



**National Seminar-cum-Exhibition on Makhana  
and Allied Aquatic Crops - 2024  
(NRCM-NASMAC 2024)**

**October 17, 2024**

***Venue***

**ICAR-National Research Centre for Makhana,  
Darbhanga - 846 005, Bihar**

***Organized by***

**ICAR-National Research Centre for Makhana, Darbhanga –  
Bihar 846 005**

***In association with***

**Darbhanga College of Engineering, Darbhanga, Bihar**

## **ICAR-National Research Centre for Makhana, Darbhanga (ICAR – NRC for Makhana)**

ICAR - NRC for Makhana, Darbhanga, a premier institute of Indian Council of Agriculture Research is dedicated to research on Makhana and other aquatic crops including but not limited to lotus, water chestnut & fisheries. The institute with restored status NRC since May 15, 2023 has made immense contribution towards establishing the Makhana as a super food with huge economic, industrial, medicinal, and nutritional significance. The institute developed first ever improved variety of Makhana “*Swarna Vaidehi*” in the year 2013, which revolutionized Makhana cultivation in field conditions, with a yield potential of as high as 30 quintals per hectare compared to 14-16 quintals per hectare in traditional cultivations. Over the past five years, area under Makhana cultivation has increased from 15,000 ha to 35,000 ha; income from Makhana farming rose from nearly Rs. 50,000/ha to around Rs.1,50,000/ha in this period, making Makhana farming an attractive source of livelihood, income and employment in the eastern India and beyond. The NRC-M also developed two nutritionally rich thornless varieties of water chestnut namely *Swarna Harit* and *Swarna Lohit* in 2023. The Institute has also initiated research on fisheries, and other economically, medicinally and nutritionally important crops such as lotus, sweet flag and others. Besides, thousands of farmers and entrepreneurs from Bihar and beyond have been trained in the area of production, processing & value addition of Makhana and allied aquatic crops as a part of the Institutes outreach activities.

## **Darbhanga College of Engineering, Darbhanga**

Darbhanga College of Engineering (DCE Darbhanga) is a government-owned engineering college in Bihar, established in 2008. The college is affiliated with Bihar Engineering University (BEU), Patna, and is approved by the AICTE. It operates under the Department of Science, Technology, and Technical Education, Bihar. DCE Darbhanga offers six undergraduate (B. Tech.) courses: Civil Engineering, Mechanical Engineering, Electrical & Electronics Engineering, Computer Science, CS (Cyber Security), and Fire Technology & Safety Engineering, along with one postgraduate (M. Tech.) course in Power Systems. The college also houses the Mithila Institute of Inclusive Technological Innovation and Entrepreneurship (MIITIE), an incubation center that supports startups in the Mithila region. DCE is dedicated to providing quality education in engineering and technology, with a strong focus on practical applications.

## **About the National Seminar-cum-Exhibition (NRCM-NASMAC 2024)**

Recent years have witnessed unprecedented rise in commercial cultivation of aquatic crops which are considered far more remunerative than the conventional crops, and high profitability in Makhana farming observed of late has further emboldened this notion. The higher income potential of aquatic crops has led to large scale commercial cultivation of Makhana (*Euryale ferox*), also known as Gorgon nut, and water chestnut (*Trapa natans*) in field conditions, which were conventionally grown mostly in ponds, trenches and low lying areas with water stagnation for most part of the year. Growing awareness about nutritional

and medicinal importance of Makhana has also led to its global recognition as a “super food”. Though equally nutritious and economically remunerative, commercial farming of water chestnut has not attracted as much attention as Makhana in eastern India. There are many other aquatic macrophytes with potentially huge nutritional/medicinal and economic significance that deserve to be explored and brought to commercial cultivation. Some of them are Indian lotus (*Nelumbo nucifera*), Taro/elephant ear (*Colocasia esculenta*), Mandukaparni (*Centella Asiatica*), Water spinach (*Ipomoea aquatica*), Sweet flag (*Acorus calamus*), Brahmi (*Bacopa monnieri*), Bhringraj (*Eclipta alba*) and *Azolla spp.* Growing demands for processed and value added products of Makhana and other aquatic crops have provided a golden opportunity for farmers and entrepreneurs to improve their income and livelihood. Clearly, Makhana and allied aquatic crops have the potential to strengthen the agri-based economy of Bihar and beyond, though there remain a lot many issues to be addressed to further exploit their economic potentials. Some of them are: (I) Inadequate mechanization in harvesting and processing of Makhana, (II) Too little research on Makhana as a medicinal crop; intensive research efforts are warranted to explore various nutritional and medicinal values of Makhana, (III) Industrial usage of Makhana seed shell and other plant parts also merit immediate attention to establish Makhana as an industrial crop, (IV) Given the wider edapho-climatic adaptability of Makhana, it needs to be promoted nationwide to realize its economic potential and to better leverage our country’s monopoly over Makhana production and processing, and (V) Aquatic crops, other than Makhana and water chestnut, with potentially huge nutritional, medicinal and economic significance also need to be brought into commercial cultivation. The required package of practices needs to be developed on urgent basis. In view of the recent advances, and further research & policy imperatives to exploit the economic, medicinal and industrial values of Makhana and allied aquatic crops, the ICAR-NRC, Makhana, in association with DCE, Darbhanga is organizing a National Seminar-cum-Exhibition (NRCM-NASMAC 2024) with the following objectives:

#### **Objectives:**

- To deliberate upon recent research advances in cultivation, processing and value addition of Makhana & allied aquatic crops in India and beyond,
- To explore the nutritional, medicinal, and industrial usage of Makhana & allied aquatic crops,
- To discuss the research/policy imperatives in order to materialize the multifaceted significance of Makhana & allied aquatic crops,
- To showcase promising technologies and products related to Makhana cultivation, processing and value addition through exhibitions,
- To sensitize farmers/entrepreneurs about the opportunities in cultivation, processing & value Addition of Makhana & allied aquatic crops, and
- To provide platform to discuss key challenges, strategies and new opportunities in Makhana & allied aquatic crops.

