

Proceedings of the 21st Meeting of Research Advisory Committee



Held on April 07-08, 2017

ICAR-Indian Institute of Wheat and Barley Research

Karnal-132001, Haryana

Proceedings of the 21st RAC Meeting during April 07-08, 2017 at ICAR-IIWBR, Karnal

The 21st Research Advisory Committee (RAC) meeting was held at the ICAR-Indian Institute of Wheat and Barley Research, Karnal during 7-8th April, 2017. The following members attended the meeting:

Dr. SK Sharma Former Director and Vice- Chancellor	Chairman
Dr. HS Nainawatee, Former AGD(Education), ICAR, New Delhi	Member
Dr. BN Patil, Former Director, UAS-Dharwad	Member
Dr. GS Mahal, Former Director (Seed), PAU, Ludhiana	Member
Dr. GS Deol, PAU, Ludhiana	Member
Shri.Ved Pal ji , Progressive Farmer, Karnal	Member
Dr. GP Singh, Director, ICAR-IIWBR, Karnal	Member
Dr. Bhudeva S Tyagi, Principal Scientist, IIWBR, Karnal.	Member Secretary

The meeting was also attended by all the Principal Investigators of various programmes and the Scientists of ICAR-IIWBR Karnal including the representatives of its Regional Station, Flowerdale, Shimla.

Dr. BS Tyagi welcomed the Chairman and all other participants which was followed by introduction. Dr. GP Singh, Director IIWBR, presented a comprehensive overview of wheat & barley research in India during the previous year. He informed the house that this year we may touch the record production of wheat (98 mmt) from an acreage of around 31.8mha and no major outbreak of any disease even in Jammu, Punjab and Haryana was noticed this year.

He informed that one of the major achievements of the year was the release of world's first biofortified wheat variety WB-2. The varieties HD 2967, WH 1105 and HD 3086 are occupying quite large area in North Western plains zone. The heat/thermal tolerance is the priority area of research and a genotype DBW 150 has been identified for the purpose. He further informed the house that draft genome sequence of Karnal Bunt and yellow rust pathogen has been decoded, new *Lr* gene has been identified. The Wheat Blast disease is the major emerging threat from Bangladesh and necessary steps are being taken along the Indo-Bangladesh border. However, from the preliminary screening many of the Indian varieties including HD 2967 have been found to be tolerant. The Institute has taken several steps to outreach the farmers using Call Centre Helpline, WhatsApp group and face book, besides organizing scientist-farmers interaction, *Kisan melas* and FLDs. During the year improved wheat and barley varieties has been released and several genetic stocks got registered.

Dr. BS Tyagi, the member secretary, presented the action taken report on the last year's RAC recommendations. This was agreed by the house and it was suggested that some activities recommended are of continuous nature.

The chairman, Dr.SK Sharma, commended the work done under the wheat and barley programme and stated that it will be a challenge to achieve the targets with minimum financial resources. He observed that climate change and wheat blast are the immediate challenges to be taken up on priority. Dr. Sharma stated that occurrence of blast in Bangladesh is a bio-security issue and should be handled by all the stakeholders collectively. He suggested giving more focus on North Eastern plains to increase the wheat production; use of wheat genome, pathogen genome sequencing results in the ongoing research programmes. He also advised that the Institute must publish 1 or 2 original research articles of very high impact factor.

Sh. Vedpal ji, advised the scientists to work on input responsive and productive technologies to bring down the cost of cultivation. He asked the scientists to provide the quality seed to farmers at cheaper rates. He opined that farmers be guided in the field and on spot solution be provided to farmers at a minimum cost.

Dr. Nainawatee suggested initiating work on nanotechnology, particularly in the areas of developing nanosensors, and nanoparticles *etc.*, for applications in nutrient, water/drought, heat/temperature, disease/pest management. He also advised to work on trehalose-6-phosphate, which has been reported in an important international journal to increase wheat yield. He suggested collaborating with UK BBSRC counterparts for wheat genome sequencing and partitioning of source- sink issue.

Dr. BN Patil suggested to work out the contribution of wheat and barley production to the total GDP and in this way the contribution of wheat and barley research can be presented to the policy makers. This impact analysis is necessary and may help in getting resources from Council and the donors.

