

No.4-15/2010-NFSM
Government of India
Department of Agriculture & Cooperation
Crops Division
NFSM Cell

Dated, the 07th October, 2011

To

All concerned (as per list)

Subject: Proceedings of the meeting on strategies for increasing wheat production with particular reference to management of Rusts in Wheat-reg.

Sir/Madam,

With reference to the subject cited above, I am directed to send herewith the Proceedings of the meeting on strategies for increasing wheat production with particular reference to management of Rusts in Wheat held on 24th September, 2011 at Directorate of Wheat Research, Karnal under the Chairmanship of Secretary(A&C), Government of India. The Action points may kindly be seen for further necessary action at your end.

Yours faithfully,

Enc: As stated above.

(s.d)
(A. Neeraja)
Director (Crops)

Copy to:

1. Sr. PPS to Secretary (A&C), GOI, Krishi Bhavan, New Delhi for information and necessary action.

Proceedings of the Meeting to review the strategies for enhancing wheat production including the management of rusts held under the chairmanship of Shri P.K. Basu, Secretary (A&C) , Govt. of India at Dte. of Wheat Research, ICAR, Karnal on 24th September, 2011

A meeting on evolving strategies for enhancing wheat production with special reference to management of wheat rust was held at Dte. of Wheat Research, ICAR, Karnal on 24th Sept., 2011 under the chairmanship of Secretary (A&C), Govt. of India. The 7 states (UP, Punjab, Haryana, Rajasthan, J&K, Uttarakhand, HP and SAUs of the NWPZ & the NHZ participated in the meeting. The list of participants enclosed as **Annexure-I**.

1. After the welcome address by DWR, (ICAR), Karnal, Shri P.K. Basu, Secretary (A&C) in his initial address opined that the meeting was crucial in view of the fact that the major issues on wheat especially relating to management of rust were to be addressed on a war footing. Although, yellow rust was managed satisfactorily during the previous year (2010-11) through the joint efforts of the Deptt. of Agriculture & Cooperation, Govt. of India, the State Governments concerned and the ICAR, still 2-3 million tones of wheat production was lost. In spite of the loss, the country could achieve a record production of 85.93 million tons of wheat during the year 2010-11. In order to address the incidence of rusts, a two member scientific team of Govt. of India was sent to the upper and mid hills of Northern India to assess the situation arising out of incidence of rusts in the summer season cultivation of wheat there. The significant finding of the team was that there were wide spread incidences of yellow and black rusts particularly in the local varieties grown there. Secretary (A&C) further stated that in view of the incidence of rusts and survival of the inoculums during the off season, there was a necessity that specific management strategies to contain rust should be evolved immediately. It was further informed by him that a component of plant protection chemical had recently been added to the NFSM programme from the current year. Besides, rust resistant wheat varieties viz. HD-2967 and PBW-621 were also included in the seed minikit program. Secretary (A&C) further opined that newer varieties should be selected on rust resistance possibly through screening of wild races of wheat which are existing in the area.

I. Directorate of Wheat Research (ICAR), Karnal:

In her presentation, Dr. Indu Sharma, Director, Directorate of Wheat research (ICAR), Karnal informed that a number of varieties were in pipeline for release in the coming years. The credit of spectacular increase in wheat production after 2006-07 was attributed by her to the implementation of the National Food security Mission (NFSM) which resulted in an all time high record production of 85.93 million tonnes from an area of 29.25 million ha during 2010-11. The favourable climatic conditions particularly the ambient temperature regime during the grain filling stage and the fairly good rainfall during the crop season of 2010-11 might also have played a significant role for reaping such higher production she concluded. This quantum jump was mainly obtained from the 8 major states in the wheat bowl of the country viz., UP, MP, Punjab, Haryana, Rajasthan, Bihar, and Maharashtra & Gujarat. Although the yield gap in the states of Haryana, Punjab, UP, HP, West Bengal & J&K, was comparatively low, the widening yield gap in other states was an area that was needed to be addressed to boost the productivity further. Therefore Keeping in view the increasing trend of productivity and production, Dr. Sharma indicated that the wheat

production target had been envisaged at 100 million tonnes by the year 2030 with the future opportunities and steps e.g., the possible introduction of the first hybrid “Pratham” developed by MAHYCO and a holistic wheat improvement strategies involving Ore-breeding initiatives, breaking yield barriers, heat & drought tolerance and durable disease resistance etc. and enabling the farmers to obtain higher income through modern storage and adequate market support. Dr. Sharma presented the list of varieties recommended for various States of the country, the varieties in the seed production chain, the optimum sowing time, the nutrient management, the weed management and the issue of multiple herbicide resistance.

