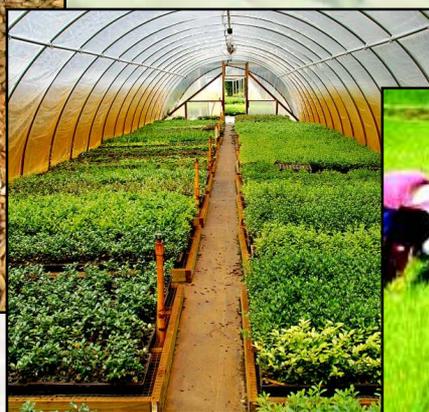
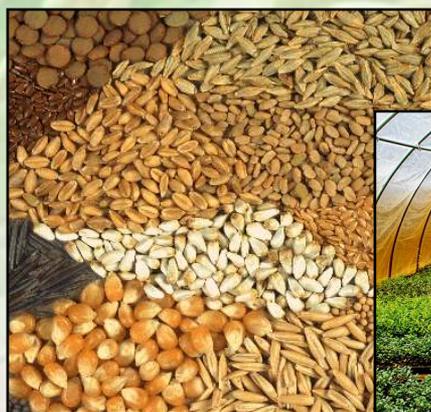


# National Seminar on “Quality Seed for Food Security through Public-Private Partnership”

**Proceedings & Recommendations**



**April, 13-14, 2010**

**Dr. B.P. Pal Auditorium, IARI, New Delhi**

*Organized by*



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**Indian Agricultural Research Institute  
National Seed Association of India  
Trust for Advancement of Agricultural Sciences**

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## National Seminar on “Quality Seed for Food Security through Public-Private Partnership”

A National Seminar on “Quality Seed for Food Security through Public-Private Partnership” was jointly organized by the Indian Agricultural Research Institute (IARI), New Delhi, the National Seed Association of India (NSAI), New Delhi and the Trust for Advancement of Agricultural Sciences (TAAS), New Delhi from April 13 to 14, 2010. It was aimed to identify the strengths of both public and private sectors for crop variety improvement and seed production programs; to identify the issues and difficulties in the commercialization of technologies; to draw a work plan in partnership mode; to suggest policy interventions; and to prioritize the areas for collaboration, which can help in making available quality seeds of improved plant varieties and hybrids at affordable prices to the farmers across the country, and fulfilling the needs of different agro ecosystems.

The seminar was attended by more than 200 participants representing policy makers from ICAR and the Ministry of Agriculture, public research institutions, state agricultural universities, public and private seed sectors comprising Indian, joint venture and multi-national companies and subject matter specialists. In all, 32 public research institutes and 25 seed companies participated in the seminar (List of participants – Annexure I).



*Inaugural Session*

Dr. S. Ayyappan, Secretary, Department of Agricultural Research & Education (DARE) and Director General, Indian Council of Agricultural Research, inaugurated the National Seminar. Dr. R.S. Paroda, Chairman, TASS, presided over the Inaugural Session. Dr. H.S. Gupta, Director, IARI welcomed the participants and the invitees to the Inaugural session. Dr. Gupta emphasized that the public and the private sectors need to come together to fill the 25-30% shortfall in seed availability, as also to harness the true potential of the seed sector in India to take it beyond the

present value of \$ 1.3 billion. Mr. Uday Singh, President NSAI stressed on the need to build a mutual trust between the two partners. Also we must identify the strengths of each partner and find ways to complement each other. In his opinion, the public sector has large infrastructure and manpower resource, whereas the private sector possesses efficient production and marketing skills. One of the areas of partnership in his opinion was providing access to the germplasm available with the public sector. The models of CGIAR institutes in this regard could be used to develop our own system.