Dr. GS Mahal said that work on alternatives of straw burning needs to be strengthened. He further said that new races of pathogens be included / mixed in the inoculum provided for screening the advance material.

Dr. GS Deol stated that post-harvest losses also need to be minimized and therefore work on storage pests needs to be strengthened. He suggested to study the relation between sprinkler irrigation and the KB disease incidence in certain wheat growing areas.

After the observations/comments of RAC, the Division wise presentations were made by Dr. Vinod Tiwari (Crop Improvement), Dr. DP Singh (Crop Protection), Dr. SC Bhardwaj (Regional Station, Shimla), Dr. RK Sharma (Resource Management), Dr. RK Gupta (Quality & Basic Sciences), Dr. AS Kharub (Barley Improvement) and Dr. Satyavir Singh (Social Sciences) on the achievements made in the research and also the future research programmes.

On 8th April, 2017, RAC visited the wheat and barley experiments and various facilities in the fields and interacted with the concerned scientists. Thereafter, they also visited the progressive farmer at Taraori, who has adopted the latest scientific recommendations especially the conservation agriculture practices.









A. Specific Recommendations

1. Climate change is an issue of paramount importance. To address it, management of genetic resources and genomic research should be the priority in years to come. For additional funding, research projects can be submitted in the network mode to DBT, DST, CSIR etc..
2. Efforts should be made to develop core/ minicore collection of wheat germplasm in collaboration with NBPGR. Large scale phenotyping should be continued as it is an important aspect for any genetic and molecular work leading to wheat improvement.
3. Utilization of wheat and pathogen genome sequencing projects should be explored in collaboration with institutes like NRCPB, NABI.etc.
4. The reasons limiting the popularization of Conservation Agriculture among farmers need to be studied. Appropriate machines for conservation agriculture with low cost be developed.
5. Preliminary studies on the effect of spraying of trehalose-6-phosphate on wheat yield can be taken up.
6. Remote sensing studies need to be taken at a larger scale for disease dynamics, yield and area estimates.

B. General suggestions and advisories:

1. Bio-availability of Zn and Fe should be seen in bio-fortified varieties.
2. A theme paper on doubling the income of farmer needs to be brought out.
3. Documentation of 2 to 3 success stories be done to show the impact of technologies. BAU Sabour model can be taken up to highlight these stories. These should also be uploaded on the Institute web site.
4. Impact assessment of the technologies of the Institute be undertaken by Extension Scientists/ Economists. Work on storage pests and management should be initiated to mitigate the losses in storage.

The meeting ended with the vote of thanks to the RAC members and staff of IWBR by the Member Secretary Dr. BS Tyagi.

 Bhudeva Singh Tyagi Member Secretary	 HS Nainawatee Member	 BN Patil Member
<p>(Could not attend)</p> Ashutosh Sarker Member	 GS Mahal Member	 GS Deol Member
 Ch. Ved Pal Member	<p>(Could not attend)</p> (IS Solanki) Member	 GP Singh Member (Director)
	 S K Sharma Chairman	

**Action Taken Report of the 20th RAC Meeting held On
March 04, 2016, at ICAR-IIWBR, Karnal**

On the basis of the presentations, interventions and deliberations of the meeting, the following recommendations were made during the RAC meeting and the same were intimated to all staff. Now kindly send the action taken on these points. :

