

# Seed Tech News



**ISST:**  
**Disseminating Knowledge of  
Seed Science & Technology**

**Vol.: 43, No. 3, September 2013**



**Secretary : SK Jain**  
**Editor : Manjunath Prasad CT**



**A Report  
XIII National Seed Seminar  
on  
"Innovations in Seed  
Research and Development"  
June 08-10, 2013**

ISST organized the XIII National Seed Seminar in collaboration with UAS, Bengaluru, during 08-10 June 2013 at GKVK Campus, UAS, Bengaluru coinciding it with the Golden Jubilee Celebrations of UAS Bengaluru. This being the mega event, preparatory work for the seminar was done where printed published announcement brochure of the Seminar were distributed amongst all the members of ISST and other stake holders. Similarly day-to-day technical programme as per theme of the seminar "*Innovations in Seed Research and Development*" was also developed for which research papers were invited. Accordingly total technical sessions were six and each session was having lead speakers, oral presentations and poster sessions. The seminar included one special session each on panel discussions involving public-private organizations on "Innovations through Partnership" and "Interactive Sessions with Young Researchers: Career Options for Seed Technologists". Each session was chaired/co-chaired by the eminent scientists. Dr. MA Shankar, Director of Research, UAS, Bengaluru, at the outset welcomed all the dignitaries, press and public media and expressed that the National Seed Seminar is the first mega event of year long Golden Jubilee Celebrations of GKVK Campus, UAS Bengaluru.

The three days seminar was inaugurated by Dr. S Ayyappan, Secretary DARE and Director General ICAR, by lightening of lamp. During the inaugural session about four hundred delegates comprised galaxy of scientists and other invited dignitaries, policy makers, ISST members, students, farmers among others were present. Dr. Ayyappan highlighted the need to increase seed replacement rates (SRR) for enhanced productivity with a slogan "*Seed Breed Feed*". The souvenir on the occasion was released by Padmashree Dr. M Mahadevappa, whereas Dr. HS Gupta, Chairman, Organizing Committee, XIII National Seed Seminar & Director, IARI released the ISST publication - Abstracts of XIII Seed Seminar Scientific Papers.

Prof. Gautam Kalloo, President, ISST, in his address thanked the University of Agricultural Sciences authorities, Dr. K Narayana Gowda, Vice-Chancellor, Dr. MA Shankar, Director of Research, Dr. Rame Gowda, Special Officer (Seeds) and Local Organizing Secretary and his team, for

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Glimpses of ISST XIII National Seed Seminar, 8-10 June 2013 held at UAS, Bengaluru



Dignitaries lighting the lamp at the inauguration of XIII National Seed Seminar



Release of seminar publications by the chief guest



Dignitaries looking at art created by Seeds



Technical session during the seminar



Dr. D.G. Gupta raising question during the technical session



Panel Session during the seminar



Prof. G Kalloo, President, ISST felicitating Padmashree Dr. M. Mahadevappa



Prof. Kalloo, President, felicitating Dr. H S Gupta, Director, IARI



Invitees and participants attending the technical session



Prof. Kalloo, President, addressing the gathering during closing ceremony of seminar



Prof. Kalloo, President, felicitating Dr. Manmohan Attavar, Chairman and MD, IAHS



Prof. Kalloo, President, felicitating Sh. Krishna Byre Gowda, Hon'ble Agril Minister, Govt. of Karnataka

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hosting the Seminar and further stressed upon inclusion of potential varieties in breeder seed production chain to enhance SRR. Dr. SK Jain, Secretary, ISST briefed about the background of XIII National Seed Seminar and expressed his sincere thanks for the co-operation received from all for arranging the mega event as well for their overwhelming response received from scientific fraternity.

Dr. HS Gupta, also congratulated the Vice Chancellor and the staff of UAS, Bengaluru having completed 50 years of glorious services to the farming community. Dr. SA Patil, Chairman, Karnataka Krishi Mission, in his Key Note address highlighted about the success of ICAR Mega Seed Project and role of seed science in transforming agriculture. Dr. K Narayana Gowda, VC, congratulated ISST for having chosen GKVK Campus, UAS Bengaluru for XIII National Seed Seminar, and stressed upon utilization of local infrastructure,

like milk unions and others for timely quality seed distribution.