*Dr. H.S. Gupta, Director IARI Welcoming the Guests*



*Opening Remarks by Mr. Uday Singh, President, NSAI*

Dr. Ayyappan in his Inaugural Address expressed happiness that the distinction between the public and private is getting blurred and it is becoming one. He stressed the need for joint action for addressing the issues related to quality seed production and seed and variety replacement, by sensitizing people about the new varieties. He assured access to the wealth of germplasm available with ICAR system. There was also need for joining hands for establishing hubs and



*Inaugural Address: Dr. S. Ayyappan*

seed banks, particularly for meeting urgent demand of seeds in seasons of draught etc. Dr. Ayyappan suggested that there should be a National Committee / Working Group comprising members from both public and private sectors, to review the situation regularly and formulate action plan for ensuring quality seeds for the farmers.

Dr. R.S. Paroda in his Presidential Address appreciated this timely initiative of NSAI and IARI to convene this seminar and felt that the public and private partnership was essential for seeds, which are catalyst of change, to ensure food security and sustainable long term agriculture growth. He thanked Dr. Ayyappan for his offer of sharing germplasm available and felt that this will contribute to development of new technologies. Dr. Paroda mentioned that the impact of technology can be realized through a partnership of the two sectors. The success story of Bt Cotton is an example. He was confident that in the present enabling environment, through partnership, the hybrid technology available can be extended suitably to cover larger areas, particularly in rice and maize. He was of the opinion that the institutions like IARI or some SAUs like UAS, Dharwad should be developed as technology parks and private sector should partner specific research projects. Dr. Paroda appreciated Dr. Ayyappans suggestion of Working Group to oversee the growth of the seed sector in the country.



*Presidential Address: Dr. R.S. Paroda*



*Views of the Participants*

The technical content of the Seminar was structured over four sessions focusing on specific theme areas, namely: *'National and Regional Perspectives for Development of Public Private Partnership; 'Promotion of Hybrid Technology; 'Initiatives for Strengthening Public Private Partnership and 'Public Private Partnership – the Way Forward.* (Detailed programme at Annexure II). In the first three sessions, eminent scientists and industry experts presented their views, which were discussed at length,

the fourth session was an interactive one, with panelists drawn from both public and private sectors, putting forth suggestions on how do we take forward the process, based on the lessons learnt and constraints experienced in the public private partnership during the last nearly a decade it had been actively practiced.

The first Session was chaired by Dr. H.K. Jain (Former DDG, ISNAR and Director, IARI). Dr. P.K. Agrawal (Former Head, DSST, IARI) acted as the Facilitator for the Session. Dr. H.S. Gupta and Dr. S.A. Patil (Present and former Directors, IARI) presented the experiences from the public sector perspective, Dr. Paresh Verma (Shriram Bioseed) explained how the private sector perceives such relationships. Dr. S.S. Virmani (Former Principal Scientist, IRRI,



*Session I Chair: Dr. H.K. Jain*

Philippines) brought in the regional perspective. Dr. Gupta shared the experience of IARI in strengthening the seed chain following three options, namely, a) to strengthen the links with and sensitize the public seed sector to introduce aggressive strategies for market development through a large number of location based field demonstrations, and intensified extension programmes to provide detailed information on new varieties and their cultivation technology; b) to expand seed production activities at institutional level; and c) to build up partnerships with public as well as private seed sector based on competence (technical & commercial), business profile of the company, commitment to serve the farmers, trustworthiness and equitable mutually agreeable terms. He presented the success story of rice hybrid PRH 10 which through public private partnership has now spread all over the country. Dr. Patil, who steered the PPP initiatives at IARI earlier, expressed happiness at the appreciation for this model of growth and stressed the need for variety replacement, besides seed replacement. He emphasised that it has to be a collaborative effort to plan and execute activities with a view to accomplish agreed upon objective, while sharing cost, risk and accrued benefits. Dr. Patil felt that the level of complementarity required between the NARS and the private sector is not achieved as there is still lack of faith and trust in each other. He suggested creation of a PPP website with information on germplasm available, parental and inbred lines available for hybrid development, varieties and hybrids in pipeline for release, MOU models, legal aspects, etc. Dr. Verma while complementing the public sector for the strength of vast infrastructure, in terms of tremendous scientific knowledge and research capabilities, mentioned that the private sector has the focus to convert the technology to

