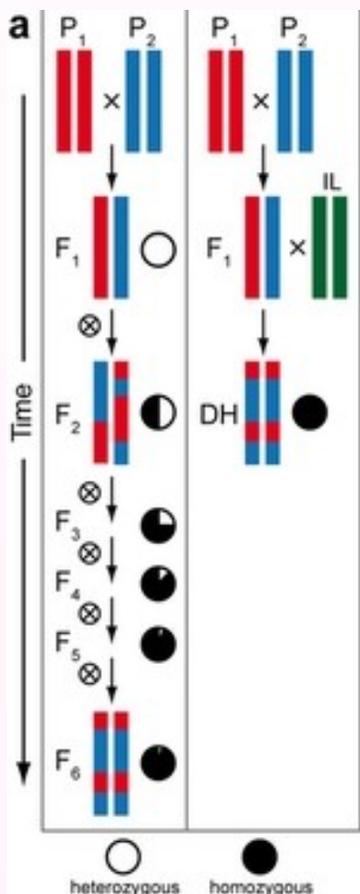


Interactive meeting

on

Doubled haploids: Scope and Future in Horticultural crops

Organized by
Society for Promotion of Horticulture
and
Indian Institute of Horticultural
Research, Bengaluru



Date: 4th Oct, 2013
Venue: IIHR, Bengaluru

Sexually producing plants carrying a set of chromosomes from each parent are the rule in nature. For crop breeders, haploid plants represent a more useful resource. Though, haploidy was first reported by Bergner in 1921, the first attempt to use haploidy in breeding was done by Chase (1952) in maize. Ever since, several techniques for induction of haploidy including pollen irradiation prior to pollination, alien cytoplasm, ultra wide hybridization, micro/megaspore culture, and more recently, the CenH3 histone based haploidy have been reported in several crops with varying success. Since such plants have only one version of each gene, they are of special interest for geneticists. Further these plants can be used to develop doubled haploid (DH) populations which are of great value in crop improvement.

Incorporating DH in breeding programs has the advantage of accelerating inbred line development by achieving homozygosity instantly within a generation. DH technique can be used to transfer sterile cytoplasm of CMS lines into a desirable background in a single step avoiding many generations of backcrossing. Further, DH can also be employed for studying inheritance of quantitative traits, QTL mapping, genomics, gene identification, as base material for TILLING populations, production of stable transgenic plants and reverse breeding.

With these advantages, haploidy is emerging as a powerful tool to enhance genetic gain per cycle which is of more relevance in horticultural crops which are either perennial or out crossing with inbreeding depression or with great commercial value where breeding duration is critical.

Recognizing the growing interest in this area, Society for Promotion of Horticulture, Bengaluru in collaboration with IIHR, Bengaluru, is organizing one day interactive meeting on, “Doubled haploids: Scope and Future in Horticultural Crops“ on 4th Oct, 2013. This meeting is an attempt to create awareness, deliberate and debate on strategies and prospects of using doubled haploidy in horticultural breeding programs.

Eminent scientists from CIMMYT, IISER, UAS Bengaluru, Monsanto, Syngenta, Namdhari’s, Invitro International etc shall participate as resource persons.

The program shall cover lectures on the following areas.

- Haploids in crop improvement: applications and prospects
- Haploids in vegetable crop improvement: feasibility and advantages
- Novel techniques for development of haploids in crop plants
- CIMMYT’s experience on crop improvement using doubled haploidy
- Genetic and transgenic approaches for haploid plant production
- Application of DNA Markers in haploid breeding
- Commercial production of double haploids with special reference to horticulture crops

Registration fee

General	:	Rs. 1000/-
Students/SPH members	:	Rs. 500/-

Demand draft/ Cheque drawn in favor of SPH, Bengaluru payable at Bengaluru along with filled in Registration form may kindly be sent to the Secretary, Society for Promotion of Horticulture, IIHR, Hesaraghatta Lake PO, Bengaluru-560089 for registration.

