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कृषिवाजिकी समाचार पत्र Agroforestry Newsletter

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Dr. O. P. Chaturvedi joined as Director

Dr. O P. Chaturvedi, has joined as Director, ICAR-Central Agroforestry Research Institute (CAFRI), Jhansi w.e.f. 2nd November, 2015. Prior to his joining at the Institute, he served as Lecturer in Botany, Kumaon University, Nainital, 1982-83; Subject Matter Specialist, Forestry, 1983-1986 and Senior Research Officer, Silviculture, 1986-87 at G.B. Pant University of Agriculture and Technology, Pantnagar; Senior Scientist-cum-Associate Professor, Agroforestry/Silviculture, 1987-1998 and Chief Scientist-cum-University Professor, Agroforestry/Silviculture, 1982-2002 at Rajendra Agricultural University, Pusa, Bihar; Principal Scientist, Agroforestry/Forestry, NRCAF, Jhansi, 2002-2009; Head, Plant Science Division, IISWC, Dehradun, 2009-2015.



Dr. Chaturvedi received number of Awards such as Forestry Teacher Education Award, U.K., 1988; Overseas Technical Trainers Award, U.K., 1989; Personal Academic Promotion Award, RAU, Pusa, 2002; K.G. Tejwani Award, Agroforestry, 2008; NAAS-Recognition Award, 2008; Editor-in-chief, Indian Journal of Agroforestry, 2003-08; Chief Editor, Indian Journal of Soil Conservation, 2009-2015.

Fellow: NAAS, New Delhi in 2007, National Institute of Ecology; Range Management Society of India; Indian Association of Soil and Water Conservationists.

Research Areas: Forestry; agroforestry; agrisilvicultural systems; agrihorticultural systems; silvipastoral systems; quality plant production; growth and production modeling of trees; wasteland reclamation and development; watershed management and development on ecosystem basis.

Forthcoming Events

- RAC Meeting 6th & 7th January, 2016
- Kisan Jagrookta Sammelan Evam Gosthi- 21st January, 2016
- Celebration of ICAR-Industry Day & Agricultural Education Day
- Institute Joint Staff Council/Women Cell / PME/ RFD Cell meetings

*Happy New Year
2016*

From Director & Editorial Board

परासई—सिंध जलसमेत में कृषिवानिकी विकास

परासई—सिंध जलसमेत, ब्लाक बबीना, जनपद झाँसी (उ.प्र.) में 1246 हे. क्षेत्रफल पर फैला है। इस जलसमेत का चयन भूगर्भ जलस्तर बढ़ाने के साथ ही कृषिवानिकी की विभिन्न पद्धतियों द्वारा सहिष्णु कृषि के लिए किया गया था। जल समेत हलका ढलवाँ, लाल मृदा युक्त है। इसके लगभग 88 प्रतिशत भूभाग में खेती की जाती है। पीने और खेती के पानी का स्रोत उथले और चौड़े कुँए हैं जो चट्टान के ऊपर स्थित मिट्टी की 2-10 मी. की पर्त में एकत्र वर्षा जल से भरते हैं। भूमिगत जल स्रोत की अनुपस्थिति में इन कुँओं में जल स्तर कम होता है और प्रायः गर्मी आने तक सूख जाते हैं। जल भण्डारण तथा भूजल संवर्धन की पुरातन तकनीक "हवेली" का प्रचलन और ज्ञान इस जलसमेत में विद्यमान है। प्राचीन काल से बुन्देलखण्ड में जल की उपलब्धता इन्हीं हवेलियों के माध्यम से सुनिश्चित की जाती थी जो कि वर्तमान में देख रेख के अभाव में अप्रयोज्य हो गई है। नई हवेलियाँ धनाभाव में नहीं बन पा रही हैं। जीवनयापन के लिए ग्रामीणों ने कृषि क्षेत्र बढ़ाने में उत्तरोत्तर वृद्धि की। क्षेत्रफल बढ़ने से कुल उत्पादन बढ़ गया। युवाओं ने अन्य रोजगार से आय बढ़ायी। अस्तु, जीवन यापन के लिए गौण व्यवसाय, मुख्य व्यवसाय बन गये हैं। तथापि आर्थिक स्थिति दिन प्रतिदिन कमजोर ही होती जा रही है। किसान छटपटा रहा है, परन्तु कोई ठोस उपाय करने में असमर्थ है।