commercialization by creating a product. He stressed the need for enablers for the PPP process to succeed. These enablers include, a clear policy framework to provide the guidelines; very strong basic research in the public sector; a vibrant private sector willing to invest in research and to have right kind of legislative environment conducive for increased investment in research. In his opinion, complementarity of partners and professional trust for each other, are the key success factors. Dr. Virmani presented the success story of public private partnership through his efforts of introducing hybrid rice in the asian region. The huge success in china was made possible by extensive policy support available to the farmers from local, provincial and national level. The combination of public and private partners in technology generation, seed production and marketing, and technology dissemination, gives tremendous boost to the gains from the process. The models of hybrid rice consortium or the ICRISAT consortium should be discussed at various levels to develop a system which is a better operational mechanism for the state / nation. This can come in through dialogue facilitation among public and private sectors representatives and policy makers.

The second session was chaired by Dr. S. Nagarajan, Chairperson, Protection of Plant Varieties & Farmers Rights Authority. Dr. B.C. Viraktamath, Project Director, Directorate of Rice Research, Hyderabad was the facilitator for the session. In the session, the speakers drawn from both public and private sector, dwelled on the experiences with introduction of hybrid varieties in different crops in the public private partnership. Dr. A.K. Singh from IARI recounted the spread of IARI rice varieties through PPP, and availability of enough breeder seed of the rice hybrids, which multiplied properly by the private sector, could cover ten times the present area under hybrid rice. Dr. Yog Raj of Bayerbioscience Ltd. narrated the experiences of how using their rice variety, they have created value for the farmers. Their company has worked extensively in large scale seed production, research in different agro climatic zones, educating farmers and worked on farm mechanization. Dr. S.K. Vasal, former Programme Leader for Maize at CIMMYT discussed various breeding systems for improving the hybrid performance in maize. He stressed that at CIMMYT, they were very open and shared breeding material with open pedigree, facilitating breeders across the world, both in public institutions as well as private sector to take the



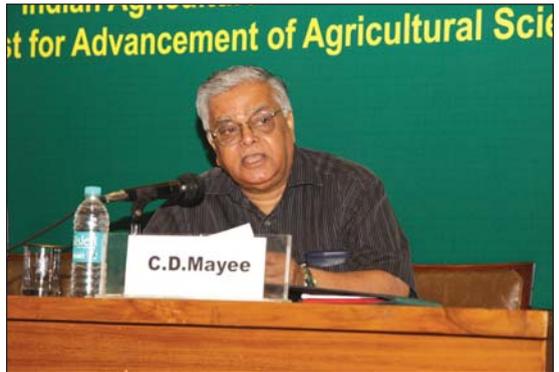
*Session II Chair: Dr. S. Nagarajan  
(with Dr. B.C. Viraktamath)*