During these three days, lead papers, oral and poster presentations were made. The conclusions drawn from these were further summarized in the Plenary Session; and recommendations made as a step for Vision Ahead.

Hon'ble Sri Krishna Byregowda, Minister of Agriculture, Govt. of Karnataka, was kind enough to spare his valuable time to be present during Plenary Session and in his address stressed the need to develop climate-resilient new varieties and appealed to the farmers to become self sustained in seed production and not to depend too much on Govt. seed supplied on subsidy. ISST felicitated the Hon'ble Agriculture Minister on this occasion by presenting the shawl and memento.

**Prof. SK Jain**  
Secretary, ISST

## Recommendations of ISST XIII-National Seed Seminar on "Innovations in Seed Research and Development"

**Technical Session I : Impact of climate change on seed set, viability and vigour**

**Chairman : Sh. VK Gaur, MD, NSC**

**Co-Chairman : Dr. KPR Prasanna**  
Fr. DSW, UAS (B)

- New provenance exploitation for quality seed production with required infrastructure and marketing set-up.
- Seed multiplication of identified genotypes suitable for biotic and abiotic conditions.

**Technical Session II : Variety maintenance and seed production challenges and advances**

**Chairman : Prof. M Mahadevappa**  
Director, JSSRDF

**Co-Chairman : Dr. MA Shankar**  
Director of Research, UAS(B)

- Enhancing the availability of quality seeds in cereals - single cross hybrid maize; exploitation of heterosis in wheat, cucurbits, *Solanaceous* vegetables, seed spices and flowers.
- Intensive research on application of micronutrients for enhancing seed quality and availability.
- Intensification of research efforts in production of inbred lines and hybrid seed production of vegetable crops.

**Technical Session III : New frontiers in seed research**

**Chairman : Dr. NK Krishna Kumar**  
DDG (Horticulture), ICAR

**Co-Chairman : Dr. PS Naik, Director, IIVR**

- Dynamics of seed deterioration at molecular level for breeding varieties with higher field emergence and seed longevity.
- Seed quality enhancement using non-conventional approaches viz. electron treatment of seed.

**Technical Session IV : GM technologies: Prospects, perspectives and challenges**

**Chairman : Dr. HS Gupta, Director, IARI**

**Co-Chairman : Dr. N Seetharama**  
Executive Director, ABLE-Ag

- Prioritization of crops for application of GM technologies.
- Awareness generation - More interactive sessions on GM technologies amongst all stakeholders including researchers and policy makers.
- Human resource development to exploit the application of GM technologies.

**Technical Session V : Regulatory system for ensuring quality seed supply**

**Chairman : Dr. MA Shankar**  
Director of Research, UAS(B)

**Co-Chairman : Dr. M. Bhaskaran**  
Head, DSST, TNAU, Coimbatore

- Harmonization of various prevailing regulations with

- respect to seed trade – both domestic/international.
- Establishment of seed herbarium to facilitate taxonomic identification of weed species.
- Seed law enforcement - its success/impact and bottlenecks to ensure the availability of quality seeds to farmers.
- Development of seed standards for uninvestigated crop, and revisit to prevailing seed standards.

## **Technical Session VI : Food security through seed replacement and adopting novel approaches**

**Chairman** : **Dr. SA Patil**, Chairman  
Karnataka Krishi Mission

**Co-Chairman** : **Dr. Balraj Singh**  
Director, NRC Seed Spices

- Seed industry *vis-a-vis* food security in the context of ongoing programmes- private/public sector role.
- Replication of success story of paddy *viz.* Swarna Sub-1 popularization in UP.

## **An interactive session with young researchers: Career option for seed technologists**

**Chairman** : **Dr. JS Sandhu**  
Agril. Commissioner, Govt. of India

**Co-Chairman** : **Dr. Sain Das**  
Fr. Director, DMR, New Delhi

- Building of career opportunities in seed science and technology including NE regions.
- Adoption of dual degree programme on the pattern of TNAU (course work in parent university and research work in other university).
- Internship (10 days to three months) for PG students at centre of excellence (both public/seed companies) as a part of course curriculum in the discipline of seed science and technology.