उपरोक्त परिस्थितियों में जलसमेत परियोजना से क्षेत्र के कृषकों में आशा की नई किरण का संचार हुआ। किसानों ने परियोजना में भागीदारी के लिए सहमति दी और यथासम्भव योगदान भी किया। परियोजना की बैठकों में भाग लिया और अपने सुझाव रखे। जल संचयन तथा भूगर्भ जल संवर्धन के लिए नालों पर चेकडैम बनाने के लिए स्थान चिन्हीकरण, निर्माण सामग्री खरीद, निर्माण कार्य की देखरेख में सहयोग किया। हर सम्भव स्थानीय मदद उपलब्ध करायी। फलस्वरूप जल समेत में 10 चेकडैम, 3 नाला प्लग, 02 तालाब, 01 हवेली, 05 जलसंरक्षण कम पुलिया, 76 हे. में मेढबन्दी के कार्य किये गये। गाँव की टूटी हवेली की मरम्मत की गयी। संसाधन उपलब्धता सुनिश्चित करने के अतिरिक्त, कृषि आय बढ़ाने के लिए उन्नत कृषि तकनीकों का प्रदर्शन एवं कृषिवानिकी विस्तार पर शुरु से ही बल दिया गया। जलसमेत में प्रचलित फसलों जैसे मूँगफली, उर्द, मूँग, सोयाबीन (खरीफ) और गेहूँ, जौ, चना, सरसों (रबी) की उन्नत प्रजातियों के बीज उपलब्ध कराये गये। खेतों पर उपलब्ध देशी बेर के पेड़ों को कलिकायन विधि द्वारा उन्नत किस्मों में परिवर्तित करने की कला का प्रशिक्षण दिया गया। उपलब्ध पलाश के पेड़ों पर लाख की खेती का प्रदर्शन किया गया। चारा उत्पादन बढ़ाने के लिए गिनी घास और नैपियर बाजरा हाइब्रिड की जड़ों का रोपण किया गया। कृषिवानिकी के बारे में कृषकों को जागरूक किया गया और उन्हें विविध फलवृक्षों, सागौन के उन्नत किस्म के पौधे उपलब्ध कराये गये। भूमिहीन परिवारों को अवसर प्रदान करने के लिए उन्हें स्वयं सहायता समूह बनाकर आजीविका के अन्यान्य स्रोत विकसित करने के लिए प्रेरित किया गया। निर्माण कार्यों तथा पौध रोपण के कार्यों के माध्यम से रोजगार का सृजन किया गया। फलस्वरूप पलायन को रोकने में सफलता मिली।



जल संसाधन विकास कार्य इस प्रकार नियोजित किया गया कि जलसमेत के हर कुँओं में वर्षभर जल उपलब्ध हो। इसके लिए चेकडैमों का निर्माण गाँव से निकलने वाले नाले के ऊपरी हिस्से से शुरु कर नीचे तक बनाये गये। फलस्वरूप नाले में जगह-जगह वर्षा जल रुका। हवेली की लगभग 8 हे. भूमि पर बरसात का पानी अक्टूबर माह तक रुका रहा। इससे कुँओं का जल स्तर 04 मी. बढ़ गया। कुँओं के जल से पूरे क्षेत्र में रबी की अच्छी फसल हुई। लगभग 60 हे. असिंचित क्षेत्रफल में पहली बार गेहूँ की बुआई हुई। वर्ष पर्यन्त पेय जल उपलब्ध रहा। जानवरों को पिलाने के लिये चेकडैम में उपलब्ध जल का उपयोग किया गया। इससे किसानों, विशेषरूप से महिलाओं को अधिक सुविधा मिल गई। किसानों को फसल सिंचाई में आसानी हुई। समय और ऊर्जा (डीजल) की बचत हुई। फसल उत्पादन तथा दुग्ध उत्पादन बढ़ गया। सभी ग्रामवासियों को घर के अन्दर या आस-पास बाड़े में फलवृक्ष लगाने के लिए पौधे उपलब्ध कराये गये। परिणामस्वरूप 27% से अधिक किसानों के पास अमरूद, नींबू, अनार के पौधे घरेलू उपयोग हेतु उपलब्ध हैं। कुछ उत्साही किसानों ने नींबू, अमरूद के छोटे-छोटे बगीचे भी लगाये। लगभग 50% किसानों ने 80 हे. कृषि भूमि में मेढ़ों पर सागौन के पौधे लगाये हैं। सागौन रोपण के प्रति किसानों में उत्साह है क्योंकि सागौन की लकड़ी की कीमत का अन्दाज सभी को है। जागरूकता बढ़ने, पौध उपलब्धता बढ़ने से पौध लगाने के लिए किसान आगे आ रहे हैं। दूर-दराज के खेतों में पौधों की जीवितता सुनिश्चित करना एक बड़ी बाधा है, क्योंकि इस क्षेत्र में छुट्टा जानवर चराने की प्रथा (अन्ना प्रथा) है। गर्मी में जब तापमान 45° सेल्सियस से ऊपर जाता है और