process of providing good genetics to farmers. This 'multiplier strategy through which work of a couple of breeders can be multiplied by thousands of breeders, is the right approach for PPP. Mr. K.V. Subbarao, of Pioneer highlighted the role of private sector in introducing hybrids which have contributed to phenomenal growth in the production and productivity of maize in the country. He mentioned of their consortium approach with CIMMYT and Kenya Agricultural Research Institute in improving maize production in the African region. Dr. N. Seetharama, former Director of Directorate of Sorghum Research, Hyderabad, presented how in spite of the area under sorghum reducing to 40 percent, the total production remained same, largely due to the introduction of hybrids. Lack of interest in the crop needs to be addressed jointly by the public institutions and the private sector. Partnership in areas like development and promotion of fodder sorghum, and sweet sorghum which besides its value for energy sector (bio fuel) has also promise of other industrial uses like in plastics and chemicals, needs to be looked into. The hybrid with sugarcane has not reached the level of success, as demonstrated by private sector in other countries. Dr. K.B. Saxena of ICRISAT recounted the public private partnership in the programmes with pigeon pea, where several public and private seed companies are involved in supporting breeding and testing of hybrid programme, joint evaluation of experimental hybrids, on farm testing, training programmes and use of seed production technology to improve the availability of quality seeds for the farmers. While Dr. Suman Bala Singh of CICR, Nagpur presented the development of hybrid cotton programme at her institute and its contribution to the growth of cotton production in the country, Mr. Prabhakar Rao of Nuziveedu Seeds Ltd. appreciated the role of cotton hybrids from public institutions helping his company to grow to its present stature. He agreed that the public private partnership in sectors like seeds has a much bigger role for the benefit of the farmers. Dr. A.S. Sidhu, Director of IIHR, Bangalore mentioned the role played by the hybrid varieties in the growth of vegetable production in the country. This has become possible due to contributions from both public and private sector and the public private partnership through multiplication of public sector hybrids by the private sector, improving the access of farmers to these hybrids. This growth in vegetables was also supported by Dr. Arvind Kapur of Rasi Seeds. Dr. Kapur felt that public private partnership would improve equity, efficiency and accountability, as well as quality and accessibility of the seed sector. In his concluding remarks, Dr. Nagarajan stressed that in public private partnership there has to be a common goal / ground on which both the partners work. The issue is to create wealth and work out how to share this wealth. He felt that the public private partnership should be a dynamic process and the model adopted today, should be reviewed after some years and redefined to yield better returns. He cautioned about exclusivity leading to monopoly and be on watch to check infringements of rights.



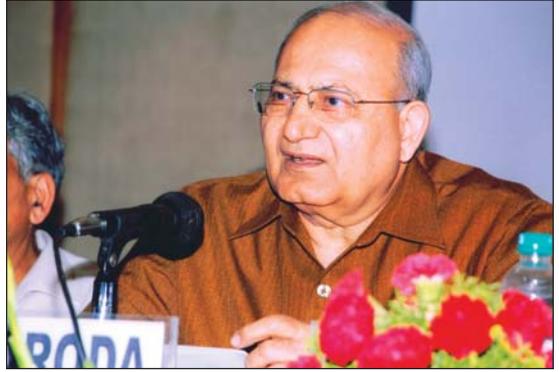
*Discussants*

Dr. C.D. Mayee, Chairman of ASRB, the Chairman of Session III expressed happiness that by removing barriers between public and private, we are growing towards providing better technologies to the farmers. Development of mutual trust will help in strengthening the partnership. Dr. P. Ananda Kumar, Project Director, NRC on Plant Biotechnology, showcased some of the technologies available with NRC and how they could be taken forward through public private partnership as in the past. In his opinion, it is a two way channel, with both partners contributing to the process. He gave examples of biotech products exchanged between the two partners and improved upon to yield a better product. Dr. S. Mauria, ADG (IPR), ICAR stressed the importance of IPR in the whole process of public private partnership. He mentioned about the initiatives of ICAR in educating the partners about the attention to be accorded to requirements of IPR regime and the importance being accorded to it by the senior management in ICAR. Mr. Raju Barwale, MD, MAHYCO, felt that partnerships are necessary to meet the growing national needs for agriculture growth and development. He said that individual efforts are not enough to achieve the goals set by improving economy and improved lifestyles. Partnerships can help an early introduction of new technology into market and improve the cost effectiveness of a technology by increased market use of the product. In such high risk projects, partnerships can mitigate the risks and effect saving of resources.



