Proceedings of the Second International Webinar on "Fast-Tracking Crop Improvement through Speed Breeding"







Organised by: School of Speed Breeding (SoSB), Institute of Horticulture Technology (IHT), Greater Noida, Delhi NCR, India

Date: Tuesday, 23rd September, 2025
Time: 11:00 AM to 12:30 PM (IST)
Mode: Google Meet
Theme: Discover How Speed Breeding is Revolutionizing Crop Improvement

Introduction

The School of Speed Breeding (SoSB), IHT, Greater Noida, organised the second international webinar of its seven session series, titled "Fast-Tracking Crop Improvement through Speed Breeding," on 23 September 2025, with the support of the Federation of Seed Industry of India (FSII) and the National Seed Association of India (NSAI), India

The webinar featured technical presentations by scientists from Tamil Nadu Agricultural University (TNAU), the International Rice Research Institute (IRRI) and the School of Speed Breeding, IHT.

Welcome and Inaugural Session

The programme began with a welcome address by Dr. R. S. Kureel, Director, IHT**,** and discussed importance of speed breeding technology in crop improvement programmes, including rapid generation advancement, development of crop-specific protocols and establishment of controlled-environment facilities.

Inaugural addresses from Dr. R. K. Tripathi, Director–Technical, National Seed Association of India (NSAI), and Mr. Raghavan Sampathkumar, Executive Director, Federation of Seed Industry of India (FSII).

Dr. R. K. Tripathi, discussed the role of integration of speed breeding with conventional and molecular breeding approaches to accelerate the development of improved crop varieties.

Mr. Raghavan Sampathkumar highlighted the importance of speed breeding for the Indian seed industry, particularly in reducing breeding cycles and accelerating the development of improved crop varieties.

Technical Session

The technical session was chaired by Dr. Sanjay Kamal, Plant Pathologist, IHT and Dr. Virendra Patel, Biotechnologist, served as Rapporteur.

1. **Dr. S. Manonmani**
Professor and Head, Department of Rice, Tamil Nadu Agricultural University, Coimbatore

Dr. S. Manonmani presented the application of speed breeding in rice improvement programmes, drawing on research undertaken at TNAU. The university has established a speed breeding facility at Coimbatore, where research is being carried out to standardise rapid generation advancement protocols and evaluate segregating rice populations.

She discussed how speed breeding can be integrated into conventional rice breeding programmes to advance segregating generations, develop breeding lines and accelerate their subsequent evaluation. The presentation highlighted the potential of controlled-environment facilities to shorten generation time and improve the efficiency of rice breeding programmes.

Dr. Uma Maheshwar Singh
Trait Deployment Lead, International Rice Research Institute (IRRI), Varanasi

Dr. Uma Maheshwar Singh presented IRRI's research on SpeedFlower, a speed breeding protocol developed for both indica and japonica rice. The protocol uses optimised light spectrum, photoperiod, temperature, humidity and crop management practices to accelerate flowering and seed maturity.

He explained how an extended photoperiod during the initial growth stage, followed by a shorter photoperiod during the reproductive stage, can promote early flowering in rice. The research also examined the effects of light intensity, spectral composition and temperature on crop development.

The presentation highlighted the potential of integrating speed breeding with marker-assisted selection, genomic approaches and trait deployment to improve breeding efficiency. The SpeedFlower protocol demonstrated how controlled-environment conditions can reduce generation time and accelerate rice improvement programmes.

Dr. Neha Pandey
Senior Scientist – Biotechnology, School of Speed Breeding, IHT, Greater Noida

Dr. Neha Pandey presented the practical requirements for establishing speed breeding facilities and their application in crop improvement programmes. She discussed the importance of

optimising environmental parameters such as photoperiod, light intensity, light spectrum, temperature, relative humidity, irrigation and nutrient management to accelerate crop growth, flowering and seed development.

The presentation covered the role of programmable LED lighting systems and controlled-environment growth chambers in maintaining suitable growing conditions for different crops. She also highlighted the need to develop crop-specific protocols, as plant responses to extended photoperiods and other environmental conditions vary among crop species.

Dr. Neha Pandey outlined the technical services offered by the School of Speed Breeding at IHT, including crop-specific protocol development, rapid generation advancement, single-seed descent (SSD), controlled-environment crop studies and technical assistance for establishing speed breeding facilities.

Participation and Interaction

The webinar received registrations from scientists, plant breeders, research professionals and representatives of seed companies across India.

The participant list included representatives from SeedWorks International, Mahyco, Advanta Seeds, HM.CLAUSE, PAN Seeds, Kalash Seeds, Savannah Seeds, Rallis India, Rasi Seeds, VNR Seeds, Nirmal Seeds, Dayal Seeds, ACSEN Agriscience, Shakti Vardhak Hybrid Seeds and Indo-American Hybrid Seeds**,** among others.

The technical presentations were followed by an open discussion, during which participants interacted with the speakers on crop-specific speed breeding protocols, environmental optimisation, generation advancement, facility requirements and the integration of speed breeding into existing crop breeding programmes.

Closing Remarks

The webinar concluded with closing remarks by Dr. Vijay K. Koul, Associate Director, IHT**.** The session provided insights into speed breeding research at TNAU and IRRI, along with practical aspects of establishing and operating speed breeding facilities. It highlighted the potential of speed breeding to shorten crop breeding cycles and support faster development of improved varieties.

Through this webinar series, the School of Speed Breeding, IHT, aims to promote knowledge sharing, research collaboration and wider adoption of speed breeding technology among agricultural research institutions and seed companies.

School of Speed Breeding (SoSB)
Institute of Horticulture Technology (IHT)
Greater Noida, Delhi NCR, India