मौसम में आर्द्रता 10–12% पर आ जाती है तो ऐसे में किसान खेत पर जाना बन्द कर देता है और पौधे नमी की कमी तथा चराई के फलस्वरूप नष्ट हो जाते हैं। इस समस्या से छुटकारा पाने के लिए सागौन का चयन किया गया और बड़ी पौधे उपलब्ध करायी गयी। समय से रोपण, बड़े गड्ढे और उचित मात्रा में सड़ी गोबर की खाद का प्रयोग करने से पौधे पहली ही बरसात में इतनी बढ़वार कर लेते हैं कि वह अगली गर्मी को आसानी से बरदाश्त कर जीवित बचे रह जाते हैं। कृषिवानिकी के अन्तर्गत लगे इन पेड़ों के लिए किसान को अलग से भूमि चिन्हित/आवण्टित करने की आवश्यकता नहीं होती है। पेड़ों पर, काष्ठीय होने के कारण, अतिवृष्टि का दुष्प्रभाव नहीं होता है। इस प्रकार किसान मौसम की अनिश्चितता से होने वाले नुकसान से बच जाते हैं। पेड़ों से सामान्य वातावरण ठीक रहता है। सूक्ष्म जलवायु में सुधार, नमी संरक्षण और फसलोत्पादन में मददगार/सहायक होती है। जलसमेत में एकीकृत विकास से किसानों में उत्साह का संचार हुआ है। आपस में समरसता बढ़ी है और उनमें आत्म विश्वास भी बढ़ा है। गाँव में ही मजदूरी के कार्य मिलने लगे हैं। किसानों ने बढ़ी आय को दुधारू जानवर खरीदने में लगाया और आमदनी बढ़ाने की पक्की व्यवस्था कर ली।

परासई सिंध जलसमेत में जल उपलब्धता बढ़ी है। लोगों में चेतना का संचार हुआ है और कृषिवानिकी के प्रति रुझान बढ़ा है। आय तथा रोजगार बढ़ने से सामाजिक समरसता बढ़ी है। बच्चों की स्कूल में संख्या बढ़ गयी है। कई परिवार अपने बच्चों को 30 किमी. दूर तक झाँसी पढ़ने के लिए भेज रहे हैं। विकास की प्रक्रिया सतत जारी है और इसके पूरे परिणाम आने में कुछ वर्ष और लग सकते हैं क्योंकि कृषिवानिकी के सार्थक परिणाम पौधों की निश्चित आयु के पश्चात ही मिलेंगे। आशा है कि परासई-सिंध जलसमेत से उठी विकास की लहर पूरे बुन्देलखण्ड क्षेत्र में फैलेगी और क्षेत्र की उन्नति में मील का पत्थर साबित होगी।

रमेश सिंह, इन्द्र देव, के. बी. श्रीधर, रज़ा हैदर रिज़वी, रघुनन्दन प्रसाद द्विवेदी,
आनन्द कुमार सिंह, रमाकान्त तिवारी एवं ओम प्रकाश चतुर्वेदी
भा.कृ.अनु.प.—केन्द्रीय कृषिवानिकी अनुसंधान संस्थान, झाँसी