*Session III Chair: Dr. C.D. Mayee*

The concluding session was an interactive session to discuss ways to take the process of the public private partnership forward. Dr. R.S. Paroda, Chairman, TAAS chaired this interaction. He was assisted by Dr. K.V. Prabhu, Head Genetics, IARI who acted as the facilitator. The interaction was conducted as a 'Panel Discussion and the Panelists included Dr. H.P. Singh (DDG, ICAR); Mr. Uday Singh (President, NSAI); Mr. Akshaya Kamath (Asia Pacific Chief, Syngenta Seeds); Dr. H.S. Gupta (Director, IARI); Dr. S.K. Sharma (Director, NBPGR); Mr. S.K. Roongta (CMD, NSC) and Dr. J.S. Sandhu (ADG, ICAR).



*Dr. R.S. Paroda Chairing the Way Forward Session*

Dr. H.P. Singh opined that public private partnership was necessary for checking the break in seed chain, developing effective diagnostic system, quality testing and developing seed buffer stocks to meet urgent requirement during natural calamities. Mr. Uday Singh emphasized that the mutual trust which has been formed must be nurtured to take the process of public private partnership further. He informed that while there has been poor access to the germplasm from the public sector, plant material collected from the country has been patented in other countries causing national loss. He supported the idea of harmonization of rules between the centre and states. Mr. Kamath stressed that once there was a common goal and agenda, we need to sincerely play out our role and it doesn't matter whether we are from public or private sector. Given the challenge of climate change and water use efficiency, an overreaching goal exists. Alignments can happen if we meet regularly to review the partnerships and redefine our roles to meet the changed requirements. Dr. Gupta felt that there was no alternative to public private partnership for continuing the country's food security through seed security. The partnership can succeed only if both the partners are open, transparent and trustworthy. He also recommended a level playing field for further growth. Dr. Sharma said that the germplasm being conserved and maintained by NBPGR is a sovereign property of the nation and is available for use by everyone, subject to the rules and guidelines laid out by various government authorities. He offered the access to germplasm to private sector and also sought its help in securing material from other countries, which at times cannot be obtained by public sector in the absence of approved inter governmental exchange programmes. He also invited the private sector to partner the evaluation, characterization and cataloguing of the huge germplasm resource available. Mr. Roongta mentioned that not many new varieties are coming into the seed chain and the farmers are being denied access to

technologies to meet the requirements of climate change etc. He said that the NSC programmes on R&D are involving partners from both public and private sector to provide better material to the farmers. Dr. Sandhu emphasized the role of public private partnership in ensuring reduction of use of farmers saved seed and improving the SRR for harnessing the food security. He suggested that to improve the access of farmers to new varieties, their inclusion in the mini kit trials and ensuring that the indents for their breeder seeds are met. Dr. Paroda in his concluding remarks appreciated the participants for recognizing that we all are part of a national system and have equal responsibility to adequately meet the requirements of farmers for quality seed. He emphasized that we must clearly define our targets and work together to achieve them. The public private partnership cannot succeed unless we have clear understanding, mutual trust, transparency and honesty. Dr. Paroda advised that we should develop a system for germplasm access and use based on internationally accepted MTAs and SMTAs. He stressed the need to develop a system of benefit sharing and incentivising the players in the process. He also advocated the setting up of technology parks to commercialise the technologies in a big way. Dr. Paroda complemented the Indian private seed industry for their role in contributing to the sustained growth of Indian agriculture and felt that we must ensure that the public private partnership models help us to meet the expectations of the farmers in the time to come.



*Interactive Session on Way Forward*

## Recommendations

Based on the discussions in the different sessions, more particularly the interactive session, the following major recommendations emerged for speedy implementation by all concerned.

