpose (egg laying and meat both) breed of poultry birds (Fig. 2.42). The model provides year round supply of around 80 kg vegetables along with 2016 numbers egg and 35 kg meat from male and culled birds. 125 kg of litter was also obtained from this model, which can be utilized for compost preparation.



Fig. 2.41 Model I (Vegetable + Mushroom)

Table 2.9 Benefit Cost Ratio (BCR) of IVNFS Model I (Vegetable + Mushroom)

S. No.	Input		Output	
	Particulars	Cost (Rs.)	Particulars	Cost (Rs.)
1	Structure (Capital cost per year) & Maintenance	2670.00	Vegetables	3200.00
2	Seeds of vegetable crops	400.00	Paddy straw mushroom	9600.00
3	Vermicompost	500.00	Oyster mushroom	2750.00
4	Mushroom cultivation (paddy straw, spawn, besan, polythene)	5000.00		
5	Labour	1500.00		
Total		10070.00	Total	15550.00
B:C Ratio = 1.54				

**Fig. 2.42 Model II (Vegetable + Poultry)**

Table 2.10 Benefit Cost Ratio (BCR) of IVNFS Model II (Vegetable + Poultry)

S. No.	Input	Output		
	Particulars	Cost (Rs.)	Particulars	Cost (Rs.)
1	Structure (Capital cost per year) & Maintenance	3228.00	Vegetables	3200.00
2	Seeds of vegetable crops	400.00	Eggs	20160.00
3	Vermicompost	500.00	Meat (male bird)	4500.00
4	Male bird (chick + feed)	900.00	Meat (culled bird)	3000.00
5	Female bird (chick + feed)	9472.00	Litter	500.00
6	Feeder	500.00		
7	Waterer	500.00		
8	Labour	1500.00		
Total		17000.00	Total	31360.00
B:C Ratio = 1.84				

The compared benefit analysis of the two models (Table 2.9 & 2.10) depicted that both the IVNFS models can provide good return as compared to cost of production but the IVNFS Model II (Vegetable + Poultry) is more profitable.

2.1.12. Development of Nutri Smart Villages for Food Security and Dietary Diversity for Combating Malnutrition (2021-2024)

Jyoti Nayak, Anil Kumar, Arun Kumar Panda, Laxmi Priya Sahoo and Tanuja S

Women are the strongest linkage between agriculture and nutrition. As a comprehensive approach towards making agriculture nutrisensitive, development of nutrismart villages through participation of women has been conceptualized. A total 300 target beneficiaries were selected randomly from 10 selected villages spread in four districts viz., Puri, Khordha, Cuttack and Jagatsingpur of Odisha. Baseline data on socio-economic profile and nutritional status of the farm families, their food consumption and purchasing pattern, clinical symptoms of nutrient deficiency and morbidity status, and nutritional Knowledge, Attitude, Practice (KAP) were collected from the target beneficiaries using semi structured interview

schedules. Technological interventions (Table 2.11) were introduced after analyzing the gaps. Only 9.3% of the women respondents were illiterate, while majority of the respondents (42.7%) had education only upto primary level with 7% of them as graduates or above. More than 75% of the women had agriculture as their primary occupation. Around 4% of them worked in either Government or private service sector. Around 70% of women were marginal farmers with a land holding of less than 1 ha while 12.7% were small women farmers. Only 1% of the women belonged to the category of large farmers with a land holding of 10 ha and above.

Table 2.11 Food consumption pattern of respondents (N=300)

Frequency of food consumption								
Food Groups	Daily		Weekly		Monthly		Rare	
	No	%	No	%	No	%	No	%
Cereals/Millet	276	92.0	22	7.3	2	0.7	0	0.0
Pulses	236	78.7	58	19.3	0	0.0	6	2.0

Oil	299	99.7	1	0.3	0	0.0	0	0.0
Sugar and jaggery	291	97.0	9	3.0	0	0.0	0	0.0
Green leafy vegetables	186	62.0	113	37.7	0	0.0	1	0.3
Other vegetables	109	36.3	170	56.7	20	6.7	1	0.3
Roots and tubers	57	19.0	110	36.7	102	34.0	31	10.3
Milk	177	59.0	66	22.0	14	4.7	43	14.3
Curd & butter milk	16	5.3	150	50.0	76	25.3	58	19.3
Milk products: ghee, butter, cheese	13	4.3	145	48.3	57	19.0	85	28.3
Meat	8	2.7	103	34.3	126	42.0	63	21.0
Fish and sea foods	7	2.3	196	65.3	38	12.7	59	19.7
Egg	26	8.7	181	60.3	53	17.7	40	13.3
Fruits	31	10.3	86	28.7	115	38.3	68	22.7
Nuts and oil seeds	25	8.3	24	8.0	119	39.7	132	44.0
Dry fruits	2	0.7	19	6.3	38	12.7	241	80.3
Any other : honey, herbs, health foods	1	0.3	2	0.7	18	6.0	279	93.0



Fig. 2.43 Visit of Hon'ble DDG (Agricultural Education), ICAR to nutri smart village

All of the respondents consumed oil, sugar and jaggery, cereals on a daily basis (Table 10). The food groups like pulses (78.7%) and green leafy vegetables (62%) were also predominantly consumed by them. Animal proteins in the form of egg (60.3%) and fish and sea foods (65.3%)

were mostly consumed weekly. Milk products like curd & butter milk (50%), butter, ghee and cheese, (48.3%) were also consumed weekly. Dry fruits (80.3%), honey, herbs and other health foods were consumed rarely.



Fig. 2.44 Farm woman involved in mushroom farming in the adopted nutri smart village

Table 2.12 Technological interventions to bridge the nutrition gap

S.	Interventions	Details of Input
1.	Backyard poultry farming	One day old chicks , feed, feeder, waterer and vaccines
2.	Homestead aquaculture	Fish fingerlings and fish feed
3.	Mushroom farming	Mushroom spawn, bavistin, bengal gram and polythene
4.	Nutrigarden	Crop calendar, vegetable seeds and seedlings
5.	Women friendly tools	Spade, hand hoe, garden hoe, hand cultivator, sprayer, secateurs etc

2.1.13. Characterization and Refinement of Integrated Farming Systems in Gender Perspective in Different Agro-Ecological Regions of India (ICAR-CIWA & IFSR, Modipuram collaborative Project) (2021-24)

Arun Kumar Panda and Praveen Jakhar

The project focuses on assessment, methodology development and refinement of IFSs in gender perspective on measurable indicators viz. net income, recycling value of output vis-a-vis input and household nutrition. Households (Farm families) under diverse production systems were assessed on the basis of gender-disaggregated secondary data, interactions and field surveys.

For the 10 agro-climatic zones of Odisha (Fig. 2.45), 11 IFS models were analyzed (Table 2.13) under the techno impact study. Each IFS model involves (as per the region specific conditions) different enterprise combinations of crops, horticulture, dairy, fisheries etc. Among different models maximum gross as well as net returns were obtained in IFS module under ACZ 8 followed by 4.1 and 3, respectively. The produce obtained under different

components was converted in to single paddy relative equivalent yield (REY t/ha) and it was observed that maximum REY (29.46 t/ha) was under ACZ 4.1 i.e. South Eastern coastal plain, followed by ACZ 9. The system with maximum employment generation was in ACZ 4.1 followed by 8. The maximum women participation (227 days) was observed in module no. 8 followed by 7 (197 days). The reason attributed for higher women participation was existence of dairy enterprise as well as kitchen gardening (KG) in which women plays a significant role. However it was observed that all family members were actively performing all activities of crop farming.

Based on the secondary datasets available from open sources a database of 10 agro-climatic zones of each production system was created. The detailed account of IFS models under the agro climatic zone of Odisha

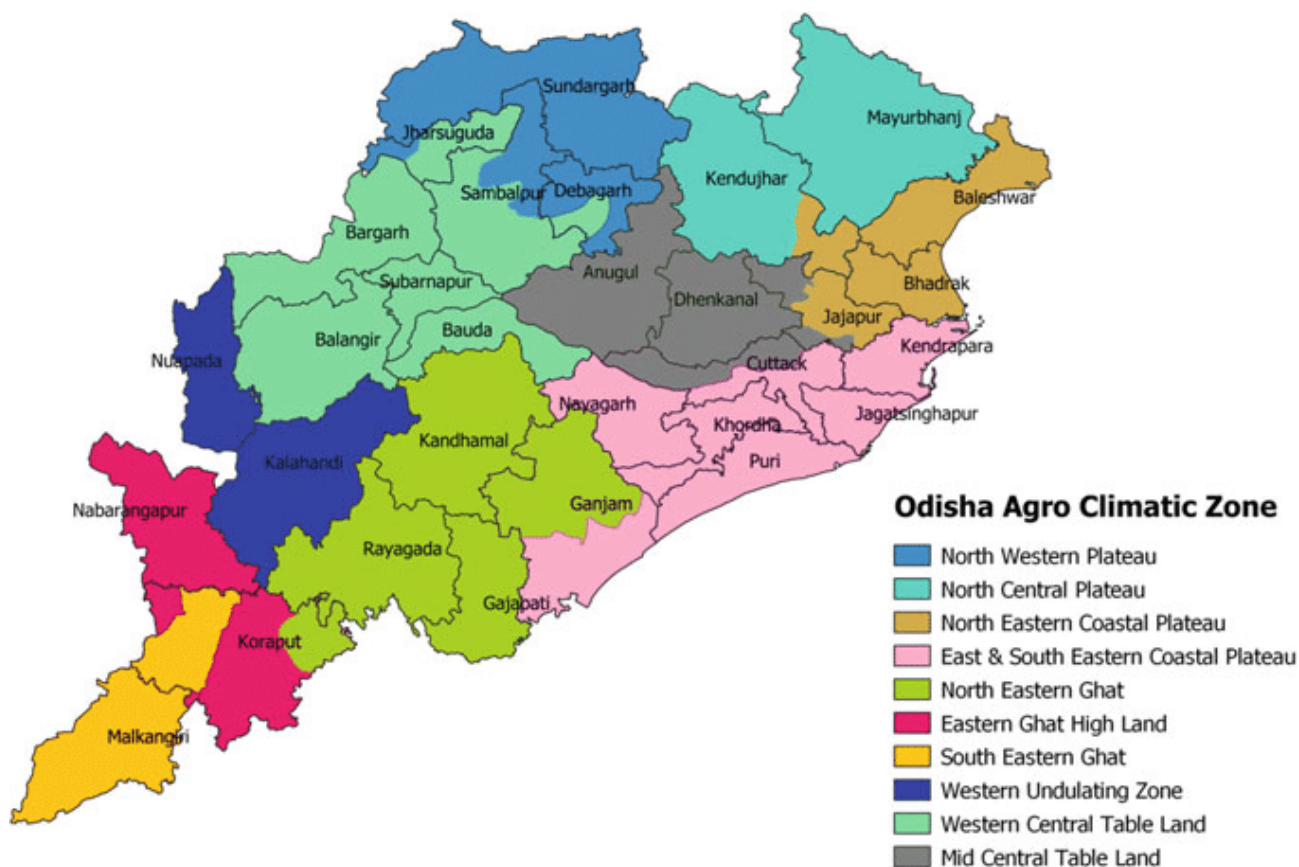


Fig. 2.45 Agroclimatic Zones of Odisha

along with gender wise participation has been made. The gender indicators were analyzed for each model. On pilot basis information on farmwomen has been entered in the database. The front end is designed using PHP, JavaScript, Bootstrap, HTML and CSS and MySQL manages the backend.

Integrated farming system approach seems to be the only alternative to ensure food, nutritional and economic security, particularly to a large chunk of small and marginal farmers which comprises of about 84% of farm households of Odisha. The promising farming system modules with their economics for each of the 10 agro climatic zones of the state are furnished. Resource recycling value of the different IFS models was computed (Table 2.14). Among 11 IFS models and 10 enterprises,

maximum recycle value for crops enterprise was in model 1 where as for horticulture enterprise it was maximum in model 9 and 2. From gender point of view in particular and recycle aspect in general kitchen gardening is a small but significant intervention in IFS system. It contributed maximum in north-western plateau followed by north-eastern coastal plain. Maximum value for dairy enterprise was obtained for western central tableland. Mushroom production is a significant income generating activity for women however among 11 models only 3 models show this intervention with maximum recycling value in north central plateau. Overall it can be concluded that maximum recycling was in IFS models where participation of women is maximum i.e. IFS models of ACZ 1, 2, 9 and 4, respectively.

Table 2.13 Economic returns and gender disaggregated details of IFS under different agro-climatic zone of Odisha

Module	Agroclimatic zones	Combinations	Area(ha)	GR ha ⁻¹ (Rs. lakhs)	NR ha ⁻¹ (Rs.lakhs)	TSP (t REY/ha)	Employment days	Mendays	Womendays
1	North Western Plateau	C,H,D,F,P,G	0.90	5.16	2.64	18.20	226	126	100
2	North Central Plateau	C,H,D,F,G,A	0.80	4.46	2.31	19.31	226	129	97
3	Ne Coastal Plain	C,H,D,F,P,M	1.30	6.24	3.16	27.43	490	394	96
4	East Coastal Plain	C,H,D,F,P,G,M,V	0.40	3.45	1.84	20.88	165	137	28
4.1	Se Coastal Plain	C,H,KG,D,F,P,M	1.70	7.25	3.82	29.46	586	486	100
5	North Eastern Ghats	C,H,KG,D,F,P,G,A	0.94	2.70	1.36	23.80	313	168	146
6	Eastern Ghat Highland	C,KG,D,F,P,G,A	0.90	1.46	0.85	21.90	298	155	143
7	South Eastern Ghat	C,H,KG,D,F,P	1.40	3.91	2.14	21.06	411	220	191
8	Western Undulating	C,H,KG,D,F,P,G	1.80	8.76	4.00	23.00	496	269	227
9	Wc Table Land	C,H,KG,D,F,P	0.90	2.87	1.51	28.36	334	199	135
10	Mid-Central Table Land	C,H,KG,D,F,P	1.10	4.38	2.28	22.76	350	235	115

Source: Synthesized from secondary data AICRP (IFS), OUAT Centre.

C-Crops, H-Horticulture, KG- Kitchen Gardening, D-Dairy, F-Fishery, P-Poultry, G-Goatery, M-Mushroom, A-Apiary

Table 2.14 Recycling values of enterprises in IFS under different agro-climatic zones of Odisha

Sl.no.	Agroclimate Zone	Enterprise	Crops	Hort.	KG	Dairy	Fishery	Poultry	Goatery	Mushroom	Apiary	Value	Total	Compost	VermiC	Total
1	North Western Plateau	C,H,D,F,P,G	12,347	4,670	2,000	5,200	450	960	*	500	*	*	26,127	17,800	8,327	26,127
2	North Central Plateau	C,H,D,F,G,A	6,316	6,400	*	6,060	320	1,580	*	2,500	*	*	23,176	23,176		23,176
3	Ne Coastal Plain	C,H,D,F,P,M	6,110	4,000	1,800	5,424	600	1,200	*	*	*	*	19,134	14,968	4,166	19,134

4	East Coastal Plain	C,H,D,F,P,G,M,V	6,050	4,500	1,300	6,424	340	1,456	*	*	*	*	20,070	15,720	4,350	20,070	
4.1	Se Coastal Plain	C,H,K,D,F,P,M	5,765	3,960		5,402	450	500	2,000	*		200	*	18,277	15,200	3,077	18,277
5	North Eastern Ghats	C,H,K,D,F,P,G,A	5,320	100	1,200	2,628	450	1,600	*	*	*	*	11,298	8,200	3,098	11,298	
6	Eastern Ghat Highland	C,K,D,F,P,G,A	4,830	168	*	6,570	350	*	2107	*	*	*	14,025	14,025		14,025	
7	South Eastern Ghat	C,H,K,D,F,P	4,430	360		5,032	600	980	1,800	*	*	*	13,202	9,500	3,702	13,202	
8	Western Undulating	C,H,K,D,F,P,G	3,900	180	*	5,552	400	1,950	*	*		220	*	12,202	12,202		12,202
9	Wc Tab. Land	C,H,K,D,F,P	3,060	6,450	1,500	8,030	400	1,400	1,540	*	*	*	22,380	14,600	7,780	22,380	
10	Mc Table Land	C,H,K,D,F,P	1,735	450	*	5,410	350	1,630	1,860	250	*	1,500	13,185	11,660	1,525	13,185	

Source: Synthesized from secondary data AICRP (IFS), OUAT Centre.

2.1.14 All India Coordinated Research Project on Ergonomics and Safety in Agriculture (2017-23)

Chaitrali S. Mhatre and Jyoti Nayak

2.1.14.1 Involvement of Women in Agriculture in the State of Odisha

Odisha mainly comprises of two agro-climatic zone viz., eastern coastal plain (ACZ no.19) and eastern plateau (ACZ no.12). Hence two districts from each zones were selected for the study. In the first phase of study; Kunjar, Chitra and Sagada villages were selected from Puri district (ACZ no.19) and Gobardhanpur village was selected from Balasore district (ACZ no.19) respectively. In the second phase of study; Anungu, Balel and Mulda villages were selected from Koraput district (ACZ no.12) and Barpan & Sodamal villages were from Jharsuguda district (ACZ no.12) respectively. Thus, the first stage and second stage of study was conducted in 4 districts.

Time use pattern: There were sixteen agricultural operations, which were performed by the respondents in the state of Odisha. The brief findings of the study are as follows:

Crop Cultivation

- In Koraput district total number of hours spent by the a female agricultural worker in the crop cultivation related activities is 104.83hrs annually. The percentage of different manual activities such as harvesting, weeding and uprooting operations are

given in fig. 2.46 and harvesting is the most drudgery prone activity and thus were time consuming.

- In Jharsuguda district, total number of hours spent by the female and male agricultural worker in the crop cultivation related activities annually is 360.50hrs and 400.67hrs respectively. Transplanting is the most drudgery prone activity (Fig. 2.47).

Animal Upkeep

- Total number of hours spent by the female in Koraput district in the animal rearing activities is 2.00hrs daily and the percentage of different activities are given in fig. 2.48. However in Jharsuguda district, total number of hours spent by female and male in animal rearing activities daily is 2.79hrs and 1hr respectively (Fig. 2.49).
- High involvement of women was observed in cleaning shed/ cleaning the coop and gathering dung in Koraput district while in Jharsuguda district high involvement of men and women was observed in cleaning activities.

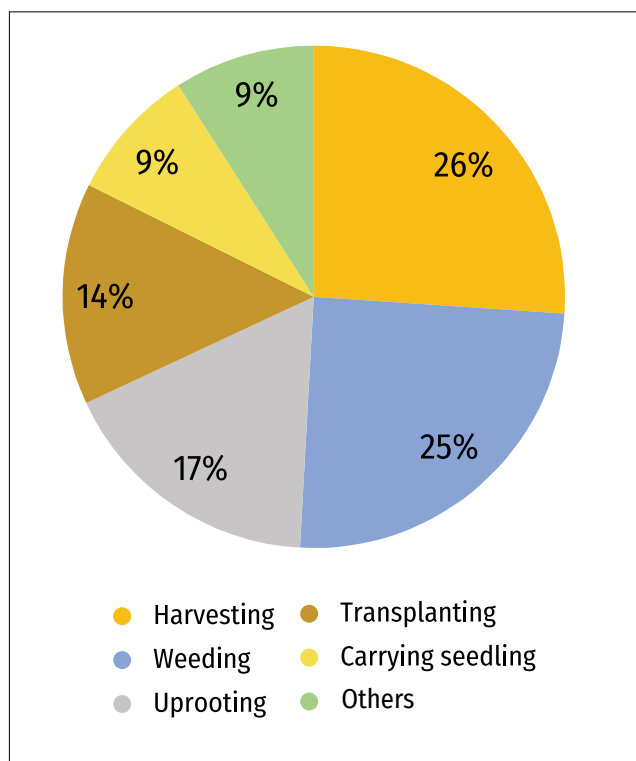


Fig. 2.46 Time use pattern of female agricultural workers of Koraput district in the crop cultivation activities

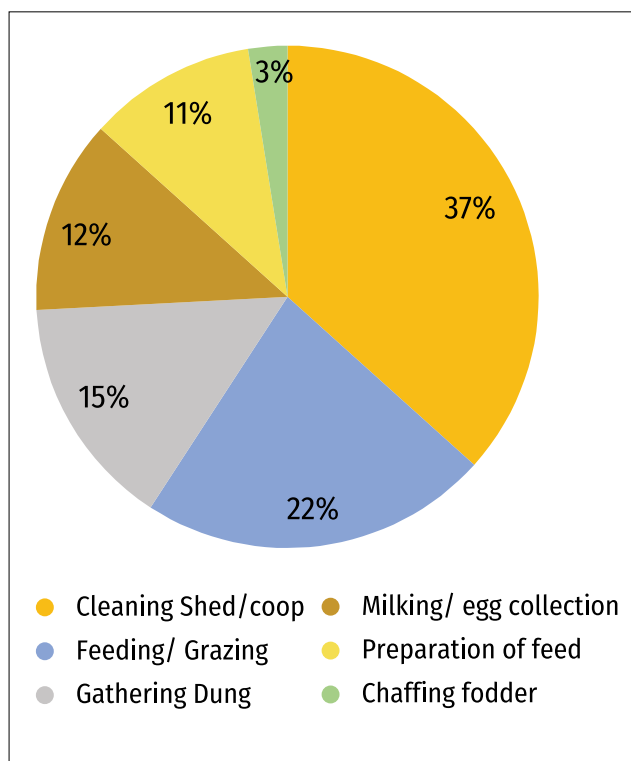


Fig. 2.48 Time use pattern of female of Koraput district in the animal rearing activities

