

**Winter School
on
Crop Residues Utilization and
Management for Clean Energy and
Environment**

23rd Feb – 15th March 2022

How to Apply?

As per the ICAR instructions, the interested candidates should register and apply online through 'Capacity Building Programme' (CBP) Portal as follows:

1. Visit the website <https://cbp.icar.gov.in/> or click on Capacity Building Programme under the important links in <http://www.icar.org.in/>
2. Login using your user ID and Password. To create user ID use "Create New Account" link.
3. After login, click on "Participate in Training" link and fill the Performa.
4. Take a printout and send duly signed copy through proper channel to the Course Director of Summer School by post along with registration fee.

Contact course Director and for any information and help

The last date for receiving the nomination is 7th Feb, 2022. The advance scanned copy of the nomination may be sent by email.

Note: The candidates will be notified about selection latest by 8th Feb, 2022.

Registration Fees

The participants are required to pay a sum of Rs. 50/- (Rupees Fifty only) as registration fee (Non-refundable) along with the completed application in the form of an Indian Postal Order in favour of Director, CIAE, payable at Bhopal.

Contact

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Director

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Important Dates

Last date for receipt of applications : 07.02.2022

Intimation to selected candidates : 08.02.2022

**Announcement cum information
brochure
for**



ICAR Sponsored

Winter School

on

**Crop Residues utilization and
management for Clean Energy and
Environment**

23rd Feb -15th March, 2022



**ICAR-Central Institute of Agricultural Engineering
Nabibagh, Berasia Road, Bhopal-462038 M.P. India**

About CIAR-CIAE

The Central Institute of Agricultural Engineering (CIAE), ICAR was established on Feb.15, 1976 at Bhopal (MP). The CIAE is a premier Institute in the country to conduct basic, applied and adaptive research in agricultural engineering. Human resource development by organizing specialized training courses is a major commitment of the Institute to upgrade the skills of engineers, scientists, subject matter specialists, farmers, manufacturers and planners engaged in the promotion of farm mechanization in the country. The Institute has the facilities for undertaking R&D activities in the areas of energy management, farm mechanization, conservation agriculture, human engineering and safety in agriculture, irrigation and drainage engineering, agro-processing and food technology, soybean processing and utilization. The energy R&D is further strengthened by Coordinating Centre of AICRP on Energy in Agriculture and Agro based industries. The research farm (93 ha), workshops and library support research and development. State of art facilities in the area of bio energy is also developed by the Institute. The Institute houses well-furnished guest house facility for comfortable stay.

Background

The excessive use of conventional energy sources like petroleum and coal causes the adverse climate changes, leading to various catastrophes such as global warming etc. Resiliency from such situations demands sustainable energy production, controlled greenhouse gas emission, waste minimization & its useful utilization, distributed energy generation for consistent energy security. Biomass is identified as an alternative, clean and carbon dioxide neutral energy source to produce liquid transportation & traction biofuels, solid biofuels and other forms of energy and valuable chemicals. Biomass is an infinitely renewable resource and contributes over a one third of primary energy in India. An estimate states that 145 MT of surplus biomass is available only from crops residue for its conversion to energy and other products. This biomass could be sufficient for sustaining about 15000 MW power potential.

A number of technologies exist to transform biomass into bioenergy. Nevertheless, there is a great challenge to select the best option for each biomass in different situations due to the infancy of these technologies, intended scale of application as well as a lack of a standard protocol/strategy for agricultural biomass management into bioenergy/biofuels. Recent advances in this area includes catalytic pyrolysis, fast pyrolysis, flash pyrolysis, rapid composting, carbon sequestration through biochar, high-frequency ultrasound supercritical water and plasma gasification, hydrogen generation from biomass/solar energy for fuel cell applications, production and processing of algal biomass, application of nanotechnology in bio energy etc.

This training focuses on knowledge and skill development on biomass basics and management, different conversion technologies; carbon sequestration through biofuel; operation and maintenance of large scale gasifier and gasifier based electricity generation systems; bio-oil production from biomass; life cycle assessment of biomass technologies and use of bio-methanation process for thermal and shaft power applications.

Course content

- **Crop residues management: An Overview**
- **Crop residue burning: extent, impact and implications.**
- **Government policies for management of crop residues.**
- **Standards and processes used for characterization of crop residues.**
- **In-situ crop residues management and demonstration of machinery for crop residues management.**
- **Changes in intrinsic properties of biomaterials due to thermo-mechanical stresses.**
- **Biochar Application to Soil: Agronomic and Environmental Benefits.**
- **Advanced systems for bioethanol production from crop residues.**
- **Pre-treatments methods of biomass for production of ethanol.**
- **Biotechnologies intervention for bioethanol production from lignocellulose feed stocks.**
- **Advances in gasification technologies.**
- **Technologies and scope of producing activated carbon from crop residues**
- **Hydrothermal liquefaction of biomass**
- **Hydrogen production from biomass for fuel cell**

- **Life cycle analysis of Biomass based energy system**
- **Life cycle assessment of biofuel production from crop residues**
- **Carbon sequestration, credit and trading**
- **Environmental, social, and economic assessment of energy utilization of crop residue**
- **Design of reactors for pyrolysis and bio-oil production**

Eligibility

The ICAR sponsored course is open for participants from ICAR Institutes/State Agricultural Universities/Central Agricultural Universities/ Krishi Vigyan Kendras etc. A total of 25 candidates shall be registered based on the following eligibility criteria.

- Master's degree in any discipline of Agricultural Engineering/Renewable Energy/M.Sc in any discipline of Agricultural Sciences from any recognized university (ICAR or State).
- Working in a position not below the rank of Scientist/Assistant Professor/Lecturer

Boarding and Lodging

Free lodging and boarding will be provided to the participants as per the approved ICAR norms. The institute has a furnished guesthouse/ hostel with dining, recreation and medical facilities in the campus. Please note that, no accommodation in the guest house will be provided to the family members or guests of the participants.

Travel

Participants will be paid travel fare to and fro through the shortest route from their respective institution to ICAR-CIAE, Bhopal and back for journey by AC-II/III class train fare or bus or other means of transport in vogue as the case may be. TA to be paid on production of a certificate or tickets by the participant.

How to Reach ICAR-CIAE

Bhopal is well connected by air, rail and road. The Institute campus is located on Berasia Road and is 7 km from Bhopal railway station and 10 km from airport. Pre-paid auto rickshaw and taxi can be availed at railway station to reach CIAE Bhopal campus.

Climate

The climate in Bhopal in the month of Feb-March is pleasant with temperature ranging from 21 °C to 26 °C.