Dr. Sharma indicated that incidence of rusts in wheat had become a major threat at present. DWR, Karnal had been doing the crop health monitoring through roving surveys, Trap Plot Nurseries and SAARC Disease Trap Nurseries regularly and advisories were being issued from time to time. There had been addition of new pathotypes in the Indian Rust Flora over the years and it had been observed that new pathotypes of Black, Brown and Stem Rust were becoming predominant over the years. The epidemic appearance of Yellow rust in severe form in our neighbouring countries like Iran, Afghanistan, and Pakistan and in other countries like Syria, Turkey, Azerbaijan, Iraq, Morocco, Uzbekistan, Ethiopia and Kenya during 2010-11 caused significant yield losses. The incidence of yellow rust in about 4.7 lakh ha of wheat area of our country was observed in the NWPZ area during 2010-11 crop seasons. A Team comprising two expert officials of Govt. of India observed the incidence of yellow rust as well as Black Rust in the summer season wheat crop in the upper hills (Leh area) of J&K. The team’s findings were further confirmed by the subsequent visit of the scientists of DWR, Karnal. Although the virulence of Sr31 (Ug99) was not found in the black rust samples collected during the visits of the teams, but there was an indication of survival of the inoculum of yellow and black rusts in particular in alternate/collateral hosts which was yet to be identified.

Dr. Sharma suggested some strategies for rust management and enhanced wheat production as follows:

- ✓ Continuous monitoring of wheat crop and rust incidence from December onwards at regular intervals particularly in the low hilly/sub-mountainous areas of HP, Jammu, Punjab, Haryana, Uttarakhand & UP by scientists, GOI officials, State extension machineries etc.
- ✓ Data to be reported & compiled at a single nodal centre
- ✓ Possible use of Remote Sensing techniques for locating the rust incidence areas.
- ✓ Awareness campaign to educate the farmers for identification (through symptoms) and management through various means like press, electronic media, leaflets, booklets etc.
- ✓ Choice of wheat varieties to be grown should be resistant ones. Growing wrong cultivar in wrong place should be banned despite any observed yield advantage. Susceptible cultivars like PBW 343 should be phased out.
- ✓ Avoiding early sowing (before October, 25th) and discouraging sowing under shades/agro-forestry.

- ✓ Regular field visits (for minute observations) for early detection of disease.
- ✓ To undertake timely chemical control measures.
- ✓ Timely sowing of Trap Nurseries in Leh-Kargil of J&K, Dalang maidan of HP, Higher & Lower hills of HP, Uttarakhand besides Punjab & Haryana.
- ✓ Creating adequate linkages with bordering and neighbouring countries like, Pakistan, Nepal etc involving CIMMYT coordinators of the respective countries. The pathogen dynamics, epidemiology, host pathogen interaction and the mitigation patterns/policies should be evolved through this linkage. Periodical revisiting the epidemiology to ensure to identification of the new pathotypes.
- ✓ NEPZ (Eastern UP, Bihar, West Bengal, Jharkhand & Assam) constitutes a large area (12 m. ha) and hence a similar meeting should be organised immediately in that zone.

II. Interaction with States:

- A. **All the 7 states** (UP, Punjab, Haryana, Rajasthan, J&K, Uttarakhand, and HP) and the SAUs agreed to replace the susceptible varieties with resistant ones in their respective states but in a phased manner so that the production and productivity was not unduly impacted.
- B. **Punjab:** Director of Agriculture, Punjab stated that the susceptible variety viz., PBW-343 had been withdrawn from the sub-mountainous region of the state; the variety was being withdrawn from the rest of the state slowly in a phased manner without affecting the productivity and production.

Associate Director of Research, PAU, Ludhiana opined that although Rust was a serious concern of the hour, but before withdrawing a cultivar from the potential areas and replacing it with a new variety, the issue of terminal heat stress should also be taken into consideration so that the yield was not impacted.

The main issues and strategies enumerated were as follows:

- ❖ Timely sowing focussed to be completed between 25 Oct to 30th Nov.
- ❖ Sowing area specific Cultivars.
- ❖ Seed treatment emphasised.
- ❖ Relay planting in standing cotton field
- ❖ Growing more than one variety to mitigate biotic & abiotic stress.
- ❖ Prepositioning of urea and DAP
- ❖ Gypsum promotion
- ❖ Using pre and post emergence herbicides for effective weed management.