National Workshop on "TBOs: Way Ahead"

A two-days National Workshop on "TBOs: Way Ahead" was jointly organized by ICAR-Central Agroforestry Research Institute (ICAR-CAFRI), Jhansi, and Department of Agriculture Cooperation & Farmers' Welfare (DAC&FW), Ministry of Agriculture, Cooperation & Farmers' Welfare, Government of India at ICAR-CAFRI Jhansi during 15th-16th October, 2015. The objective of the workshop was to promote the tree borne oilseed production to increase the oil productivity in the country, increasing awareness to the state departments about the TBOs and also to know the constraints and challenges faced in the research and development of tree borne oilseeds. The Inaugural session was presided over by Dr. Arvind Kumar, Vice Chancellor, Rani Lakshmi Bai Central Agriculture University, Jhansi and Former DDG, Education, ICAR, New Delhi. Dr. Anil Kumar, Director (Acting), ICAR-CAFRI welcomed the dignitaries and delegates participating in the workshop and thanked DAC&FW for choosing ICAR-CAFRI as the venue of the national workshop. Dr. Anupam Barik, Addl. Commissioner, DAC&FW in his opening remarks gave an overview of vegetable oil production scenario in the country and the need for its enhanced production to reduce the huge burden on foreign exchequer spent in the import of vegetable oils. He said that the Government of India is aiming to provide thrust on Tree Borne Oilseeds (TBOs) through the implementation of Mini Mission-III of National Mission on Oilseeds and Oil Palm (NMOOP). In the two days program, resource persons from different parts of the country were invited to share the knowledge on different TBOs like Jatropa, Karanja, Mahua, Neem, Wild Apricot (Cheura) and Olive. 102 members including official representation of state departments from six different states viz., Rajasthan, U.P., Tamil Nadu, Mizoram, Madhya Pradesh, Uttarakhand and Maharashtra participated in the two day National Workshop. In the interaction session of the participants issues such as non-availability of quality planting material in required quantities, lack of storage facilities, lack of assured market, utilization of bunds for TBOs plantation, lack of standard package of practices, inadequate collection and processing centers and necessity for involvement of community plantation in TBOs were brought out. The Plenary session was chaired by Dr. S.K. Dhyani, Former Director, ICAR-CAFRI. Dr. A. K. Handa, Dr. S. Vimala Devi, Dr. K. B. Sridhar, Sh. S. B. Chavan and Sh. A. R. Uthappa were part of the organizing team.



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SAARC Regional Training on Smart Practices for Climate Resilient Agriculture

SAARC Regional Training on "Smart Practices for Climate Resilient Agriculture" was jointly organized by ICAR-CAFRI, Jhansi, NRM Division, New Delhi; SAARC Agriculture Centre, Dhaka; SAARC Forestry Centre, Thimpu and International Food Policy Research Institute, South Asia Office, New Delhi during 16th to 20th November, 2015 at National Agricultural Science Complex, New Delhi. The training focussed on capacity building on Climate Smart Resilient Agriculture Technologies in SAARC countries. Delegates from Bangladesh, Bhutan, India, Nepal, Maldives, Pakistan, Sri Lanka, and Cambodia participated in this training programme.



Dr. A. K. Sikka, DDG (Natural Resource Management) while inaugurating the programme stated that climate has been changing and the magnitude of change is likely to be more prominent in coming years. He mentioned that climate change has, now, become a global concern because of its potential threat to sustainable economic development. Climate change may bring further risks and unpredictability to harvest, from rise in temperature and related aridity, shifts in rainfall patterns, or the frequency and duration of extreme weather events. In this scenario robust and resilient agricultural systems are needed to meet the growing demands for food and feed. He further elaborated that due to impact of climate change on land and water resources, insect pest populations, diseases etc. will lead to change in productivity and profitability of agriculture. Particularly South Asia as a region, and the resource poor people here, are at maximum risk. He mentioned that agroforestry as one of the potential options in mitigating climatic change effects through microclimatic modulation and carbon sequestration. Through Agroforestry, many countries have been able to increase their forest/tree cover to meet the specific national targets, which otherwise are quite difficult to achieve for lack of sufficient forest land. Dr. Sikka opined that trainings on smart practices for climate resilient agriculture will lead to capacity building to handle the changing climate in the South Asian Region.