SN	Recommendations	Action Taken
Major recommendations		
1.	The development of climate smart genotypes and technologies is to be strengthened.	<p>The development of new genotypes suited for changing climatic conditions is being taken up through multilocation screening programmes and phenotyping under controlled conditions.</p> <ul style="list-style-type: none"> • Selected genotypes are being evaluated under timely, late and very late sown conditions at three locations for heat tolerance. • The shuttle breeding approach is followed in selecting the lines in breeding projects. • Phenotyping of advanced breeding lines and land races under four sowing conditions (timely sown under irrigated and rainfed, and late sown irrigated and rainfed) is continuing for 2nd consecutive year. • The evaluation of entries of pre coordinated and coordinated yield trials was done against biotic stresses at about 15 hot spot locations situated in six agro ecological zones.
2.	Germplasm resources are required to be identified for initiating work on varietal development for conservation agriculture.	<ul style="list-style-type: none"> • The screening/evaluation of 120 advanced bulk populations along with released varieties grown under zero tillage, zero tillage + residue incorporation and conventional tillage, is being carried out at Hisar. • 450 F₂ have been planted for making selections under zero tillage at Hisar during the current crop season.
3.	Hybrid wheat program based on CMS to be rejuvenated.	<p>Hybrid wheat development programme based on CMS system is being carried out at IIWBR.</p> <ul style="list-style-type: none"> • 16 CMS lines based on <i>Triticum timopheevii</i> cytoplasm and 38 restorer lines are being maintained and their diversification (85 lines) into 21 Indian wheat varieties is underway. • A common hybrid wheat trial with 56 entries from IIWBR-Karnal, IARI-New Delhi and PAU-Ludhiana is being conducted during 2016-17 at Karnal, Ludhiana, Delhi and Jabalpur centres.

4.	Biofortification should be inbuilt in varieties instead of nutrient supplementation and work on food nutrients in wheat and barley be initiated.	<ul style="list-style-type: none"> • High Zn lines have been identified and being utilized in hybridizations along with yield and disease resistance traits. Separate nurseries 'Wheat Bio-fortification Nursery' have been started. • WB 2, a zinc rich variety has been released for irrigated timely sown conditions of NWPZ. • Preliminary screening of Indian and exotic germplasm and varieties of hulless barley for Zn has been started.
5.	The access to the data to and from NBPGR of germplasm characterization and evaluation be easily and quickly accessible particularly for the biotic stress.	<ul style="list-style-type: none"> • Multi-location disease evaluation data generated under the CRP Agro-biodiversity Project was supplied through the NBPGR for utilization in crop improvement programme. • At Shimla, evaluated more than 500 for rust resistance and shortlisted lines are being used for genetic and pyramiding.
6.	Modules for inter-cropping and precision water management be developed under changing climate conditions,	<ul style="list-style-type: none"> • Growing of radish and turnip in furrow as intercrop with wheat on bed planting increased the wheat equivalent yield as compared to sole wheat crop. Work on various other intercropping options is also in progress. • The work on irrigation scheduling as well as on drip and sprinkler irrigation is in progress to develop the appropriate water management modules
7.	Steps should be taken so that advisories reach the farmers in more effective and quicker way.	<ul style="list-style-type: none"> • IIWBR has created a WhatsApp Group named "Farm Advisories_IIWBR" comprising agriculture professionals in order to provide timely help to the farmers in case of any disease and pest outbreak. • The Institute has been linked its scientific advisory services to MANAGE Portal (http://14.139.87.205:8082/).

General Recommendations as advisories

1.	The research projects should be short term and long term outcome oriented.	The projects have been reframed and activities have been reoriented keeping in view of short and long term objectives and timely and relevant outcomes according to needs of farmers and other stakeholders. The projects now have been reduced to only 12.
2.	For IIWBR to become a National Institute of Excellence, there is a need to deliberate on the development of infrastructure and human resource development and the actionable points so	<ul style="list-style-type: none"> • The infrastructural and HRD needs of IIWBR have been included in the EFC plan submitted to the Council. The prioritization of research activities has also been undertaken with re-structuring of Institute research projects in the IRC. • The labs facilities have been strengthened to tackle major biotic stresses. • Publications (research papers, technical bulletins,

	that the justified requirements are included in the ensuing plan of the Council.	<p>extension cards) have been undertaken.</p> <ul style="list-style-type: none"> • Use of GPS done while conducting surveillance on diseases and advisories were issued. • A need has been felt for long time to pursue a case for a National facility or centre for wheat rust research at IIWBR, RS, Shimla. It was discussed with higher authorities but it was suggested to wait for some time.
3.	NBA should be approached for designating rust pathotypes collection of RS, Shimla as national repository.	Several times NBA was approached but they conveyed that they are not designating more labs at this stage
4.	The scientific positions in the disciplines Food Science and Technology are required to be created in next plan to start/strengthen work on barley/wheat based novel health foods.	<ul style="list-style-type: none"> • In the EFC submitted to the Council, the facilities were demanded but finance ministry have denied creating any new post. • Also there has been about 27% cut on the already approved budgets.