- ❖ Light & frequent irrigation during high temperature period
- ❖ Promotion of Yellow Rust resistant varieties viz., PBW-621 and HD-2967.
- ❖ Regular surveillance
- ❖ Awareness campaign from 2nd fortnight of December onwards.
- ❖ Provision of Propiconazole at 50% subsidy.

C. **Haryana:** Principal Secretary (Agri), Govt. of Haryana suggested that whether there was any incidence of rusts or not, but the susceptible varieties should be withdrawn in a phased manner. It was also suggested that the subsidy on the particular variety (which needed to be discouraged) be withdrawn or scrapped totally and instead higher subsidy should be given to the rust resistant variety that was required to be promoted. Thus, the SRR of the preferred variety would be ensured.

The main issues and strategies for enhanced wheat production in Haryana were enumerated by the Addl. Director of Agriculture, Govt. of Haryana as follows:

- ❖ Delayed sowing problem- 80% sowing target by 30th November this year.
- ❖ Seed treatment- 100% seed treatment ensured. Entire cost of fungicides reimbursable to the seed producing agencies.
- ❖ 50% subsidy on fungicides for treatment of farm saved seeds.
- ❖ Conservation agriculture and zero tillage promotion in Basmati rice areas in particular.
- ❖ SRR targeted to be 37% during the current year.
- ❖ Increased sale outlets of State Seed Corporation and adequate stocking of certified seeds of desired rust resistant/tolerant cultivars.
- ❖ Line sowing advocated through seed drill promotion particularly in low productivity areas like Ambala.
- ❖ Soil health cards distributed, Potassic fertilisers and biofertilisers promotional measures taken, 2.31 lakh ha area targeted for micronutrient application (Zinc). Gypsum application targeted in 2 lakh ha.

- ❖ Strategies for management of yellow rust formulated in consultation with State Agril. Univ.
- ❖ Promotion of rust resistant/tolerant varieties like WH-542, WH-1021, PBW-550, DBW-17 in susceptible areas.
- ❖ Awareness campaign to educate farmers about symptoms and control.
- ❖ Weekly surveillance of the disease by the team consisting of JDA (PP) & DDA of the concerned districts.
- ❖ Adequate stocking of Propiconazole 25% EC for distribution on 50% subsidy.
- ❖ Provision of funds made under RKVY.
- ❖ 200 qtls of breeder's seeds of each of PBW-621 and HD-2967 required for multiplication.
- ❖ Happy seeder and Straw Reaper should be included in NFSM.
- ❖ Subsidy on certified seeds should be increased from Rs. 500 to Rs. 700/- per qt.

D. **Himachal Pradesh:** Addl. Director of Agriculture, Govt. of HP agreed to phase out the existing varieties like PBW-343 & PBW-502 from cultivation. But availability of seeds of the recommended varieties to be promoted was inadequate. He therefore, requested that immediate arrangements for supply of seeds of resistant recommended varieties should be made. CMDs of SFCI & NSC agreed to provide adequate seeds of the desired varieties.

The main strategy for management of rusts in HP as indicated by HP are as follows:

- ❖ Popularising resistant and less susceptible cultivars replacing the current ones.
- ❖ Effective monitoring
- ❖ Awareness and training to farmers.
- ❖ Demonstration & training to farmers on spraying fungicides
- ❖ Pre positioning of adequate quantity of fungicides and spraying equipments.

- ❖ Distribution of Minikits of resistant varieties for quick dissemination of a particular cultivar.
- ❖ Issuing advisories through print and electronic media.

E. **J & K:** Inadequate availability of certified seeds of specific rust resistant high yielding varieties was a major problem towards achieving the varietal replacement. In order to replace the existing PBW-343, sufficient seeds of alternate variety would have to be made. NSC & SFCI agreed to address the seed unavailability problem.

In view of the non availability of seeds of specific rust resistant high yielding varieties , the option suggested by Dr. S. S. Singh, Former Director, DWR, Karnal to be timely sowing and 2 sprays of Propiconazole. This was required to be continued till the seeds of alternate varieties were made available.

J&K Officials requested for additional funds for the purchase and spraying of propiconazole in the rust susceptible areas at 100% subsidy.