Dr. Sangay, Director, SAARC Forestry Centre, Thimpu, Bhutan in his opening remarks emphasized the role of SAARC to reduce the poverty and improving food and nutritional security in South Asian Region. He also highlighted the role of India in developing and disseminating climate resilient technologies in the region. Dr. S. K. Chaudhary (ADG - Soil and Water Management), Dr. S. P. Kimothi (ADG -Coordination), Dr. Avinash Kishore (IFPRI, South Asia office), Dr. S. K. Dhyani (Former Director, CAFRI, Jhansi) also shared their views on this occasion. Dr. Tayan Raj Gurung, Senior Program Specialist, NRM, SAARC Agriculture Centre, Dhaka, Bangladesh extended vote of thanks to the guests, organizing partners and participants.

Dr. S. K. Chaudhary (ADG - Soil and Water Management), Dr. S. P. Kimothi (ADG -Coordination), Dr. Avinash Kishore (IFPRI, South Asia office), Dr. S. K. Dhyani (Former Director CAFRI, Jhansi) also shared their views on this occasion.

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Dr. Tayan Raj Gurung, Senior Program Specialist, NRM, SAARC Agriculture Centre, Dhaka, Bangladesh extended vote of thanks to the guests, organizing partners and participants.

During the SAARC Regional Training 16 lectures were delivered by the eminent experts from NARS and CGIAR system. During the training programme two group activities were also organized including a field visit to ICAR- CSSRI, Karnal and to Hara Farm (Agroforestry Farm) at Yamunanagar.



The valedictory session of the training was chaired by Dr. A. K. Singh, Dy. DDG (Ext.), ICAR. Dr. Javed Rizvi, Regional Director, WAC, Delhi was the Guest of Honour. Dr. S. P. Kimothi, Dr. S. K. Chaudhari, Dr. S. K. Dhyani and Dr. Tayan Raj Gurung were the other dignitaries who shared their views about during the valedictory session. Dr. S.K. Dhyani, ICAR- NRM Division, Dr. Inder Dev, Dr. Ramesh Singh and Shri Rajender Singh, ICAR- CAFRI, Jhansi were part of the organizing team of the SAARC Regional Training.

हिन्दी कार्यशाला

संस्थान में हिन्दी कार्यशाला दिनांक 19.12.2015 को संस्थान के निदेशक डा. ओ. पी. चतुर्वेदी, की अध्यक्षता में सम्पन्न हुई। कार्यक्रम की अध्यक्षता करते हुए डा. चतुर्वेदी ने अपने उद्बोधन में कहा कि हमें संस्थान द्वारा किये जा रहे कृषिवानकी से सम्बन्धित शोध कार्यों से प्राप्त किसानों के लिये उपयोगी तकनीकों को हिन्दी में अनुसंधान लेख/ प्रसार बुलेटिनों के माध्यम से सरल भाषा में लिखकर किसानों तक पहुँचाना होगा, जिसे किसान भाई उन तकनीकियों को पढ़कर तथा अपने खेतों में इस्तेमाल कर लाभ प्राप्त कर सकें। उन्होंने सभी कार्मिकों से अपील की भारत सरकार के गजट में इस संस्थान का नाम "क" क्षेत्र में है, इसलिए सभी अधिकारियों / कर्मचारियों को अपना प्रशासनिक कार्य शतप्रतिशत हिन्दी में करना है। उन्होंने समस्त वैज्ञानिकों, अधिकारियों एवं कर्मचारियों को धारा 3(3) के अनुपालन पर विशेष ध्यान देने के लिए कहा। उन्होंने सरकारी कामकाज में पत्राचार को बढ़ावा देने के लिए संस्थान के समस्त वैज्ञानिकों एवं अधिकारियों से कहा की हिन्दी में पत्राचार को बढ़ाने में अपना सहयोग प्रदान करें।