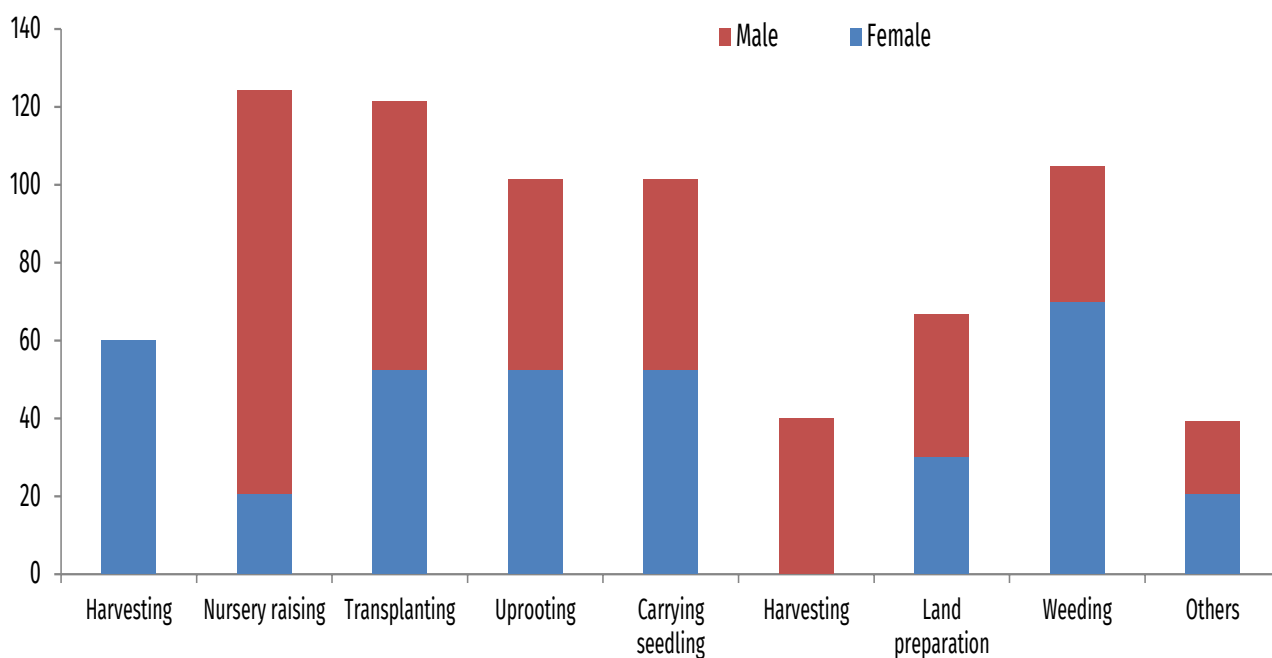


Fig. 2.47 Time use pattern of agricultural workers of Jharsuguda district in crop cultivation activities

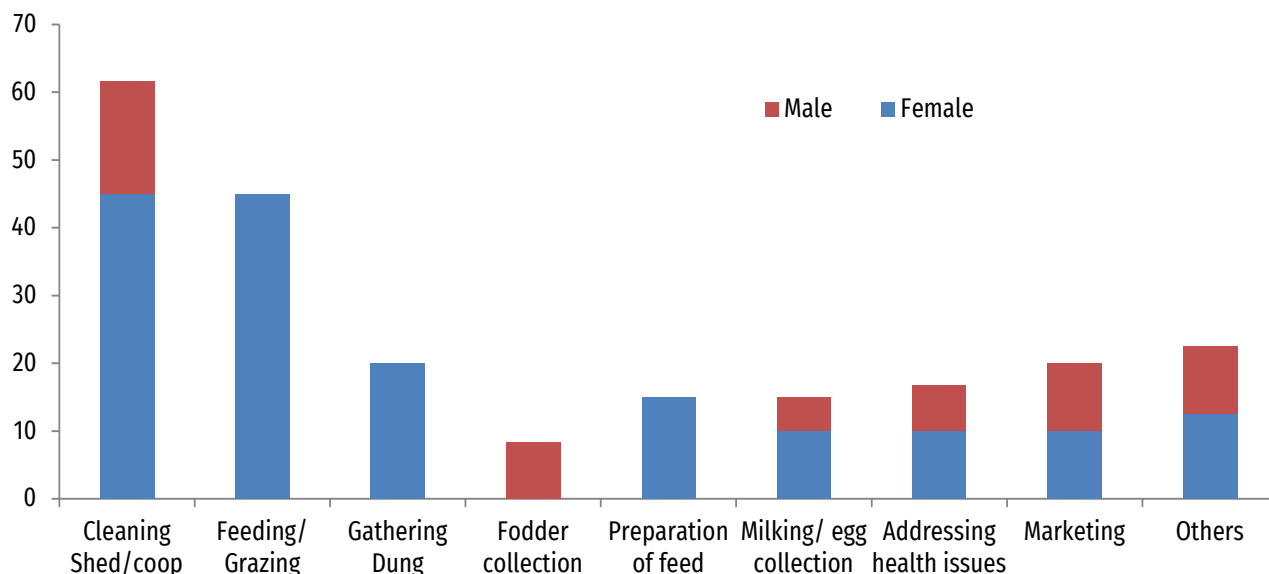


Fig. 2.49 Time use pattern of male and female of Jharsuguda district in animal rearing activities

2.1.14.2 Ergonomic Evaluation of Post Harvest Technologies in Fisheries Sector

Issues and constraints of men and women in post harvest fisheries

A survey was done in the fish markets of Odisha (small scale – 5 and large scale – 1) to obtain following data in post harvest activities of fisheries. The experience of the workers both male and female ranged from 4 to 12 years. Both performed cleaning, descaling, peeling, cutting, grading & vending operations. Difficulties faced by the workers were in operations like cleaning, descaling, peeling, cutting. The postures adopted by men and women were predominantly squatting and sitting. Pain was perceived by both in lower back, shoulder, knees. They suffered cuts in hand and finger leading to infections. They reported to taking tetanus shots as a mitigating measure for the same. Only indigenous tools like paniki & local made descaler were used by them in post harvest activities. Vending was done in open air and hence they were subjected to the atmospheric elements such as heat, cold, wind and in some cases pollution. The male respondents did admit to using cold storage facility to store excess fish.

Design considerations for CIFT manually operated fish descaler

- The handle design needs to be improved for comfortable grip & proper coupling with the hand.
- An additional grip handle needs to be provided

at the opposite end for correcting the imbalance experienced by the operator.

- The current support stand obstructs legs of the operator increasing the distance between the shoulder of the operator and handle, and leads to an uncomfortable working posture, thus it needs to be modified to reduce this distance.

A no load test was conducted for the manual fish descaler using male and female subject. The subject was given rest for 10 mins and HR rest was recorded. The descaler was operated for 20 mins, and HR work was recorded. Later heart rate was recorded every 1 min to obtain time required for recovery. It was found that the ΔHR ranged from 18 to 39 beats/min for female and for male it ranged from 6 to 38 beats per min. Females recovered in 2 to 3 mins while male recovered in 1 to 2 mins. The per cent of $VO_{2\max}$ for female ranged from 28 to 39 %, while for male it was from 30 to 35 %. Hence, ΔHR is less than LCP (i.e. 40 work pulses per minute) and $VO_{2\text{work}}$ is less than AWL (i.e., 35 % of $VO_{2\max}$) hence the work load is acceptable for manually operated fish descaler at no load condition.

A load test was also conducted for the manual fish descaler using five male and female subject. The details of the test are given in the table 2.15.



Fig. 2.50 Design consideration for CIFT manually operated fish descaler

Table. 2.15 Physiological study using CIFT manually operated fish descaler and hand tool

Subject	ΔHR (beats/min)	Per cent of VO_{2max} (%)	Cardiac cost (bpm/kg)	Output (kg/hr)
CIFT manual fish descaler				
Female	37.5	60.73	22.20	18
Male	15.5	31.70	9.18	18
Hand tool				
Female	11.5	46.34	24.33	16.44
Male	12	23.17	15.79	15.2

It was observed that the ΔHR for both male and female, while operating descaler is lower than the LCP (40 bpm), but the per cent VO_{2max} is higher than 35 %. But it may also be noted that the cardiac cost for descaler operation

is lower than that of hand tool. Thus it can be concluded that the use of descaler is beneficial for marketing and vending, where large amount of fish has to be descaled in less amount of time.

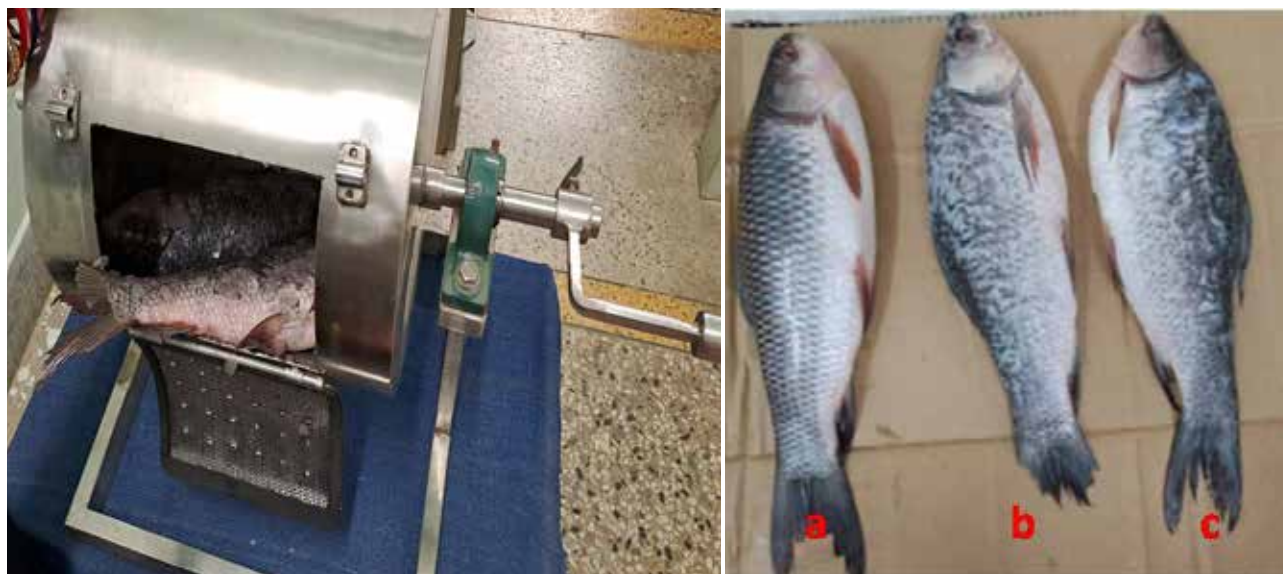


Fig. 2.51 Fish in the descaler after operation
(a – Before descaling, b – Descaled with CIFT manual descaler, c – Descaled with hand tool)

2.1.14.3 Drudgery Assessment of Women Involved in Selected Livestock Management Systems

An experiment was conducted for recording the physiological data and postural analysis in activities involved in maintaining a goat shed. Male and female subjects were selected for the same. The subject was

given rest for 10 mins and HR rest was recorded. Then subject was asked to perform the given activity and at the end of the activity HR work was recorded (Table 2.16).

Table 2.16 Physiological evaluation of female and male subject involved in different operations of goat management

Activities	ΔHR	Per cent of VO_{2max}	ΔHR	Per cent of VO_{2max}
	Female		Male	
Gathering dung	45	51.50	29	38.10
Cleaning	23	32.56	31	40.39
Grazing	14	24.84	7	21.28
Fodder collection	36	40.29	26	41.15
Feed preparation	31	38.88	18	31.22
Feeding	22	31.16	20	34.27

Development of walk behind type cleaning tool for Goat shed operation

A walk behind type tool was designed and developed for cleaning and scooping operation to reduce the drudgery. With this tool the cleaning activity which is usually done in bending or squatting posture can be done in standing/walking posture. This will eliminate the stress of repeated bending on the spinal cord. Two type of cleaning units were fabricated and tested with respect to performance

and physiological cost (Fig. 2.52). The first type has a scooping pan, which collects the dung in one go, when the pan is filled the collected material is discarded. The second pan is scraper type and it is mounted at an angle (45° to 135°) to the direction of the travel. It scrapes the dung and deposits it to the side simultaneously.



Fig. 2.52 Type 1 cleaning unit (scooper) & Type 2 cleaning unit (scraper)



Fig. 2.53 Operation with Type 1 cleaning unit (Scooper) & Type 2 cleaning unit (Scraper)

Table 2.17 Physiological study of existing method & developed walk behind type tool

Type of scooper/scraper	Δ HR	Recovery time(min)	Per cent of VO_{2max} (%)
Broom	32	3	36.07
Type 1	25	2	32.56
Type 2	4	2	20.62

It was observed that gathering dung with the brooming action leads to higher value of per cent VO_{2max} as compared to the scooping and scraping units (Table 2.17). Thus the walk behind type cleaning device will reduce the drudgery.

2.1.15 ALL INDIA CO-ORDINATED RESEARCH PROJECT ON WOMEN IN AGRICULTURE

RESEARCH PROGRAMME-1: CREATE, CHARACTERIZE, CLASSIFY AND MAINTAIN THE REPOSITORY OF DATA TO ANALYSE THE DYNAMICS AND ROLE OF WOMEN IN DIFFERENT SECTORS OF AGRICULTURE

2.1.15.1 Development of Database Repository to Analyse the Dynamics and Role of Women in Agriculture and Allied Sectors in Selected Agro-Ecological Regions (2020-26)

The study of role of women in agriculture and allied sectors in Ludhiana district of Punjab revealed that household work and child care was considered as women exclusive work by majority of the respondents. Agriculture was male dominated while dairy was women dominated in majority of the households. Shed cleaning, milking, feeding animals, making cow dung cakes, milk processing, care of new born, pre and post natal management, selling manure and cattle shed management were performed by women. In Dindugal, Theni and Thenkasi districts of Tamil Nadu, the major and minor activities performed by women in different agriculture crops such as paddy were transplanting, weeding, harvesting, threshing, cleaning, straw separation; in guava cultivation were planting, weeding, grading, marketing; maize were cob picking and in cotton cultivation women performed thinning, weeding, plucking. In sericulture women performed laborious work like mulberry leaf cutting, cleaning, tray changing and feeding as everyday activities. In fruit production cent per cent were involved in harvesting and weeding, 60-80 per cent in transplanting, grading, retail marketing and drying operations and very less (20-30%) in land preparation and wholesale marketing. In vegetable production

transplanting, hoeing, weeding and harvesting of vegetables were performed exclusively by farm women, where as ploughing, retail marketing were performed by 15-30 per cent of women. They were involved in grapes harvesting and processing. In cardamom production 100 per cent of the operations i.e. harvesting, shade drying and processing are performed by farm women. Women are the major gatherers of a wide range of Non Timber Forest Products (NTFP) for subsistence and as a source of income. They were involved in medicinal plants collection and the same was found to be the source of income for 35 per cent of the women. Collecting firewood is the most widespread activity for poor women. Irrespective of district, women involved in dairy farm activities perform the following functions like shed cleaning, grazing, milking, water supply, feed collection and feeding, animal washing, taking care of young ones. In Andhra Pradesh, women dominated in sowing, transplanting, weeding intercultural operations, harvesting, grading and sorting threshing, dehusking, cleaning, shelling, grading and storage while men alone participated in technical orientation and marketing strategies.

RESEARCH PROGRAMME-2: STANDARDIZATION OF TECHNIQUES FOR LIVELIHOOD ANALYSIS AND GENDER MAINSTREAMING IN AGRICULTURE

2.1.15.2 Assessment of Livelihood Status of Farm Women and Appropriate Interventions for Enhancement of Livelihood in Different Agro-Ecological Regions (2020-26)

In Ludhiana district of Punjab it was observed that 23 per cent of respondents were engaged in agriculture along with business, followed by 20 per cent who opted agriculture and allied activities as occupation. Whereas, 18 per cent of the respondents were doing agriculture alone and 17 per cent were doing agriculture with service. However, just eight per cent were engaged in agriculture and labour work. Among the respondent the food and nutritional security was found to be high to moderate while dietary diversity was moderate indicating that there is need and scope of diversity in food groups. The financial security was found to be low indicating the need for capacity building of the farm women with various entrepreneurial skills. The health security was moderate to low. Educational and social security ranged from high to moderate. The skill security was moderate to low.

The market inclusion security was moderate to low. The ecological security levels were found to be of moderate level. Overall, it can be concluded from the data that the livelihood security levels for many aspects were either low or moderate.

In Ayakudi village, Palani block, Dindigul district, the food and nutritional security score of 7 to 9 reveals that majority of the food categories have been included in their regular diet. Analysis of financial security revealed that mostly they belonged to BPL families (53%). Health security was found to be better due to the presence of Primary Health Centre (PHC) and the villagers (83%) utilized its services. It could be observed that around 69% of women were educated up to primary school level. Other securities namely social, skill, market inclusion and ecological

were found to be low and interventions are needed to create awareness about these aspects. The survey done in Adilabad and Mahabubnagar district inferred that majority of the respondents (39%) depended mainly on agriculture alone, followed by business alone (26.50%), Agriculture + Labourer work (15.50%), Agriculture + Allied activities (Animal Husbandry, Fisheries etc.) (8.00%),

Agriculture + Business and Agriculture + Service (5.50%) respectively. Out of the total respondents, majority of the respondents consumed oils and condiments and spices regularly, followed by sugar and other carbohydrate foods (84%), milk and milk products (83%), Vegetables (66.50%), pulses and legumes (33.50%), fruits (18%), eggs (13.50%) and meat (11%).

RESEARCH PROGRAMME 3: COMMUNITY-BASED TECHNOLOGICAL INTERVENTIONS FOR FOOD, NUTRITION AND LIVELIHOOD SECURITIES AND ENTREPRENEURSHIP DEVELOPMENT FOR FARM WOMEN

2.1.15.3 Promotion of Gender Equity through Technological Interventions and Entrepreneurial Development (2020-26)

In Ludhiana district of Punjab, only 13.2 and 12% respondents were actively running their enterprise. Around 4% of the surveyed women were found to participate in social groups with maximum participation in SHG. Almost all the respondents (99%) had no knowledge about the government schemes related to entrepreneurship. Majority of the surveyed women had positive attitude towards running an enterprise. Manufacturing was the most preferred enterprise among women. The respondents (81.34 %) agreed that lack of proficiency/ competence to start an enterprise was the basic constraint for enterprise development.

Out of all, 63.56 and 66.18 per cent women agreed that sale of product and competitors of the area are the major obstacles to be faced for running a profitable enterprise. Majority of the women i.e., 53.29, 56.29 and 56.89 per cent agreed that financial institutions take a lot of time for documentation, sanctioning of loan and for disbursement of loans. Majority of the respondents did not possess knowledge of starting an enterprise (57.14%), skills (54.81%), procedure (68.22%), type of enterprise (43.44%), capital required (63.56%), funding agencies (60.35%), loan procedures (57.73%) and other financial aspects to start an enterprise. More than half of the surveyed women were unaware about the business practices like production, distribution, promotion and selling of product (81.63%), government support (59.18%), support from NGOs (55.98%), social workers (55.39%) and

also unaware about the channels of distribution to sell (58.31%).

In Ayakudi village, Palani block, Dindigul district majority of the farm women (48 %) were marginal and had small land holding size less than 5 acres. The majority (62%) of farm women have not taken part in any social organization. Regarding enterprise related decisions, only 12 per cent of respondents had enterprise in the area of coir making, milk retailer and silk rearing.

In Rangareddy and Karimnagar districts of Andhra Pradesh for 85.2% respondents, the major crop enterprise was paddy followed by commercial crops i.e. cotton and maize (77.2%) and also with respect to social participation, 90% of the respondents participated in SHG meetings and maximum number (96%) of the respondents were not involved in any type of entrepreneurial training programmes, as well as they don't have awareness towards government schemes (state/ central) related to entrepreneurship. The proficiency of women with regard to entrepreneurship development was assessed and found that 70% of the respondents had not thought of running or starting own enterprise because 35.3% of respondents felt that they don't have family support and 18.3% of respondents felt fear of failure. The perceptions of farm women with regard to entrepreneurship development were found to be positive (28%) to start an enterprise.

RESEARCH PROGRAMME 4: VULNERABILITY FRAMEWORK AND DRUDGERY REDUCTION FOR WOMEN IN AGRICULTURE

2.1.15.4 Identification of Gender Gaps by Assessing Vulnerability Indices for Climate Change and Approaches to Minimize Occupational Drudgery through Technological Interventions (2020-26)

Assessing the vulnerability indices for Climate change and occupational drudgery of farm women in various agro-climatic regions to identify gender gaps

In Punjab respondents agreed that there is increase in

flowering, fruiting, crop ripening time; incidents of disease in crops; insects/pests in crops and use of chemicals. They also agreed to change in temperature over last 10 years. Majority viewed this climate change is due to burning of paddy and wheat straw. They also perceived that there

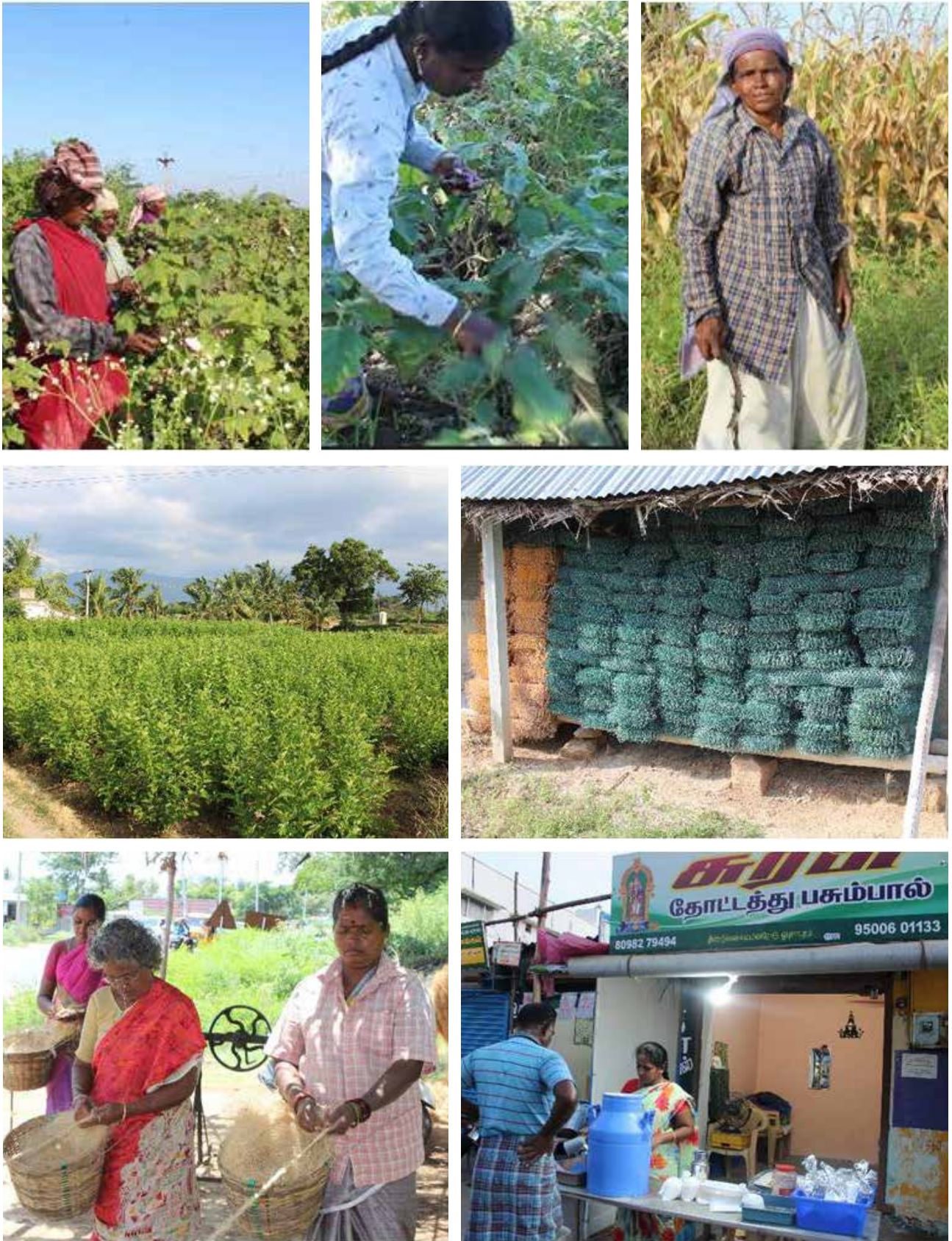


Fig. 2.54 Involvement of women in production and post-production activities

is increase in overall food production (91.67%). Most of the respondents feel that there is decrease in waterborne diseases. They reported that there is no impact/ change on community assets, crop diversity, social conflicts and wildlife attack. Most of the respondents (96.67%) opined that due to temperature variation they are resorting to use of hybrid varieties followed by improved varieties, zero tillage and mulching. In Ayakudi village, Palani block, Dindigul, around 40% of respondents expressed that there was an increase in the changes in the flowering and fruiting time while 64% agreed that the incidence of pest and disease has decreased owing to the increased use of pesticides in agriculture. Majority (88%) of farm women reported increased incidence of wildlife attack. The major climate change effect in the selected region was heavy rainfall, drought and increased pest attacks. Majority of farm women expressed that natural source of water and water for drinking purpose have decreased due to climate change. About 46 per cent of people from the selected farmers were changing their job due to heavy rainfall whereas 24 per cent of people leased their land. 32 per cent of farm women leased their land to others during drought situation. Due to heavy rainfall, 72 per cent of people adopted intercropping for additional income from farm, while 28 per cent of farm women opted for growing vegetables in off season. During drought, 68 per cent of farm families use mulching to reduce soil evaporation in crop field. Twenty four per cent of farm women follow crop rotation during drought condition to cope up the situation. Forty per cent of farm women follow Indigenous Technique Knowledge (ITK) to control pest and disease attack in crop field and also for storage. Around 24 per cent of farm women use crop insurance during drought conditions.

