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Forthcoming Events

- RAC Meeting 6th & 7th November,2014
- Farmer's Innovation Day: 16th November, 2014.
- Institute Joint Staff Council/ Women Cell's / PME Cell meetings.

Participants from various scientific institutions in the workshop

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Round table scientific exchange workshop on “Drought Proofing Strategy for Semi-Arid Region of Bundelkhand” at NRCAF

In order to help the farming communities of Bundelkhand manage drought like conditions in semi-arid region, scientific experts and civil society experts working in drought prone region of Bundelkhand participated in the round table scientific exchange workshop, “Drought Proofing Strategy for Semi-Arid Region of Bundelkhand” on 4th July, 2014 at NRCAF, Jhansi. The workshop was organized by the Development Alternatives in association with India Water Partnership and Global Water Partnership under the Water and Climate Resilience Programme. Scientific experts from ICAR institutions viz. NRCAF, IGFRI, CSWCR & TI, Regional Station, Datia, National Institute of Disaster Management, Krishi Vigyan Kendras, Bundelkhand University and Development Alternatives participated in the workshop to provide expertise for drought preparedness and sharing experiences for drought mitigation in the region. Scientists participating in the workshop with vast knowledge on the subject and experience from field helped us to develop a package of robust adaptation options for drought mitigation in the region. Subsequent to the presentations by the speakers, the participants discussed to identify key adaptation strategies for increasing the resilience of communities against drought like situations

Annual Group Meeting of All India Coordinated Research Project on Agroforestry

On 26th July, 2014 Prof. M. Kar, Hon'ble Vice Chancellor of OUAT, Bhubaneswar inaugurated the three days Annual Group Meeting of All India Coordinated Research Project on Agroforestry organized at OUAT, Bhubaneswar. In his inaugural speech Prof. Kar stressed upon dissemination of appropriate agroforestry models for the benefit of small and marginal farmers. He emphasized the need for integrating livelihood options in the agroforestry models. Mr R.S. Gopalan, IAS, Director of Agriculture and Food Production, Govt. of Odisha emphasized on the need to initiate work on tree borne legumes and ecosystem services of agroforestry. Dr. S. K. Dhyani, Project Coordinator and Director, NRCAF, Jhansi presented the Coordinator's Report and brief summary of the research achievements of the project for the year 2013-14 and thrust areas for the XII Plan. In the beginning, Dr. P. K. Das, OUAT welcomed the dignitaries and delegates. During the occasion a Souvenir and one Technical Bulletin on *Acacia mangium* was released. The AICRP on Agroforestry was initiated in 1983 and it has 37 centres at present. The meet was attended by 24 coordinating centres located in SAUs and three volunteer centres in ICAR Institutes. During the three days meeting there were 9 Technical sessions including inaugural and plenary sessions in addition to field visit to the agroforestry experimental area of the University. The group meet emphasized upon the dissemination of agroforestry technologies for benefit of the farmers. One of the sessions was devoted for formulating workable linkages between AICRP on AF and AICRPs of Dryland Agriculture, Forage Crops and Integrated Farming System. The deliberation were held on the subject in the presence of Dr. A. K. Roy, (Project Coordinator, AICRP on FC), Dr. J.V.N.S. Prasad (Principal Scientist, AICRP on DA) and Dr. Gananayak (OIC, AICRP on IFS, OUAT).

Institute Management Committee (IMC)

The 18th IMC meeting was held on 5th July, 2014 at NRCAF, Jhansi under the chairmanship of Dr. S. K. Dhyani, Director, NRCAF, Jhansi. Dr. Ramesh Singh made a presentation on watershed management in the semi-arid region. In his presentation, he informed that there was severe drought in Bundelkhand region from 2004-07. More than

81% wells became dry resulting into severe scarcity of drinking water. There was huge migration towards metros in search of livelihoods. NRCAF took up the initiative to develop technological options in participatory mode for sustainable agriculture production through integrated watershed interventions. All members appreciated the efforts of the Center particularly for dissemination of the technology to the stakeholders. They emphasized that technology should be developed for small holder farmers, need of strong linkages between the Centre and State departments and collaboration with KVKs. After the discussion, the Committee confirmed the proceedings of 17th IMC. The Committee thereafter discussed the new proposals.