Organizing Committee

Chief Patron:

Dr. N.K.Krishna Kumar,
DDG (Hort),
ICAR, New Delhi

Chairman:

Dr.A.S.Sidhu, Director,
IIHR, Bengaluru

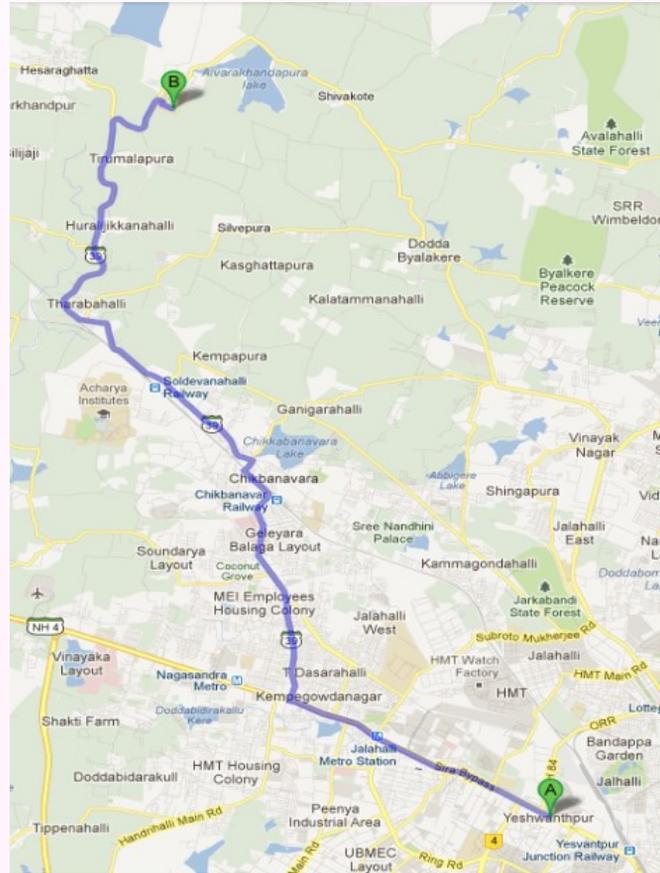
Organizing Secretary:

Dr.A.T.Sadashiva,
Principal Scientist and Head,
Div of Vegetable Crops,
IIHR, Bengaluru

Convenors

Dr. T.S.Aghora
Dr. K.Madhavi Reddy
Dr. E.S.Rao
Dr. N Mohan

Route map



For further details kindly contact,

Dr. T.S.Aghora

Mob/Tel: 09986100079 or 28466420 ext: 280

Email: aghor@iihr.ernet.in



Registration form

*Interactive meeting on
Doubled haploids: Scope and future in horticultural crops*

**Organized by
Society for Promotion of Horticulture
&
Indian Institute of Horticultural Research, Bengaluru**

Date: 4th Oct, 2013

Venue: IIHR, Bengaluru

Name:

Designation:

Address for communication:

Phone/Mobile:

Email ID:

Category: Student/ SPH member/ General

Mode of Payment: Cash/ DD/ cheque

Signature

Interactive meeting on Doubled haploids: Scope and Future in Horticultural crops

Proceedings of the Interactive meeting on Doubled Haploids: Scope and Future in Horticultural crops held at IIHR Bengaluru on 04.10.2013

One day Interactive meeting on Doubled Haploids: Scope and Future in Horticultural crops was jointly organized by IIHR and Society for Promotion of Horticulture, Bengaluru on 4th October 2013 at IIHR, Bengaluru. The meeting was inaugurated by Dr N K Krishna Kumar, Deputy Director General (Hort.), ICAR, New Delhi.

At the outset, Dr. T.S. Aghora, General Secretary, SPH extended a warm welcome to all the delegates who had come from all over the country. Dr. K. Madhavi Reddy gave a brief introduction to the interactive meeting and importance and relevance of doubled of doubled haploid technology in horticultural crops. Dr. R. Chitraichelvan, Director Incharge and Head, Division of fruit crops welcomed all the delegates to IIHR and spoke about the importance of this technology especially in perennial fruit crops. The Chief Guest, Dr. A Satyanarayana Director, Agri Tech Private Limited spoke about the relevance of this technology as a tool to aid conventional breeding approaches and not as a replacement. On this occasion, Dr. N.K. Krishna Kumar highlighted the scope of this technology to solve several challenges that Indian horticulture is going through. He stressed upon critical gaps in horticulture productivity. He mentioned about citrus greening, phytoplasma, little leaf of brinjal, Tospo in tomato and chilli, bud rot of arecanut. He also emphasized on gene silencing/ RNAi technology, insecticide resistance management, moisture stress management and various flag ship programmes. DDG (H) also opined that Society has to organize an International Meet on *Phytophthora* during 2015.