Specific issue of wheat grown by the farmers in the areas along LOC in the international border was raised. Specific strategies were sought by J&K officials in containing the disease in these areas. It was also suggested that free seeds of specific wheat cultivars should be provided to the farmers of these areas so that the varietal replacement was possible in a shorter span of time. It was therefore decided that the CIPMC, Jammu and Srinagar will monitor the entire area of wheat along the LOC for a month or more with active cooperation from the State Government of J&K.

The main strategy for management of rusts in J&K includes:

- ❖ Varietal replacement- older varieties with new rust resistant high yielding ones.
- ❖ Timely sowing focussed
- ❖ SRR to be enhanced to 30.12% as against last year's 29.77%.
- ❖ Seed treatment campaign be made vigorous.
- ❖ Yellow rust management measures will be adopted; adequate funds sought by J&K state for the measures including the fungicides.

F. **Uttar Pradesh:** Director (Agriculture), UP informed that the current year's production was targeted to be 317 lakh tonnes as against last year's 300 lakh tonnes.

Wheat was normally sown in the state not before mid November as the congenial temperature was not reached particularly in Eastern India before that period. Besides, weed problem, growing crops like Toria, short duration Arhar, potato and sugarcane often delayed the sowing of wheat. About 35 lakh ha area in the state was not under line sowing.

Director (Agri), UP also opined that there was a need to replace the older varieties with new rust resistant HYV immediately to combat rust disease. The main strategies for enhanced production and productivity envisaged by UP were as follows:

- ❖ PBW-343 gradually decreased in cultivation.
- ❖ 75% sowing targeted to be completed by 30th Nov and rest by 10th December.
- ❖ Line sowing of 15 lakh ha of the 35 lakh ha targeted
- ❖ Encouraging balance use of fertilisers, organic and bio fertilisers and PSB culture.
- ❖ Use of soil ameliorants.
- ❖ Encouraging on farm water management.
- ❖ More area to be brought under micro irrigation.
- ❖ Weedicide treatment in 37.97 lakh ha.
- ❖ Zero till seed cum fertiliser drill for line sowing.
- ❖ Adequate availability of propiconazole is ensured.
- ❖ Tie up with CIMMYT for organising Demonstrations and training of officials for ridge furrow and conservation tillage.

G. **Uttarakhand:** Director of Agriculture, Uttarakhand informed that the state was divided into plains zone and hills zone. Wheat crop comprises 83% of the total rabi season crop. The state was determined to wipe out the susceptible cultivars viz., PBW-343, PBW-502, UP-2338 etc. so far as rusts were concerned. Here also adequate availability of seeds of desired rust resistant varieties was to be ensured. Director further informed that there was even 50-60% yield gap within a single village both in hills and plains.

The main issues and strategies adopted were:

- ❖ To bridge the yield gap- varietal replacement
- ❖ Availability of credit- special campaign for KCC .

- ❖ Input distribution and technology dissemination in special Krishak Mahotsava.
- ❖ Enhancement of SRR in hills.
- ❖ Nutrient management in rainfed wheat.
- ❖ Use of micronutrients and weedicides for effective weed management.
- ❖ 100% seed treatment campaign of farm saved seeds.
- ❖ IPNM based demonstration in low productive areas.
- ❖ Yellow rust management targeted specifically.
- ❖ Wiping out rust susceptible cultivars
- ❖ Effective surveillance in coordination with SAUs and VPKAS,Almora.
- ❖ Awareness and publicity campaign for rust prevention & control.
- ❖ Ensuring adequate availability of Propiconazole and Tebuconazole.

H. **Rajasthan:** Joint Director (Agri), Rajasthan informed that the production target for 2011-12 had been kept at 95.2 lakh tons as against the normal 80.18 lakh tons (of last 5 yrs average). The area was targeted to be 28 lakh ha during the current rabi season.