Agroforestry based Conservation Agriculture – A New Initiative at CAFRI

Increasing foodgrains production were accompanied by widespread problems of resource degradation, stagnating productivity, increasing production costs, declining water tables and increasing environmental problems. The nature and dimensions of the problems being faced today are much different and complex than those faced in the 1960s and 1970s. Therefore, there is a need to increase the crop yields and maximise the profits through alternate technologies. Conservation agriculture, hence, have become a critical component for growth of agriculture. Conservation agriculture (CA) aims to achieve sustainable and profitable agriculture

and subsequently aims at improved livelihoods of farmers through the application of the three CA principles: minimal soil disturbance, permanent soil cover and crop rotations. It is a way to combine profitable agricultural production with environmental concerns and sustainability. Conservation agricultural systems are gaining increased attention worldwide as a way to improve soil water infiltration, increasing soil water retention and reducing runoff. CA technologies in India are spreading mostly in the irrigated areas of the Indo-Gangetic plains where rice-wheat cropping system dominates.

Adopting CA systems further offers opportunities for achieving more crop diversification. Agroforestry is other alternative options for CA practices. This indicates that the concept of CA has to be adopted in a broader perspective for all size farms of the arid and semi-arid areas. At presemnt location specific CA practices in conjunction with the agroforestry intervention are essentially required. Therefore, an Agroforestry based Conservation Agriculture project has been initiated at this Centre for sustainable land use and improved productivity. The fields were prepared by blasting and removing large boulders, followed by laser levelling. Three agroforestry systems *viz.*, teak (*Tectona grandis*), bael (*Aegle marmelos)* and teak + bael each with different cropping systems have been initiated to study the impact of trees in conservation agriculture. The quality planting material of teak (MHEM-R-2) and bael (CISH-B-2) have been planted on the onset of monsoon. On the boundaries Leucaena (K-636) has been planted, to be used as soil mulch.

Inder Dev, S. K. Dhyani, R. K. Tewari, Ramesh Singh, Asha Ram, Sridhar, K. B., Anil Kumar, Mahendra Singh and A.R. Uthappa
Central Agroforestry Research Institute, Jhansi (U.P.)- 284 003, India

Training programme on Willow mortality in Lahual & Spiti Distt. of Himachal Pradesh under Tribal sub Plan

The farmer's training programme on "Modern cultivation of seed potato, wheat and agroforestry" was organized at Dalang Maidan, Lahual & Spiti from 5th to 7th August, 2014. The training was jointly organized by Regional Station, DWR, Dalang Maidan, NRCAF, Jhansi and CPRI, Shimla alongwith the coordinating centre of AICRP on Agroforestry at YSP UHF, Solan and CSK HPKV, Palampur. The training was attended by about 50 farmers from different villages of Lahaul-Spiti valley. The training was organized as a follow up action of the scientist-farmer's interface meet organized last year at this venue during the visit of Dr. S. Ayyappan, Secretary, DARE and DG, ICAR, where farmers raised the question of Salix mortality in the region. After the registration of the participating farmers, the inauguration session was held under the chairmanship of Dr. S. K. Dhyani, Director, NRC for Agroforestry, Jhansi. After brief introduction of farmers and experts, Dr. Dhayni briefed the gathering about the role of agroforestry in providing livelihood support and income generation in the region and how the farmers of the valley can utilize different tree species and resistant clones of willow to solve their problems. Dr. A. K. Handa, Pr. Scientist & PL, NRCAF informed about the agroforestry activities undertaken under Tribal Sub Plan of the Project and suitable agroforestry systems for the region. The pest management of

willow tree and other options, besides willow were explained by Dr. Kishore Khosla and Dr. K. S. Pant from YSP HUF and Dr. Rameshwar, CSH HPKV, Palampur.

Dr. N. K. Pandey and Dr. Dhurv Kumar from Regional Station, CPRI, Meerut also interacted with the farmers. The scientists visited the Lahaul-Spiti valley from 5th to 7th August, 2014. During the visit, the willow trees were found drying on a large scale in the valley. There were wide stretches of dried willow trees especially in the villages Sissoo (70-80%), Gondhla (75-85%), Tandi (50-60%), Kargha (70-80%) and Keylong and adjoining areas (50-60%). In Tholang, Tilling, Keylong, Karding and Gondhla villages also high mortality was observed. In addition, trees were also seen drying in varying proportions at other localities in the valley. Unlike the tree trunk, branches were severely affected having cankerous lesions (3-15cm) at emergence point of branches. A large number of branches were seen dried resembling die-back symptoms as a result of girdling due to canker. The affected part was depressed, somewhat flattened, light brown to dark brown with raised edges (callus) and split bark. The dried branches were light brown to yellow in colour with tight skin having pimples in which amber yellow or orange coloured exudations of spore masses in cirrhi (thread like spore tendrils) pushing through the epidermis were commonly observed.

