Registration form

APPLICATION FORM FOR PARTICIPATION IN WINTER SCHOOL TRAINING

Organizing Institute: ICAR-Indian Institute of Soil Science, Bhopal

1. Full name (In block letters):.....
2. Designation:.....
3. Present employer and address:.....
4. Address to which reply should be sent:.....
   Postal address with PIN:.....
   Phone/ Mobile No.:.....
   Fax No.:.....
   E-mail:.....
5. Permanent address:.....
6. Date of Birth:.....
7. Sex (Male/Female):.....
8. Teaching/research/professional experience:.....
   (mention post held during last 5 years and number of publication) :.....
9. Marital status
   (Married/Unmarried):.....
10. Mention if you have participated in any Research seminar, Summer/Winter School/Short Course, etc. during the previous years under ICAR/Other organization:
11. Postal order No---------- dated .....of Rs 50/-
    (Not refundable for registration of application)

Examination passed	Subjects main/ Subsidiary	Year of passing	Class/Rank/ Distinction etc.	University/ Institution	Other information

CERTIFICATE

It is certified that the information furnished by the office record and was found correct.

Signature and designation of sponsoring authority

Note: *Application with above details may be typed on good quality A- 4 size paper and sent to the Course Director of the training or the Director, IISS, Bhopal*

training. A non-refundable registration fee Rs. 50/- (Rupees fifty only) in the form of an Indian Postal Order/Demand Draft drawn in favour of ICAR Unit-IISS, Bhopal, Payable at Bhopal should be sent along with the duly filled in application form.

TA, Boarding and Lodging

The costs of travelling, boarding and lodging etc. of the selected participants will be met out of the grant from the Indian Council of Agricultural Research, New Delhi. All participants will be reimbursed the to and fro travel fare for the journey to Bhopal by rail or bus by shortest route. **The payment will be restricted to the maximum of AC-II (2nd AC)** tier train fare/bus fare to accommodate more number of participants. Local participants will be provided lunch and inter session tea. Participants are requested not to bring family members with them, as the institute has limited hostel facilities.

Travel to IISS, Bhopal

Bhopal, capital of Madhya Pradesh, is well connected by rail and roadways to different parts of country. Participants travelling by train/bus should alight at Bhopal railway station/Bhopal bus stand from where auto-rickshaws can be hired to reach IISS Campus located near Karond (Chowraha) on Berasia Road at a distance of 8 km from railway station and 7.5 km from Bus Stand. The participants are advised to make their return journey reservations at their end before leaving for Bhopal.

Important Dates

Last date for receipt of application: **31 August, 2016**
Confirmation of participation: **15 September, 2016**

All correspondence should be addressed to:

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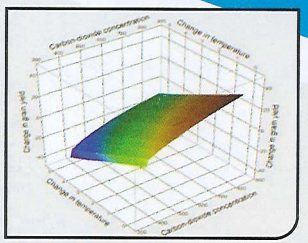
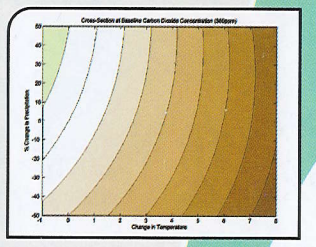
Winter school on

Assessing natural resource management, climate risk and environmental sustainability using simulation models

8-28 November, 2016



Dr. Monoranjan Mohanty
Course Director
Dr. Ranjeet Singh Chaudhary
Course coordinator
Dr. Nishant K. Sinha

हर कदम, हर डगर
किसानों का हमसफर
भारतीय कृषि अनुसंधान परिषद

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Sponsored by
Indian Council of Agricultural Research (ICAR)
New Delhi -110001

Organized by
ICAR-Indian Institute of Soil Science (IISS)
Nabi Bagh, Berasia Road, Bhopal-462038 MP

Background

Rapid population growth, declining availability of cultivable land, and inadequate irrigation in dry season are exerting pressure on the Earth's natural resources in producing food. In addition to this, global food security is threatened by climate change and is one of the most important challenges in the 21st century. The manifestations of climate change include higher temperatures, erratic rainfall patterns, glacier melts and more frequent extreme events such as heat waves, droughts and floods. On account of global warming, the Monsoon pattern is changing in the South Asian region and extreme temperatures are expected in both summer and winter months, accompanied by altered yearly distribution of precipitation, including prolonged dry spells in one part and the occurrence of flood disasters in another part. Agriculture is the most vulnerable to climate and thus would be affected by climate change. The climate change can lead to an increase in existing or potential conflicts with regard to possession of natural resources such as land and water etc. Such conflicts may exacerbate climate change impacts worsening food security issues.

