# APPLICATION FORM

Short course

On

## Solar energy applications in agriculture

(September 14 to September 23, 2016)

1. Full Name (in capital letters):……...
2. Designation:…….
3. Employer address:……...
……
……
4. Postal address (with Email and mobile no.)……
……
……
……
5. Date of birth: ……
6. Sex (male/female):……...
7. Marital status: ……..
8. Educational qualification:

| Academic record | Examination passed | Subject | Year | University/ Institute | Class/ Rank |
|---|---|---|---|---|---|
| Bachelor's | | | | | |
| Master's | | | | | |
| Ph.D. | | | | | |
| Others | | | | | |

9. Whether accommodation is required (Yes/No):……...
10. Mention, if you have participated in training, during previous years on similar theme:…….
11. Level of computer application: ……..
12. Research/Teaching/Professional experiences:……
……...
13. Payment details of ₹ 50/- as registration fee……..

Date……

Place……  Signature of the applicant

Recommendations of forwarding Institute:

**Certificate**

It is certified that the information furnished above has been verified and found to be correct.

Date…….  Signature

Institute seal  Director/Head of the organization

## How to apply

Interested candidate may apply online via the website http://iasri.res.in/cbp. Necessary rules and guidelines are available in the website. For any query write mail to the course director or cbp@icar.gov.in. Please ensure to upload the scanned copy of the application form approved by the Director or Head of Organization

## Eligibility

Participants should be from ICAR institutes/ State AUs/CAU/Agricultural faculty of AMU, BHU, Vishwa Bharati and Nagaland University in the cadre of Assistant Professor or equivalent or above.

Selection based on short listing of applications and preference will be given to those who have not undertaken similar training anywhere. Decision of Course Director shall be final.

## Number of seats : 25

## Important dates

Last date of application: Aug. 14, 2016

Intimation of selection: Aug. 24, 2016

Confirmation by participants: Aug. 31, 2016

Course commencement: Sept. 14, 2016

Course completion: Sept 23, 2016

## Address for Correspondence

**Dr. Priyabrata Santra (Course Director)**
**Senior Scientist**
Division of Agricultural Engineering for Arid Production Systems
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Updates are available at www.cazri.res.in

# Announcement

## ICAR Short Course

# Solar energy applications in agriculture

## September 14 - 23, 2016

Organized by

**ICAR-Central Arid Zone Research Institute**

Jodhpur, Rajasthan, India 342003

Sponsored by

**Indian Council of Agricultural Research**

## Background

In order to keep pace with the development there is rise in energy use but it has adverse effects on greenhouse gas emissions on climate due to burning of fast depleting fossil fuels. In this context, we need to harness and use more and more renewable forms of energy, especially solar energy that is plentiful on most part of the country. Solar based devices may also need to be integrated with small wind turbines as hybrid devices. At present about 12-13% of energy generation in India is met through renewable sources e.g. wind, solar, biomass etc. whereas coal is till the main source contributing about 60% of total generation. Under the national solar mission it is targeted to generate 1,00,000 MW of solar energy by the end of 2022. Apart from this, there are targets to install 2000 MW off-grid solar PV systems, 20 million $m^2$ solar thermal collectors and 20 million solar lighting systems.

In agricultural sector, energy is directly used for pumping irrigation water, operating different mechanized farm implements/tools and processing of foods. Share of agricultural sector in total energy consumption is about 7-8% and further increase in energy use from its present value of 1.6 kW $ha^{-1}$ to 2.5 kW $ha^{-1}$ is expected to meet the production target of next 20 years. Off-grid target of 2000 MW in the form of solar PV pumping system, mini-grids etc. can be achieved through interventions in agricultural farms. Even, the target of installing 20 million $m^2$ solar thermal collector area by the end of 2022 can be achieved through propagating solar thermal devices for post harvest processing of agricultural produces e.g. solar drier, animal feed solar cooker etc.

Considering the potential of solar energy in future, few avenues of its utilization in agriculture are as follows: **(i) Solar PV operated water lifting / pumping system (ii) Solar farming or agrivoltaic system (iii) Solar based processing of agricultural produces and (iv) Solar PV hybrid devices**

## Course content

The aim of this course is to provide exposure to the participants with the recent developments in solar energy applications including solar thermal and solar PV technologies, different novel solar devices and systems for agriculture, measurement and analysis of solar radiation etc. Specifically, following modules will be covered in the short course:

- Principles and theory of solar PV and thermal technologies
- Thermal energy storage using phase change material
- Solar radiation assessment
- Solar devices for agriculture/rural applications
- Solar PV pumping system for irrigation
- Post harvest processing through solar devices

## Course Director

**Dr. Priyabrata Santra, Senior Scientist**
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### Course Co-Directors

**Dr. R.K. Singh, Sr. Scientist**
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### About CAZRI

Central Arid Zone Research Institute, Jodhpur is a Premier Organisation of the Indian Council of Agricultural Research (ICAR), Department of Agricultural Research and Education, Ministry of Agriculture, Government of India. The Institute is working constantly for more than fifty years towards understanding arid environments so far as to achieve higher productivity through sustainable management of natural resources. Its state of art laboratories, strong international linkages and relentless efforts of its staff has brought the Institute in the forefront as an emerging Leader in the area of Arid Zone Research.

### Weather at Jodhpur

In the month of September, weather is generally comfortable with the mean maximum temperature 30 ˚C and mean minimum of 15 ˚C making it the most pleasant and suitable time for such an activity.

### How to reach Jodhpur

Jodhpur is well connected through Rail and Bus transport and has links with all the major cities of India. The institute can be reached by hired or personal vehicle by road. Distance from major terminals of the city is:

From Railway Station: 6km

From State Roadways Bus Stand: 8km

Jodhpur is known as the "Sun City" because of its bright and sunny weather throughout the year. Named after Rao Jodha, who established in 1459 it rose to be the second largest city of Rajasthan and is a very popular tourist destination.

### Boarding and Lodging

Participants will be paid travel fare of to and fro journey by rail or bus as per the entitlement, restricted to the maximum of AC II tier of the shortest route. TA will be paid on the production of original tickets. Free boarding will be provided during this training program. Free lodging shall be provided on first come first serve basis.