Rajasthan had no incidence of rusts in the past few years so far as HYV wheat cultivation was concerned. However, during 2010-11, local wheat cultivars (Lal Gehun) witnessed yellow rust incidence in the two districts of Barmer & Jodhpur where about 8000 ha area was found affected. In view of the rust incidence and to achieve higher production target the strategies to be adopted were as follows:

- ❖ Focussing on timely sowing.
- ❖ SRR to be enhanced to 33.68% from the present level of 25.5%
- ❖ Seed treatment, weeds and termite control measures.
- ❖ Promotion of INM, IPM & Agril. Implements
- ❖ Efficient water management.
- ❖ Capacity building of field functionaries and farmers.
- ❖ Awareness campaign on Rust management among field functionaries and farmers
- ❖ Provision of subsidised availability of 0.1%Propiconazole 25 EC

III. Agriculture Commissioner in his remarks said that the major issues that were required to be kept in mind while dealing with rust problem and sustainability of wheat production were as follows:

- ❖ The issues on the impact of climate change on the wheat productivity and pest/disease dynamics needed to be looked into.
- ❖ While going for a varietal replacement, farmers judge the performance of a particular variety in the previous year. The variety which performed best in the previous year becomes dear to the farmer in the following year.
- ❖ Popularising a particular variety, the issues of yellow rust, terminal heat stress, frost and cardinal temperature variations needs to be looked into in totality. There is a strong need to develop multi-stress tolerant wheat varieties.
- ❖ KVK Scientists and agriculture officers at the district level need to monitor yellow rust incidence January 10 and March 15.

IV. Secretary (A&C) in his concluding remarks stated that the states of J&K, Uttarakhand and HP were the major states of concern being the storehouse/originator of rust inoculums build up. Therefore, steps should be taken immediately so that the inoculum was stopped from spreading in the plains areas of NWPZ during the ensuing rabi wheat season. In view of the incidence of inoculum in India and other countries particularly the neighbouring ones, CIMMYT should be actively involved in containing the spread of rusts and for sustaining higher productivity level. Varietal diversification and effective monitoring should be ensured by the States.

V. ACTION POINTS:

The following action points emerged from the meeting:

1. Subsidy management- Seed Subsidy to be scrapped on specific Varieties like e.g. PBW-343 that needed to be phased due to rust incidence. Subsequently, the specific cultivars recommended for promotion to be encouraged through provision of additional subsidy/assistance. **[Action: DAC, GOI/All 7 participant State Governments]**
2. Wheat variety PBW-343 along with other rust susceptible varieties should be taken out from seed chain in a phased manner from the states.
[Action: Seed Division of DAC & the 7 participant State Govt. concerned]
3. For rapid varietal replacement and introduction of rust resistant HYV of wheat, CIMMYT should also be involved as per GOI Guidelines and extant rules & procedures.
[Action: Crops Division of DAC /DWD, Ghaziabad]
4. The surveillance & monitoring of rusts by the DAC and the DWR (ICAR) teams should be made at frequent intervals. State Governments and their State Agriculture Departments should take pro active role in the surveillance works taken up by the

above teams and provide assistance to these teams for their visits to the concerned states as and when made.

[Action: Crops Division (NFSM) DAC/DWD' Ghaziabad/DWR (ICAR)/ 7 participant State Govt. concerned]

5. So far as the wheat cultivation in the international border areas along the LOC is concerned, it was decided that the CIPMC (Jammu and Srinagar) would monitor the entire area more vigorously during the crucial stages of the crop. The State Govt. of J&K would provide full assistance (including logistic and infrastructure support) as and when required by CIPMC.

[Action: CIPMC of DAC (Jammu & Srinagar)/ PPA, DAC (GOI)/ J&K State Govt. Agriculture Deptt.]

6. Inoculum built-up in upper and mid hills of J&K and HP needed to be arrested. Growing resistant varieties during the growing season there and spraying of chemicals should be ensured. In Non-NFSM areas, funds from RKVY, MMA could be utilised and in NFSM Districts it should be utilised under the provisions therein.

[Action: All 7 participating states]

7. Awareness campaign should be undertaken by the states concerned through print & electronic media. A single page card (back to back) in preferred languages should be prepared and widely distributed amongst all the farmers & workers. The provision of funds should be managed as mentioned in point no. 6 above.

[Action: All 7 participating states]

8. Regarding cross border movement of rust inoculum, the concerned countries should be brought together on the discussion table to evolve adequate strategies to address the rust problem- yellow, black and brown rusts. PP Division of DAC to take necessary action to involve the countries of SAARC and related other countries. PPA, Faridabad to coordinate in the matter with FAO, India and chalk out a detailed plan in details. Involvement of CIMMYT in the issue should also be ascertained.

[Action: JS (PP), DAC/Plant Protection Adviser, GOI/DWD, Ghaziabad, DAC]

9. The nodal centre for Data collection and compilation would be the DWR (ICAR), Karnal who would actively work in association with the Directorate of Wheat Development, Ghaziabad of DAC. All the information/data relating to enhancement of wheat production and productivity and information on rusts of wheat should be maintained by the Directorate of Wheat research (ICAR), Karnal and the Directorate of Wheat Development, Ghaziabad (DAC). The final/periodical reports would be submitted to the Secretary (A&C) from time to time.