Assessing the existing farm tools developed and validated by AICRP and identifying the gaps for drudgery reduction.

Two technologies i.e., finger guards (Nakhalya) and digging tool developed by Department of Family Resource

Management, VNMKV, Parbhani and Punjab Agricultural University were tested and validated. The highest workload faced by the respondents was during earthing up (4.16). The postures adopted by the respondents while uprooting the turmeric were bending, sitting and squatting posture. The uprooting of turmeric by improved tool, i.e., with the use of finger guard and digging tool resulted in reduction of pain in upper arm, lower arm, hand and wrist as compared to the pain felt while working by conventional tool. In Andhra Pradesh cent per cent of the farmers found the manual weeding, harvesting and transplanting to be demanding in nature whereas after giving the drudgery reduction technologies i.e. long handle weeder, ring cutter and sapling transplanter as interventions they found reduction in work demand. Further, the posture analysis was done using standardized scales which revealed that Cent per cent of the farm women found adopting awkward postures while manually performing harvesting, transplanting and weeding, whereas when validated farm tools were used by them, they felt lessening of the drudgery caused due to awkward postures. The MSD'S experienced while performing the activity was assessed using body pain 5 point rating scale. With regard to manual weeding activity, cent per cent of women were experiencing pain severely sometimes in the back region followed by 66 per cent had pain moderately in the lower arm region. The 80 per cent of the sample were found having moderate pain always in the legs, 21 per cent said there was occurrence of cramps in the legs. This might be due to adopting the squatting posture for longer durations while performing the weeding activity. The manual harvesting activity had caused pain in the fingers (83%), the back (71.5%) based on the stature of plant and sometimes cramps in the fingers frequently. At the same time, 96.3 % of respondents acknowledged the feeling of pain always in the back while performing sapling transplanting activity manually and moderately severe (3.7%) as they were working in bending posture for longer duration. The 33.6 per cent revealed that they sometimes had stiffness in lower extremities.

RESEARCH PROGRAMME NO. 5: ASSESSMENT, REFINEMENT AND POPULARIZATION OF GENDER FRIENDLY TECHNOLOGIES AND SKILL ENHANCEMENT OF FARM WOMEN

2.1.15.5 Identification, Assessment, Refinement/Development and Popularization of Different Gender Friendly Technologies for Skill Enhancement of Farm Women in Different Agro-Ecological Regions (2020-26)

The study in Ludhiana and Jalandhar districts of Punjab revealed that there was lower access of women to Govt. schemes, financial aids, subsidies and other extension services. Value addition to crop biomass and farm waste especially through mushroom cultivation and vermin composting; value added products through apparel

designing and traditional embroideries were identified as gender friendly technologies. In Ayakudi village of Palani Block, Dindigul district the women farmers had very low access to the government schemes, financial aids, subsidies and other extension services. They also lack in knowledge in using drudgery reducing tools.

They also lack the technical knowledge on exploitation of resources and locale based cropping pattern. While assessing the need based technologies requirement in agriculture and allied sectors most of the farm women expect relevant to Integrated Pest Management (IPM) and Integrated Nutrient Management mushroom cultivation, bee keeping, dairy, livestock and value addition of agriculture and horticulture crop. In Rangareddy and Nagarkurnool districts of Andhra Pradesh, most of the respondents have expressed their concern on poor yield from local traditional varieties due to several biotic and abiotic factors (52%), poor market demand and low return from rice (24%), lower profitability from

conventional farming (12%), labour availability and high cost (8%) and other issues (4%). In Ranga Reddy district, gender friendly technologies like beekeeping, sericulture, poultry rearing (chicks) by utilizing farm and household waste and low-cost technologies for preservation of vegetables are planned to be assessed and popularized keeping in view of prominent area under horticulture (vegetables and leafy greens). In Nagarkurnool district, gender friendly technologies like beekeeping, drudgery reducing technologies, vermin composting, organic products, fodder cafeteria are planned to be assessed and popularised keeping in view of prominent area under conventional farming.

2.1.16 Nutri- Smart Village Programme

In order to commemorate with the 75th Independence of India, a programme on “Nutri Smart Village” has been initiated to strengthen the POSHAN ABHIYAN by ICAR-Central Institute for Women in Agriculture, Bhubaneswar. This new initiative aims to reach out 75 villages across India through the network of AICRP on Women in Agriculture and ICAR-CIWA. The objectives of the Nutri Smart Village are promoting nutritional awareness, education and behavioural change in rural area involving farm women and school children; harnessing traditional knowledge through local recipes to overcome malnutrition and implementing nutrition sensitive agriculture through homestead agriculture and nutri-garden. The AICRP centres adopted 5 villages each constituting a total of 65 villages & 10 villages have been adopted by ICAR-CIWA with an aim to develop 75 Nutri-Smart villages. Total

2250 households (30 from each village) were selected as respondents. To achieve the goal of malnutrition free villages, intensive awareness campaigns and field activities were undertaken for focusing on the concept of Nutri-village/Nutri-food/Nutri-diet/Nutri-thali etc. Awareness among the women farmers was also created about their legal rights in all walks of life. The Technical plan includes assessment of nutritional status of farm families in selected villages, established nutri-gardens in villages and schools, promotion of mixed cropping systems/crop diversification/ integrated farming system with incorporation of minor millets, nutritional awareness and education through ICTs.

The baseline survey indicated the poor purchase of the protective foods (fruits, vegetables) and protein rich foods



Fig. 2.55 Farm woman tending to her nutri-garden



Fig. 2.56 Poshan thali



Fig. 2.57 Hon'ble DDG (Agricultural Education), ICAR visiting the nutri-food exhibition

(pulses, meat, fish, sea foods, egg and milk). Although, the purchase of staple foods like rice, wheat, ragi and other millets across the states was significant, but still needs to be correlated with family size, vulnerable groups etc to satisfy their daily needs. The food habit tendency toward non-vegetarianism ranged from 99% in Madurai (Tamil Nadu) to 97% in Bangalore (Karnataka) to 50% in Tura (Meghalaya). The lowest number of non-vegetarianisms was reported in Hissar (Haryana), Parbhani (Maharashtra), and Udaipur (Rajasthan). The vegetarian population was highest in Parbhani, followed by Hissar and Udaipur. Hyderabad had the highest proportion of ovo-vegetarian population. The data on frequency of food consumption pattern indicated that most of the respondents consumed energy giving foods such as cereals and millets, fat and oils, sugar and jaggery on a daily basis. Pulses are being consumed daily by 57% of the total respondents only. Amongst vegetables group, roots and tubers and other vegetables were consumed daily, while green leafy vegetables were consumed only weekly in these villages. Hence, based on the identified socioeconomic and nutritional gaps, appropriate interventions were planned and implemented in all the adopted villages by adopting various nutri-smart technologies.

The Body Mass Index (BMI) analysis indicated that majority of the respondents were normal, followed by obesity I, overweight, underweight, and obesity II. The mean BMI value was highest in respondents from Madurai and lowest in Jorhat. In Hissar, the largest number of respondents, followed by Palampur, Parbhani, Udaipur, and Hyderabad had low health risks. The data on the morbidity status of the subjects for the past three months depicted that body ache was the most common problem reported followed by fatigue, joint pain, and back ache, respectively. The Knowledge, Attitude and Practice (KAP) of respondents towards nutrition revealed that the respondents from Palampur, Ludhiana and Pantnagar had the maximum knowledge score, Bangalore had the highest attitude score while the respondents from Parbhani, Jorhat, and Pantnagar showed the highest score for healthy practices. A total of 335 awareness campaigns, 24 healthy recipe competitions, 548 nutri-gardens and 90 nutri-farming were established under this Nutri-Smart Village programme as per the needs of the farming community, available resources and market preferences for promoting gender friendly entrepreneurship, nutritional enhancement and livelihood upliftment of farm families.

2.2. EXTERNAL FUNDED PROJECTS

2.2.1. Women Empowerment and Gender Sensitization–Developing a Model for Bridging Gender Gap (NASF Project) 2019-2023

Lipi Das, Praveen Jakhar and Ankita Sahu

ICAR-Central Institute for Women in Agriculture, Bhubaneswar conducted the study in a cluster comprising of two villages viz., Sankilo and Tentapur under Nischintakoili block of Cuttack district of Odisha by adopting 40 farm women. On the basis of the identified critical gender gap indicators, interventions were provided and field trials were conducted for the year 2022

under three modules viz., Livelihood Enhancement Model for the small and marginal women farmers, Nutritional Security Model for medium income group women farmers and Entrepreneurship Promotion Model for big women farmers through Institute-Industry-Stakeholders' Linkages.

Livelihood Enhancement Model: An approach ascertaining income enhancement

Under Livelihood Enhancement Model, demonstration of high yielding and hybrid varieties of vegetables resulted

an increase in average gross return from Rs 1,16,923/- to Rs 3,15,005/- and net return from Rs 50,107/- to Rs 1,89,955/-



Fig. 2.58 Gender sensitive schematic extension model for bridging the gender gap in agriculture

per annum. A yield advantage of about 45.51-68.93% and incremental income of 155-203% was obtained. The introduction of high yielding fruit crops resulted in yield advantages of about 47.85-49.52% with an incremental income of 69.74-119.30%. In case of rice production, average net return of Rs 1,13,000/- and gross return of Rs 1,26,290/- per ha along with 64.40% yield advantage and 145.26% increase in net return were recorded under demonstrations of high yielding varieties when compared with existing farmers' variety and cultivation practice.

As a point of intervention paira cropping (Rice-followed by black gram) was demonstrated to popularize the cropping

system as a strategic approach to enhance farm income and to restore soil fertility. After harvesting of kharif rice, high yielding black gram (var. PU-31) was introduced in the rice-fallow and rice local pulse system. An average yield of 1.28 t/ha. was recorded in black gram(var. PU-31), which registered an increase in yield of 63.08% over previously grown local varieties. An increase in average gross return of Rs 33,050/- and average net return of Rs 29,687/- per annum were also obtained. The nutritional benefits of black gram indicated that the intake of black gram being rich source of protein enhanced the protein intake of farm families.

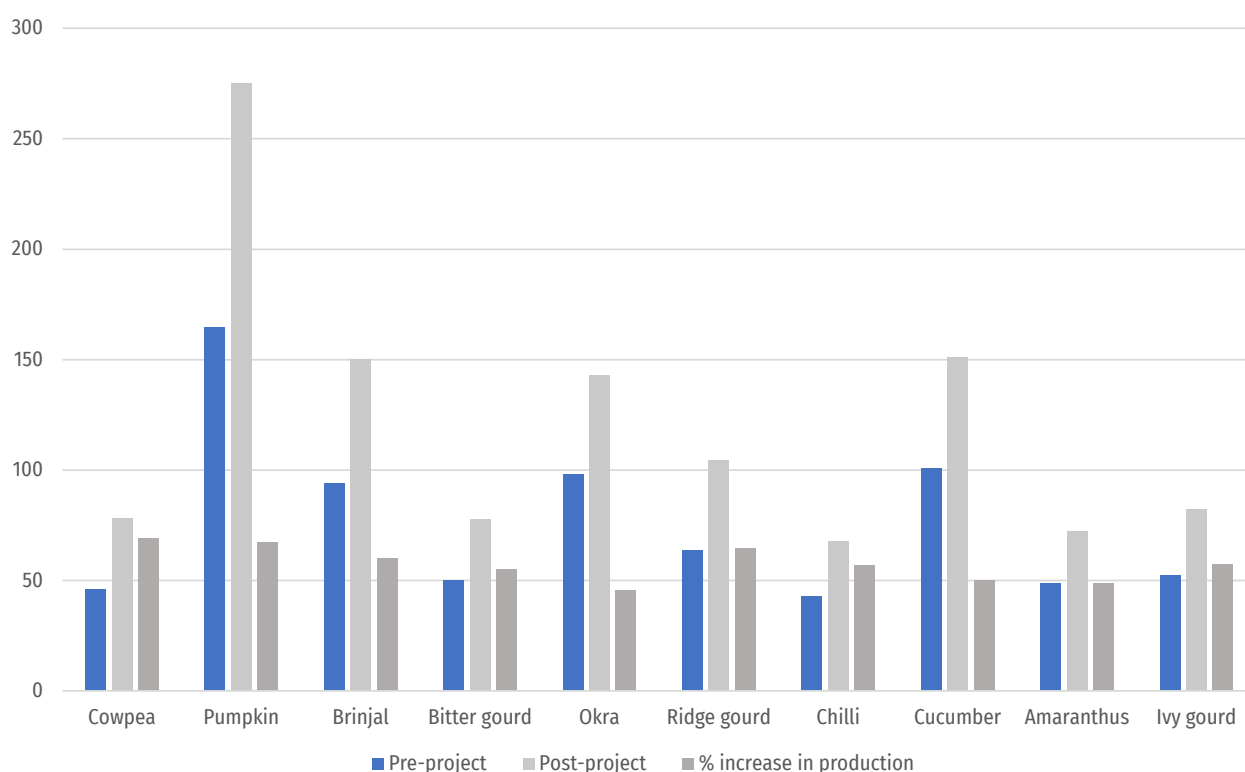


Fig. 2.59 Vegetable production status

Nutritional Security Model: A Step towards Nutritional Security

This model included the interventions of bio-fortified paddy variety and popularization of "Nutri-Farms" in small patches in their homestead areas to ensure nutritional fortification of farm families. Additionally, it supplemented the income of farm families. Varietal demonstration of two newly released bio-fortified rice varieties viz., CR-Dhan 311(Mukul) and CR-Dhan 315, produced 5.25t/ha and 5.10t/ha, respectively. Introduction of high protein content high yielding varieties of rice,

CR Dhan 311 (Mukul) and CR Dhan 315, added additional mean protein yield of 3.26 and 3.30 q/ha to the diet of the farm families. These bio-fortified varieties with higher zinc content (20-22 ppm) also supplemented the zinc requirement of women and child. The nutritional benefits accrued to the farm families through nutri-farms established in their homesteads is depicted in the table 2.18.

Table 2.18 Nutritional benefits accrued to the farm families through nutria-farms

Crop Types	Crop	Variety	Average Household consumption (kg)	Average Unit consumption (kg)	Average per day (kg)	Average Nutritional benefits per person/per day during cropping season*						
						Carbohydrate (g)	Dietary Fibre (g)	Protein (g)	Calcium (mg)	Iron (mg)	Minerals (g)	Energy (Kcal)
Leafy vegetables	Amaranthus	Mix	1448	14.48	120	4.56	7.32	6.24	396.00	22.44	3.36	45.6
	Spinach	All green	1650	16.50	120	3.48	0.72	2.40	87.60	1.368	2.04	31.2
Legumes	Cowpea	Sumantha	1562	15.62	120	65.40	4.56	28.92	92.40	10.32	3.84	387.6
Cucurbits	Bitter gourd	Indam Sofia	1556	15.56	120	12.72	2.04	2.52	27.60	2.40	1.68	72
	Ridge gourd	Rama	2090	20.90	130	4.42	0.65	0.65	23.40	0.507	0.39	22.1
	Pumpkin	Arjuna	5503	55.03	200	9.20	1.40	2.80	20.00	0.88	1.20	50
	Ivy gourd	Arka Neelachal Sabuja	2131	21.31	120	4.08	1.20	1.68	30.00	1.08	0.60	25.2
	Cucumber	VNR-Krish	3025	30.25	130	3.25	0.52	0.52	13.00	0.78	0.39	16.9
Cole crops	Cabbage	Rare ball	6080	60.80	150	6.90	1.50	2.70	58.50	1.20	0.90	40.5
	Cauliflower	Barkha	5040	50.40	150	11.40	3.00	8.85	939.00	60.0	12.3	99
Solanaceous vegetable crops	Tomato	Chiranjeevi	7525	75.25	100	3.60	0.80	0.90	48.00	0.64	0.50	20
	Brinjal	VNR-Utkal	3004	30.04	120	4.80	1.56	1.68	21.60	0.456	0.36	28.8
Root & Tuber crops	Radish	Rani Super	5545	55.45	130	4.42	1.04	0.91	45.50	0.52	0.78	22.1
	Carrot	Coroda improved	4015	40.15	120	12.72	1.44	1.08	96.00	1.236	1.32	57.6
	Potato	Chandramukhi	5078	50.78	200	45.20	0.80	3.20	20.00	0.96	1.20	194
Others	Colocasia	Muktakeri	2210	22.10	130	4.68	0.78	0.39	78.00	0.65	1.56	23.4
	Okra	Radhika	2857	28.57	120	7.68	1.44	2.28	79.20	0.42	0.84	42
	Plantain	BananaBonthal	6275	62.75	250	68.00	1.00	3.00	42.50	0.9	2.00	290
	Dessert Banana	Grand Naine	6040	60.40	250	68.00	1.00	3.00	42.50	0.9	2.00	290
	Papaya	Red lady	7500	75.00	200	14.40	1.60	1.20	34.00	1.0	1.00	64
Total				801.34	2980	358.91	34.37	74.92	2194.80	108.65	38.26	1822

Entrepreneurship Promotion Model: A Stepping stone towards Self reliance (Atmanirbhar)

Agri-entrepreneurship was encouraged among the women farmers through promotion of mushroom farming. An entrepreneurship promotion model was also designed for implementation in a convergence mode through Institute-Industries-Stakeholder's linkages. The project implementation period, resulted in skill-

upgradation of women farmers in mushroom cultivation through adoption of scientific package of practices. The comparative analysis of yield returns and economic returns from mushroom cultivation revealed an enhancement in production and income of about 55% and 82%, respectively (Fig. 2.60).

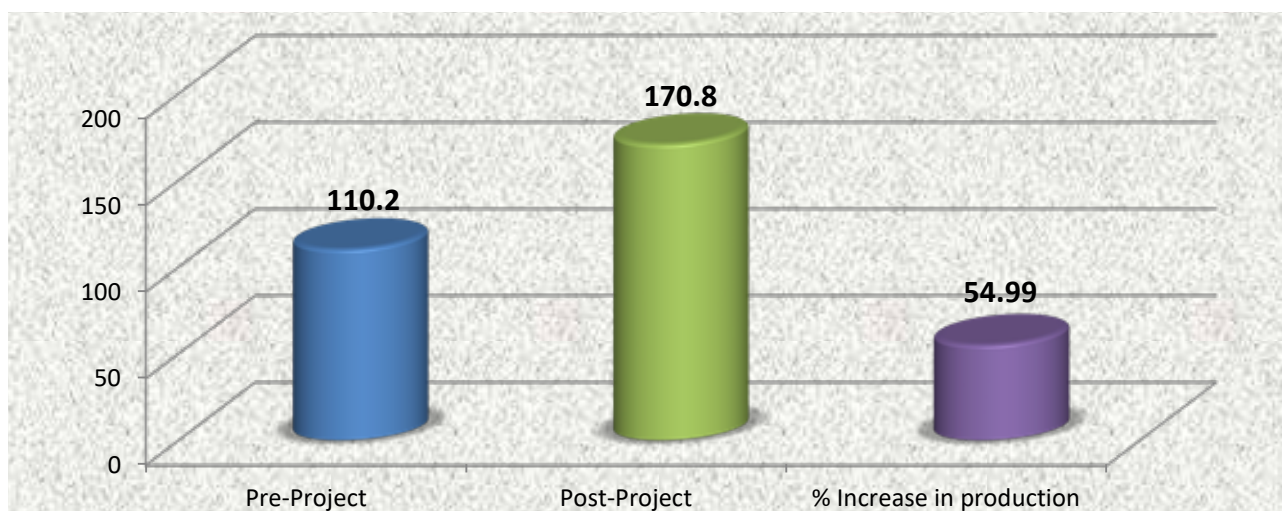


Fig. 2.60 Yield advantages in paddy straw mushroom (in Kg)

A Women Farmer Producer Organization (WFPOs) i.e., “Ananya Farmer Producer Company Limited” was established with 90 members to strengthen the Agri-entrepreneurial approach of the identified farm women

cluster (Fig. 2.61). Sixteen capacity building programmes, seven demonstrations, twenty four field visits and three workshops were organised in the adopted villages.