#### **Technical Sessions:**

1. Bio and Natural Resource Management for Aquatic Crops (Theme 1)
2. Mechanization and Value Addition to Aquatic Crops (Theme 2)

### **CALL FOR ABSTRACTS:**

Participants are invited to submit their original/ongoing/completed research work in the form of abstract (250-300 words) along with the duly filled registration form to the organizing secretary through email to: [mkumar\\_iari@yahoo.co.in](mailto:mkumar_iari@yahoo.co.in) / [manojkssac@gmail.com](mailto:manojkssac@gmail.com). The abstract should not exceed 300 words typed in MS-WORD, Times New Roman, 12 font size with double spacing. The title of the abstract should be in capital letters followed by the name and complete mailing address of the corresponding author. Please do not cite any reference in the abstract. The abstract will be peer reviewed and authors will be informed about the acceptance of the abstract, if accepted.

### **POSTER DIMENSION:**

The dimension of the poster: Portrait orientation – height - 120 cm; width - 80 cm.

### **IMPORTANT DATES:**

Last date of receipt of abstract: September 20, 2024

Acceptance of abstract: September 25, 2024

Last date of registration: September 30, 2024

### **REGISTRATION FEE:**

Category	Fees (Rs.)
Faculty, Scientist, Researchers and Industry personals	2000
Student Delegates	1000

**Note:** The Registration Fee should be submitted by direct transfer to the account (Account Name: National Seminar CIPHET, Name of Bank: Bank of India, Branch: Pratap Singh Wala, Account No: 650610100001710, IFS Code: BKID 0006506). An email in this regard with transaction details should be sent to: [mkumar\\_iari@yahoo.co.in](mailto:mkumar_iari@yahoo.co.in) / [manojkssac@gmail.com](mailto:manojkssac@gmail.com). Registration fee may preferably be paid using the QR Code imbedded in the Google form. It's also given here for convenience in payment.



Link to Google form for registration: <https://forms.gle/Fc7Yg4si1GeFWV7s6>

### **EXHIBITION STALL:**

An exhibition to showcase the products/inventions will be arranged. The rates for each stall (size: 3x3 m) is Rs. 1000/- only for private entrepreneurs and NIL for Government Institutions.

### **ACCOMMODATION:**

Since the event is scheduled for one day only which ends by the evening, accommodation is not provided by the organizers, except for the invited guests willing to stay on. Participants willing to stay on shall be assisted by organizers in getting reasonably priced hotel accommodation near the venue on prior request.

**HOW TO REACH DARBHANGA:**

The ICAR - NRC for Makhana, Darbhanga (venue of the event) is within 01 Km of the Darbhanga Airport and 05 Km from the Darbhanga Railway station. The venue is well connected with Bus Services also as the Bus stand is located within 100 m of the venue, exactly alongside NH 57.

**Organizing Committee of the National Seminar-cum-Exhibition (NRCM-NASMAC 2024)****Chairperson:**

Dr. S.N. Jha, DDG, Division of Agricultural Engineering, ICAR, New Delhi

**Co-Chairpersons:**

Dr. Nachiket Kotwaliwale, Director, ICAR-NRC for Makhana, Darbhanga

Prof. (Dr.) Sandeep Tiwari, Principal, Darbhanga College of Engineering

Dr. K Narsaiah, ADG (PE) , Division of Agricultural Engineering, ICAR, New Delhi

**Convener:**

Dr. I.S. Singh, Principal Scientist & Station I/c, ICAR-NRC for Makhana, Darbhanga

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**Co-Conveners:**

Mr. S.M. Raut, Scientist, ICAR-NRC for Makhana, Darbhanga

Dr. V.K. Padala, Scientist, ICAR-NRC for Makhana, Darbhanga

Mr. Ishant Kumar, Assistant Professor, Darbhanga College of Engineering

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**Co-Organizing Secretaries:**

Dr. B.R. Jana, Senior Scientist, ICAR-NRC for Makhana, Darbhanga

Dr. S.B. Tarate, Scientist, ICAR-NRC for Makhana, Darbhanga

Er. R.K. Rout, Scientist, ICAR-NRC for Makhana, Darbhanga

Mr. Ankit Kumar, Assistant Professor, Darbhanga College of Engineering

**Registration form for National Seminar-cum-Exhibition on Makhana and Allied  
Aquatic Crops (NRCM-NASMAC 2024)**

Full Name ( <i>In Capital</i> )	
Name of Institution	
Official Address	
Designation	
Date of Birth	
E-mail	
Mobile No.	
Nationality	
Gender	
Participation Type	<input type="checkbox"/> Students
	<input type="checkbox"/> Professionals
Registration fee paid (Rupees)	
Mode of payment	Online
Transaction Number	
Date of transaction	
Mode of Presentation	Oral/Poster
Title of the abstract submitted	
	Signature