1. A **Policy Paper** needs to be brought out immediately based on crop-wise desired and current seed replacement rates (SRR), total seed requirements and availability, giving varietal shares and strategy to be followed to increase crop productivity by increasing the SRR. The ICAR may coordinate with the Department of Agriculture & Cooperation (DAC) and NSAI to bring out this paper to become the basis for strengthening of seed development program in the country.
2. Increased availability of HYV seeds can fast bridge the yield gaps and thus, increase the national productivity. Hence, there is an urgent need for the Council

to enhance the SRR of selected crops and vegetables, with emphasis on improved varieties of pulses and groundnut, where the SRR is still far from satisfactory. Wherever hybrids are successful, a special drive to increase the area under them would be desirable. For instance, in rice, the area under hybrids can be enhanced from the current 1.5 million hectare to at least 5 million hectare in the next five-year plan period. Similarly, in maize, the production can be doubled by increasing the area under single cross maize and QPM hybrids from the current 40 – 50% to at least 70 – 80% in the next 4 to 5 years.

3. The success of partnership lies in trust, openness, and transparency. This can be built by regular interactions and dialogues, and appropriate policy framework to strengthen public-private partnerships. **Therefore, a Standing Working Group in the Ministry of Agriculture (DAC/DARE-ICAR) may be constituted as a matter of priority under the leadership of an eminent scientist, comprising, in all, around 7 members representing DAC (2), ICAR (2) and seed industry (2).** This could work as a “Think Tank” and play an oversight as well as honest brokers role in promoting public-private-partnership (PPP). The proposed Working Group could also review the existing guidelines for incentives and rewards and suggest ways for building new partnerships while taking care of access and benefit sharing (ABS) mechanisms.
4. Good models and success stories on PPP existing in the NARS and the CGIAR system, such as that of IARI, NRCPB, IHR, ICRISAT, IRRI, etc., **can be replicated or further refined, as needed, by other institutions/universities.** However, some of these institutions expressed concerns about the break in the continuity of Breeder Seed procurement by the commercial organizations, which has to be addressed to build partnership.
5. For the access to new hybrids/varieties/genetic materials, the private sector may consider paying royalties between 3-7% on sale proceeds – based on negotiations, on a case to case basis, and depending on exclusive/non-exclusive rights. The public sector seed corporations should also join hands with the research institutions in popularization and fast delivery of improved varieties, especially the hybrids. In view of the poor conversion of breeder seed to foundation and certified seed, the public sector should use PPP mode to convert maximum of breeder seed to certified seed. The public sector should, henceforth, pay a royalty on breeder seed on mutually agreed terms.
6. There is an urgent need to build crop-based/institution-based Technology Parks/Incubators so that scientists from both public research institutions and private seed sector could work together right from the beginning of the partnership in evaluating germplasm and breeding lines, and in developing, evaluating and

commercializing varieties with the desired traits. This may encompass the development of transgenics, biosafety assessment, field evaluation, public awareness and release of the final product keeping in mind the national interest.

7. Germplasm conservation through use can help in achieving both sustainable agricultural growth and development. Hence, it was emphasized that the national germplasm collection available at the NBPGR, being the national public goods, be made available more freely on request, to Indian scientists/institutions/seed companies engaged in crop improvement (R&D) programs. For this, the Standard Material Transfer Agreement (SMTA), as adopted recently by the FAO International Treaty on Genetic Resources for Food and Agriculture (ITGRFA) for multilateral access, can be adopted for immediate implementation, with necessary safeguards as needed. All data on available germplasm must be documented / catalogued and placed on NBPGR website.
8. Some of the policy related issues for consideration of the DAC are:
  - The DAC may like to harmonize, to the extent possible, seed related regulations both at the central and state levels. The New Seed Bill, currently under consideration of the Parliament, is expected to provide enabling environment for faster seed sector growth in the country.
  - The quality seeds, whether certified or truthfully labeled, must qualify for seed subsidy. Subsidies need to be linked to promote area coverage under new HYVs and hybrids for increasing productivity, irrespective of whether produced by the public or private sector. This will benefit both farmers and the nation and avoid discrimination, which otherwise is counterproductive.
  - For accelerating hybrid seed production, the present system of receiving indents of the parental lines of notified hybrids by the public/private sector (through NSAI to DAC) and fixing one uniform price, irrespective of their commercial value, must be reviewed at the earliest in consultation with the ICAR and NSAI.
9. For crisis management, it is essential to establish Regional Seed Banks as a contingency measure. There is an urgent need for establishing Seed Processing and Storage Facilities by the public / private sector for common use, on a fixed charge basis.

