

The task of ensuring food security for country's burgeoning population is a major challenge to the researchers and planners. It is estimated that by 2050, the country will require 377 Mt of food grain to feed its 1.6 billion populations. This challenge must be met in the face of impact of the climate change and from the limited and shrinking land and water resources. Out of 328.7 M ha geographical area of the country, about 121 M ha is under various kinds of degradation. Input-intensive conventional agriculture, intensive tillage, residue removal, residue burning and monocropping systems have led to declining factor productivity, depletion of ground water table, deteriorated soil health and environment. Combating the degradation of natural resources especially soil, water and biodiversity and their conservation for posterity is a challenge to promote food and environmental security. Globally, conservation agriculture (CA) has opened a new paradigm as it has potential to improve and sustain productivity, enhance resource use efficiency, arrest land degradation and mitigate climate change through minimal soil disturbance, residue retention and rational crop rotations. The CA systems are being adopted in about 155 M ha in the world, most of which are confined in northern and southern America and Australia. In India, adoption of CA is still in its initial phases and occupies about 2.0 M ha mostly under no-till wheat in the rice wheat system of Indo-Gangetic plains. The uptake of the technology is rapid in the north-western states which are relatively better endowed with respect to irrigation, mechanization and relatively larger land holdings compared to the eastern region.

Agriculture in the hill ecosystem is low-input based and subsistence in nature and characterized by fragility and marginality. Climate change is a global challenge threatening sustainability of agriculture and its impact is realized more in the fragile and vulnerable hill ecosystems. The resource poor small and farmers are

more prone to climatic aberrations than other farmers. The north eastern hill region is highly susceptible to acute soil erosion (40 t/ha/year against 16 t/ha/year of national average) due to its undulating topography, faulty cultivation practices (intensive tillage, residue burning, along the slope cultivation, etc.) and high rainfall intensity (>2000 mm). The ICAR Research Complex for NEH Region, Umiam (headquarters) along with its six regional centres has done pioneering research and extension activities in the field of CA in rice and maize based cropping systems, developed location specific micro-water shed based farming system models, intensive integrated farming system (IIFS) models comprising complementarities of field crops, horticultural crops, livestock, fishery and agroforestry interventions, and generated useful information on soil quality, carbon sequestration, system productivity, nutrient recycling etc. for sustainable agriculture. Off late, institute is actively involved in research on climate resilient agriculture through soil and water management practices, identification of stress tolerant varieties/breeds of crops and livestock including shelter and nutrition management in pig and poultry.

In this context, a 21 days training is proposed to be organized to develop capacity of researchers and extension workers on recent developments and strategies of CA for enhancing resource use efficiency, sustainable food production, and improving quality of degraded soils. Emphasis will be given in cross learning on various aspects of climate resilient agriculture including C-sequestration and GHG emission from eminent resource persons from within and outside the north-eastern region of India. In addition, practical sessions and field visits to various land use models, experiments on conservation agriculture, watersheds and advanced facilities like FATE, Biochar unit, CTGC etc. will be organized to develop capacity and skills of the trainees.

Course Content

The course content will broadly cover the following topics: (i) Conservation agriculture: Definition, importance, concept, principles etc. (ii) Opportunities and Constraints of conservation practices in various cropping systems (iv) Carbon sequestration and mitigation of climate change (v) Integrated farming systems including for food and environmental security (vi) Organic farming (vii) Agroforestry models for arresting land degradation (viii) Pest and disease management strategies under CA systems (ix) Managing livestock and fishery in changing climate, (xi) Practical sessions on advance facilities/equipments and presentations from trainee (5-slides/10-minutes each).

Travel, Boarding and Lodging

Free boarding and lodging facilities will be provided to the outstation participants as per the ICAR's norms and guidelines of summer school. Local participants will be provided lunch, session tea and course materials. Participants will be paid to and fro fare for journey by train as per their entitlement (restricted to AC II tier) or bus or other means of transport in vogue as the case may be. Actual TA will be paid on production of tickets by the participants. The participants will be provided shared accommodation in the guest house of the Institute.