Fig. 2.61 Women Farmer Producer Organisation

2.2.2. Gender Responsive Integrated Homestead Aqua-Horticulture (GRIHA) : A Sustainable Climate Resilient Approach towards Livelihood Diversification (NICRA GCG funded project) (2022- 2024)

Tanuja S, Lipi Das, Ananta Sarkar and Tania Seth

A concept on Gender Responsive Integrated Homestead Aqua-horticulture (GRIHA) has been developed as a sustainable climate resilient approach towards livelihood diversification (Fig. 36). The concept envisages strengthening the adaptive capacity of rural women to climate change including enhancement of their income and nutritional security through adoption of climate smart integrated homestead aqua-horticulture practices. Rural women have limited access to productive resources, technologies, services education and employment opportunities. Though increasing women's skill, access to information and knowledge about climate-smart aqua-horticulture options, the concept envisages the greater uptake of these technologies and practices by the farmers, and enhance the resilience of entire households and communities and food systems to climate-related shocks and changes. Climate change and nutritional security are intricately linked. The concept focuses on the utilization of resources available with the family which can be easily accessed by women for enhancing

the nutritional security under the changing climatic conditions. Climate smartness of various aqua cultural and horticultural interventions will be evaluated through expert survey before advocating its adoption by the farmers. The concept also focuses on the federation of women into farmer interest groups not only to improve their capacity in managing the homestead aqua-horticulture production but also to bear the shocks of changing climate through group efforts. The model has the components of baseline assessment, GRIHA design, creating evidence, scaling up and impact and outcomes. Model developed thus on Gender Responsive Integrated Homestead Aqua-horticulture (GRIHA) for livelihood improvement and empowerment of rural women could be popularized for large scale adoption by farmers living in similar ecosystems. The climate smart aquaculture interventions were identified based on expert survey. The interventions identified and the Climate Smart Agriculture (CSA) pillar which it supports based on expert survey are given in the table 2.19

Table 2.19 List of climate smart aquaculture interventions and the CSA pillar it supports

SN	Intervention	CSA pillars
1	Utilisation of homestead pond for integrated aqua-horticulture	1& 2
2	Participation of women in integrated homestead aqua-horticulture	1
3	Formation of women farmer interest groups at village level	1&2
4	Modified extensive farming of Indian major carps in homestead ponds	1&2
5	Polyculture of IMC with minor carps, medium carps	1&2
6	Production of stunted juveniles of IMC at village level for replenishment of stocks during grow out culture	1&2
7	Fencing of ponds with nets to prevent loss of crops during flood	1&2
8	Late stocking of homestead ponds with stunted juveniles/advanced fingerlings in flood prone areas	1&2
9	Culture of short term species like Tipalia or minor carps in seasonal ponds	1&2
10	Preparation of farm made aquafeeds using locally available raw materials	1, 2 & 3
11	Feeding management (for eg: Alternate day feeding)	1&3
12	Multiple stocking and multiple harvesting practices	1&2
13	Use of passive harvesting gear like gill net	3
14	Use of solar dryers in post harvest drying of fish and vegetables for use in lean season	1,2 & 3

CSA pillar 1- Sustainable increase in farm production and income

CSA pillar 2- Help in adapting and building resilience to climate change, risks and shocks

CSA pillar 3- Directly or indirectly reduce and /or remove emission of green house gases

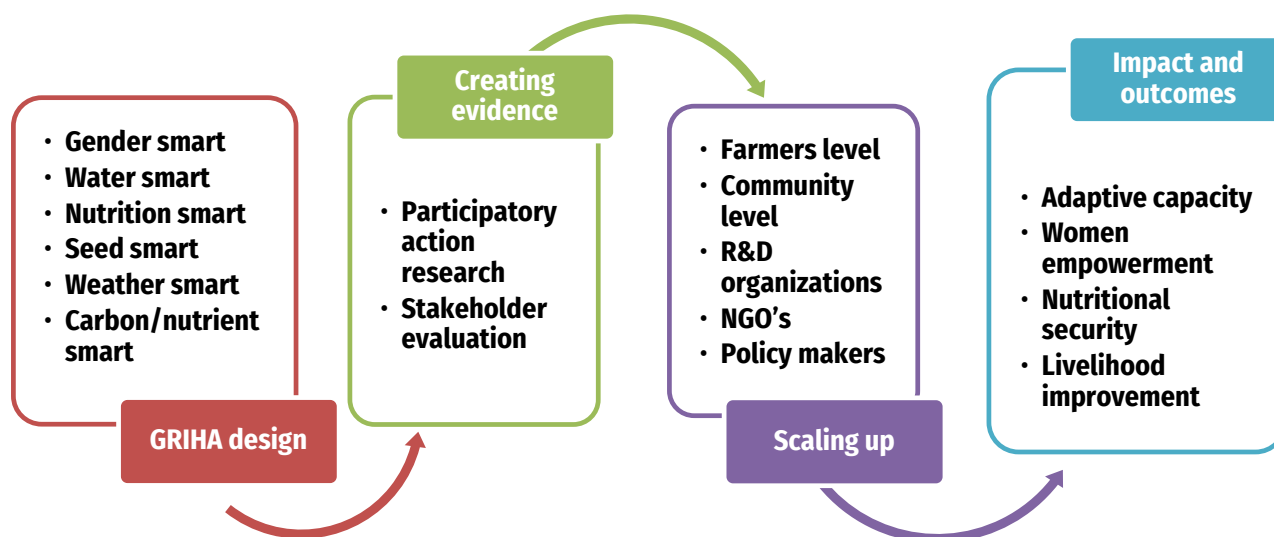


Fig. 2.62. Conceptual framework of GRIHA

2.2.3. Empowering Farm Women through Climate Smart Intensification and Diversification in Minor Irrigation Command Areas of Keonjhar District, Odisha (OIIPCRA Funded project) 2021-24

Praveen Jakhar, Sachidananda Swain, Sabita Mishra and Neetish Kumar

Climate Resilient Agriculture is a national priority. Under this theme, the research project aims to analyse, empower and demonstrate women friendly Climate Smart Agriculture Technologies (CSAT) and practices in 24 villages in a command area (507 ha.) of 7 Minor Irrigation Projects (MIPs) of Ghasipura, Anandpur and Harichandanpur blocks of Keonjhar district of Odisha. (Fig. 2.63) The technological interventions encompass varietal trials, frontline demonstrations (FLDs) and promotion of stress tolerant high yielding, nutri-rich crop varieties involving women farmers and value added processing through SHGs for higher income (Table 2.20).

A conceptual framework is an analytical tool used to show (cause-effect) relationships among different components (variables) of a research work. Overcoming gender inequality is a cornerstone of climate resilient agriculture development practices and has far-reaching benefits for adaptation and mitigation. Gender inequality in context of climate change can be regarded through two aspects A) women's differential vulnerability and adaptive capacity and B) role of women in mitigation and adaptation. Under the project, a study on gender-responsive Climate Smart Agriculture (CSA) was accrued out based on literature and secondary data available in public domain. Climate-Smart Agriculture stands on three major pillars: (1) Sustainably increasing agricultural productivity and incomes (2) Adapting and building resilience to climate change and (3) Reducing and/or removing GHG emissions. Beyond CSA practices, the institutions involved in climate change adaptation and mitigation need to partner with

women's based organizations to go beyond productivity and support income generation, credit, access loans, improved nutrition and health services. Gender-sensitive indicators of a particular CSA practice include numbers of women and men engaged in applying practices; they also measure the long-term change. These changes include women increased control on assets, participation in decision-making, knowledge, changes in behaviour, approach, awareness, empowerment, and improved economic status, food security and nutrition.

Ensuring the participation of farm women (FW) in the CSAT adoption is the strategic approach of the research project. User participation in technology development and transfer processes enables development of appropriate demand driven CSATs that readily fit into the agro-climatic and socio-economic conditions of different project villages. The important technologies popularised in 207 ha by 312 farm women (FW) as are follows:

1. Community paddy nursery for delayed planting (Area. 52 ha., FW: 80)
2. Direct seeded rice for promoting water use efficiency (30 ha., FW: 50)
3. Drum seeding of rice for water saving, less drudgery and timeliness in planting (30 ha., FW: 50)
4. Short duration black gram varieties suitable for late sowing (45 ha., FW: 62)
5. Crop diversification in Rice-fallows for livelihood security and resiliency (50 ha., FW 70)

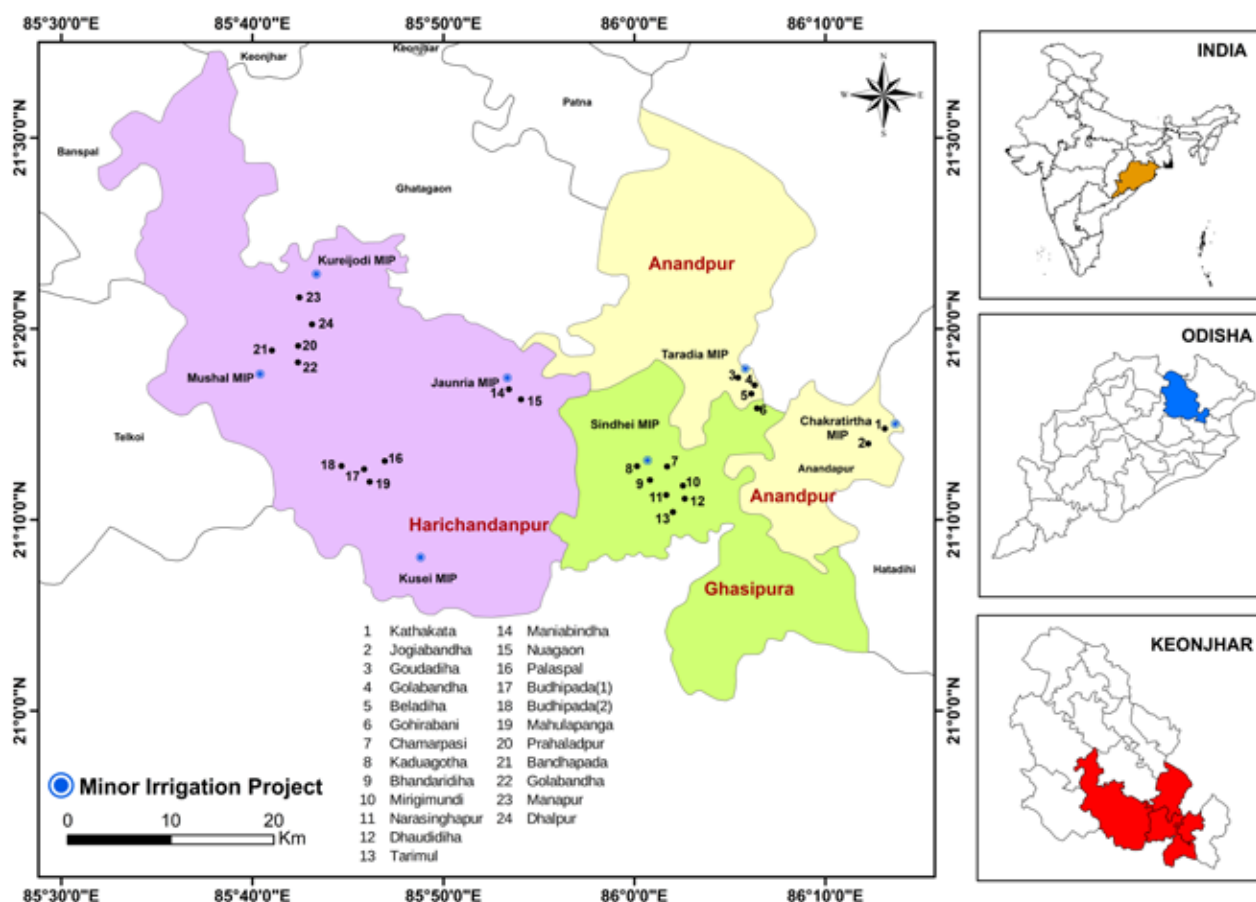


Fig. 2.63 Locale of study

Table 2.20 Climate resilient technology spread and adoption among farm women

S.No.	Domain	Technology	Coverage	Output	Impact
1.	Intensification	Increasing cropping intensity (Time & space). Rice – Fallows,	Quality seed distribution in 396 ha. in 26 villages of 3 blocks	Seed replication rate CI=126 to 200	Rice-fallow land to cultivation
2.	Diversification	Paddy to non-paddy area (Oilseeds, millets and pulses).	26 villages increase in the command area (53 + 328 ha)	Gain employment Sysem productivity	Income and soil health management
3.	Contingency	Planning for adaptation Flood mitigation, Drought escape	10 villages under 7 MIPs	Contingency planning	Adaptation for reduced vulnerability
4.	Resiliency	Climate resilient seeds, Live B, Mulching, SOC sequestration	SHC distribution to 50 FW Residue R-CP(10 nos.), VCB (10)	Input use effeciency Resource recycling	Mitigation
5.	Awareness	CBP and Mobile Advisory	15 women incl. VLCRMC	Progressive Farmers	Climate smart village in 7 MIPs

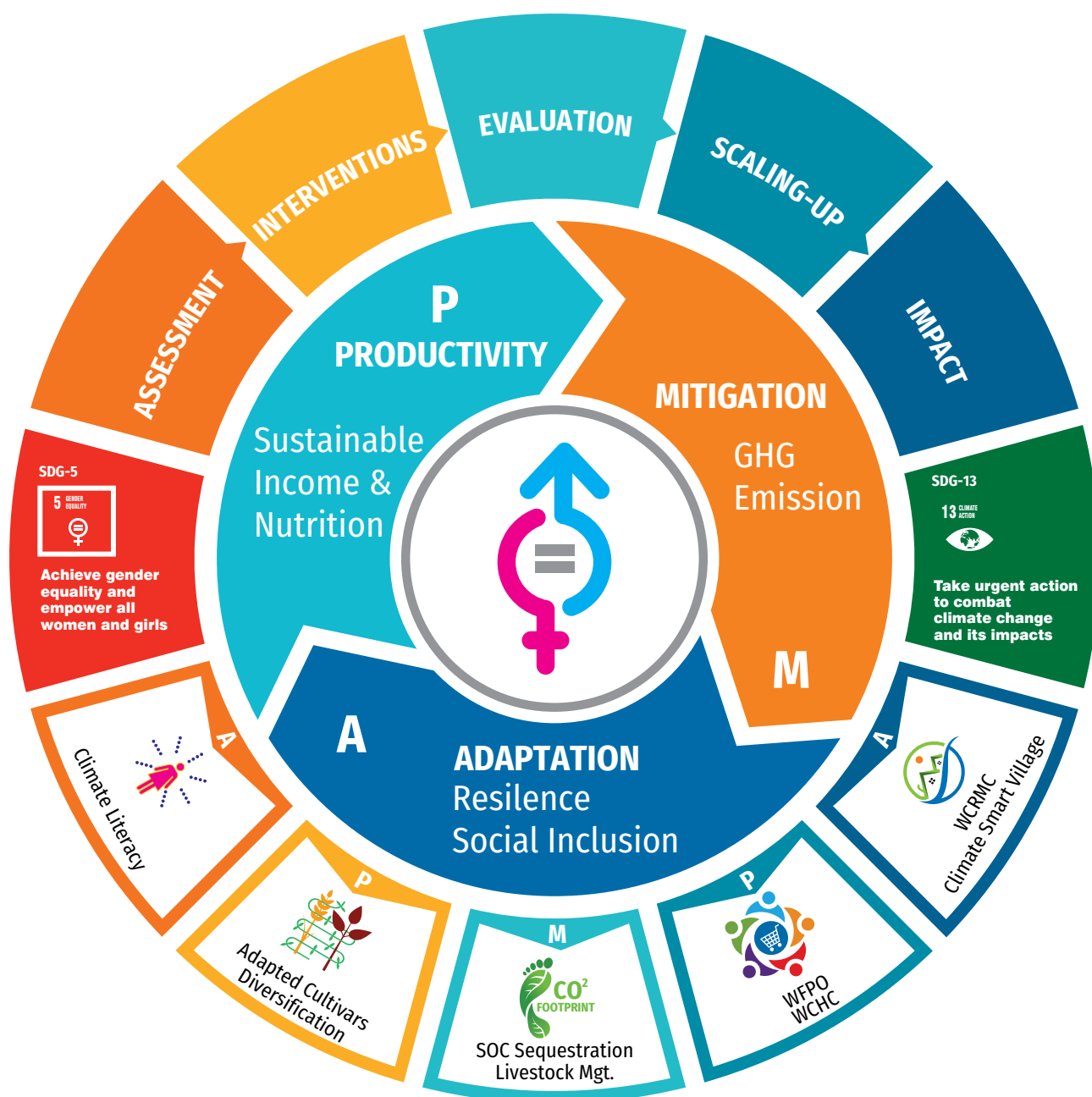


Fig. 2.64 Conceptual framework for gender responsive Climate Smart Agriculture (CSA)

The project activities emphasised on sustainable intensification with diverse cropping systems integrating soil, water management and dissemination of climate change knowledge among women stakeholders. It promotes farmer-to-farmer exchange and learning of

technologies. The overall goal of the project is to enhance resilience of farm women against climate change and increase their income, through sustainable intensification and diversification in different MIPs of Odisha.

3. EVENTS AND ACTIVITIES

Celebration of Foundation Day (17 February 2022)

The Institute celebrated its 27th Foundation Day on 17 February, 2022 through hybrid mode. During this occasion, a Scientist-Farmer Interface was organized in which 150 farmwomen from adopted villages of the institute from Cuttack and Puri districts of Odisha participated. The Hon'ble DDG (Agricultural Education), ICAR, New Delhi, Dr. R. C. Agarwal graced the occasion as the Chief Guest. Dr. P.S. Pandey, ADG (EP & HS), ICAR, New Delhi, was the Guest of Honour while Chairman, PG Council, Rama Devi Women's University, Bhubaneswar, Dr. Sasmita Mohanty was the Speaker to deliver the Foundation Day Lecture. Besides, there were many other Dignitaries from ICAR, SAUs and NGOs who attended this auspicious function. A video on 'Journey of ICAR-CIWA' was publicized before the audience. Dr Anil Kumar, Director of the Institute welcomed all the delegates and highlighted the significant

achievements of the Institute. Twelve progressive Farm Women from nine different adopted villages were awarded for their contribution in agriculture and allied sectors. ICAR-CIWA staff was also felicitated during this occasion. The programme was coordinated by Dr. Sabita Mishra, Principal Scientist & Nodal Officer, Foundation Day

Workshop on “Intellectual Property Rights: Issues and Challenges” (26 February 2022)

Under the National Agriculture Innovation Fund (NAIF) Component- I, ITMU cell of ICAR-CIWA organized one day workshop on “Intellectual Property Rights: Issues and Challenges” for sensitization of Scientists and Technical Personnel of the institute on 26 February, 2022. The workshop began with welcome address by Er. Chaitrali S. Mhatre, Scientist of the Institute. Dr. A.K. Panda, Pr. Scientist and Member Secretary, ITMU gave a brief



Workshop on IPR

orientation about the workshop and made a presentation on the activities of the ITMU cell of the institute. Dr. Anil Kumar, Director in his introductory remarks highlighted about the importance of IPR issues in today's context. He urged the scientists to follow the ICAR guidelines for IP management and advised to submit the IP generated by them for further needful. Dr. Baburam Singh, Retd. Professor, OUAT, Bhubaneswar, the invited speaker delivered a presentation on the theme of the workshop. In his presentation, he discussed about different types of Intellectual Property such as Patents, Copyrights, Trademarks, Trade Secrets, Plant varieties, Geographical Indications and Industrial design etc and its importance in the present scenario. This was followed by an open discussion on various IPR issues. The workshop ended with vote of thanks by Dr. Ananta Sarkar, Pr. Scientist of the Institute.

Poshan Mela under Azadi Ka Amrit Mahotsav (22 April 2022)

A Poshan Mela, a campaign for Annadata Devo Bhava under Azadi Ka Amrit Mahotsava was organized on on 22 April 2022 wherein 250 farm women from 10 villages adopted under Nutri- Smart Village Project participated along with staff of ICAR-CIWA. The programme was intended for creating awareness among the farmwomen beneficiaries of the 10 Nutri Smart Villages being developed under the project "Nutrition Smart Villages: An Innovative Model for Strengthening Poshan Abhiyan ". Development of 10 Nutri Smart Villages was taken up by ICAR-CIWA after

launching of "Nutri Smart Villages: An Innovative Model for Strengthening Poshan Abhiyan" by Hon'ble Minister of Agriculture & Farmers Welfare, Shri Narendra Singh Tomarji through virtual mode on 10 November 2021 witnessed by 200 farm women representing 10 villages of 4 districts like Khordha, Puri, Cuttack & Jagatsingpur of Odisha. Dr Jyoti nayak, Nodal Officer of the celebration welcomed the dignitaries and participants. Dr Sabita Mishra, Director In-Charge, ICAR-CIWA emphasized on the endeavour of ICAR-CIWA in addressing the issues and constraints of rural women in achieving health and nutrition of the farm families. Professor P.J. Mishra, Dean Extension of Orissa University of Agriculture Technology and Chief Guest of the inaugural function expressed his satisfaction on the efforts of ICAR-CIWA in conducting Poshan Mela and appraised the participants about different food types providing nutrition. He expressed his interest for collaboration of ICAR-CIWA with Krishi Vigyan Kendras for realizing the goal of Poshan Abhiyan. In the technical session, the participants took part in the Farmers-Scientists Interaction in which five lectures on addressing family food security through backyard poultry rearing, strengthening nutrition security of farm families through nutri-sensitive agriculture, eradicating malnutrition through dairy and goat rearing, enhancing nutritional security through nutrition garden and preserving nutritive value during food preparation to enhance dietary needs were delivered and queries were answered. On this occasion, a technology demonstration was organized on nutrition garden, value addition, women friendly tools and implements. The women participants



Poshan Mela

exhibited more than 100 nutritious recipes made by them from locally available ingredients.

National Webinar on “Natural Farming for Sustainable Production, Nutrition and Health” under Campaign “Annadata Devo Bhava” (23 April 2022)

A National Webinar on “Natural Farming for Sustainable Production, Nutrition and Health” under the ICAR Campaign “Annadata Devo Bhava” under Azadi ka Amrit Mahotsav was organized in hybrid mode by ICAR-CIWA, Bhubaneswar on 23 April, 2022. The event was attended by more than 80 participants comprising of Scientists from ICAR, AICRP- WIA, SAU’s and students. Two eminent speakers; Dr. N. Balasubramani, Director (CCA), MANAGE, Hyderabad and Dr. Trupti Mohanty, Director, College of Community Science OUAT, Bhubaneswar, delivered their talk on Natural Farming: Perspective in the Present Context and Strengthening Nutrition and Health of farm families through Intervention in Agriculture, respectively. The programme began with opening remarks of Director (In-Charge), Dr. Sabita Mishra, ICAR-CIWA, Bhubaneswar in which she emphasized on the crucial link between natural farming and nutrition for farm women and children specifically. The convener of the webinar Dr. A.K. Panda elucidated on the need of natural farming and its scope in different scenarios. Dr. N. Balasubramani gave a detailed account on the basic principles of the beejaamrit, jeevaamrit, aachadan and wapsa. He also discussed about role of farm women and women based SHG in different states taking lead as master trainers in prakritik kheti. Dr. Mohanty explained the schemes of Odisha govt. on Poshan Vatika under Odisha livelihood

mission being executed in 13 districts of the states involving farm women. The lectures were followed by discussion with participants and queries on different aspects of natural farming moderated by Dr. Praveen Jakhar, the Co-convener of the programme. At the end, Dr. L.P. Sahoo, the Co-convener of the programme proposed vote of thanks.