**Annexure-I****List of participants**

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- 50 Dr. B. Chaudhary  
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- 54 Dr. Shiv Kumar Yadav  
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- 55 Dr. P. Nallathambi  
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- 56 Dr. Manjunath Prasad  
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- 57 Dr. R.K. Yadava  
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- 61 Dr. Shafiq A. Wani  
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- 102 Dr. Uday Bhaskar  
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- 103 Dr. V.L. Gawande  
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- 111 Dr. V.S. Dagaonkar  
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Opp. Bus Station, Nagpur-440018
- 112 Mr. Sudesh Kumar Sharma  
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- 113 Dr. S.K. Tripathi  
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Modhapur Hyderabad-500081
- 115 Mr Sandeep Kumar Kaushik  
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- 116 Mr. Santosh Kumar  
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- 117 Dr. N.S. Sipani  
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- 118 Mr. K. Brahma Teja  
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- 119 Mr. Ashwin Kashikar  
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- 130 Mr. Suresh Gupta  
J.K. Agrigenetics Ltd.  
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- 131 Mr. Vinay R Dhannawat  
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- 132 Mr. I.S. Pahuja  
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- 133 Mr. P.K. Kansal  
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- 134 Dr. V. Patil  
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- 139 Ms. Tulika Singh  
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- 140 Mr. R.D. Sharma  
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- 141 Mr. Sher Singh  
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- 141 Mr. Vinay Chourasiya  
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**Annexure-II**

**National Seminar on  
“Quality Seed for Food Security Through  
Public-Private Partnership”**

**April, 13-14, 2010**

**Technical Programme**

**13th April 2010**

**0930**

**INAUGURAL SESSION**

- Welcome : Dr. H.S. Gupta (Director, IARI)  
Opening Remarks : Mr. Uday Singh (President, NSAI)  
Inaugural Address : Dr. S. Ayyappan (Secretary, DARE & DG, ICAR)  
by the Chief Guest  
Presidential Remarks : Dr. R.S. Paroda (Chairman, TAAS)  
Vote of Thanks : Dr. M. Dadlani (Head, DSST, IARI)

Seminar Coordinator

**1030**

TEA

**1100**

**SESSION I : NATIONAL AND REGIONAL  
PERSPECTIVES FOR DEVELOPMENT OF PPP**

- Chairperson : Prof. H.K. Jain (Former Director, IARI)  
Facilitator : Dr. P.K. Agrawal (Former Head, DSST, IARI)  
Resource Persons : Dr. H.S. Gupta (Director, IARI)  
Dr. S.A. Patil (Chairman, KKM)  
Dr. Paresh Verma (Shriram Bio Seed)  
Dr. S.S. Virmani (Ex-P.S, HyRice, IRRI)

