Application form

ICAR-sponsored Winter School: "Next Generation Bio-fertilizer Technologies for Improving Adaptive Capacity and Input Use Efficiency in Hot Arid Region Agro-ecosystem" (5–25 January 2027)

1. Full Name (in block letters)
2. Designation
3. Present Employer and Address
4. Address for correspondence
5. E-mail
6. Telephone Number (Mobile)
7. Date of Birth
8. Gender (Male/Female)
9. Highest educational qualifications
10. Discipline
11. Participation in training programmes (details) during past four years
12. D.D./Indian Postal Order No. _____ Dated _____ of Rs. 50/- (fifty only) in favour of Director, ICAR–CAZRI, Jodhpur; payable at Jodhpur. Rajasthan towards registration fee (non-refundable) must be enclosed.

Signature of applicant with date

Recommendations of the forwarding Institute

Signature of forwarding authority with seal and date

CERTIFICATE

It is certified that the information furnished above is correct.

Travelling allowances will be paid/will not be paid by this office.

Signature of sponsoring authority with seal and date.

Organizers:

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ICAR- Central Arid Zone Research Institute



ANNOUNCEMENT

ICAR Sponsored 21 days Winter School

On

Next Generation Bio-fertilizer Technologies for Improving Adaptive Capacity and Input Use Efficiency in Hot Arid Region Agro-ecosystem

(5th – 25th January 2027)

ORGANIZED BY:

Division of Integrated Farming Systems
ICAR- Central Arid Zone Research Institute
Jodhpur - 342003

SPONSORED BY :

Education Division
Indian Council of Agricultural Research
KAB-II, New Delhi 110012

ABOUT THE WINTER SCHOOL

Agricultural resilience in hot arid agro-ecosystems is constrained by low and erratic rainfall, high evaporative demand, temperature extremes, poor soil fertility, low organic carbon, and land degradation. Rhizosphere management and microbiome-based technologies offer promising approaches to improve soil health, nutrient and water-use efficiency, crop productivity, and stress resilience. The rhizosphere is a dynamic plant–soil–microbe interface where beneficial microorganisms, including PGPR, phosphate-solubilizing and nitrogen-fixing bacteria, AMF, and bio-control agents, enhance nutrient mobilization, root development, pathogen suppression, and tolerance to drought, heat, salinity, and nutrient stress. Native, stress-adapted microbial strains and compatible consortia, integrated with climate-smart agronomic practices, can strengthen rhizosphere functioning and agro-ecosystem resilience. The course will provide theoretical and practical training in rhizosphere ecology, plant–microbe interactions, microbial consortia, and next-generation microbiome-based bio-fertilizers production technology, covering microbial isolation, functional screening, identification, selection, designing of formulation, and evaluation. It will build capacity for developing ecosystem-adaptive microbial technologies for sustainable and climate-resilient arid agriculture.

COURSE CONTENT

Beneficial microorganisms enhance nutrient mobilization, root development, pathogen suppression, and tolerance to drought, heat, salinity, and nutrient stress. Native, stress-adapted microbial strains can be used to develop compatible consortia integrated with climate-smart agronomic practices, strengthening rhizosphere functioning and agro-ecosystem resilience. This course provides hands-on training in next-generation bio-fertilizer production and utilization to harness native adaptive microbes and improve adaptive capacity and input-use efficiency in hot arid agro-ecosystems.

- Introduction to arid agro-ecosystem
- Microbe-mediated abiotic stress mitigation strategies
- Conservation agriculture for improving soil physical health
- Alternative crops for enhancing resilience and productivity of arid regions
- Hands-on isolation, identification and characterization of soil microbes using polyphasic approaches
- Developing synthetic microbial communities for abiotic stress management in crop plants
- Multi-omics tools for plant–microbe interactions under stress: genomics, metagenomics, metabolomics and transcriptomics
- Introduction to microbial bio-stimulants
- Microbe-derived products for abiotic stress mitigation in crop plants
- Bio-fertilizers: current status and future prospects
- Technical and administrative clearances for bio-fertilizer start-ups
- Recent techniques in bio-fertilizer preparation: isolation, mass culturing, packaging and marketing; bio-control agents in arid agro-ecosystems
- Government schemes and assistance for setting up bio-fertilizer production plants
- Advances in consortium formulation and application strategies
- Mycorrhizal fungi: collection and characterization for deficit-moisture-stress tolerance
- Preparation of compost and other organic manures and quality testing
- Bio-inoculants in integrated/organic production systems

THE LOCATION AND CLIMATE

The arid zone of India covers nearly 12% of the country's geographical area, including approximately 31.7 million ha of hot desert and 7 million ha of cold desert. These fragile ecosystems face low and erratic rainfall, high evaporative demand, temperature extremes, poor soil fertility, and limited water availability, compounded by climate variability and land degradation. To address the issue an institute was established as the Desert Afforestation Station at Jodhpur in 1952; ICAR–CAZRI evolved into the Central Arid Zone Research Institute in 1959 and has since emerged as a premier national centre for arid agriculture, natural-resource management, desertification control, and climate-resilient technologies. With six research Divisions and five Regional Research Stations, the Institute provides strong multidisciplinary expertise and infrastructure in soil health, microbial biotechnology, bio-fertilizers, and climate-smart agriculture. Its representative hot-arid environment, accessible location, and favorable mild winter conditions (approximately temp. 12–25°C) provide an ideal setting for classroom, laboratory, and field-based training on rhizosphere management, beneficial microorganisms, and climate-resilient arid agriculture.

ELIGIBILITY

Master Degree in Agri. Microbiology, Biotechnology, Biochemistry, Plant Pathology, Entomology, Agronomy, Soil Science, Extension Education, Horticulture, and Agri. Economics Working in a position not below the rank of Scientist/Assistant Professor/Subject Matter Specialist in ICAR Institutes/SAUs

How to apply

Applicants must submit their application either in physical form or through the online **HRD portal of ICAR–CAZRI, Jodhpur**, in the prescribed format. **Interested candidates must register through the designated Google Form on or before 7 December 2026**. A non-refundable registration fee of ₹50 must be paid through Demand Draft (DD) or Postal Order drawn in favour of "Director, ICAR–CAZRI". Applications without the prescribed registration fee will not be accepted. Candidates must obtain prior approval/recommendation from the competent authority of their respective Institution/University/College before submitting applications. Final selection will be considered only for applications duly forwarded/recommended by the competent authority. **The completed and forwarded application form, along with the DD/Postal Order for the registration fee, must reach the Course Director by 7 December 2026 via email (kkmeenamicro@gmail.com; kk.meena@icar.org.in), post, or courier.** Applications received after the deadline or without approval/recommendation and registration fee will not be considered.

Accommodation and Travel

The participants will be paid for the journey, to and fro, restricted to AC-II train fare (Except Rajdhani and Shatabdi) or bus or any other means of transport in vogue, as the case may be. Tickets purchased through Balmer Lawrie & Company Limited (BLCL), M/s Ashok Travels & Tours, IRCTC will be restricted to AC-II tier train fare and flight tickets from others will not be entertained. Free boarding and lodging will be provided to the participants during the training programme.

Number of Participants: 25

Last Date for Receipt of Applications: 7th December 2026

Information to Selected Candidates: 10th December 2026.