डा. राजेन्द्र प्रसाद, प्रधान वैज्ञानिक (मृदा विज्ञान) द्वारा जलवायु परिवर्तन एवं कृषि : अतीत, वर्तमान एवं भविष्य' विषय पर जानकारी दी गयी। उन्होंने कहा कि आज के युग में पर्यावरण संतुलन को बिगाड़ने वाली सभी गतिविधियाँ जलवायु में परिवर्तन एवं भू-मंडल के तापमान को बढ़ाती हैं। कार्यशाला के संयोजक डा. आर. पी. द्विवेदी, प्रभारी अधिकारी राजभाषा ने सभी का स्वागत करते हुए कार्यशाला की उपयोगिता पर प्रकाश डाला। उन्होंने सभी से अनुरोध किया कि तिमाही के दौरान आयोजित होने वाली कार्यशाला में सभी लोग अवश्य भाग लें। कार्यशाला में संस्थान के वैज्ञानिक, अधिकारी तथा कर्मचारी उपस्थित थे। कार्यक्रम का संचालन डा. आर.पी. द्विवेदी ने किया और आभार श्री ओमप्रकाश, वैयक्तिक सहायक ने ज्ञापित किया।

Human Resource Development

- Dr. R. K. Tewari, Dr. A. K. Handa, Dr. Inder Dev, Dr. Ramesh Singh and Dr. Asha Ram participated in the two days regional consultation on "Agroforestry: the way forward" during 8th -10th October, 2015 held at NASC Complex, New Delhi and organized by TAAS, ICAR, ICRAF, ISAF and APAARI.
- Dr. R. P. Dwivedi attended the two days training during 12th -13th October, 2015 on "Gender Sensitization and Training Workshop: Concepts and Tools for Gender Analysis" at ICRAF, New Delhi.
- Dr. Inder Dev attended the 25th Asian Pacific Weed Science Society Conference on Weed Science for Sustainable Agriculture, Environment and Biodiversity during 13th-16th October, 2015 held at Hyderabad, India.
- Dr. Asha Ram participated in the One day workshop on Hindi Rajbhasha on 7th November, 2015 held at NASC Complex, New Delhi and organized by DKMA, ICAR, New Delhi.
- Dr. Asha Ram and Dr. Dhiraj Kumar attended five days SAARC Regional Training programme on "Start Practices for Climate Resilient Agriculture" during 16th - 20th November, 2015 at NASC complex, New Delhi. Dr. A. K. Handa, Dr. R. H. Rizvi, Dr. Ramesh Singh and Dr. Inder Dev were the resource persons during the training programme. Dr. Inder Dev, Dr. Ramesh Singh and Shri Rajendra Singh were part of the organizing team.

- Dr. A. K. Handa delivered invited lecture on "National Agroforestry Policy and Current Status of Agroforestry R & D in India" in the Refresher Course for Indian Forest officers on 16th November, 2015 at AMITY University, Noida.
- Dr. Sudhir Kumar, Dr. R. P. Dwivedi, Dr. Inder Dev, Dr. S. Vimala Devi, Dr. Ramesh Singh, Dr. Mahendra Singh, Dr. Asha Ram, Sh. S. B. Chavan, Sh. A. R. Uthappa, Dr. Ashok Shukla, Dr. Madhulika Srivastava and Dr. V. D. Tripathi participated in 23rd IGC from 21st to 24th November, 2015 at New Delhi.
- Dr. Dhiraj Kumar attended a training on spectroscopy during 14th -17th December, 2015 held at IISS, Bhopal.

Visit Abroad

- Dr. K. B. Sridhar attended the workshop on "Systematic Review in Forest Science" at Forest Research Institute in Malaysia during 17th - 19th November, 2015. This visit was sponsored by IUFRO.



New Scientist

- Dr. Naresh Kumar, Sr. Scientist (Agroforestry) joined the Institute on 9th November, 2015.
- Sh. Veeresh Kumar, Scientist (Entomology) joined the Institute on 1st July, 2015.

Promotion

- Sh. S. P. Singh, Tech. Officer promoted to Sr. Technical Officer w.e.f. 21st March, 2015.

Donation

- Communal Harmony Campaign and Fund Raising Week from 19th to 25th November, 2015 was observed at the Institute and during the week a sum of ₹ 11,370.00 was collected and donated. Sh. Veer Singh Pal, Sr. Clerk collected the amount from the staff members.