## **General points**

- There is a strong need to increase seed replacement rates (SRR) for enhanced productivity with a slogan "*Seed Breed Feed*".
- To use local infrastructure, like milk unions and others for timely quality seed distribution.
- Need to develop climate-resilient new varieties and appealed to the farmers to become self-sustained in seed production and not to depend too much on Govt. seed supply on subsidy.

**Prof. SK Jain**  
*Secretary, ISST*

## **Proceedings of the General Body Meeting Held on June 10, 2013**

The number of members present was not enough to meet the quorum, therefore, the meeting was adjourned for 30 minutes and then resumed. Following agenda items were discussed one by one:

### **Item No. 1: President's Remarks**

Prof. Gautam Kalloo, President, ISST in his presidential address, during welcoming the delegates, highlighted about the ISST publications Seed Research and Seed Tech News. He mentioned that the NAAS rating of Seed Research Journal was raised by present EC from 3.0 to 4.7. He desired that efforts, for its international indexing be made. The ISST-publications are also updated. He highlighted that quality of publication is the main issue which need attention of all concerned.

He further informed that last conference, *ie.* XII NSS was organized at ANGARU, Hyderabad- as Hyderabad is the hub of Seed Industry, whereas XIII National Seed Seminar coinciding with Golden Jubilee Celebrations of UAS Bengaluru, is organized as the University has done commendable work in the area of seed science & its technology development. He indicated that Research & Education is an important area, where module implemented by VC, UAS, Bengaluru as well as Mega Seed Project of this university is highly appreciable.

Presentations made during the seminar were the reflections of the progress made in all facets of seed science. Efforts should be made to organize such national event once in 3 years, as well efforts are also needed to organize an international conference.

### **Item No. 2: Secretary/Treasurer Report**

Dr. SK Jain, Secretary, ISST presented the Secretary's Report. He indicated the background of the XIII NSS and placed on record the voluminous support provided by Hon'ble Vice Chancellor and Director of Research, UAS, Bengaluru and their team in successful conduction of the Seed Seminar. He indicated that Shri HCS Negi, Treasurer, ISST due to some unavoidable circumstances could not attend the seminar, hence on

his behalf Treasurer Report was also presented. Audited Statement of Accounts for the year 2011-12 was made available for the presence of members.

Proceedings of the last AGM, duly published in Seed Tech News, Vol. 36 (2): 4-5 were approved by the House.

Consolidation of amendments made from time to time in Association of Memorandum were included for publication in Seed Tech News, Vol. 42(2): 1-5 for the perusal of the members at a glance. Similarly publications of ISST were updated and Seed Tech News pending issues of 2010-2013 were in the press. Same was about Seed Research.

### Item No.3: Awards & Recognition

Dr. Gautam Kalloo, President, ISST indicated the need for institution of the following ISST-awards:

- Young scientist award
- Best thesis award
- Life time achievement award
- Best paper award
- ISST Fellow: Guidelines
- Felicitation to outstanding workers

The ISST should make an effort to award these on regular basis, by finalization of the procedures, terms & conditions and operational modalities.

It was of general consciousness that committee of Five Eminent experts be constituted for such purpose. For these awards, someone need to donate money to keep the continuity of awards; therefore, a minimal amount need to be donated by the person/family in whose name award is to be instituted. Possible areas for award were also indicated as given above, during AGM.

Dr. Jain, Secretary informed that various items of work undertaken by ISST Secretariat pertaining to finalization of terms and conditions for ISST-Fellowship. He presented the guidelines developed for the award of ISST Fellow to the august gathering, which was unanimously agreed by the members present. He

further informed that guidelines for ISST Fellowship are being published in Seed Tech News, Vol. 43(1) 2013.

### Item No. 4: Membership Fee Revision

In view of the increased cost of publications namely, Seed Research Journal and Seed Tech News – a Technical Bulletin etc and substantial postage, AGM approved the proposed enhancement, as under, which was duly considered during 69<sup>th</sup> ISST EC Meeting:

Kind of Membership	Present	Proposed
Ordinary (individual)	Rs 200	Rs 500
Life (individual)	Rs 2400	Rs 6000
Associate (Organization) ordinary	Rs 4000	Rs 6000
Corporate (Organization) Life	Rs 50000	Rs 75000
Student	Rs 200	Rs 500
Registration fee (For enrolling new member)	Rs 25	Rs 50

The revised charges as proposed above were approved and will be applicable *w.e.f.* April 2013.