International Day of Yoga 2022 (21 June 2022)

ICAR-Central Institute for Women in Agriculture (ICAR-CIWA) Bhubaneswar celebrated International Day of Yoga on 21 June 2022 with the theme “Yoga for Humanity”. As a part of celebration a session on “Meditation: A simple, fast way to reduce stress” was organized on 17th June, 2022 for the staff of the institute. The session was facilitated by Sister B. K. Durgesh Nandini Chaudhury, Brahma Kumaris, Unit-8 Bhubaneswar. She delivered a presentation on “Reducing Stress through Meditation” and also demonstrated various activities for alleviating stress in our day to day life. On 21st June 2022, the International Day of Yoga was celebrated by organizing a Yoga Session under the guidance of Mr. Prince Parija, a Retired IAF Air Warrior and Yoga Expert. The programme began with welcome address by Dr. A. K. Panda, Nodal IYD. Dr. Anil Kumar, Director, in his speech stress upon the need to practice yoga everyday to maintain calm, reduce stress and increase work efficiency. All the Scientific, Technical and Administrative staff of the Institute enthusiastically participated in the program. The expert also answered various queries raised by the staff on the benefits of specific Asanas & Pranayams on physical as well as mental health. Handouts/Booklets on importance of yoga released by Ministry of AYUSH (Govt of India) were distributed among the staff.



International Day of Yoga

Awareness Programme on Nutri Sensitive Agriculture (8 July 2022)

An awareness Programme on Nutri Sensitive Agriculture was organised on 8 July, 2022 for sensitizing the stakeholders on the importance of nutritional interventions in improving family food and nutritional security. Smt Rekha Sharma, Hon'ble Chairperson, National Commission for Women (NCW), New Delhi graced the occasion as Chief Guest. Dr Minati Behera, Chairperson, State Commission for Women, Odisha and Mrs. Daisy Thakur, Chairperson, State Commission for Women, Himachal Pradesh were the Guests of Honour. Dr Anil Kumar, Director, ICAR-CIWA welcomed the dignitaries and participants. In his welcome address he highlighted the seven priority areas identified in National Policy for Women by NCW covering the areas of Health including food security and nutrition, education, economy, decision making, environment and climate change etc, which largely affects the health, nutrition and wellbeing of farmwomen. He made special mention of Nutri Sensitive Agriculture to combat increasing malnutrition among women and children in rural areas. Dr Daisy Thakur, Chairperson, State Commission for Women, Himachal Pradesh, appreciated the initiatives taken by ICAR-CIWA under Nutri Smart Village Programme in promoting local

nutritious food. She advised that women should take care of their own health and nutrition and avail the facilities of Women Commission in getting justice whenever needed. Dr Minati Behera, Chairperson, State Commission for Women, Bhubaneswar, Odisha, emphasized on suitable interventions for rural women by different stakeholders in a coordinated manner to improve their health, nutrition and livelihood. In her address, Smt Rekha Sharma, Hon'ble Chairperson, NCW, apprised the participants that Govt. of India is dedicated for the cause of well being of women and taking timely measures to formulate and implement both women inclusive and women exclusive policies and programmes to improve their livelihood, health, nutrition and social status. She congratulated the farmwomen for being a part of the noble initiative naming them Anna Devi and appreciated the efforts put by ICAR-CIWA in organizing such programmes. On this occasion, a farmer scientist interface and exhibition on nutri dense products were also organized. About 300 farmwomen participants from 13 villages of different districts of Odisha including staff of ICAR-CIWA attended and benefited during this programme. The programme was successfully organized by the team of scientific, technical and administrative staff of ICAR-CIWA led by Dr Tanuja S, Senior Scientist and Nodal Officer.

RAWE/ Internship training programmes

Particulars of students	Institution	No of Students	Date	Co-ordinators
4th year B.Sc. Agriculture students	Siksha 'O' Anusandhan, Bhubaneswar	18	5 September 2022 to 5 November 2022	Dr. A. K. Panda (Convenor), Dr. Tania Seth and Dr Ankita Sahu (Co-conveners)
4 th Year BFSc (Bachelor of Fisheries Science) students	CUTM, Parlekmundi	2	16 August 2022 to 7 September 2022	Dr Tanuja S

The training for BSc Agriculture students comprised of several theory and practical sessions with an aim to update the students with recent advances in fields of Crop Science, Horticulture Science, Animal Sciences viz., Dairy, Goatery and Fisheries, Farm Mechanization, Drudgery Reduction and Process Engineering. Overall, the training consisted of several interactive sessions, class room teaching, field visits, brainstorming sessions, presentations and report compilations. The students of the final year BFSc were given hands on training on preparation of value added products from fish. They were also trained on the proximate and quality analysis of fish and value added fish products. The students also undertook drying experiments on value added fish/shell

fish products in solar cabinet dryer. Exposure to farmer's field was also given to students.

Parthenium Awareness Week (16 - 22 August 2022)

Parthenium awareness week was celebrated at ICAR-CIWA by organizing a number of activities to spread awareness among staff members, farm workers, school children as well as farm women in different villages. The staff members of the institute actively participated in Parthenium eradication drive by removing the weeds present outside the institute. ICAR-CIWA campus and farm area are now a Parthenium free campus. To spread

the awareness in adopted villages a mass awareness was organised on 20-08-2022 in Guapur village of Khorda district. A sensitization programme was also organised in Govt. High School, Guapur in which school children, teachers and staff members were apprised of the harmful effects of Parthenium weed and they were advised to maintain Parthenium free school campus. Fifty farm women of the village Guapur also participated in the demonstration on composting method of the Parthenium weed for its proper utilization. The programme was coordinated by Dr. Praveen Jakhar, Senior Scientist (Agronomy), Dr. D. N. Sadangi (Tech. Officer) and Sh. M. Prusty (Tech. Officer).

Convergence Meeting with National Gender Resource Centre in Agriculture (NGRCA), New Delhi for Addressing Issues on Women in Agriculture (24 August 2022)

A convergence meeting with National Gender Resource Centre in Agriculture (NGRCA, New Delhi), with a combined objective of mainstreaming women farmers and promoting women empowerment in agriculture and allied sector was organised at ICAR-CIWA on 24 August, 2022. Dr. Anil Kumar, the Director extended a warm welcome to all the stakeholders and emphasized the core role of farm women in enhancing agricultural production. The meeting was graced by Dr. Y.R. Meena, Additional Commissioner Extension (DA & FW), NGRCA as Chief Guest and during his presidential address, he highlighted the various schemes and policies for promoting women farmer and assured support to all the stakeholders willing to promote women farmers. The convergence meeting comprised of technical session, where in Dr. Lipi Das presented the concept of collaborative project "Development of Gender framework through the Development Programmes in Agriculture and Allied Sectors". Additionally, Dr. Punam Tiwari, NGRCA, presented the responsibilities, functions and future strategies of NGRCA and underlined the importance of convergence for collectively assuring farm women empowerment. The technical session continued with deliberation and experience sharing by Scientists from other ICAR institutes, representatives from state line Dept. Mission Shakti; agri-enterprise promoting agency like APICOL, financial institute like NABARD; NGOs and progressive women farmers. The technical session ended with elaborate discussion to formulate approaches to strengthen farm women's farming and agri-entrepreneurial perspective. Emphasis was laid on skill upgradation of women farmers, formation of women FPOs, market linkages for commercial farming and agri-enterprises, documentation of success stories and case studies. It was further emphasized to develop a women empowerment in agriculture index to assess

the effectiveness of developmental frameworks for farm women. The meeting was successfully organized by Dr. Lipi Das, Principal Scientist and convener, Dr. B. Sahoo, Principal Scientist and co-convener, Dr. Tanuja S., Senior Scientist, Dr. Tania Seth, Scientist, Dr. Arpita Mohapatra, Scientist, Dr. Ankita Sahu, Scientist and Dr. Neetish Kumar, Scientist.

Special Campaign 2.0 for disposal of pending matters (14-30 September, 2022),

Special Campaign 2.0 for disposal of pending matters was successfully accomplished by ICAR –CIWA, Bhubaneswar. During the preliminary phase (14-30 September 2022), the pendency with regards to pending references from the State Govt., MP's, Inter-ministerial references, pending PMO references, public grievances & appeals (CPGRAMS as well as grievances received from other sources) were identified. During the implementation phase (02-31 October, 2022), the pendency reported as well as the targets fixed for cleanliness activities, Swachhta campaigns, removal of office wastes and scrap material were carried out. The campaign offered an opportunity to cleanse the office premises from unwanted stuffs along with clearing all pending grievances, weeding out unwanted files & strengthening digitalization and E-office activities. The women farmers from Institute's adopted villages also participated in the campaign and made it effective through cleanliness activities under Swachh Bharat Abhiyan. The campaign was successfully coordinated by Dr. Ankita Sahu, Scientist as Nodal Officer and Dr. Arpita Mohapatra, Scientist as Co-Nodal Officer along with active participation & whole-hearted cooperation of all the scientific, technical and administrative staffs of the Institute.

Rashtriya Mahila Kisan Diwas (15 October 2022)

The Rashtriya Mahila Kisan Diwas was celebrated in the institute on 15 October, 2022 to mark the significant contribution and participation of farm women in agriculture. The event was graced virtually by Shri Kailash Choudhary, Hon'ble Minister of State for Agriculture & Farmers Welfare, Govt. of India as the Chief Guest. During his Presidential address, he applauded and motivated the farm women nationwide for their immense contribution in agriculture and emphasized the importance of gender equity for enhancing the potential of farm women. Additionally, he focused that nutrition enhancement is critical and should be ensured with multifaceted approaches for holistic development of rural families. Dr Himanshu Pathak, Hon'ble Secretary, DARE & Director General, ICAR, New Delhi graced the programme as Special Guest. He emphasized for collaborative research work with other ICAR Institutes for mainstreaming women

farmers. Further, he stated that, ICAR-CIWA should develop a model which will be accepted globally for women empowerment. Dr B. N. Tripathy, Deputy Director General (Animal Science), expressed his compliments towards contribution of farm women in animal husbandry sector and also highlighted the scope of entrepreneurship in the sector. Dr J. K. Jena, Deputy Director General (Fisheries Science), explained about the scope and utilization of village ponds for profitable fish farming by women farmers. Dr R.C. Agrawal, Deputy Director General (Agril. Education), in his address signified the importance of celebrating Rashtriya Mahila Kisan Diwas and activities undertaken by ICAR-CIWA in Nutri-Smart villages through Poshan Abhiyan. The programme also comprised of Farmers'-Scientists Interface and an exhibition on nutri-dense crop varieties and food items. The celebration was attended by more than 300 farm women from institute adopted villages and nearly more than 500 women farmers across India joined the celebration through digital mode. The progressive women farmers were also awarded during the event for their outstanding performances in agriculture and allied sector. The programme ended with a formal vote of thanks offered by Dr. Lipi Das, Principal Scientist, ICAR-CIWA and Convener of the programme.

Agri-Startup Conclave and Kisan Sammelan (17 October 2022)

In the view of the National Significance of the event, the webcast of Agri-Startup Conclave and Kisan Sammelan was organized by ICAR-Central Institute for Women in

Agriculture, Bhubaneswar on 17 October, 2022 to facilitate the on-line joining of women farmers for seeing the mega event. The inaugural session of the programme was graced by Shri Ramchandra Ransingh, Corporator, Bhubaneswar Municipal Corporation (BMC), Baramunda unit as the Chief Guest. At the outset, Dr. Sabita Mishra, Director in charge, welcomed all the delegates and participants to the programme. She also sensitized the farm women about the significance of 'Agri Start-up Conclave Kisan Sammelan Program'. The Chief Guest during his inaugural remarks highlighted the importance of women farmers in agricultural development and appreciated the role of the Institute in gender mainstreaming and women empowerment. During the event, the progressive women farmers shared their views and expressed their gratitude towards Govt. schemes and policies for strengthening their livelihoods. The programme offered a platform for the women farmers of Odisha to listen to the PM-address and virtually see the mega-event. During the live webcast, the women farmers got an exposure of the latest breakthrough on agricultural innovations, agri-startup ventures and new Govt. initiatives like One-Nation One Fertilizer Scheme. Nearly 250 farmwomen from the Institute's adopted villages participated in the event. The programme also comprised of Farmers'-Scientists Interface to update the farm women on sustainable agriculture techniques, crop varieties and farm management. The programme ended with a formal vote of thanks offered by Dr. Jyoti Nayak, Principal Scientist and Nodal Officer of the event.

Other events organised

Sl no	Programme	Date	Participants		Nodal officer/Team
			Male	Female	
1	Awareness programme on Nutri Sensitive Agriculture	29 July 2022	50	200	Jyoti Nayak, Pragati Kishore Rout, Subrat Kumar Das
2	World Food Day	16 Oct 2022	10	190	Ananta Sarkar D. N. Sarangi B. C. Behera
3	साम्प्रदायिक सन्दाव अभियान सप्ताह एवं झंडा दिवस	19-25 Nov 2022	20	30	Neetish Kumar
4	Agricultural Education Day	3 Dec 2022	75	75	Tanuja S Atul C. Hemrom
5	Soil Day	5 Dec 2022	5	30	Praveen Jakhar, Ankita Sahu, Pragati Kishore Rout
6	Kisan Diwas (Jai Kisan Jai Vigyan)	23 Dec 2022	-	75	Sachidananda Swain, Neetish Kumar, Pragati Kishore Rout, Subrat Kumar Das

Vigilance Awareness Week (31 October 2022- 6 November 2022)

Vigilance Awareness Campaign was observed in the Institute for three months (16 August to 15 November, 2022) and also Vigilance Awareness Week-2022 from 31 October to 6 November, 2022 with a theme of 'Corruption Free India for a Developed Nation' (भ्रष्टाचार मुक्त भारत-विकसित भारत). Activities undertaken were: pledge taking, publicity through social media like Whatsapp, ICAR CIWA Facebook and Twitter, organization of Gram Sabha, human chain, debate competition among school children, quiz competition among Institute staff, seminar Talk and walkathon on the street with commanding slogans against corruption for public awareness. Handout on the theme was also distributed highlighting the magnitude of integrity of an individual for growth of a nation and eradication of corruption. The winners of the competition were awarded certificates during the celebration. The Vigilance Awareness Week-2022 was coordinated by Dr. Sabita Mishra, Principal Scientist and Vigilance Officer of ICAR-CIWA with the Team Dr Neetish Kumar, Mrs Bishnupriya Moharana and Shri B. C. Behera.

Women in Agriculture Day (4 December 2022)

Women in Agriculture Day was celebrated on 4 December, 2022 at Gopabandhu Daridra Narayan Sevashrama Sangha of Talapatna village, Sakhigopal. Smt Gayatri Mohapatra, Sarapanch of Kadua Grampanchayat was the Chief Guest of the programme. Smt Dipa Behera, Sarapanch of Biraramchandrapur and Sri Jagannath Barik, In-Charge Gopabandhu Sevashrama Sangha also attended the programme. More than 100 farm women from nearby villages participated in the programme. Smt Kanaklata Panda, progressive farmwoman welcomed all the dignitaries and participants. Dr Jyoti Nayak, Principal Scientist, and the coordinator emphasized the importance of balanced diet and micro nutrients to mitigate malnutrition and advised the participants to raise nutritional garden in their backyard. The Chief Guest, Smt Gayatri Mohapatra, highlighted the role of women to build the society and praised ICAR-CIWA for its initiatives to empower farmwomen. Smt Dipa Behera, told the farmwomen about the various women related govt. schemes for income generation. The programme ended with vote of thanks by Smt. Geeta Saha.



Women in Agriculture Day

4. REVIEW MEETINGS

Nutri-Smart Village Programme (25 April 2022)

The review meeting of Nutri-Smart Village Programme was organized under the Chairmanship of Hon'ble Secretary DARE & DG, ICAR, Dr Trilochan Mohapatra in hybrid mode at ICAR-CIWA, Bhubaneswar on 25th April, 2022 in which 58 AICRP scientists from 13 centres in 12 states and 17 Scientists from ICAR-CIWA were present. Dr. Anil Kumar, Director, ICAR-CIWA welcomed all the participants and highlighted about the achievements of Nutri-Smart Village Programme implemented in 75

villages across the country (by the Institute and AICRP centres). Dr. P. S. Pandey, ADG (EP&HS) discussed about the restructuring and reorienting of AICRP on Women in Agriculture (WiA) for better implementation of the Nutri-Smart Village Programme. Dr. Lipi Das, Principal Scientist (Agril. Extension) & Nodal, AICRP (WiA) presented the salient achievements of Nutri-Smart Village Programme. Exhibition stalls were put up showcasing different nutri-based value added products prepared by the farm women of adopted villages under Nutri-Smart Village Programme. Hon'ble DG, ICAR appreciated the promotion of local



Hon'ble Secretary, DARE & DG, ICAR visiting the stall

recipes for addressing malnutrition in the community. Dr. Mohapatra in his remarks reiterated that it is a national responsibility to develop model villages showcasing Agri-Nutri linkage in order to address malnutrition in the country. This could only be possible through appropriate interventions based on baseline survey, clinical analysis and nutritional gap existing in the villages. He urged the scientists to establish market linkage of nutri-based food items based on the local recipes and value added products.

Annual Workshop of All India Coordinated Research Project on Women in Agriculture (12-13 May, 2022)

A two days Annual Workshop of AICRP on Women in Agriculture was organized during 12-13 May 2022 at ICAR-CIWA. Dr. R. C. Agrawal, DDG (Agril. Education), ICAR was the Chief Guest for the inaugural session and Dr. P. S. Pandey, ADG (EP&HS), ICAR was the Guest of Honour. Dr. P. S. Pandey highlighted the important role of ICAR-CIWA and AICRP on WiA in addressing the challenges of women in agriculture in India and in guiding the policy directions in the country. He emphasized on prioritization of the gender related issues and identification of performance indicators for the impact study. The Chief Guest, Dr. R. C. Agrawal stressed on the necessity of conducting research on the gender related issues of current era, scope to solve these challenges and hence progress further to take position in the world as a unique institute. Dr. Anil Kumar, Director, ICAR-CIWA highlighted the collaborative research activities of ICAR-CIWA with all the 13 centers of AICRP on WiA across the country and making significant interventions for the livelihoods of farmwomen. On this occasion, an exhibition which showcased the technologies of ICAR-CIWA and AICRP on WIA was organized. Six Technical Sessions were conducted to review the achievements and future plan of work under the five programs of AICRP. Dr. Trilochan Mohapatra, Secretary DARE & DG, ICAR graced the concluding session as the Chief Guest. In his speech he highlighted the importance of Nutri-Smart Village programme to make India free from malnutrition as desired by Hon'ble Prime Minister of the nation. About 80 Scientists from 18 AICRP centers and ICAR-CIWA participated in this workshop. On 13 May 2022, a lecture on "Sampling Techniques and Discrete Choice Models for Impact Assessment Studies" was delivered by Dr. Girish Kumar Jha, Principal Scientist (Agril. Economics), IARI, New Delhi which was followed by a presentation on "Technology Solutions for Nutri-village Program" by Zoom Video Communications, India. On the same day a field visit by the dignitaries was also organized to Dubduba village of Satyabadi Block in Puri District to review the implementation of Nutri-Smart village project. The farm

women in the village displayed the various value added nutri-products.

Quinquennial Review Team (QRT) Meeting (22-23 June 2022)

The first Quinquennial Review Team (QRT) Meeting of ICAR-CIWA for the period 2017-2022 was held during 22-23 June 2022 to review the research by the Institute and monitor the progress of research, its relevance and excellence, and for providing guidelines to the ICAR for taking steps for the fulfillment of the mission and goals of the Institute. Dr. Ranajit Kumar Samanta, former Vice Chancellor, BCKV, West Bengal and Chairman QRT commended the Institute for its past achievements, being a unique and premier institute in the field of women empowerment in agriculture. The QRT members advised the scientists to establish complete synchronization between ICAR-CIWA and AICRP on WiA in research and extension activities through common mandate and programmes. Dr. Arun Kumar Panda, Member Secretary, QRT made a brief presentation on various activities taken up by the Institute, significant research achievements, action taken report on last QRT recommendations and RAC recommendations. The QRT team visited ICAR National Rice Research Institute, Cuttack on 23 June 2022 to get acquainted with the activities undertaken by the Institute on gender mainstreaming and women empowerment in agriculture. Dr. Padmini Swain, Director, ICAR-NRRI made a brief presentation about the activities of the Institute. Dr. G. A. K. Kumar, Head, Social Science Division presented the activities taken up by the institute for empowering farm women in agriculture. The committee suggested that linkage should be developed between ICAR-NRRI and ICAR-CIWA to work in collaboration for gender mainstreaming and women empowerment in agriculture. The QRT team also visited the office of Dean Extension, OUAT, Bhubaneswar to get acquainted with the activities being made by the university on empowering farm women in agriculture.

22nd Research Advisory Committee Meeting (15-16 September 2022)

The 22nd meeting of Research Advisory Committee (RAC) of ICAR-CIWA was held on 15-16 September, 2022. The meeting was chaired by Dr (Prof.) Madhura Swaminathan, Indian Statistical Unit, Bangalore in which five RAC members besides Scientists from ICAR-CIWA and AICRP on WiA participated. Dr Madhura Swaminathan, Chairperson of RAC, highlighted that ICAR-CIWA is a unique institution having potential to become a repository of knowledge and data relating to women in agriculture in India. She emphasized that social science needs to be strongly



RAC meeting in progress

integrated while studying appropriate technologies for women in agriculture as the social dimensions are very important to understand adoption, acceptance and usefulness of various technologies. She urged the scientists that research projects should focus on specific gender dimensions following a strong methodology identifying a set of measurable outcomes. Dr. P. S. Pandey, ADG (EP&HS) emphasized that there should be complete synchronization between ICAR-CIWA and AICRP (WiA) in research and extension activities. The RAC suggested to develop linkage with KVKs for technology assessment, refinement, demonstration, popularization and skill based capacity development of farm women. The focus need to be given on secondary agriculture, post harvest technologies, nutri sensitive agriculture with

special emphasis on value addition for entrepreneurship development of farm women. The Action Taken Report (ATR) on the recommendations of 21st RAC Meeting was presented by Dr. B. Sahoo, Member-Secretary, RAC. The progress on various projects under 5 specific programmes were presented by respective programme leaders. The research activities and achievements of ongoing projects of AICRP centres of Women in Agriculture along with progress on nutri-smart village programme was presented by Dr Lipi Das, Nodal, AICRP (WiA). The RAC appreciated the progress made by the institute and advised the scientists to establish strong linkages and partnership with other institutes for wider dissemination of women friendly technologies.