Zonal Sports Meet

- A contingent of 19 players from ICAR-CAFRI, Jhansi participated in ICAR Zonal Tournament-2015 held at ICAR-CSWRI, Avikanagar, Rajasthan during 2nd to 6th November, 2015 organized by ICAR-Central Sheep and Wool Research Institute, Avikanagar. ICAR-CAFRI secured 2nd position in cycle race (Sh. Attar Singh) and in badminton (Sh. A. R. Uthappa, Sh. S.B. Chavan, Dr. Asha Ram and Sh. Birendra Singh).



World Soil Day and Farm Innovators Day

A function was organized on 5th December, 2015 at the Institute to mark the International Year of Soils-2015 and celebrate the World Soil Day along with Farm Innovators Day. The honorable Member of Legislative Assembly, Uttar Pradesh Shri Ravi Sharma, Sadar, Jhansi graced the occasion as chief guest. About 100 farmers from nearby selected villages attended the function and of these 44 selected farmers received the soil health cards from the Chief Guest and rest distributed afterwards. While distributing soil health cards



to the farmers, the chief guest emphasized on soil health by saying "Swasth Dhara, Khet Hara". He also hailed the National Soil Health Scheme and the initiative of the Prime Minister of India to distribute 14 Crore Soil Health Cards in next three years. He asked the farmers to follow scientific techniques of farming and use fertilizers as per recommendations based on soil analysis and fertility status of the soil. The chief guest also honored two innovative farmers selected by the institute for their new initiatives. In his speech, the chief guest

appreciated the scientific community for development of innovative agricultural techniques but opined that for effective transfer of technology to farmers, additional efforts are needed. He emphasized on use of local languages for communicating with farmers as the farmers understand their local dialect easily. As special guest, Dr. P. K. Ghosh, Director, ICAR-IGFRI placed emphasis on use of balanced fertilizers with care in application of micronutrients as their excess may cause toxicity. Dr. O. P. Chaturvedi, Director, ICAR-CAFRI, Jhansi highlighted the importance of soil health for environmental security and ecological balance. Dr. R. K. Tewari, Programme Leader, Human Resource Development, highlighted the significance of innovative techniques and urged farmers to adopt new ideas and scientific techniques on their farm. In beginning of the function, Dr. Rajendra Prasad, Principal Scientist (Soil Science) informed the



farmers about importance of soil health and soil health cards. The farmers were also illustrated the significance of soil parameters values given on soil health cards and how soil test based fertilizers recommendation will help them in achieving maximum production with minimum input. He also highlighted the importance of soil management practices in curbing greenhouse gas emission and making agriculture as low carbon primary industry in the era of climate change. After the function all the participants visited exhibition organized at the main gate of the

institute wherein different information on Agroforestry systems and watershed technologies were displayed. The compeering was done by Dr. R. P. Dwivedi, Principal Scientist (Agri. Extension) and Dr. Ramesh Singh, Principal Scientist (SWE) proposed the vote of thanks. Team of the Scientists for developing Soil Health Cards: Team Leader: Dr. Rajendra Prasad, Members- (Dr. R. P. Dwivedi, Dr. Ramesh Singh, Dr. R. H. Rizvi, Sh. S. B. Chavan and Sh. Sunil Kumar) and Member Secretary: Dr. Dhiraj Kumar.

***Corcyra cephalonica* Rearing for *Trichogramma* Mass Production**

The rice meal moth *Corcyra cephalonica* (Stainton, 1865) (Family: Pyralidae) is one of the most factitious host for *Trichogramma* production and is a pest of stored foods, viz; cereals, cereal products, oil seeds, pulses, dried fruits, nuts and spices. Many of the natural enemies mass bred in the laboratory for use in field against crop pests are dependent either on egg or larval stages of *Corcyra* due to the reason that it is easier and cheaper to produce natural enemies on different stages of *Corcyra*, than on their original host.