### Item No. 5: ISST-By-Laws

Dr. SK Jain, Secretary informed to the house that amendments made in By-Laws from time to time in Association of Memorandum were published in Seed Tech News Vol. 42(2) (2012) for the perusal of the members at a glance.

Similarly, need to amend/modify the prevailing by-laws was also felt in the light of technical advancement in seed science. Looking to the importance of the subject, it was decided that services of Dr. PK Agrawal may be requested in the light of his rich experience in the subject/discipline. To lend appropriate support in this task, services of Dr. Vilas A Tonapi, Head, Division of Seed Science & Technology, IARI was also requested.

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## Item No. 6: ISST-Publications

President appreciated the efforts of EC in scaling up of NAAS rating from 3.0 to 4.7. He emphasized that Seed Research, the only Journal in Asia, should have an international impact. Dr. Balraj Singh, Vice President and EC members were of the opinion that more efforts are needed to enhance the NAAS rating of Seed Research. For this there is a need to bring out improvement in the quality of the journal with thorough review, editing, proof-reading etc.

(Action: President/Chief Editor)

## Item No. 7: Organisation of Events

The important issue of organizing International Seed Seminar during November-December 2015 at New Delhi was also discussed and it was decided that for which necessary efforts need to be made forthwith. ISST, EC is to take pin pointed action.

## Item No. 8: ISST- EC Elections

Realizing the importance of timely elections as has been felt time to time by various Members, it was decided to complete the election process preferably soon after XIII National Seed Seminar. For which, to conduct the Elections the names of **Dr. Ambrish Sharma**, *Principal Scientist*, CATAT, IARI, New Delhi and/or alternatively **Dr. Dinesh Kumar**, *Principal Scientist*, Crop Science Division, ICAR, New Delhi as Returning Officer was proposed and agreed.

## Item No. 9: Office Bearers of the ISST

- The matter regarding immediate past president of ISST to be the member of EC and to nominate Patrons (two): **Dr. M Mahadevappa** and **Dr. SA Patil** was decided; which will be co-terminus with EC tenure. The inclusion of nomination of Patrons in Association of Memorandum was suggested.
- Looking to the increased ISST work and long felt

need of regular Executive Officer, Secretary ISST indicated that in absence of any such arrangements it is rather difficult to handle all work and on many occasions it remain haphazard. There is need to fulfill all ISST important day-to-day tasks smoothly. Therefore, AGM decided in favour of regular position of Executive Officer.

## Item No. 10: Any other Item with Permission of the Chair

- Dr. V Sankaran** expressed his keenness and appreciated the efforts made by ISST Secretariat in providing the information on developments in seed science and technology through ISST publications *ie.* Seed Research Journal and Seed Tech News. Further all members were requested to provide updates and information on developments related to seeds, enabling ISST for wider circulation amongst members.
- Dr. SK Yadav** indicated that AGM is very important where only those items should be highlighted which need rectification/approval of AGM so that other irrelevant matters may be avoided.

At the end, **Dr. Jain**, Secretary, ISST profusely thanked UAS, Bengaluru authorities, namely **Dr. K Narayana Gowda**, Vice Chancellor, **Dr. MA Shankar**, Director Research, **Dr. Rame Gowda**, Professor & Special Officer (Seeds) and his team comprised of staff members and students for their whole hearted support in successful conduction of seminar. He also extended his warm thanks for the financial support given by sponsors and advertisers, which certainly helped to fulfill logistic needs to organize the seed seminar.

The meeting ended with the *Vote of Thanks* to the chair.

**Prof. SK Jain**  
Secretary, ISST

## Editorial Contact Information

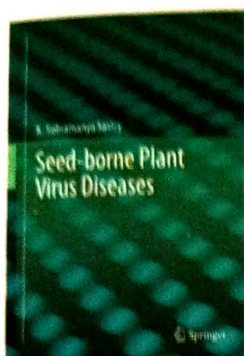
Please send us information related to any news, new projects, opinions on policy issues, current happenings, publications, book reviews, foreign visits, new appointments, trainings, seminars, workshops and conferences or other interesting stuff related to seed for the next issue of Seed Tech News.