5. EXTENSION PROGRAMMES

5.1. Mera Gaon Mera Gourav (MGMG)

A total of 20 villages from Puri, Khordha, and Cuttack district of Odisha have been adopted under flagship program of Mera Gaon Mera Gaurav (MGMG). During the year 2022, various activities which include training, demonstration, field visit, interaction with women farmers, distribution of critical inputs and establishment of Custom Hiring Centres have been taken up by the four teams of ICAR-CIWA for the holistic development of women farmers in various aspects. After the post-pandemic period it had become very important for the women to learn not only about agriculture but also to develop skills to become self-reliant, empowered and develop entrepreneurial aptitude, and accordingly the plans for the adopted villages were executed.

Interface/Gosthis/Awareness Creation Programs

As part of the MGMG programmes, various need-based interface meet which not only benefitted but also increased the knowledge level of more than 900 beneficiaries were organised. In order to provide the beneficiaries with technical backstopping and assistance and to enhance their technical skill various small tools, implements, seeds, mineral mixtures, poultry birds (*Vanraja*), ducklings (Khaki Campbell and White Pekin), poultry implements, vegetable seed kit, power operated sprayers, metal bins for storage and other technologies were provided. Two other flagship programmes were also conducted simultaneously in the adopted villages. Under Nutri-Smart Village (NSV) and Scheduled Caste Sub Plan (SCSP) programmes technical backstopping was provided to different stakeholders. The *Swachhta Abhiyan* programme on mission mode was organized to create awareness on the importance of cleanliness. Natural farming which is slowly gaining pace and acceptance among the farming community was also preached. These flagship programmes were also conducted under the banner of *Azadi ka Amrut Mahotsav* and more than 1750 farmers and women farmers' were made aware through these flagship programmes.

Training/Demonstrations

Field demonstrations, training programmes for MGMG villages under Nutri-Smart Village (NSV) program and Schedule Caste Sub Plan (SCSP) programme were conducted and various small tools, implements and other inputs like improved vegetable seed kit and fish fingerlings were provided for technical backstopping of the selected beneficiaries. Demonstrations were organized on proper use of seed treatment drum, battery operated sprayer, spice grinding machine, oil extracting machine, pulveriser, ground nut decorticator, composite fish farming etc. Trainings were also imparted on proper installation of vermi-beds and process of vermicompost preparation and its marketing. Other trainings included preparation of poultry feed, animal feed etc. It had benefitted more than 350 identified beneficiaries. Four Custom Hiring Centres were also developed in Jagulaipadar, Lokapal, Taraboi villages of Puri district and Guapur village of Khordha district, respectively.

Other Activities

The above reported events were organized by the Institute at village level under the banner of *Azadi ka Amrut Mahotsav*, where women farmers were invited to participate in the Nation wide Interaction programme on 31 May 2022, in which, Hon'ble Prime Minister addressed the farming community. Awareness program was also organized on Nutri Sensitive Agriculture, Mahila Kisan Divas and an Agri Startup Conclave and Kisan Sammelan was organized on 8 July, 15 October and 17 October 2022, respectively. A total of 360 women farmers from MGMG adopted villages participated. Twenty five mobile advisories were also issued to 50 beneficiaries, 13 different type of literatures on various topics benefitted to more than 650 farmers.

5.2. Swachha Bharat Abhiyan (SBA)

The Swachha Bharat Abhiyan was organised in the Institute and adopted villages involving farm women, youth, students etc. to create awareness among the



Swachhta Pakhwada campaign

mass. Swachhta Pakhwada campaign was organised in the Institute during 16-31 December, 2022 in which cleaning of institute premises, tree plantation programme, stock taking on digitization of office records/e-office implementation, cleaning of offices, collection of agro-waste from residential quarters, farm, canteen kitchen, goat-poultry farm were undertaken followed by segregation of biodegradable and non degradable waste. Agro waste was subjected to vermicomposting through demonstration in vermi pit and NADEP pit. Awareness was created in village Sankilo, Tentapur, Cuttack in which general cleanliness, health and hygiene, elimination of open defecation, safe ways of disposing biodegradable and non-biodegradable wastes, prohibiting single use plastic, composting of kitchen and home waste materials and cost effective technologies for ecologically safe and sustainable sanitation etc. were explained to farm women for healthy life. Farm women were also distributed vegetable seed minikits, tools and implements for organic cultivation. Competition among school students and youth mass in the village was organised on essay writing and drawing on 26th December 2022 in the MGMG village, Haladiapada, Kanas, Puri on "Swachha Bharat". The local public places Tarini haat, Bharatpur and community waste disposal sites of Municipal Corporation was also visited and various steps of waste disposal were developed and awareness on conversion of waste to wealth was created.

As a part of Swachhata programme, ICAR-CIWA also organised 'Kisan Diwas' on 23 December 2023 at village Mangarajpur, Kujanaga, Jagatsinghpur in which about 80 farm women were sensitized on importance of Swachhata on community health by Block Development Officer, Panchayat Sarpanch and other agriculture officers. The Institute also organised Swachhata programme at village Athantara, Balipatna, Khordha and village Dubuduba, Puri in which Panchayat Sarpanch and Samiti Sabhya, participated and appreciated the Swachhata activities undertaken by ICAR-CIWA in the village and advised the farm women to develop a swachha model village. An awareness programme on importance of immunity booster nutrition and hygiene for farmwomen was also organised. The swachhata campaign activities were also publicized in social media (Facebook and Twitter), press and electronic media. During the Swachhata Pakhwada, 450 participants actively participated which was coordinated by Dr Biswanath Sahoo and Dr Arpita Mohapatra.

5.3. Scheduled Caste Sub Plan (SCSP)

Under the SCSP, ICAR-CIWA focused on SC farmwomen for technology dissemination, capacity building, input support and entrepreneurship development for their socio-economic empowerment. Teams comprising of scientific and technical staff adopted 3-4 villages in 8 different districts of India and carried out regular

interaction for different need based technological interventions. A direct interface with women farmers provides first-hand information and solutions with developing awareness on climate change, customized services, marketing measures, FPOs, SHGs etc. In this programme, inputs like seeds of improved varieties, farm tools and processing equipments were distributed to the SC women beneficiaries from the project areas and adopted villages. Under the SCSP program, many women friendly tools and equipments were distributed among the women farmers, like hand weeder, sprayers, improved sickles, seed treatment drum, Mandwa weeder,

cono weeder, rice transplanters, improved Sickle, pedal operated thresher, hand winnower (fan model), battery operated sprayer, axe, rose can, bill hook, liner/garden hoe, iron bucket, spade, crowbar, milk strainer, mineral mixture, poultry equipments, improved seeds varieties, etc. In a village Honeybee boxes were also provided for the upliftment of SC farming community through augmenting their livelihood opportunities. Inputs for mushroom cultivation were also distributed. More than 2030 beneficiaries from adopted villages have been benefited under SCSP scheme where different technologies/tools/equipments were provided.

Table: Details of capacity building programme under SCSP - 2022

District	No. of Trainings	Block	No. of Trainings	Village	No. of Trainings
Puri	29	Kanas	13	Lokapal	6
				Chotijodi	1
				Jagulaipadar	6
				Badagadaput	1
		Nimapara	14	Balanga	1
				Taraboi	5
				Alanda	1
				Kunjar	2
				Siula	1
				Budhei	1
				Olikana	2
				Mohara	2
				Pataligaon	2
				Bianla	1
				Renghalo	1
		Satyabadi	2	Gaurigoda	1
				Kadua	1
Keonjhar	3	Ghasipura	1	Ghasipura	1
		Anandpur	1	Goudadiha	1
		Harichandanpur	1	Golabandha	1
Khorda	8	Balipatna	8	Majhihara	3
				Guapur	5
				Sarat	1
Cuttack	5	Nischintakoili	5	Sankhilo	4
				Tentalpur	2
Jajpur	4	Kuakhia	2	Sribantpur	2
		Jajpur Sadar	2	Kabirpur	2
Balasore	1	Nilagiri	1	Dhobasila	1
Jagatsinghpur	2	Balikuda	2	Sribantpur	1
				Khalagaon	1
Bhubaneswar	1	BMC	1	ICAR-CIWA	1
8	53	13	53	30	53

6. राजभाषा

भुवनेश्वर स्थित सात वैज्ञानिक अनुसंधान संस्थानों के संयुक्त प्रयास से हिन्दी में संयुक्त वैज्ञानिक संगोष्ठी-2022 का आयोजन 15 मार्च 2022 को राष्ट्रीय विज्ञान शिक्षा एवं अनुसंधान संस्थान में किया गया। इस संगोष्ठी का शीर्षक – “कोविड महामारी चुनौतियां, उपचार तथा मानव जीवन पर प्रभाव” था। केन्द्रीय कृषिरत महिला संस्थान में कर्मचारियों के बीच में हिन्दी के प्रति जागरूकता बढ़ाने के लिए हिन्दी चेतना पखवाड़ा कार्यक्रम का आयोजन

दिनांक 14- 29 सितम्बर 2022 तक किया गया था। कार्यक्रम के शुभारंभ में अपने संदेश में निदेशक महोदय ने हिन्दी की सराहना की और बताया की कैसे हिन्दी एक सूत्र से हमारे देश को बांधे रखने में अहम भूमिका निभाती है। हिन्दी चेतना पखवाड़े के दौरान ज्यादा से ज्यादा दैनिक कार्य हिन्दी में करने के लिए सभी कर्मचारियों से वे अनुरोध किए। इस के दौरान अनेक प्रतियोगिताओं का भी आयोजन किया गया, जैसे की हिन्दी निबंध प्रतियोगिता,



हिन्दी पखवाड़े के दौरान पुरस्कार वितरण समारोह

वाद-विवाद प्रतियोगिता, स्वरचित कविता लेखन, हिन्दी में युनिकोड टाइपिंग और हिन्दी पहेली प्रतियोगिता। पखवाड़े के दौरान संस्थान के सभी कर्मचारियों के लिए एक कार्यशाला का भी आयोजन किया गया। अतिथि वक्ता डा. नीतीश कुमार ने “कार्यालयी हिन्दी की भूमिका एवं लोकप्रियता” के ऊपर विस्तार से चर्चा किए और कार्यशाला को मनोरंजक भी बनाए रखे। हिन्दी चेतना पखवाड़ा का समापन समारोह 29 सितम्बर 2022 को आयोजित किया गया। इस समारोह में संस्थान के हिन्दी प्रभारी श्रीमती गीता साहा, तकनीकी अधिकारी ने सब का स्वागत किया और मुख्य अतिथि एवं विशेष अतिथि का भी अभिनंदन किया। निदेशक, डा. अनिल कुमार, मुख्य अतिथि के रूप में उपस्थित थे, और उनके साथ विशेष अतिथि के रूप में डा. धीरेन्द्र कुमार, भा.कृ.अनु.प.-डी. पी. आर. क्षेत्रीय केंद्र, भुवनेश्वर को भी आमंत्रित किया गया था। इस कार्यक्रम के दौरान विशेष अतिथि ने हिन्दी में कार्य करने के अपने अनुभव को समक्ष कर्मचारियों के साथ साझा किया, और हमेशा हिन्दी के कार्य वहन करते रहने का प्रयास करने के लिए प्रेरित भी किया। समापन समारोह के अंत से पहले सभी प्रतियोगिताओं में भाग ले कर विजयी हुए प्रतिभागियों को पुरस्कार राशि और प्रमाण पत्र का वितरण किया गया। इसके अलावा संस्थान में वर्ष २०२२ में तीन तिमाही कार्यशाला का आयोजन भी किया गया।

26 मार्च 2022 को आयोजित कार्यशाला में “कार्यालयी कार्य में तथा बोलचाल के भाषा में हिन्दी व्याकरण का

प्रयोग” पर अतिथि वक्ता डॉ अंशुमन दीक्षित, वैज्ञानिक, जीव विज्ञान संस्थान, भुवनेश्वर ने बहुत ही सरलता से व्याख्याण किया। उसके बाद राजभाषा हिन्दी में सरकारी पत्राचार एवं सरकारी कामकाज में हिन्दी का प्रयोग, व्याकरण में लिंग, वचन, संज्ञा, समास, मुहावरे का व्याख्यान किए साथ ही व्याकरण का व्यवहार से वाक्य को कैसे सुंदर लिखे तथा बोले सरलता से समझाया। 7 जून 2022 का विषय “कार्यालय कार्य में तथा बोलचाल के भाषा में हिन्दी व्याकरण का प्रयोग” था। इस कार्यशाला में मुख्य वक्ता थे डॉ अनिल कुमार निदेशक ICAR-CIWA थे। “सरकारी कामकाज में मसौदा तैयार करना तथा हिन्दी में टिप्पणियाँ लिखना” विषय पर 8 दिसम्बर 2022 को एक तिमाही कार्यशाला आयोजित किया गया था जिसमें अतिथि वक्ता श्री भी. गणेश कुमार, वरिष्ठ प्रशासनिक अधिकारी, (ICAR – NRRI, Cuttack) ने प्रशासनिक कार्यों में सरलता से फाइल में कैसे हिन्दी का प्रयोग किया जा सकता है उसका उल्लेख किया। आगे उन्होंने e-office में भी हिन्दी के प्रयोग के बारे से समस्त कर्मचारियों का ज्ञान वर्धन किया। दिनांक 24 मार्च 2023 को भी भा.कृ.अनु.प.-केन्द्रीय कृषिरत महिला संस्थान, भुवनेश्वर में हिंदी कार्यशाला का आयोजन किया जिसमें मुख्य वक्ता श्री. एच. एल. मीना, मुख्य प्रशासनिक अधिकारी, भा.कृ.अनु.प.-केन्द्रीय मीठाजल जीवपालन अनुसंधान संस्थान ने “कार्यालयी हिन्दी का महत्व” एवं “ई-ऑफिस की मिसिलों में हिंदी टिप्पण एवं प्रारूपण” विषयों पर प्रकाश डालें।

7. AWARDS AND RECOGNITIONS

Dr Sabita Mishra served as expert, KVK Scientific Advisory Committee (SAC) of KVK Ganjam II on 15 January 2022

Dr Ananta Sarkar was nominated as an expert in 'Gender responsiveness Co-ordinating Committee' of Bureau of Indian Standards (BIS) from 27 January 2022

Dr Lipi Das is acting as Vice- President, ARRW Executive Council (2022-24) by Association of Rice Research Workers, Cuttack, Odisha from January 2022

Dr Lipi Das served as External Expert for Career Assessment Scheme of Professors, Central Agricultural University, Imphal, Manipur on 9 February 2022

Dr Sabita Mishra served as expert member for the promotion of Technical staff of ICAR-NRRI, Cuttack on 18 February 2022

Dr Sabita Mishra served as Panelist, ASSOCHAM, Kolkata and NABARD, Bhubaneswar during Webinar on Strengthening FPO for Atmanirbhar Odisha and Atmanirbhar India on 22 March 2022

Dr Sachidananda Swain received Best Oral Presentation award by Society for Promotion of Horticulture, ICAR-IIHR, Bengaluru during 24-26 March 2022

Dr Ankita Sahu received Best Oral Presentation award by Central Horticultural Experiment Station (ICAR-IIHR), Bhubaneswar & Society for Promotion of Horticulture, ICAR-IIHR, Bengaluru during 24-26 March 2022

Dr Jyoti Nayak was awarded with the Most Innovative Article of the Month award for the article Nutritional Needs of Adolescent Girls by Vigyan Varta in the month of April 2022

Dr Praveen Jakhar acted as Co-Convener in the National Webinar on Natural farming for sustainable production, nutrition and health organised by ICAR-CIWA on 23 April 2022

Dr Lipi Das acted as Panelist for Agri-Confluence on Boosting Agripreneurship in Odisha organized by SOA, Bhubaneswar on 29 April 2022

Dr Sabita Mishra was the invited guest on the occasion of ĀkhyaTritiya (Farmers Day) by Nilachal Krushak Mahasangha on 3 May 2022

Dr Ananta Sarkar acted as reviewer of Journal of Indian Society of Agricultural Statistics from 8 June-25 October 2022

Dr Praveen Jakhar acted as Joint Organizing Secretary in the Biannual Workshop on Kharif crop cultivation: Special focus to climate resilient non-paddy crops for beneficiaries of OIPCRA project on 4 June 2022 at Keonjhar, Odisha

Dr Sachidananda Swain acted as Organizing Secretary in the Biannual Workshop on Kharif crop cultivation: Special focus to climate resilient non-paddy crops for beneficiaries of OIPCRA project on 4 June 2022 at Keonjhar, Odisha

Dr Biswanath Sahoo delivered a Key note lecture on Changing role of small ruminants for enhancing livelihood security in the present climatic change scenario during 21 days Summer School on Recent trends in sustainable livestock and crop production technologies vis-a vis climate change organised by IGFR (Jhansi), Srinagar and Bihar animal science university, Patna on 28 June 2022

Dr Arpita Mohapatra was awarded with the Most impactful article of the month award for Life below water- A sustainable goal approach. 2022 by Vigyan Varta (e- Magazine) in the month of July 2022

Dr Lipi Das acted as Reviewer of Pantnagar Journal of Research for the month of July 2022

Dr Sabita Mishra served as an expert for MANAGE, Hyderabad for revision of Capsule Module on 'Gender Responsive Budgeting' on 13 July 2022

Dr Jyoti Nayak was nominated by ASRB as the Chairperson for Technical Assessment Committee for promotion of Technical staff in the category III (Home Science) at ICAR-CIFA, Bhubaneswar on 27 July 2022

Dr A.K. Panda was the Invited Speaker in the International Conference on Sustainable Development in Hill and Coastal Ecosystem in Chennai organized by MSSRF, Chennai from 7-9 August 2022

Dr Sachidananda Swain served as External Examiner for M.Tech thesis evaluation and final viva-voce examination of CAET, OUAT, Bhubaneswar on 17 August 2022

Dr Arpita Mohapatra was awarded with Certificate of appreciation for outstanding contribution as a member of Reviewer panel by International Journal of Livestock Research for the month of August 2022

Dr Ananta Sarkar acted as examiner for evaluation of Ph.D. thesis (Agricultural Statistics) of IARI, New Delhi from 26 July-23 August 2022

Dr Lipi Das was invited as Lead Speaker, Agripreneurship Boot camp cum Idea thonorganized by NAU, Navsari, Gujarat on 8 September 2022

Dr Neetish Kumar was invited as Chief Guest on the occasion of Hindi Diwas 2022 by ICAR-DFMD, Bhubaneswar on 14 September 2022

Dr A.K. Panda received Best E Poster Award: In National Conference on Native Chicken on Relevance of Climate Smart Traditional Farming Systems in The Era of Omics held at Madras Veterinary College, Chennai during 22 -23 September 2022.

Dr Ananta Sarkar acted as examiner for evaluation of Ph.D. thesis (Farm Engineering) of BHU, Varanasi from 20 October-29 November 2022

Dr Anil Kumar delivered a Keynote Lecture during National Symposium on Innovations in forage and livestock sector for enhancing entrepreneurship and farm productivity held at IGFR, Jhansi during 1-3 November 2022

Dr Lipi Das served as reviewer of Indian Journal of Agriculture Sciences, ICAR, New Delhi on 2 November 2022.

Dr A.K. Panda was awarded with the Kerala Chapter IPSA Award. 2020 by Indian Poultry Science Association during IPSACON 2022 held at Mathura from 4-6 November 2022

Dr A.K. Panda served as Co-chairman in the National Symposium on Recent Advances in Sustainable Poultry Production for Livelihood and Nutrition Security held at DUVASU Mathura during 4-6 November 2022

Dr Tanuja S. received Certificate of Excellence in reviewing research article in Asian Journal of Fisheries and Aquatic Research on 4 November 2022

Dr Tania Seth served as Reviewer of special Issue on Underutilized Horticultural Genetic Resources: Conservation and Utilization (UHGRUC) by Journal of the Andaman Science Association, 27 (Special Issue) 2022 on 10 November 2022

Dr Sabita Mishra served as Chairman DPC, for probation clearance of LDC at ICAR-CIWA, Bhubaneswar on 14 November 2022

Dr Biswanath Sahoo served as Chairman in the Technical session-I (Cattle and Buffalo nutrition) in 19th Biennial International Conference of Animal Nutrition Society of India held at Guru Angad dev Veterinary & Animal Sciences University, Ludhiana, Punjab, India during 16-18 November 2022

Dr Biswanath Sahoo served as Co chairman in one Technical session-I (Nutrition and Animal Production Relationship) in V Annual convention and National Conference on NAVNAW at CVSc & AH, Jabalpur, MP during 21st-22nd September, 2022

Dr Tanuja S. served as a Rapporteur for the Thematic Session of the 8th Global Conference on Gender in Aquaculture & Fisheries held at Kochi, Kerala, India on 21-23 November 2022

Dr Sabita Mishra served as expert, KVK Scientific Advisory Committee (SAC) of KVK, Mayurbhanj on 24 November 2022

Dr Tanuja S. received Most Innovative Article of the month Award for November 2022 by Vigyan Varta on 30 November 2022.