The technical session was chaired by Dr A. Satyanarayana and Co- Chaired by Dr. C. Aswath, Head, Division of Biotechnology, IIHR. The session included seven topics as follows,

SN	Topics
1	Haploids in Crop Improvement: Applications and Prospects – Dr. N. Anand, Director (Research), Namdhari Seeds, Bengaluru
2	Haploids in Vegetable Crop Improvement: Feasibility and Advantages- Dr Prejeesh Sreedaran, Syngenta Seeds, Aurangabad

SN	Topics
3	Novel techniques for development of haploids in crop plants – Dr. M. Ravi, IISER, Trivandrum
4	CIMMYT's experience on crop improvement using doubled haploidy- Dr. K. Karthikeya CIMMYT Regional Centre, Hyderabad
5	Genetic and transgenic approaches for haploid plant production- Dr.Shiva Prakash, Monsanto, Bengaluru
6	Application of DNA Markers in haploid breeding- Dr Shailaja Hittalamani, Professor and Head, UAS, Bengaluru
7	Commercial production of doubled haploids with special reference to horticulture crops- Dr Jitendra Prakash, Invitro International, Bengaluru

Dr Anand, Director (Research), Namdhari Seeds, Bengaluru emphasized the value of haploids, applications of haploid techniques, factors affecting the doubled haploid production, and problems associated with this technology. He further mentioned about reverse breeding and how the breeding cycle can be shortened through these methods.

Dr Prejeesh Sreedaran, from Syngenta Seeds, Aurangabad presented on the fundamentals of DH and feasibility and advantages of using this technique in vegetable breeding. He further informed the house that it can be successfully used in potato, brassica and cucumber.

Dr Ravi, Scientist from IISER, Trivandrum presented a novel technique of developing doubled haploids through centromere mediated uniparental genome elimination. He also mentioned about other methods like parthenogenesis, semigamy, haploid inducing genes and genotypes, bulbosum technique etc.

Dr Karthikeya from CIMMYT Regional Station Hyderabad gave a brief account of doubled haploidy breeding in maize at CIMMYT and its usage in other crops. Gene/genotypes inducing haploids for production of doubled haploids were presented. Dr Shiva Prakash from MONSANTO, Bengaluru presented on Genetic and transgenic approaches for haploid plant production. Further, Dr Shailaja Hittalamani, from UAS, Bengaluru talked about application of DNA Markers in haploid production. Dr Jitendra Prakash of In-vitro International, Bengaluru presented the Commercial production of

double haploids with special reference to sweet pepper, sweet corn, mustard and canola. He stressed the need for increasing productivity in horticulture crops using advance methodologies like haploid production. At the end of the technical session, the following action points were finalized based on the discussion held.

Action Points:

- A Project on doubled haploids in horticulture crops has to be submitted to ICAR for funding in important horticulture crops where the tissue culture protocols are standardized.
- Joint programme has to be initiated in collaboration with IISER, CIMMYT, University and private R and D units. The modalities have to be worked out and communicated to the stake holders
- Proceedings has to be published as a book and to be sent to all the participants

Finally, Dr E Srinivasa Rao, Senior Scientist, IIHR extended vote of thanks to all the delegates.

General Secretary

Approved,

President

Recommendations of Doubled Haploids meeting held on Oct 4th 2013

- A Project on doubled haploids in horticulture crops has to be submitted to ICAR for funding in important horticulture crops where the tissue culture protocols are standardized.
- Joint programme has to be initiated in collaboration with IISER, CIMMYT, University and private R and D units. The modalities have to be worked out and communicated to the stake holders
- Proceedings has to be published as a book and to be sent to all the participants