Suggestions and comments are welcome!

Editor  
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# Seed Tech News

## New Publications



### Seed-borne Plant Virus Diseases

K Subramanya Sastry

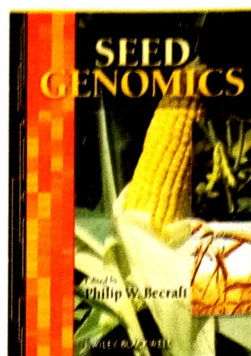
2013, Springer

ISBN: 978 81 322 0812 9

209.00 USD

Seeds provide an efficient means in disseminating plant virus and viroid diseases. The success of modern agriculture depends on pathogen free seed with high yielding character and in turn disease management. There is a serious scientific concern about the transmission of plant viruses sexually through seed and asexually through plant propagules. The present book provides the latest information along with the total list of seed transmitted virus and viroid diseases at global level including, the yield losses, diagnostic techniques, mechanism of seed transmission, epidemiology and virus disease management aspects. Additional information is also provided on the transmission of plant virus and virus-like diseases through vegetative propagules. It is also well known that seed transmitted viruses are introduced into new countries and continents during large-scale traffic movements through infected germplasm and plant propagules. The latest diagnostic molecular techniques in different virus-host combinations along with disease management measures have been included. The book shall be a good reference source and also a text book to the research scientists, teachers, students of plant pathology, agriculture, horticulture, life sciences, green house managers, professional entrepreneurs, persons involved in quarantines and seed companies. This book has several important features of seed transmitted virus diseases and is a good informative source and thus deserves a place in almost all university libraries, seed companies and research organizations.

Source: [www.springer.com](http://www.springer.com)



### Seed Genomics

Philip W. Bearchraft

March 2013, 276p  
Wiley-Blackwell

ISBN: 978 0 470 96015 8

199.95 USD

Seed genomics looks at the application of genomic analyses to various aspects of seed research and improvement. The book opens with an historical perspective on the field. Subsequent chapters look at the impact of genomic advances on understanding the fundamental biology of seed development. 'Seed Genomics' brings together top researchers in the field to cover three general themes: genomic approaches to studying seeds, genomic analyses of basic seed biology, and crop seed genomics. The following chapters look at seed components such as proteins, oils, starch and fiber and the genomic basis of these properties in seed crops. The closing chapters then explore genomic approaches informing strategies for seed crop improvement. Providing a broad ranging look at genomic advances in fundamental and applied aspects of seed biology, seed genomics will be an essential resource for seed biologists, crop scientists, crop geneticists and others working in allied fields.

Source: [www.as.wiley.com](http://www.as.wiley.com)

## News From DSST

1. With Dr. Vilas A. Tonapi, Fr. Head, DSST shifting to Directorate of Sorghum Research, Hyderabad, Dr. Surendra S. Parihar, Professor, DSST has taken over as Head, DSST *w.e.f.* 06 July 2013.
2. Dr. SK Jain, Principal Scientist at DSST, IARI takes over the charge of Professor, DSST *w.e.f.* August 22, 2013. ISST welcomes the decision and wishes him all the success in the future endeavor.
3. The Post-Graduate teaching at Division of Seed Science and Technology, IARI is further strengthened with addition of Dr. RK Chowdhury, Fr. Project Director, NSP (Crops) as Adjunct Faculty *w.e.f.* October 01, 2013.
4. Dr. Atul Kumar, Senior Scientist has rejoined the team of scientists at Division of Seed Science and Technology, IARI on July 01, 2013. With his joining, the seed pathology research is further strengthened. ISST welcomes him to the seed fraternity and wishes him all the success in research career.