Dr Praveen Jakhar received the Outstanding Scientist Award. 2022 by the Society for Tropical Agriculture. India during 14th International Conference on Agriculture, Horticulture and Food Science during 16-17 December 2022

Dr Sabita Mishra served as Member, IQA Cell for Sailabala Women's Autonomous College, Cuttack on 19 December 2022

Dr A.K. Panda received the Certificate of Appreciation as Member and Reviewer Panel in recognition of an outstanding contribution to the quality of the International Journal of Livestock Research for the year 2021-22

Dr A.K. Panda served as member of Subcommittee for Research and Development in Basic and Applied Science, Department of Science and Technology, Govt. of Odisha

Dr A.K. Panda received appreciation from Mukti Social Service Organization, Purusanda, Puri Dist. (Odisha) for dedication of work towards empowering rural farm women for the year 2022

Dr A.K. Panda served as Member of International advisory Board of The Journal of Poultry Science Japan (International) in the year 2022

Dr A.K. Panda served as Section editor and Editor of the Brazilian Journal of Animal Sciences (International) and Indian Journal of Poultry Sciences (National), respectively in the year 2022

Dr A.K. Panda served as Member, Editorial Board of Animal Nutrition and Feed Technology (National) and Amity Journal of Agribusiness (National) in the year 2022

Dr A.K. Panda guided one student of Master of Science in Bioinformatics of OUAT, Bhubaneswar in the year 2022

Dr Sabita Mishra served as National Facilitator by MANAGE, Hyderabad for Agriculture Extension Management during 2021-22

Dr Sabita Mishra is serving as General Secretary, Research Association for Gender in Agriculture (RAGA), Bhubaneswar from the year 2022

Dr Biswanath Sahoo served as reviewer for Journal of Range Management and Agroforestry, Animal Nutrition and Feed Technology, and Indian journal of Animal Nutrition for the year 2022

Dr Ananta Sarkar served as Editorial Board Member, RASHI: Journal of the Society for Application of Statistics in Agriculture and Allied Sciences (SASAA), BCKV, Mohanpur, Nadia, West Bengal in 2022

Dr Ananta Sarkar served as Reviewer of Journal of Indian Society of Agricultural Statistics for the year 2022

Dr Sachidananda Swain served as Reviewer, of Amity Journal of Agribusiness, Journal of Engineering Research and Reports and Mathews Journal of Nutrition & Dietetics for the year 2022

Dr Tanuja S. served as reviewer of Indian Journal of Fisheries and Fishery Technology for the year 2022

8. PUBLICATIONS

Research Papers

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- Bansal, V., Das, Lipi, Joshi, V. and Meena, S. C. 2022. Awareness and knowledge of farm women regarding climate change. *Agricultural Mechanization in Asia, Africa and Latin America*, 15(07): 8637-8643.
- Bansal, V., Das, Lipi, Joshi, V. and Meena, S. C. 2022. Farmer's awareness and use of different ICT Tools. *Asian Journal of Agricultural Extension, Economics and Sociology*, 40(10): 156-165.
- Das, Lipi and Panda, R. S. 2022. Livelihood enhancement and promoting gender equity through agri-horti cropping system model. *Journal of Community Mobilization & Sustainable Development*, 17(3): 1019-1025.
- Das, Lipi, Moharana, G. and Panda, R. S. 2022. Mitigating drudgery for gender equity and livelihood security in agri-horti cropping system model. *Journal of Community Mobilization and Sustainable Development*, 17(4): 1065-1071.
- Devi, I., Mallick, P. K., Mohapatra, A., Shinde, A. K. and Tomar, A. 2022. Effect of udder morphology on milk yield and suckling behaviour of Patanwadi lambs. *The Indian Journal of Small Ruminants*, 28 (1): 91-100.
- Dohiya, J., Panigrahy, S. R., Nayak, A. and Mohapatra, A. 2022. Socio economic impact of skill development training program on employment status of rural youth: A case of RSETI, Gujarat. *Journal of Experimental Agriculture International*, 44(9): 144-151.
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- Kishore, K., Kanupriya, C., Samant, D., Acharya, G. C., Singh, H. S. and Sahu, A. 2022. Phenological description and thermal time requirement of tamarind (*Tamarindus indica*) in tropical conditions. *Annals of Applied Biology*, 181(3): 309-320.
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- Maity, A., Marathe, R. A., Sarkar, A. and Basak, B. B. 2022. Phosphorus and potassium supplementing bio-mineral fertilizer augments soil fertility and improves fruit yield and quality of pomegranate. *Scientia Horticulturae*, 303: 111234.
- Maity, A., Sharma, J., Sarkar, A. and Basak, B. B. 2022. Zinc nutrition improves fruit yield, quality, and reduces bacterial blight disease severity in pomegranate (*Punica granatum* L.). *Journal of Plant Nutrition*, 46(9): 2060-2076.
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 20. Roy, S. S., Sarkar, A., Singh, H. N., Sharma, S. K., Ansari, M. A., Singh, K. H. R., Kadirvel, G., Punitha, P., Kshetri, P., Singh, T. H. S., Tamreihao, K., Rajiv, C., Devi, A. K., Langhu, T., Langamba, P. and Datt, S. 2022. Performance of micro and small foodpreneurs in Manipur during COVID-19 pandemic. *Indian Journal of Agricultural Sciences*, 92(4): 469-73.
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 25. Schwarcz, H.P., Ford, A., Knyf, M. and Kumar, A. 2022. The green deer: Chaya as a potential source of protein for the ancient Maya. *Latin American Antiquity*. 33(1): 175-186.
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9. TRAINING AND CAPACITY BUILDING

9.1. Training/Workshop/Interface/Exposure Visit/ Field Visit organised

SN	Name of the programme	Coordinators	Venue	Date	No of beneficiaries		
					Women	Men	Total
1	Field day and sensitization-cum-awareness programme on sunflower cultivation	P. Jakhar S. Swain	Dhaudidiha, Keonjhar	15 Jan 2022	50	-	50
2	Skill based capacity building programme on Improved management practices in poultry rearing	A. K. Panda B. Sahoo	ICAR-CIWA Bhubaneswar	11 Feb 2022	8	2	10
3	Production enhancement of sunflower popularization through Good Agricultural Practices (GAPs)	P. Jakhar S. Swain	Jamujodi, Keonjhar	14 Feb 2022	30	-	30
4	Capacity building programme on Integrated pest management in green gram for higher profitability	P. Jakhar S. Swain	Jogiabandha, Keonjhar	15 Feb 2022	40	-	40
5	Front Line Demonstration (FLD) on Composite fish farming	Tanuja S. Jyoti Nayak and S.K.Das	Kanjia, Puri	23 Feb 2022	15	10	25
6	Entrepreneurship development through small scale poultry production	A. K. Panda B. Sahoo	ICAR-CIWA Bhubaneswar	28 Feb 2022	8	2	10
7	Workshop-cum-training on Entrepreneurship development through value addition and market linkage	Lipi Das B.Sahoo	Sankilo, Cuttack	28 Feb 2022	31	11	42
8	Trainers' training programme on capacity building of farmwomen, sponsored by State Institute for Management on Agriculture, Rahamakhara, Lucknow,UP	Jyoti Nayak	ICAR-CIWA Bhubaneswar	28 Feb -4 March 2022	16	25	41
9	Sensitisation-cum-awareness programme on Value addition in sunflower and green gram.	P. Jakhar S. Swain	Jogiabandha, Keonjhar	1 March 2022	50	-	50

10	Field day on Integrated disease and pest management in sunflower crop	P. Jakhar S. Swain	Jamujodi, Keonjhar	5 March 2022	50	-	50
11	Entrepreneurship development in agriculture and allied sectors	S. Swain	ICAR-CIWA, Bhubaneswar	22-24 March 2022	8	7	15
12	Formation of women FPOs for entrepreneurship development and self-reliance	Lipi Das B. Sahoo	Sankilo, Cuttack	25 March 2022	50	20	70
13	Demonstration and popularisation of Pest and nutrient management technology in sunflower	P. Jakhar S. Swain	Anandpur, Keonjhar	2 April 2022	40	-	40
14	Capacity building programme on Doubling income of farm women through post harvest management and value addition technologies	P. Jakhar S. Swain	Golabandha, Keonjhar	21 May 2022	50	-	50
15	Awareness campaign on Protection of Plant Varieties and Farmer's Rights (PPV&FR) Act, 2001	L.P. Sahoo Tania Seth	ICAR-CIWA, Bhubaneswar	31 May 2022	450	50	500
16	Biannual workshop on Kharif season cultivation : A special focus on climate resilient non paddy crops (maize and groundnut)	P. Jakhar S. Swain Sabita Mishra Neetish Kumar P. K Rout	Ghasipura, Keonjhar	4 June 2022	135	-	135
17	Awareness programme and farmer-scientist interaction on Design and development of gender sensitive Integrated Vertical Nutri-farming System (IVNFS) for household nutrition	Tania Seth A.K. Panda P K. Rout	Sagada, Puri	7 June 2022	65	5	70
18	Training on Feeding management of lactating cows	Arpita Mohapatra	Banamalipur, Cuttack	8 June 2022	40	-	40
19	Inception workshop of NICRA GRIHA Project	Tanuja S Tania Seth	Sriramchan- drapur, Puri	9 June 2022	25	25	50
20	Nutri-sensitive agriculture for improving family food and nutritional security	A. K. Panda Pragati Rout Subrat Kumar Das	Sagada, Puri	23 July 2022	80	8	88
21	One day ATMA training programme of farm women from Biridi block, Jagatsinghpur	Arpita Mohapatra	ICAR-CIWA, Bhubaneswar	30 July 2022	40	-	40

22	National Swachhata Awareness on "Swachh Bharat Mission"	Sabita Mishra A. Sarkar D. N. Sarangi B. C. Behera	Lokapal, Puri	5 Aug 2022	100	20	120
23	Women kisan gosthi meeting : Formation of FPO for better livelihood	P. Jakhar S. Swain	Tarimula, Keonjhar	6 Aug 2022	35	-	35
24	Training on Record keeping in custom hiring centres by women leaders for empowerment	Sabita Mishra A. Kumar A. Sarkar D. N. Sarangi B. C. Behera	ICAR-CIWA, Bhubaneswar	19 Aug 2022	100	65	35
25	Demonstration on the Preparation of value added fish products and inauguration of Common Facility Centre	Tanuja S Lipi Das B. Sahoo	Kanamana, Puri	29 Aug 2022	40	20	60
26	Training on Winter vegetable cultivation	Sabita Mishra A. Sarkar D. N. Sarangi B. C. Behera	Badagadput, Puri	30 Sept 2022	100	80	20
27	Training-cum-Workshop on Promoting entrepreneurship through Women Farmer Producer Organizations (WFPOs)	Lipi Das B. Sahoo Ankita Sahu	Sankilo & Tental pur, Cuttack	30 Sept 2022	60	10	70
28	Workshop-cum-training programme on Strengthening Women Farmer Producer Organizations (WFPOs) for promoting agripreneurship in convergence mode	Lipi Das B. Sahoo A.C. Hemrom	Sankilo & Tentalpur, Cuttack	21 Oct 2022	43	13	56
29	Demonstration programme on Establishment of homestead nutrition garden	Tanuja S M. Prusty	Thaila, Bhadrak	27 Oct 2022	20	25	45
30	Field day on Harvest and post harvest technologies of paddy	P. Jakhar S. Swain	Budhipada, Keonjhar	4 Nov 2022	45	-	45
31	Demonstration programme on Establishment of homestead nutrition garden	Tanuja S Tania Seth	Sriramchandrapur, Puri	11 Nov 2022	35	-	35
32	Awareness programme and farmer-Scientist interaction on Integrated Vertical Nutri-farming System (IVNFS)	Tania Seth M. Prusty	Mendhasala, Khordha	16 Nov 2022	25	-	25
33	Demonstration cum training programme on Gender sensitive Integrated Vertical Nutri-farming System (IVNFS)	Tania Seth A. K. Panda M. Prusty	Sagada, Puri	18 Nov 2022	24	4	30

34	Capacity building programme on Value addition & drudgery reduction: A promising way for creating sustainable livelihood for rural women	S. Swain Jyoti Nayak	ICAR-CIWA Bhubaneswar	21-23 Nov 2022	29	1	30
35	Improved crop management technologies for sustainable pulse production	P. Jakhar S. Swain	Dhalapur, Keonjhar	24 Nov 2022	30	-	30
36	Improved crop management practices for sustainable oilseed production	P. Jakhar S. Swain	Bandhapada, Keonjhar	7 Dec 2022	35	-	35
37	Field day on Composite carp farming	Tanuja S Jyoti Nayak	Dubuduba, Puri	8 Dec 2022	30	-	30
38	Workshop-cum-training programme on Gender sensitive Integrated Vertical Nutri-Farming System for household nutrition and income enhancement	Tania Seth A. K. Panda Chaitrali S. Mhatre Manoranjan Prusty	ICAR-CIWA, Bhubaneswar	14 Dec 2022	25	0	25
39	Capacity Building Programme on Women Agripreneurship through livestock and fisheries	Tanuja S A.K. Panda Lipi Das D. Sahoo	ICAR-CIWA, Bhubaneswar	27 Dec 2022	25	0	25
40	Training cum skill development on Vegetable seed production	Jyoti Nayak L P Sahoo Geeta Saha	Dubuduba, Puri	30 Dec 2022	50	-	50





9.2. Capacity Building Programmes Organised under SCSP

Sl No.	Programme details (Field day/ FLD/ Farmers day/ Interaction/ meeting)	Coordinators	Venue	Date	No of beneficiaries		
					Women	Men	Total
1	Importance of organic manure and techniques of preparation	Sabita Mishra B.C. Behera	Lokapala, Puri	13 Jan 2022	80	-	80
2	Field day and sensitization-cum-awareness programme on Green gram (Mung) cultivation	S. Swain Neetish Kumar	Ghasipura, Keonjhar	22 Jan 2022	30	-	30
3	Improved methods of duck rearing by farm women	Sabita Mishra A. Sarkar D.N. Sarangi	Majhihara, Khordha	25 Jan 2022	10	-	10
4	Back yard duck farming for farm women	Sabita Mishra A. Sarkar D.N. Sarangi	Lokapala, Puri	1 Feb 2022	10	-	10
5	Back yard poultry rearing for enhancement of income and nutrition of farm women	Sabita Mishra D.N Sarangi B.C. Behera	Taraboi, Puri & Majhihara , Khordha	15 Feb 2022	20	-	20
6	Skill based CBP on Women entrepreneurship through Improved goatery & poultry farming	B. Sahoo A. K. Panda	Sribantapur, Jajpur	5 March 2022	18	-	18

7	Skill based capacity building programme on Women entrepreneurship through improved small scale goatery and poultry Farming	A. K. Panda B. Sahoo	Kabirpur, Jajpur	9 March 2022	45	15	60
8	Skill based CBP on Women entrepreneurship through improved goat farming	B. Sahoo A. K. Panda P. Jakhar	Sribantapur, Jajpur	17 March 2022	30	-	30
9	Skill based capacity building programme on Women entrepreneurship through Improved goat farming	B. Sahoo A.K. Panda P. Jakhar	Kabirpur, Jajpur	21 March 2022	26	-	26
10	Training cum Demonstration Programme on Improved package of practices for higher income through backyard poultry farming	A. K. Panda Neetish Kumar P.K.Rout	Alanda, Puri	25 March 2022	30	12	42
11	Training on Mushroom cultivation	Sabita Mishra A. Sarkar	Lokapala, Puri	28 March 2022	30	-	30
12	Follow up MGMT activity and distribution of input and survey on Nutri-smart village	A.Sarkar D.N. Sarangi	Majhihara, Khordha	4 April 2022	30	-	30
13	Importance of micronutrients in daily diet to combat malnutrition	Jyoti Nayak Geeta Saha	Kunjar, Nimapada	8 April 2022	30	-	30
14	Back yard poultry rearing for women empowerment	Sabita Mishra D.N Sarangi B.C. Behera	Chotijodi & Lokapala, Puri	23 April 2022	18	-	18
15	Training cum Demonstration programme on Improved package of practices for higher income through backyard poultry farming	A. K. Panda Neetish Kumar P.K.Rout S.K.Das	Budhei, Puri	28 April 2022	40	10	50
16	Backyard duck farming and demonstration of seed treatment drum, tools and implements	Sabita Mishra D.N Sarangi B.C. Behera	Jugalaipadar, Puri	3 May 2022	50	-	50
17	Demonstration of seed treatment drum, tools and implements	Sabita Mishra D.N Sarangi B.C. Behera	Taraboi, Puri	7 May 2022	20	-	20
18	Women entrepreneurship through small scale Goatry farming	B. Sahoo T. Sahoo	Sarat, Khordha	20 May 2022	40	-	40
19	Raising of nutri garden in backyard and supply of inputs to beneficiaries	Jyoti Nayak Geeta Saha	Kunjar, Puri	24 May 2022	30	-	30
20	Demonstration of battery operated sprayer	Sabita Mishra D.N Sarangi B.C. Behera	Taraboi, Puri	24 May 2022	9	-	9

21	Training cum demonstration programme on Scientific management practices for higher income through backyard poultry farming	A. K. Panda, P. Jakhar P.K.Rout S.K.Das	Pateligaon, Puri	25 May 2022	40	6	46
22	Awareness programme on Entrepreneurship development of farm women through spice grinding machine	Sabita Mishra, A. Sarkar, D. N Sarangi B.C. Behera	Jagulaipadar, Puri	3 June 2022	50	-	50
23	Improved duck rearing	Sabita Mishra A. Sarkar D. N Sarangi B.C. Behera	Guapur, Khordha	7 June 2022	50	-	50
24	Training cum Demonstration Programme on Improved package of practices for higher income through backyard poultry farming	A. K. Panda Tania Seth Pragati Rout	Bianla, Puri	7 June 2022	20	5	25
25	Women entrepreneurship through improved goat rearing and nutri-sensitive agriculture	B. Sahoo Lipi Das T. Sahoo	Sribantapur, Jagatsinghpur	9 June 2022	20	21	41
26	Livelihood enhancement of farm women through improved duck rearing	Sabita Mishra A. Sarkar D. N. Sarangi B. C. Behera	Jaguleipadar, Puri	10 June 2022	70	-	70
27	Popularisation of Improved technologies for higher yield and value addition in field crops	P. Jakhar Neetish Kumar P.K. Rout	Gualigorada, Puri	17 June 2022	40	-	40
28	Value addition to mushroom	Sabita Mishra A. Sarkar D. N. Sarangi B. C. Behera	ICAR-CIWA, Bhubaneswar	29 June 2022	30	-	30
29	Awareness programme on Entrepreneurship development of farm women through spice grinding machine	Sabita Mishra A.Sarkar D. N Sarangi B.C. Behera	Lokapal, Puri	2 July 2022	50	-	50
30	Packaging of rice based value added products & marketing	Jyoti Nayak Geeta Saha	Kadua, Puri	4 July 2022	50	-	50
31	Skill based capacity building programme on Improved goat farming for women entrepreneurship in goatry	B. Sahoo M. Prusty T. Sahoo	Khalgaon Jagatsinghpur	5 July 2022	15	5	20

32	Farm women-Scientists interaction and inauguration of Custom Hiring Centre	A. Sarkar Sabita Mishra A. Kumar D. N. Sarangi B. C. Behera L. P. Sahoo	Jaguleipadar, Puri	5 July 2022	85	15	100
33	Establishment of Custom Hiring Centre and installation of spice grinding machine	Sabita Mishra A. Sarkar D. N Sarangi B.C. Behera	Taraboi, Puri	13 July 2022	50	-	50
34	Workshop cum training programme on mechanization for farm women through WFPOs	Lipi Das B.Sahoo A.C. Hemrom	Tentalpur, Cuttack	16 July 2022	40	14	54
35	Farm women awareness programme on ICAR-CIWA technologies	P. Jakhar P.K.Rout S.K.Das	Dhobashila, Balasore	16 July 2022	30	-	30
36	Demonstration of spice grinding machine and follow up MGMT activities	D.N. Sarangi B.C. Behera	Jagulaipadar, Puri	30 July 2022	50	-	50
37	Workshop cum training programme on Mechanization for farm women through WFPOs	Lipi Das B.Sahoo A.C. Hemrom	Tentalpur, Cuttack	3 Aug 2022	40	10	50
38	Technology demonstration programme on Good agricultural practices for paddy cultivation	P. Jakhar S. Swain	Goudadiha, Keonjhar	4 Aug 2022	40	-	40
39	Training cum demonstration programme on Good agricultural practices for paddy cultivation	P. Jakhar S. Swain	Golabandha, Keonjhar	5 Aug 2022	40	-	40
40	Establishment of Custom Hiring Centre	Sabita Mishra A. Sarkar B.C. Behera P.K. Rout	Lokapal, Puri	5 Aug 2022	35		35
41	Organised field and planning on vermicompost preparation	A.C. Hemrom	Sankhilo, Cuttack	17 Aug 2022	20	-	20
42	Interaction meeting for identification of Custom Hiring Centre and installation of spice grinding machine	A. Sarkar D.N. Sarangi B.C. Behera P. Jakhar	Guapur, Khordha	20 Aug 2022	40	-	40
43	Inauguration of Custom Hiring Centre for livelihood improvement of farm women	Sabita Mishra A. Sarkar Anil Kumar B.C. Behera	Guapur, Khordha	27 Aug 2022	35	-	35
44	Training on Pre-season cultivation and follow up scsp activities.	Sabita Mishra A. Sarkar D. N Sarangi B.C. Behera	Taraboi, Puri	7 Sept 2022	50	-	50

45	Training and demonstration on IVNFS model	Tania Seth A.K Panda M. Prusty P. K Rout	Chitra, Puri	22 Sept 2022	36	4	40
46	Skill based capacity building programme on Women entrepreneurship through improved goat farming.	B. Sahoo T. Sahoo	Jamuna, Cuttack	18 Oct 2022	39	16	55
47	Post flood management of animals, poultry and duck and follow up MGMT and SCSP activities.	A.Sarkar A. Mahapatra D. N Sarangi B.C. Behera	Jagulaipadar, Kanas, Puri	24 Nov 2022	50	-	50
48	Improved management practices for higher income through backyard poultry farming	A. K. Panda Neetish Kumar, P.K.Rout	Chitra & Pateligaon, Puri	29 Nov 2022	32	8	40
49	Winter vegetable cultivation	S. Mishra A.Sarkar Arpita Mahapatra D. N Sarangi B.C. Behera	Badagadaput, Puri	30 Nov 2022	100	-	100
50	Workshop-cum-Capacity Building Programme on Farm mechanization for farm women through WFPOs	Lipi Das Tania Seth A.C. Hemrom	Sankilo, Cuttack	30 Nov 2022	44	06	50
51	Livelihood improvement through value addition and product diversification of local produce	S. Swain Neetish Kumar	Kujanga, Jagatsinghpur	16 Dec 2022	45	-	45
52	Establishment of Custom Hiring Centre (CHC) on grain processing	S. Swain Jyoti Nayak Neetish Kumar	Nunukua, Jagatsinghpur	23 Dec 2022	15	-	15
53	Training cum Demonstration Programme on Improved management practices in family poultry farming for higher income and nutrition	A. K. Panda P. K. Rout	Olikana, Puri	30 Dec 2022	34	6	40

10. HUMAN RESOURCE DEVELOPMENT

Participation of Scientific and Technical staff in Seminars/Meetings/Workshops/Conferences/Webinars etc.