The Intergovernmental Panel on Climate Change (IPCC) has projected a temperature increase of 0.5-1.2 °C by 2020, 0.88-3.16 °C by 2050 and 1.56-5.44 °C by 2080 for the Indian region, depending on the scenario of future development (IPCC, 2007). Overall, the temperature increase in winter season is much higher than summer. These changes in climate may affect the crop yields, and result into incidence of weeds, pests and plant diseases and raise the costs of agricultural production. In India, there is a probability of 10-40% loss in crop production with increase in temperature by 2080-2100 (IPCC, 2007). Winter crops are especially vulnerable to high temperature during reproductive stages. Crop production in winter season might become comparatively more vulnerable due to greater increase in temperature and higher uncertainties in rainfall.

Studies on crop production in agriculture are traditionally carried out by using conventional agronomic research, in which crop production functions are derived from statistical analysis without referring to the underlying mechanism involved. However, the quantitative information obtained from statistical analysis is very site specific and can only be reliably applied to other-sites where climate, soil and crop management are similar to those used in developing the original functions. Thus, there is limitation of applying statistical models in decision making process. As knowledge is accumulated, mathematics can be adopted as the tool to express biological hypotheses and advances in computer technology have made possible to consider the combined effects of several factors involved in crop growth and development, which has emerged as a new era of agricultural research and development i.e. crop simulation modelling in agriculture. The biophysical crop growth simulation model such as APSIM, DSSAT, CROPSYST have potential to quantify plant-management-climate relationships and may be used to understand the effects of climate change such as elevated carbon-dioxide, changes in temperature and rainfall on crop development, growth and yield.

Climate change poses a serious challenge for natural resource management. As temperatures, rainfall patterns, and disturbance regimes change and sea levels rise, ecosystems are being transformed. Some species of plants and animals are already shifting their distributions in response to climate change, and changes in phenology are disrupting ecological relationships and species interactions. In the present context of climate change, there is possibility of decrease in crop yield in various regions of the world. Crop models may play an increasingly important role in natural resource management in face of climate change. Presently, crop modelling is viewed as a tool for (1) integrating scientific knowledge on whole plant responses to environmental and management variables, and (2) for presenting information to support the decision making processes of agricultural practitioners. In the former case, models quantify knowledge in a format that can provide scientists with techniques and methodology for evaluation and additional experimentation of related theories. In the latter case, computer software programs are frequently developed around the crop model in order to simplify access to simulations and results that are usable by both scientists and non-scientists. These programs typically serve as decision support systems, where simulated outputs can be used to support management decisions at the farm level and land-use decisions at the policy level.

Objectives

1. To introduce basic concepts of crop growth modelling, climate change and natural resource management.
2. To familiarize participants with comprehensive computer models for the simulation of crop growth and yield, water, nutrient and carbon dynamics and their applications to real world problems.
3. To learn to apply models as decision making tools to manage natural resource management, climatic risk, and environmental sustainability for sustainable agricultural production under different climatic scenarios.

Course outline

- Introduction to crop simulation modelling
- Minimum dataset and information requirements of the crop models
- Parameterization and validation of simulation models
- Simulating water limited production systems
- Simulating nutrient limited production systems
- Modeling soil organic carbon dynamics in crops and cropping systems
- Modelling greenhouse gas (GHG) emissions such as nitrous oxide (N_2O), nitric oxide (NO), dinitrogen (N_2), ammonia (NH_3), methane (CH_4) and carbon dioxide (CO_2),
- Simulating effects of elevated CO_2 and temperature on productivity of cropping systems
- Carbon pools, carbon management indices and soil carbon dynamics in the context of climate change.
- Agricultural adaptation & mitigation measures for climate change
- Effect of climate change on natural resource management and crop yield

Eligibility

Teachers, researcher workers of the subject or supervisors from ICAR Institutes and Universities under National Agricultural Research Systems (NARS) programme, who are actively engaged in research and teaching in areas of Soil Science, Agronomy, Plant Physiology, Horticulture, Microbiology (Plant Science), Agricultural Chemistry and Forestry and any branch of agricultural sciences are eligible to attend the winter school training. The total number of participants will be 25. Participants, who'll be selected for this course, are requested to carry their laptops.

Duration of Winter School

Duration of the winter school is 21 days from 8-28 November, 2016 (both days inclusive). The participants are expected to arrive at IISS, Bhopal latest by the evening of 7th November, 2016 and can leave after 17:00 hrs on 28th November 2016.

Application and Registration

Interested candidates may send their applications in the prescribed format duly nominated/forwarded by the competent authority, to the Course Director, winter school