Morphology and Biology of *Corcyra cephalonica* (Stainton)

The eggs are oval and measure 0.5 mm x 0.3 mm. The white surface is sculptured and has a short nipple like process at one end. The larvae are generally creamish white except for the head capsule and prothoracic tergite, which are brown. There are well developed prolegs on the abdominal segments 3-6 and 10. The last instar larva spins a closely woven, very tough, double -layered cocoon in which it develops into a dark-brown pupa. The adults are small. The hind wings are pale -buff and the fore wings are mid -brown or greyish brown with thin vague lines of darker brown colour along the wing veins. The males are smaller than the females. Sexual activity usually begins shortly after adult emergence. There is a pre oviposition period of about 2 days. Egg laying mainly occurs during the night. The greatest numbers are laid on the second and third days after emergence, although oviposition may continue throughout life. Eggs take about 2-3 days to hatch. The adults emerge through the anterior end of the cocoon.



Corcyra mass production system

Rearing of *Corcyra cephalonica*

The host insect, *Corcyra cephalonica* is being reared in the laboratory at ICAR-CAFRI under controlled conditions (temperature $25\pm 2^{\circ}\text{C}$, $65\pm 5\% \text{RH}$). *Corcyra cephalonica* eggs (6 cc) were procured from National Bureau of Agricultural Insect Resources (NBAIR), Bangalore in February, 2015. Eggs were inoculated in the sterilized crushed sorghum grains in a jar. Rice meal moth, *C. cephalonica* was reared on crushed and sterilized (at 150°C) sorghum grains. The rearing structure was made using slotted iron

angles of five cm width. Wooden board of 80cm X 60cm X 7cm size was fitted at the top to provide additional strength. Rearing trays (40cm X 30cm X 7cm) were kept inside the structure and the whole structure was covered with a thick black polythene sheet. A thick transparent polyvinyl funnel was provided at the bottom of the structure so as to enable the collection of moths in the oviposition cages. Scales and other contaminants from the moths were cleaned by using a vacuum cleaner and the host eggs were sieved through three BSS 36 size sieves. Clean eggs were used partly for maintaining the culture of *Corcyra* and partly for rearing the parasitoids used in the present studies. The different life stages of *Corcyra* were observed as egg (5-7 days); larval instars viz., Ist (4-6 days), IInd (5-7 days), IIIrd (3-5 days), IVth (3-5 days), Vth (5-7 days), VIth (7-10 days) and pupal stage (10-15 days). The *Corcyra* remained in egg and different larval stages for about two months. Mass production of *Corcyra* started in April, 2015. Average monthly (April to October) egg and moth production is presented in Fig 1. The *Corcyra* eggs are being used for the *Trichogramma* mass production in the laboratory.

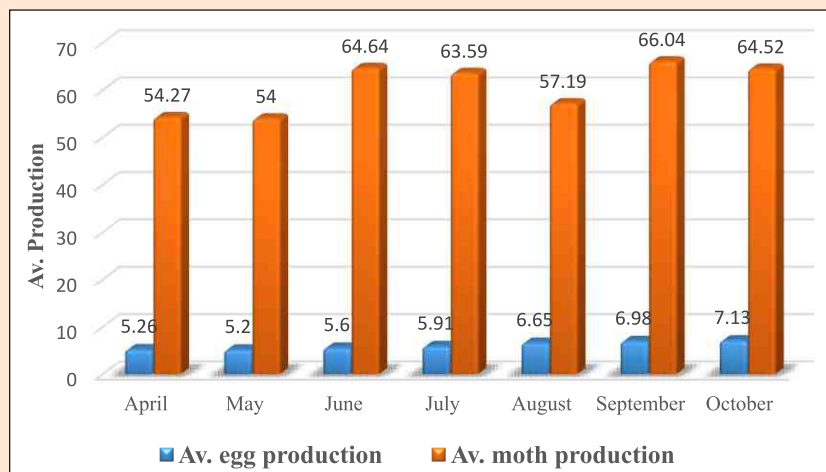


Fig 1. Performance of *Corcyra* culture



Corcyra adults

Madhulika Srivastava and Veeresh Kumar
ICAR- Central Agroforestry Research Institute, Jhansi

Supervision and Guidance

Dr. O. P. Chaturvedi, Director

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Inder Dev, Ramesh Singh, Rajeev Tiwari and Asha Ram

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