The severely cut/lopped and water stressed trees were found more affected than the trees near water channels or in the irrigated area. In addition to it, the trees were also found severely infested with white scale insects. The infestation of giant willow aphid was also reported by the scientists of Himalayan Forest Research Institute (ICFRE), Shimla. The association of the sap sucking insects (scale and aphid) and water stress may have rendered the plants vulnerable to the attack of the *Cytospora* fungus. Moreover, the injuries inflicted as a result of unscientific cutting/ lopping of the trees have further aggravated the situation as the associated fungus is otherwise a weak pathogen which attacks the stressed/ weakened plants and requires injuries for infection. The observations gathered from time to time during the previous survey/visits of the valley since 1999 by the scientists of YSP UHF, Solan conclusively revealed that water stress, changes in weather conditions, ageing of the trees, nutrient depletion, infestation of sucking insects and injuries inflicted as a result of unscientific cutting/lopping of the trees have rendered the willow plantation weak and vulnerable to the attack of the *Cytospora* fungus. The ultimate drying of the trees is due to the attack of this fungus causing cankers and girdling of the branches/shoots.

With the changing environment scenario farmers were advised to use improved management practices like lopping of fully crown tree, use of disease free saplings plants. Planting of single sapling in place of three in a pit and also use of improved clones of willow developed by the YSP UHF, Solan is recommended. In addition the following suggestions were given to the farmers to overcome the problem of Salix mortality;

- Farmers were advised to plant other fodder species like higher altitude Mulbrery (*Morus laevigata*).
- Planting trees in good/deep soil on a proper site.

- Water stress to the plants should be avoided and adequate moisture in the root zone may be maintained through adequate irrigation.
- Avoid excessive lopping or pruning of bigger branches.
- Bark of the young planted seedling/cutting should be protected from animal damage.

Willow plants drying

Scientists interacting with farmers

Scientists visiting the villages reporting high mortality of willows

- Avoid south-west facing slopes; sandy and gravelly soils.
- Select only healthy sticks for plantation purpose which are free from canker and scale infestation.
- Replacement of the existing poor stock with superior clones developed by YSP UHF, Solan.
- Creating awareness for proper planting stock among the growers. Since wild willow is least affected by disease, therefore its potential in plantation and producing new resistant willow planting material needs further investigations.
- New plantations may be raised through entire transplantation instead of cuttings from old existing plantations.

An action plan with the involvement of the AICRP on Agroforestry Centres at YSPHUF, Solan and CSK HPKV, Palampur was also developed to tackle the willow mortality and providing alternate sources for fuel-fodder.

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Training Programmes

Centre organized following Farmers training on Agroforestry Development. In these training programmes 110 farmers from Bihar state participated. Training was sponsored by Forestry Research and Extension Centre (ICFRE), Patna under Kisan Study Tour (KST) programme.

Date	Topics	Training Coordinators
16th – 18th July	Agroforestry Development	Dr. R K Tewari, Dr. Mahender Singh & Sh. Mahendra Kumar
5th to 8th August, 2014	Agroforestry Development	Dr. Inder Dev, Sh. Rajendra Singh & Sh. Tridev Chaturvedi
26th -28th August, 2014	Agroforestry Development	Dr. Ramesh Singh, Sh. R K Singh & Sh. Birendre Kumar
16th -18th September,2014	Agroforestry Development	Dr. Rajender Prasad, Sh. Sunil Kumar & Sh. Om prakesh

ICAR-Sponsored Short Course on "Agroforestry for biofuels and bioenergy"

