



Proceedings of the 30th Meeting of Research Advisory Committee

(December 08, 2025)



**ICAR-Indian Institute of Wheat and Barley Research,
Karnal-132001**

**Proceedings of 30th Meeting of Research Advisory Committee held in hybrid mode on
December 08, 2025**

ICAR-IIWBR, Karnal (Haryana)

(Venue: V. S. Mathur Hall)

Proceedings of the 30th Meeting of the Research Advisory Committee (RAC)

The 30th meeting of the Research Advisory Committee (RAC) of ICAR-Indian Institute of Wheat and Barley Research, Karnal was organized in the hybrid mode on 08th December, 2025. The following members and invitees were present:

Dr. PL Gautam Chancellor RPCAU, Pusa, Bihar; Former Vice Chancellor, GBPUAT, Pantnagar; Chairman PPVFRA and Chairman NBA, Chennai	Chairman
Dr. AK Sharma Former Director, ICAR-NBAIM, Mau (UP)	Member
Dr. PS Birthal Director, National Institute of Agricultural Economics and Policy Research, New Delhi	Member
Dr. Kuldeep Singh Head Genebank, Deputy Program Director, Accelerated Crop Improvement ICRISAT, Patancheru, Telangana	Member
Dr. Ratan Tiwari Director, ICAR-IIWBR, Karnal	Member
Dr. Sharat K Pradhan Assistant Director General (FFC), Crop Science Division, ICAR, New Delhi	Member
Dr. PC Sharma Dean Indraprastha University, New Delhi	Member
Sh. Rajender Singh Sandhu, Karnal, Member IMC	Member
Sh. Gurcharan Singh Sandhu, Sri Muktsar Sahib, Punjab, Member IMC	Member
Dr. Sunil Kumar Principal Scientist, ICAR-IIWBR, Karnal	Member Secretary

Dr SK Pradhan, Dr PC Sharma, Dr Arun Sharma, and Dr Kuldeep Singh joined the meeting online. Dr IPS Ahlawat could not attend the meeting due to some personal reasons. All the scientists from ICAR-IIWBR, Karnal and scientists from its Regional Stations, Shimla and Hisar, participated in the meeting.

A. Welcome of RAC members and Presentation of the Director's report:

Followed by the field and lab visit by Chairman RAC, the meeting started with welcome of the Chairman and members of the RAC by the Director of the institute. Dr Ratan Tiwari, Director, ICAR-IIWBR, Karnal presented highlights of the achievements of the institute including research and other activities from preceding to the current RAC. He congratulated the scientific fraternity for achieving the yield milestone of 117.5 million tonnes from an area of 32.8 million hectares with an average productivity of 3.59 tonnes/ha in case of wheat. He also apprised the house regarding barley production of 1.905 million tonnes from an area of 0.625 million

hectares with an average productivity of 3.049 tonnes/ha. Out of the total wheat production, 35-40 MMT has been procured by millers this year. As per Director's report, keeping in mind the total outlay of ICAR-IIWBR to the tune of 7.55 crores during 2025, the institute could earn a revenue of totalling 8.61 crores where breeder and truthfully labelled seeds (9000 q) sale could garner 7.54 crores while commercialization of varieties and technologies mediated MoAs (179) could generate a revenue of 1.07 crores. Nearly more than 18,000 farmers were provided seeds of improved varieties through IIWBR seed portal. The Director informed that two wheat (DBW386 and DBW443) and one barley (DWRB 223) varieties were developed and released for cultivation during 2024-25. He enlightened the august gathering regarding probable sparing of area from wheat to barley extension in 30 districts of 6 states where wheat productivity is bit low. He underlined efforts on wheat improvement including, *inter alia*, nutrient and water use efficiency, stress tolerance, wheat blast management, developing climate resilient and biofortified varieties *etc.* and farmer-scientist interaction via various platforms. The Director put forth a goal of achieving 125 MT wheat production by attaining a national wheat average productivity of 4.0 t/ha by 2030. He flagged challenges experienced by the institute due to limited administrative and technical staff, inadequate guest house and research-centric land availability, budgetary requirements needed for up-scaling research and skilling activities, research support to tackle complications arising due to climate change and challenges of area expansion under barley crop.

B. Presentation and consideration of ATR

Dr Sunil Kumar, the Member Secretary RAC, presented the action taken report (ATR) on recommendations of the 29th meeting of the RAC held on November 18th, 2024 (Annexure 1). The RAC members expressed satisfaction over actions taken on the recommendations. The ATR was adopted by the committee and appreciated the scientists for the progress.