[Action: All 7 participating states/DWD, Ghaziabad/DWR (ICAR), Karnal]

10. Similar meetings shall be conducted in other zones also.

[Action: DWD, Ghaziabad (DAC)/DWR (ICAR), Karnal]

ANNEXURE-I

List of participants of the Meeting on evolving strategies for enhancing wheat production with special reference to management of wheat rusts held on 24/9/2011

Sr. No.	Name	Address
1.	P.K. Basu	Secretary, DAC, Govt of India
2.	Dr.Gurbachan Singh	Agri. Commissioner Govt of India
3.	Mukesh Khullar	Jt Secretary (crops) DAC GOI
4.	Dr.Indu Sharma	Project Director, DWR, Karnal
5.	Dr.R.K. Sharma	DWR, Karnal
6.	Dr.R.K. Gupta	DWR, Karnal
7.	Dr.R.P.S. Verma	DWR, Karnal
8.	M. Singh	Plant protection officer CIPMC Jammu
9.	Krishna Pal	Asstt. Director, CIPME, Jalandhar
10.	Rajendra Singh	PPO (PP) CIPMC, Solan
11.	Pradeep Singh	ARS, Durgapura, Jaipur
12.	Mahesh Shrimali	ARS, Durgapura, Jaipur
13.	T.S. Thind	ABR, PAU, Ludhiana
14.	Dhiraj Singh	Prof. & Head GPB CCSHAU, Hisar
15.	S.S. Karwasra	Sr. Wheat Pathologist, CCSHAU, Hisar
16.	Karan Chand	DDA (PD) Haryana
17.	Dr. R. Chatrath	DWR, Karnal
18.	B. S. Sidhu	Director Agri. Punjab
19.	Dr.R.P. Narwal	Director Research CCSHAU Hisar
20.	D.K. Sharma	Director CSSRI, Karnal
21.	L.N. Kumawat	Jt. Dir. Agri. Rajasthan, Jaipur

22.	D.S. Radu	Director Research GBPUST & T
23.	Madan Lal	Director Agriculture Uttrakhand
24.	Dr.G.K. Choudhury	Dir. (Wheat) Ministry of Agriculture Govt. of India
25.	Dr.S.S. Singh	National Consultant, NFSM, Govt. of India
26.	Dr.J.S. Sandhu	ADG (Seed) ICAR
27.	Dr.Ratan Tiwari	DWR, Karnal
28.	Dr.Gyanendra Singh	DWR, Karnal
29.	Dr.A.K. Sharma	DWR, Karnal
30.	M.L. Khurana	Dy. Dir. (SC), Karnal
31.	J.P. Jaiswal	Prof., GBPUAT, Pantnagar
32.	Gopal Singh	Asst. Proff. SVPUAT, Meerut
33.	B.P. Singh	AGM (P) SPG. N. Delhi
34.	Dr. N.S. Bains	PAU, Ludhiana
35.	Dr. Gulzar Sing Sanghera	Sr. Scientist, SKUAST-K, MRCFC, Khandwain, Anantng J&K
36.	Satyavir Singh	DWR, Karnal
37.	Pankaj Kumar Tyagi	RM. NSC, Chandigarh
38.	N. Emay	GM (P) NSC, New Delhi
39.	Neeraj Kulshreshtha	CSSRI, Karnal
40.	V.K. Yadava	Plant Protection Advisor Min. of Agri. Haryana
41.	Dr.B.S. Duggal	Add. Director Agri, Haryana
42.	Dr.S.P. Sharma	Director Research Palampur, HP
43.	H.R. Sharma	Add. Director Agri. (H.P.)
44.	Ramji Singh	Prof. & Head Plant Pathology SVPUAT Meerut
45.	Vijay K. Razdan	SKUAST, Jammu (J&K)
46.	V.K. Bhatt	Jt. Director Agri., Jammu (J&K)
47.	V.K. Gaur	C, SFCI, New Delhi

48.	Dr. Mukesh Gautam	Director Agri., UP
49.	S.K. Roongta	CMD, NSC, New Deilh
50.	Roshan Lal	FC Agriculture, Haryana
51.	Dr. M.S. Saharan	DWR, Karnal