Sl no	Programme title	Category	Venue and organisers	Date	Attended by
1	Advanced Statistical Techniques for analyzing data using R	Online Training Program	ICAR- IIRR, Hyderabad	3-15 Jan, 2022	Ankita Sahu
2	National Facilitators Development for Agricultural Extension Management	Training Programme	MANAGE, Hyderabad	17-22 Jan 2022	A.K. Panda Sabita Mishra
3	XIII th Workshop of AICRP on ESA	Workshop	ICAR-CIAE, Bhubaneswar	2-3 Feb 2022	Jyoti Nayak C. S. Mhatre
4	Recent advances for managing soil health and crop production	International Conference (virtual)	GKV Society, Agra, India	18 -20 Feb, 2022	Praveen Jakhar
5	National Webinar on Surviving the Pandemic through Aquaculture: The Kerala Experience.	National Webinar	Dept. of Aquatic Biology and Fisheries, University of Kerala.	24-25 Feb 2022	Tanuja S
6	Workshop on Intellectual Property Rights: Issue and Challenges	Workshop	ICAR-CIWA, Bhubaneswar	26 Feb 2022	All staff
7	Recent Trends, Opportunities and Value Creation in Animal Husbandry Sector	Webinar	Manage, Hyderabad	2 March 2022	B. Sahoo
8	Fodder Resource Development Plan for Odisha	Online Workshop	ICAR-IGFRI and OUAT, Bhubaneswar	9 March 2022	Sabita Mishra
9	संयुक्त वैज्ञानिक संगोष्ठी-2022	Seminar	NISER, Bhubaneswar	15 March 2022	All staff
10	Entrepreneurship Development in Agriculture and Allied Sectors	Capacity building	IIM, Nagpur	22-24 March 2022	All staff

11	Fruit production in Eastern Tropical Region of India: Challenges and Opportunities	National Seminar	Central Horticultural Experiment Station (ICAR-IIHR), Bhubaneswar	24-26 March 2022	Ankita Sahu
12	Conference on Agricultural Development, its Challenges and Future Needs	Global Conference (Virtual)	KVK, Chanpura, Bihar	9-11 April 2022	Praveen Jakhar
13	62 nd Labour Economic Conference	Conference	IIT, Roorkee	11-13 April 2022	Neetish Kumar Anil Kumar
14	NASF National Workshop on the Strategic area "Social Sciences and Policy in Agriculture"	Online Workshop	NASF	5 April 2022	Lipi Das
15	Farmers FIRST Programme of ICAR-NRRI	Workshop	Cuttack	6 April 2022	Lipi Das
16	अंश-2022	राष्ट्रीय हिंदी वेबिनार	CSIR NAL, एयरपोर्ट रोड, बेंगलुरु	21-22 अप्रैल 2022	प्रवीण जाखड़
17	Natural Farming for Sustainable Production, Nutrition and Health	Webinar	ICAR-CIWA, Bhubaneswar	23 April 2022	All staff
18	Analytical Techniques for Impact Evaluation Methods	Training	BHU, Varanasi	25-30 April 2022	A. Sarkar
19	Review Meeting of Nutri-Smart Village Programme	Meeting	ICAR-CIWA Bhubaneswar	25 April 2022	All staff
20	Project Workshop conducted by IRRI	Workshop	Krishi Bhawan, Bhubaneswar	26 April 2022	A. K. Panda
21	SPARROW	Training	ICAR-CIWA, Bhubaneswar	27 April 2022	All staff
22	Revisiting Poultry Production and Marketing Systems for Addressing the Fast Changing Consumer Preferences	National seminar	ICAR-DPR Hyderabad	6 May 2022	A. K. Panda
23	Livestock for Sustainable & Inclusive Agricultural development	Seminar	ICAR-CIRC, Meerut	7 May 2022	B. Sahoo
24	Annual Workshop of AICRP on Women in Agriculture	Workshop	ICAR-CIWA, Bhubaneswar	12-13 May 2022	All staff
25	10 th National Seminar on Agriculture and more: Beyond 4.0	Seminar	SKUAST, Srinagar	26-28 May 2022	Sabita Mishra
26	Underutilized Horticultural Genetic Resources: Conservation and Utilization (NCUHGR-2022)	Virtual National Conference	ICAR-CIARI, Port Blair	3-4 June 2022	Tania Seth
27	कार्यालीन कार्य मे तथा बोलचाल के भाषा में हिन्दी व्याकरण का प्रयोग	Hindi Workshop	ICAR-CIWA, Bhubaneswar	7 June 2022	All staff
28	Impact of Climate Change and Heat Stress on Dairy Cattle and Mitigation Strategies	International Webinar	ICAR-NDRI, Karnal	20- 22 June 2022	Arpita Mohapatra

29	Orientation of Nodal officers of Disaster Management	Workshop	NIDM, New Delhi	26- 28 June 2022	Praveen Jakhar
30	Thematic Review Meeting of NICRA Projects	Meeting	NASC Complex, New Delhi	8 July 2022	Tanuja S
31	Interface Meeting with DG, ICAR	Meeting	ICAR-IIWM, Bhubaneswar	9 July 2022	Lipi Das
32	Canopy Management in Mango under High Density Planting System	Training Program	Central Horticultural Experiment Station (ICAR-IIHR), Bhubaneswar	15 July 2022	Ankita Sahu
33	ICAR-APAARI Knowledge Management Workshop	Online Workshop	NASC Complex, New Delhi	23 July 2022	A. Sarkar
34	Innovations in Fodder Technologies for Sustainable Livestock Production	Online training	MANAGE in collaboration with IGRI, Jhansi	1-5 Aug 2022	B. Sahoo
35	National Intellectual Property Awareness Mission	Awareness/ Training	NIPAM, Govt. of India	5 Aug 2022	A. K. Panda
36	International Conference on Sustainable Development in Hill and Coastal Ecosystem	International Conference	MSSRF, Chennai	7-9 Aug 2022	A. K. Panda
37	RE-Appex Committee Meeting for shortlisting project proposals	Meeting	DA& FE, Govt. Odisha	8 Aug 2022	Sabita Mishra
38	Science for Society: Agricultural Imperatives	Seminar	ICAR-CIWA, Bhubaneswar	12 Aug 2022	Sabita Mishra
39	Review Meeting on Nutri-Smart Village Programme	Meeting	NCAP, New Delhi	17 Aug 2022	Lipi Das
40	Interface Meet on Convergence Mode under NSV programme	Meeting	AICRP Centre MPUAT, Udaipur	18- 19 Aug 2022.	Lipi Das
41	Preparatory Meeting on Issue of Drudgery Reduction for Farmwomen	Meeting	DA &FE, Govt. of Odisha	20 Aug 2022	Jyoti Nayak
42	Advances in Agriculture and Food System towards Sustainable Development Goals	International conference	UAS, Bangalore	22-24 Aug 2022	S. Swain Arpita Mohapatra Tania Seth
43	Systematic Reviews and Evidence Gap Map	Workshop	CGIAR Gender Platform	5-7 Sept 2022	Tanuja S Arpita Mohapatra
44	Ozone Layer, its Depletion and Impact on Living Beings (ODIL-2022)	Online National Conference	ICAR-NRCC, Bikaner	16-17 Sept 2022	Arpita Mohapatra
45	Extension and Advisory Services to Fast-Track Technology	Meeting (on line)	DA & FE, Govt. Odisha	20 Sept 2022	Sabita Mishra

46	Reaching Women Farmers with Climate-Smart Agriculture Information: How Can We Do Better?	International Seminar	IFPRI in partnership with ICAR-CIWA	27 Sept 2022	Anil Kumar A.K. Panda Sabita Mishra Lipi Das
47	Policy Roundtable on Transforming Odisha's Agri Food system	Workshop	DA &FE, Govt. of Odisha	20-21 Oct 2022	Jyoti Nayak
48	IPSACON-2022 and National Symposium on Recent Advances in Sustainable Poultry Production for Livelihood and Nutrition Security	National Symposium	DUVASU Mathura	4-6 Nov 2022	A. K. Panda
49	Interaction Meet: Officer Incharge Data Management	Workshop	ICAR-IASRI, New Delhi	10 Nov 2022	A. Sarkar
50	Celebration of Mandia Diwas	Workshop	DA &FE, Govt. of Odisha	10 Nov 2022	Jyoti Nayak
51	73 rd Annual Conference of Indian Society of Agricultural Statistics (ISAS)	Conference	SKUAST, J&K	14-16 Nov 2022	A. Sarkar
52	8 th Global Conference on Gender in Aquaculture and Fisheries (GAF8)	Global Conference	ICAR-CIFT, Kochi, Kerala	21-23 Nov 2022	Tanuja S
53	Research and Development in Basic and Applied Science of Department of Science and Technology	Review meeting	Odisha Bigyan Academy Bhubaneswar	22-23 Nov 2022	A. K. Panda
54	31 st National Congress of Veterinary Parasitology and National Symposium on "Green Management of Animal Parasites to Enhance Livestock Production, Livelihood and One Health	National Symposium	OUAT, Bhubaneswar	6-8 Dec 2022	A.K. Panda Arpita Mohapatra
55	सरकारी कामकाज में मसौदा तैयार करना तथा हिन्दी में टिप्पणियाँ लिखना	Hindi Workshop	ICAR-CIWA, Bhubaneswar	8 Dec 2022	All staff
56	OIIPCRA, MoAFW and Wordbank team Review	Meeting	Krishi Bhawan and Hotel Suryansh, Bhubaneswar	15 Dec 2022	Praveen Jakhar
57	14 th International Conference on Agriculture, Horticulture and Food Science	International Conference	Hotel The Exotica Grand, New Delhi	16-17 Dec 2022	Praveen Jakhar
58	Analysis of Experimental Data	Online Mode	ICAR-NAARM, Hyderabad	19-28 Dec. 2022	Praveen Jakhar

11. RESEARCH PROJECTS

S. No	Institute Projects	Duration	Research Programme no.	Investigators
1	Studies on Sectoral Contribution of Women in Agriculture and Allied Sectors	2020-23	1	Dr. Anil Kumar Dr. Ananta Sarkar Dr. Tanuja S. Dr. Neetish Kumar
2	Development of Integrated National Information System for Women in Agriculture	2020-23	1	Dr. Ananta Sarkar Dr. Neetish Kumar
3	Gender Mainstreaming through Govt. Schemes in Animal Husbandry Sector for Empowering Farm Women	2021-24	1	Dr. Biswanath Sahoo Dr. Anil Kumar
4	Integrating Gender Dimensions for Improvement of Livelihood through Empowerment	2020-23	2	Dr. Sabita Mishra Dr. Anil Kumar
5	Women's Empowerment through Watershed Development Programmes in Different Agro-Ecological Regions of India	2021-24	2	Dr. Praveen Jakhar Dr. Sabita Mishra
6	Developing Community Seed Network in Traditional Production Systems for Sustainable Livelihood of Tribal Women	2021-24	2	Dr. L. P. Sahoo Dr. Praveen Jakhar Dr. Neetish Kumar
7	Assessment of Role of Organised Dairy Sector on Livelihood of Women	2021-24	2	Dr. A. Mohapatra Dr. Biswanath Sahoo Er. Chaitrali S Mhatre
8	Development of Women Entrepreneurship in Livestock and Fisheries Sector for Promoting Gender Equity and Strengthening Livelihood	2020-23	3	Dr. Tanuja S Dr. Arun Kumar Panda Dr. Lipi Das Dr. Biswanath Sahoo
9	Entrepreneurship Development through Value Addition and Product Diversification of Food Crops	2020-23	3	Dr. Sachidananda Swain Dr. Lipi Das Dr. Jyoti Nayak Dr. Tania Seth
10	Study of Farm Equipments and Tools for Drudgery Reduction of Women in Agriculture	2020-23	4	Er. Chaitrali S Mhatre Dr. Jyoti Nayak
11	Designing and Development of A Gender Sensitive Agri-Nutri (GSAN) Farming System Model	2019-22	5	Dr. Lipi Das Dr. S. K. Srivastava Dr. Biswanath Sahoo Dr. Praveen Jakhar Dr. Sachidananda Swain Dr. Tania Seth

12	Design and Development of Gender Sensitive Integrated Vertical Nutri-Farming System (IVNFS) for Household Nutrition and Income	2020-23	5	Dr. Tania Seth Dr. Arun Kumar Panda Er. Chaitrali S Mhatre
13	Assessment and Refinement of Integrated Farming Systems in Gender Perspective in Different Agro-Ecological Regions of India	2021-24	5	Dr. A. K. Panda Dr. Praveen Jakhar
14	Development of Nutri Smart Villages for Food Security and Dietary Diversity for Combating Malnutrition	2021-24	5	Dr. Jyoti Nayak Dr. Anil Kumar Dr. Arun Kumar Panda Dr. L. P. Sahoo Dr. Tanuja S.
15	AICRP on Ergonomics and Safety in Agriculture (ESA)	2017-23	ICAR- External Project	Er. Chaitrali S. Mhatre Dr. Jyoti Nayak
16	Women Empowerment and Gender Sensitization- Developing a Model for Bridging Gender Gap	2019-22	NASF Project	Dr. Lipi Das Dr. Praveen Jakhar Ms. Gayatri Moharana (on study leave) Dr. Ankita Sahu
17	Gender Responsive Integrated Homestead Aqua-Horticulture: a Climate Resilient Approach towards Livelihood Diversification	2022- 24	NICRA Project	Dr. Tanuja S. Dr. Lipi Das Dr. Ananta Sarkar Dr. Tania Seth
18	Empowering Farm Women through Climate Smart Intensification and Diversification in Minor Irrigation Command Area of Keonjhar District (Odisha)	2021-24	OIIPCRA Project	Dr. Praveen Jakhar Dr. Sachidananda Swain Dr. Sabita Mishra Dr. Neetish Kumar

12. PERSONNEL

12.1 Details of Staff as on 31-12-2022

S.No	Name	Designation
1	Dr Mridula Devi	Director
2	Dr. Anil Kumar	Principal Scientist
3	Dr. Sabita Mishra	Principal Scientist
4	Dr. Arun Kumar Panda	Principal Scientist
5	Dr. Lipi Das	Principal Scientist
6	Dr. Biswanath Sahoo	Principal Scientist
7	Dr. Jyoti Nayak	Principal Scientist
8	Dr. Ananta Sarkar	Principal Scientist
9	Dr. Laxmipriya Sahoo	Senior Scientist
10	Dr. Praveen Jakhar	Senior Scientist
11	Dr. Sachidananda Swain	Senior Scientist
12	Dr. Tanuja S.	Senior Scientist
13	Ms. Gayatri Moharana	Scientist (On study leave)
14	Dr. Tania Seth	Scientist
15	Er. Chaitrali S. Mhatre	Scientist
16	Dr. Arpita Mahapatra	Scientist
17	Dr Ankita Sahu	Scientist
18	Dr. Neetish Kumar	Scientist
19	Sh. Shaji A.	Assistant Chief Technical Officer
20	Mrs. GeetaSaha	Technical Officer
21	Sh. Debendra Nath Sarangi	Technical Officer
22	Sh. Manoranjan Prusty	Technical Officer
23	Sh. Bhikari Charan Behera	Technical Officer
24	Mrs. Tapaswini Sahoo	Senior Technical Assistant
25	Sh. Sanjay Kumar Behera	Senior Technical Assistant (On study leave)

26	Er. Pragati Kishore Rout	Senior Technical Assistant
27	Er. Subrat Kumar Das	Senior Technical Assistant
28	Sh. Atul Chetan Hemrom	Senior Technical Assistant
29	Sh. Prabhat Kumar Nayak	FAO
30	Mrs. Parisima Sen	Private Secretary
31	Mrs. Bishnupriya Moharana	Assistant Administrative Officer
32	Sh. Parikshit Mallik	Personal Assistant
33	Sh. JyotiRanjan Das	Upper Division Clerk
34	Sh. Tushar Ranjan Mangaraj	Lower Division Clerk
35	Sh. Pramod Kumar Sahoo	Lower Division Clerk
36	Sh. Biswanath Biswal	Skilled Support Staff

12.2 Joining/ Transfer/Promotions/Superannuation

Sl. No.	Name	Designation	Due Date	Details
1	Dr. Mridula Devi	Director	14.11.2022	Joined as Director
2	Dr S.K.Srivastava	Principal Scientist	31.03.2022	Retired on Superannuation
3	Dr. Laxmi Priya Sahoo	Senior Scientist	03.10.2012	Promoted to Senior Scientist (RPL-13A)
4	Dr. Praveen Jakhar	Senior Scientist	08.01.2020	Promoted to Senior Scientist (RPL-13A)
5	Dr. Sachidananda Swain	Senior Scientist	04.11.2021	Promoted to Senior Scientist (RPL-13A)
6	Dr. Tanuja S.	Senior Scientist	15.12.2019	Promoted to Senior Scientist (RPL-12)
7	Dr. Tania Seth	Scientist	01.01.2019	Promoted to Scientist (RPL-11)
8	Dr. Arpita Mohapatra	Scientist	01.07.2019	Promoted to Scientist (RPL-11)
9	Shri Bishnu Charan Sahu	Technical Officer	31.05.2022	Retired on Superannuation
10	Shri Biswanath Biswal	Skilled Support Staff	27.07.2018	MACPS (PL-3)

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କକ୍ଷିଚର ପଦ୍ମିନୀଙ୍କ ଚାଲିଯି (୩ ବିଭାଗ ପ୍ରକାଶ)

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॥ ପ୍ରଭାନ୍ତରୁ ॥ ଜଗନ୍ନାଥ, ଶ୍ରୀମତୀ: ଶାରଦା ଚୂଡ଼ି ପରିଧାନରେ ସେଝାସଜ ହୋଇ ପେଟାପେଟିଆ ପାଉଁଶ, ଶୁଭରାଜ

ପାଳଘାଟର ବେଢ଼ାପାଣି ଶୈବ ପେଟାକଟିକ ଇତିହାସ, ବ୍ରହ୍ମପୁର

ମହାତ୍ମା ଗାନ୍ଧୀଙ୍କ ଶ୍ରଦ୍ଧାଘାତ ଚିତ୍ରଣ
ପ୍ରାୟ ୧୫ ମିନିଟ୍ ପ୍ରଦର୍ଶନ

ମହିଳା ସ୍ୱୟଂ ସହାୟକ ଗୋଷ୍ଠୀ

ବିଦ୍ୟା ଲକ୍ଷ୍ମୀ ପବିତ୍ରା ପ୍ରସ୍ତୁତ କରାଯାଇ ଲାଗିବା ସେବାରେ ଶ୍ରଦ୍ଧା
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ସୂଚୀ ୫ ସୁଗନ୍ଧା ଚନ୍ଦ୍ରୀ

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સાથે સાથે સ્ત્રીઓને જોડવાનો પ્રયત્ન કરવામાં આવ્યો છે.

ଆନୁଷ୍ଠାନିକ ସହଯୋଗ: ଶ୍ରୀମତୀ ସୁଷମା ମହାନ୍ତି, ଶ୍ରୀମତୀ ସୁମିତ୍ରା ମହାନ୍ତି, ଶ୍ରୀମତୀ ସୁମିତ୍ରା ମହାନ୍ତି, ଶ୍ରୀମତୀ ସୁମିତ୍ରା ମହାନ୍ତି, ଶ୍ରୀମତୀ ସୁମିତ୍ରା ମହାନ୍ତି

[illegible]

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[illegible]

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ଉତ୍ତର, ୨୯/୩(ଆପ୍): ଉତ୍ତର ଗିରି ପ୍ରାଣ ସମ୍ପଦ ବୈଜ୍ଞାନିକ ଡା. ଅରୁଣ କୁମାର ପଣ୍ଡା, ଡା. ବିଶ୍ଵରାମ

ଦୁଇ ବର୍ଷ ପୂର୍ବେ ଉପରୋକ୍ତ ଶିବିରରେ ଯୋଗଦାନ
କରିବା ବେଳେ ଗାଆଁ ଗହଳ ସିଂହପୁର ସିଂହପୁର

ମୁରାବାନୀଙ୍କ ନାମ ଉପସ୍ଥିତ ଥିଲେ । ଶିବିରରେ

ଦିନା ବଡ଼ ସହାୟତା ଗୋଷ୍ଠୀର ମହିଳାଙ୍କ ସମେତ ଏ

ଅନୁସୂଚିତ ଜାତିର ମହିଳାମାନଙ୍କୁ ପ୍ରତ୍ୟେକ ସଂସ୍ଥା
ନିଜ ମଣ୍ଡଳରେ ଯେଉଁ ସୁବିଧା ଅନୁକୂଳ ଉପକରଣ ବ୍ୟବହାର

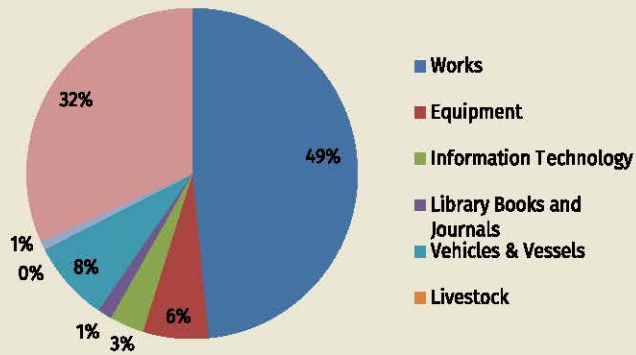
විශාලතම මානව සම්පත් සහිත රටක් ලෙස සැලකෙන බැවින්, ශ්‍රී ලංකාවේ ස්වදේශික සම්පත් සහිතව සංචාරකයන්ගේ අවධානය ආකර්ෂණය කිරීම සඳහා සැලසුම් කළ යුතුය.

ମିଶ୍ର ସହିତ ଧନ୍ୟବାଦ ଅର୍ପଣ କରିଥିଲେ ।

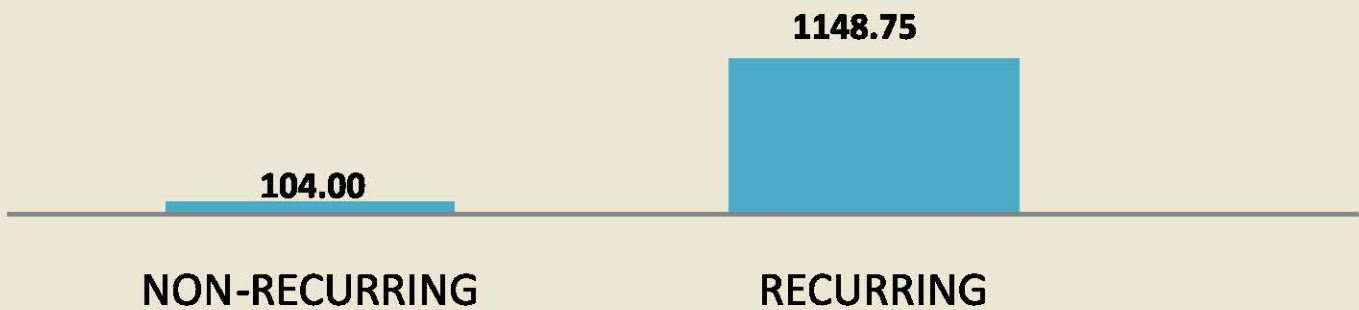
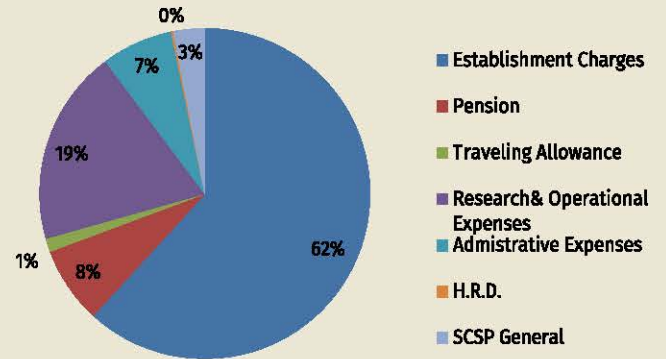


BUDGET & EXPENDITURE 2022-23

NON-RECURRING



RECURRING



REVENUE GENERATION 2022-23

Rs. in lakhs





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