**1215**

- : Discussion & Chairperson's Remarks

**1300**

LUNCH

<b>1400</b>	<b>SESSION II: PROMOTION OF HYBRID TECHNOLOGY</b>
Chairperson	: Dr. S. Nagarajan (Chairman, PPV & FRA, GOI)
Facilitator	Dr. B.C. Viraktamath (PD, DRR)
Resource Persons	: <i>Cereals</i>
	Dr. A.K. Singh (Genetics, IARI)
	Dr. Yograj (Bayer Bioscience)
	Dr. S.K. Vasal (Formerly Distinguished Scientist, CIMMYT)
	Dr. N. Seetharama (Former Director, NRCS)
	Dr. K.V. Subba Rao (PHI Seeds Ltd.)
	<i>Cotton, Pigeon Pea</i>
	Dr. S.B. Singh (CICR, Nagpur)
	Mr. M. Prabhakar Rao (Nuziveedu Seeds)
	Dr. K.B. Saxena (ICRISAT, Hyderabad)
	<i>Vegetables</i>
	Dr. A.S. Sidhu (Director, IIHR, Bangalore)
	Dr. Arvind Kapur (Rasi Seeds)
<b>1530</b>	TEA
<b>1600</b>	Discussion and Chairperson's Remarks
<b>1830</b>	Cultural Evening
<b>2000</b>	DINNER
<b>14th April 2010</b>	
<b>0930</b>	<b>SESSION III: INITIATIVES FOR STRENGTHENING PPP</b>
Chairperson	: Dr. C.D. Mayee (Chairman, ASRB)
Facilitator	Dr. V. Sankaran (Krishidhan Seeds)
Resource Persons	: Dr. P. Anand Kumar (PD, NRC PB)
	Dr. S. Mauria (ADG, ICAR)
	Mr. Raju Barwale (MAHYCO)
<b>1030</b>	Discussion & Chairperson's Remarks
<b>1100</b>	TEA

**1130** **INTERACTIVE SESSION: PPP - THE WAY FORWARD**

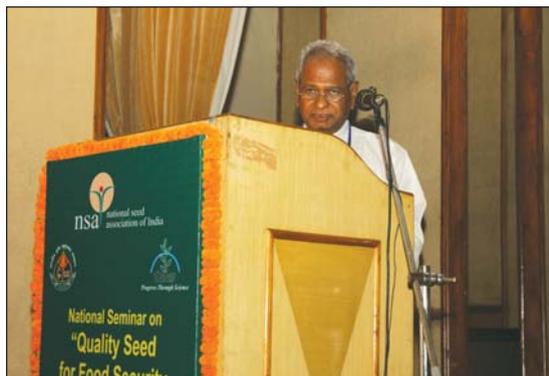
Chairperson : Dr. R.S. Paroda (Chairman, TAAS)  
Facilitator : Dr. K.V. Prabhu (Head, Genetics, IARI)  
Resource Persons : Dr. H.P. Singh (DDG, Hort., ICAR)  
Mr. Uday Singh (President, NSAI)  
Mr. Akshaya Kamath (Syngenta Seeds)  
Dr. H.S. Gupta (Director, IARI)  
Dr. S.K. Sharma (Director, NBPGR)  
Mr. S.K. Roongta (CMD, N.S.C.)  
Dr. J.S. Sandhu (ADG, Seeds, ICAR)

**1245** Discussion & Chairperson's Remarks

**1330** Lunch



*Dr. H.S. Gupta*



*Dr. S.A. Patil*



*Dr. Paresh Verma*



*Dr. A.K. Singh*



*Dr. S.K. Vasal*



*Mr. Raju Barwale*



*Dr. K.V. Subbarao*



*Mr. M. Prabhakar Rao*



*Dr. A.S. Sidhu*



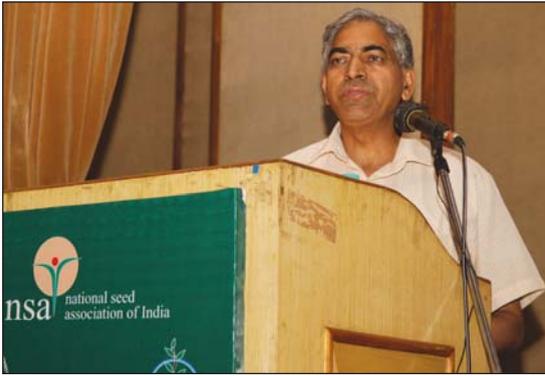
*Dr. Arvind Kapur*



*Dr. P. Anand Kumar*



*Dr. H.P. Singh*



*Dr. S.K. Sharma*



*Dr. J.S. Sandhu*



*Dr. S.S. Virmani*



*Dr. M. Dadlani*



*Dr. S. Mauria*



*Mr. S.K. Roongta*