ICAR sponsored 10-days short course on "Agroforestry for biofuels and bioenergy" was organized at National Research Centre for Agroforestry, Jhansi during 15th to 24th September, 2014. Dr. S. Vimala Devi was Course Director and Dr. K. B. Sridhar as well as Sh. S. B. Chavan were Course Coordinators. Dr. D. N. Tewari, Ex-DG, ICFRE, Ex. Member Planning commission and QRT Chairman inaugurated short course and Dr. S. K. Dhyani gave the inaugural lecture. A total of 25 candidates from 10 states *viz*., Karnataka, Telangana, Seemandhra, Maharashtra, Gujarat, Madhya Pradesh, Uttar Pradesh, Uttarakhand, Kashmir and Himachal Pradesh participated in the training program. Lectures on biofuels and bioenergy lectures were delivered by resource persons from NRCAF, IGFRI, HAU, IIT Delhi, University of Pune and ICAR NRM Divisions. Practical demonstrations on the oil properties for biofuels including the saponification value, free fatty acids value and the method of trans-esterification of oil to produce biofuels were demonstrated. Field visits were organized to Development Alternatives and watershed program of NRCAF. The industrial experience on biofuel production and processing was shared by the resource person from Ruchi biofuels in tie up with Indian Oil Corporation limited.

Director & Project Coordinator, AICRP on Agroforestry visits during the period

- OUAT, Bhubaneswer, Odisha (26th -28th July, 2014) for organizing the Annual Group meeting of AICRP on AF.

- Brain Storming Session on Tree cover mapping organized by ICARDA, New Delhi on 17.07.2014
- ICAR Foundation Day & meeting at NASC, New Delhi on 29th -30th July, 2014.
- Lahaul valley for organizing Farmer's training on Willow mortality at DWR RS, Dalang Maidan on 5th -7th August, 2014
- AICRP on Agroforestry Centre at YSHUF, Solan, 08th -09th August, 2014.
- Inter Ministerial meeting for National Agroforestry Policy at KB, New Delhi on 27th Aug., 2014.
- ICAR Regional Committee No. IV meeting at IISR, Lucknow on 5th -6th Sept., 2014.
- Presentation by the DG, FAO at NASC, New Delhi on 8th Sept., 2014.

Human Resource Development

- Dr. Badre Alam, Principal Scientist participated in the Annual Workshop of NICRA during 3rd to 5th July, 2014 held at NASC Complex, New Delhi.

- Dr. Rajendra Prasad, Dr. Sudhir Kumar, Dr. A. K. Handa and Dr. Inder Dev (Principal Scientists); Dr. Mahendra Singh (Sr. Scientist) and Sh. S.B. Chavan (Scientist) participated in the Annual Group Meeting of All India Coordinated Research Project on Agroforestry from 26th to 28th July, 2014 held at OUAT, Bhubaneswar (Odisa).

- Sh. S. B. Chavan, Scientist participated in the 21 days ICAR Summer School on "Temperate Agroforestry for Sustenance and Climate Moderation" from 5th -25th August, 2014 held at SKUAST-K, Main Campus Shalimar, Srinagar (J&K).

- Dr. Mahendra Singh, Sr. Scientist participated in the training on "MDP on Consultancy Services" from 22nd to 27th August, 2014 held at NAARM, Hyderabad (A.P.).

- Dr. S. K. Dhyani, Director and Dr. A. K. Handa, Principal Scientist delivered the lecture in Training Programme on "Agroforestry and Mortality of Salix" under Tribal Sub-Plan for Tribal Farmers on 6th & 7th August, 2014 held at DWR, Regional Station, Dalang Maidan (Lahaul Spiti), H.P. in association with AICRP on AF Centres located at YSP UHF, Solan and CSK HPKV, Palampur (H. P.).

- Dr. Inder Dev, Principal Scientist participated in the regional workshop on "Strengthening partnerships and refined methodology for on-station experiments of AICRP on IFS" during 26th to 29th August, 2014 held at S. K. Nagar (Gujarat).

- Dr. R. H. Rizvi and Dr. A. K. Handa delivered the lecture in Summer School on Agroforestry on 8th & 20th August, 2014, respectively held at SKUAST-K, Main Campus Shalimar, Srinagar (J&K).

Supervision and Guidance: S K Dhyani, Director

Compiled and Edited: R K Tewari, Inder Dev, Rajeev Tiwari, Ramesh Singh
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Published By : Director, ICAR- Central Agroforestry Research Institute,
Gwalior Road, Jhansi-284003 (U. P.) India
Telephone : 0510- 2730213, 2730214
Fax : +91-0510-2730364
Telefax : +91-0510-2730214
E. mail : krishivaniki@nrcaf.res.in
Web site :http://www.nrcaf.res.in