### Mechanism of seed germination in rice

The scarcity of water and labour is forcing the rice farmers to shift from conventional to direct seeded cultivation. Vigorous crop established with faster and uniform seed germination is of paramount importance in direct seeded crop. Earlier studies have hypothesized that galactomannan hydrolyzing enzymes in rice plays an important role in loosening of the embryo surrounding tissue (*viz.* endosperm) influencing the speed of germination. To test this hypothesis and the effect of gibberellins (GA) and Abscisic acid (ABA) on enzyme activity, studies were conducted on ten rice genotypes comprising of five early germinating (taking <30 hr for radicle emergence) and five late germinating (taking >44 hr for radicle emergence) genotypes. Activities of galactomannan hydrolyzing enzymes (*viz.*  $\beta$ -mannanase,  $\beta$ -mannosidase and  $\alpha$ -galactosidase) increased with germination in both early and late germinating rice genotypes. The average enzyme activities of the genotypes was higher in early germinating group in comparison with the late germinating group for all the three enzymes and at all the three stages of germination (*viz.* dry seed, lemma rupture and radicle emergence). Among the enzymes, activity of  $\beta$ -mannosidase was found higher in dry seeds of both the group followed by  $\alpha$ -galactosidase and  $\beta$ -mannanase. GA supplement (@ 50, 100 and 200  $\mu$ M) in the germinating medium has increased the activities of all the three enzymes that manifested in faster lemma rupture and radicle emergence in both early and late germinating rice genotypes by 3-5 hr and 8-12 hr, respectively. The increase in  $\alpha$ -galactosidase activity with increased concentrations of GA was marginal in both the group and hence it is hypothesized that GA is facilitating in attaining the required threshold activity of  $\alpha$ -galactosidase in shorter time that was manifested in faster germination of all genotypes. Supplement of ABA (@ 50, 80 and 100  $\mu$ M) in the germination medium has decreased the activities of all the enzymes that resulted in enhanced time taken for radicle emergence. However, no changes were observed with respect to time taken for lemma rupture, which corroborate that lemma rupture could be due to expansion of embryonic axis or cell elongation under the control of expansins regulated by GA.

Name of the student: **Nakul Gupta**

Name of the Major Supervisor: **Dr. Arun Kumar, MB**  
Division of Seed Science and Technology  
IARI, New Delhi 110 012

### Effect of high temperature on floral characteristics, seed set and seed quality in parental lines of rice hybrids

Seed yields in rice often fluctuate due to various environmental stresses. As a consequence of climate change, heat stress is emerging as the most serious threat to hybrid rice seed production. Hybrid rice with 15-20% yield superiority over HYVs is vital for food security. Synchronized flowering in parental lines can be achieved by time of sowing for successful pollination and seed set. An experiment at IARI, New Delhi was conducted to identify optimum time of sowing of parental lines in three Indian rice hybrids *viz.* DRRH-2, DRRH-3 and PRH-10 for NCR Delhi condition. The three different date of sowing *i.e.* I (26/03/2012), II (30/04/2012) and III (13/06/2012) showed variation in average temperature of 32.0, 29.4 and 28.6 °C, respectively from nursery sowing to physiological maturity. The parental lines of the selected hybrids differed for days to booting, flowering duration, spikelet opening duration and angle, days to maturity and seed set in the A line and pollen fertility in B and R lines under different sowing dates and growing conditions. However, high temperature during growth phase in parental lines resulted in significant variations in average number of days to booting (23 days), panicle emergence (22 days), 50% flowering (23 days) and days to physiological maturity (12 days) when compared to normal temperature, leading to wide non-synchrony in flowering between the parental lines and subsequently low seed set in the female line. Pollen fertility was reduced with increased temperature. An average yield loss (about 20%) was recorded among the parental lines of the three hybrids with 3.6°C increase in temperature at the reproductive stage. The parental lines of DRRH-3 were found susceptible to high temperature; however, parental lines of DRRH-2 and PRH-10 showed relative tolerance against high temperature stress. Seeds harvested from plants sown early maturing under high temperature stress recorded low vigour index-I (29%), vigour index-II (20%) and germination (8%) as compared to seeds produced under normal sowing conditions. The study identified optimum time of sowing of parental lines of the three hybrids under Delhi and similar conditions elsewhere in India for the diversification of hybrid rice seed production areas.

Name of the student: **Hrishikesh Sutradhar**

Name of the Major Supervisor: **Dr. SK Chakrabarty**  
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