About ICAR Research Complex for NEH Region

The institute was established in the year 1975 by the ICAR to provide an adequate research base for supporting agricultural development in the North Eastern Hill region of the country. It is the first institute of its kind setup by ICAR which encompasses all the disciplines of



agriculture, horticulture, animal sciences, agricultural engineering and fishery to cater the research needs of the tribal areas of NEH Region including Sikkim. The Institute has six regional centres located at Basar (Arunachal Pradesh), Imphal (Manipur), Kolasib (Mizoram), Jharnapani (Nagaland), Lembucherra (Tripura) and Gangtok (Sikkim).

Eligibility of participants

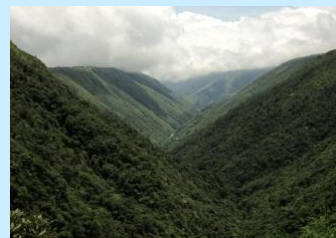
The summer School is meant mostly for active researchers/teachers having at least 2 years research /teaching experience in SAUs/ICAR Institutes in the field of Agronomy/Soil Science/Agroforestry / soil & water conservation/ Agricultural Extension/ Horticulture or other related disciplines. A total of 25 candidates will be selected for this course. The selection of candidate will be made by screening committee and as per available guidelines of ICAR.

How to apply

The participants should submit their application online using CBP portal of Agricultural Education Division, ICAR (<http://proj.iasri.res.in/cbp/>). After filling up the online application take a printout of application form and get it approved by the competent authority of your organization. Upload the approved form (scan copy) on CBP portal. The original copy along with Rs. 50 (postal order, Non-refundable) drawn in favour of the Director, ICAR Research Complex for NEH region, payable at Post Office, Barapani may be sent through post to the Course Director. An advance copy of the application (scan copy) may be sent to the Course Director (anup_icar@yahoo.com) to overcome any postal delay. However, the candidature for final selection will be considered only after receipt of the approved original copy. The detail guidelines for participating in the ICAR summer/winter schools can be downloaded from the CBP portal (<http://proj.iasri.res.in/cbp/ToDownload/Guidelines%20to%20participate%20in%20training%20program.pdf>).

About the place

Umiam is situated about 20 km away from the Shillong city. The nearest airports are Shillong Airport (12 km) and Guwahati Airport (100 Km). The nearest Railway station is at Guwahati (85 km). Taxi services are frequently available from all these places to ICAR, Umiam. Shillong is the capital and Hill station of Meghalaya and is known as "Scotland of the East". The water falls of Cherrapunjee, Mawasmai cave, Umiam lake, Elephanta Falls, Shillong Peak, Mawlyngnong (Asia's cleanest village), living root bridge etc. are the famous tourist attractions around the Shillong. A moderate cool climate and heavy showers are expected during the training period. Light warm cloths and umbrella are advocated for comfortable stay.



IMPORTANT DATES

Last date for receipt of applications: 6 July, 2015
Intimation to selected candidates: 16 July, 2015
Confirmation of participation by candidates: 25 July, 2015

Training Organizing Team

Chairman:

Dr. SV Ngachan

Director, ICAR Research Complex for NEH Region, Umiam

Course Co-Directors:

Dr. AS Panwar : Head, Division of Crop Production
Dr. KP Mohapatra : Senior Scientist (Forestry)
Dr. DJ Rajkhowa : Principal Scientist (Agronomy)
Dr. Ramkrushna G : Scientist (Agronomy)
Dr. Jayanta Layek : Scientist (Agronomy)

All communications may be addressed to:

Dr. Anup Das

Course Director

& Senior Scientist (Agronomy)

Division of Crop Production

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Summer school on

Conservation Agriculture for Enhancing Resource Use Efficiency and Arresting Land Degradation

(19 August to 08 September, 2015)

Sponsored by:

**Indian Council of Agricultural Research
New Delhi**



**ICAR Research Complex for NEH
Region, Umiam-793103
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