C. New proposals: presentation and approval

The new proposals for the year 2025-30 were presented by respective theme leaders (Annexure 2). The committee deliberated on theme-wise presentations and offered following suggestions to further fine-tune the new proposals as given below:

Theme 1: Maximization of wheat productivity by synchronizing genotype, environment, and management (GxExM) interactions

Theme leader: Dr Hanif Khan

Suggestion	Response
Target traits should be specified for yield maximization in wheat	The key traits for yield maximization are: 1000 grain weight, Grain number per spike, Hectoliter weight, Spike fertility, No. of spikes/unit area, Adult plant resistance genes (yellow & brown rust resistance), Lodging resistance, Harvest Index, Photosynthetic efficiency, Biomass per/plot

Prior information on selected parents and donors for the target traits of yield maximization should be mentioned	There are 32 selected parents and donors for the target traits viz. WH1105, DBW187, DBW222, DBW303, WH1270, DBW296, DBW327, PBW757, PBW827, PBW826, FITIS, CHIPAK, <i>Lr80</i> , DBW371, DBW372, DBW359, PASTOR, PBW872, DBW424, DBW432, DBW377, MUNAL, DBW386, HD3428, NWS2218, VL3040 ^M , DBW457, DBW467, JKW261, DBW316, KINGBIRD, DBW509
The information sought by RAC members should be given in the form of flow chart while revising the project	These 32 genotypes will be used for hybridization during this year (2025-26). Crosses will be made with parents having complementary yield traits. New high yield potential genotypes will also be identified in the ongoing wheat trials and will be used in subsequent years hybridization programme

Theme 2: Safeguarding wheat and barley improvement using untapped genetic resources
Theme leader: Dr Arun Gupta

Suggestion	Response
Chairman as well as Dr. SK Pradhan suggested to revise the theme title and the title of sub project 1	The title has been revised as ‘Harnessing untapped genetic diversity of wheat and barley germplasm for utilization in breeding programme’
Dr. Kuldeep Singh suggested that NBPGR has developed a core set of wheat germplasm (during 2015-16) under network projects. This information should be used for planning work under germplasm project and can be evaluated in multi-environment for targeted traits. As the genotypic data is also available, hence marker/trait associations can be identified for the target traits. This could further be used for QTL identification following either GWAS or biparent/multiparent populations. He further suggested that <i>Elymus</i> and <i>Leymus</i> germplasm available with NBPGR and elsewhere (tertiary gene pool of wheat) should be explored in pre-breeding project for the enhancing drought and salinity tolerance in wheat	Agreed and efforts will be made to acquire germplasm of <i>Elymus</i> and <i>Leymus</i> from the NBPGR and other gene banks and standardize protocols for introgression of desirable variability
Dr. Kuldeep Singh further suggested that for barley improvement, germplasm collected from Kashmir, and Lahaul and Spiti region, should be exploited. Present status of commercial barley cultivars for protein, Zn,	The Committee’s observations are duly-noted and accepted for further needful

and Fe should be documented and efforts be made to further improve their content	
Dr. SK Pradhan emphasized on adding more review of literature and efforts should be carried out to decipher the genetics of quality characters with the help of biotechnological tools	The information pertaining to the suggested area will be collated and work plan consisting of biotechnological tools have been incorporated in the project
The Committee observed that the current scope of the food project is too broad, covering quality, stresses, yield, processing, health, and market promotion simultaneously. It was advised to adopt a modular approach and narrow the focus to select a set of priority traits, and clearly objectify the work to ensure measurable outcomes. (Project 2 Pre-Breeding subproject-Dr Omvir Singh)	The Committee's observations are duly noted and accepted. Accordingly, the project will be restructured into a modular, outcome-oriented framework, with the Pre-Breeding subproject focused on a limited set of priority traits, mainly yield stability and key quality parameters. Other components such as processing, health, and market promotion will be addressed separately or in later phases, with clearly defined objectives, milestones, and measurable outputs, in line with the Committee's advice.

Theme 3: Enhancing resource use efficiency in wheat for better and consistent/ sustainable remunerations

Theme leader: Dr Chandra Nath Mishra

Suggestion	Response
Include extension person for impact assessment studies	Dr Ravindra Singh Sekhawat will be added as extension person for impact assessment studies

Theme 5: Continued vibrancy in biotic stress management for sustaining production in wheat and barley

Theme leader: Dr Pradeep Sharma

Suggestion	Response
Focus should be on taking insect problem as system approach like rice wheat system	The work has already been done in AICRP project. The new proposal is mainly focusing on wheat pests and its natural enemies' populations taking into cognizance the wheat-based cropping system
In FHB significant work has been carried out by Dr. MS Saharan. Avoid duplication and bank upon novelty	Separate pathogenic isolates will be collected and different germplasm and material will be utilised for study. Information from work done earlier will be integrated with the findings of the proposed project

Focus should be on novel resistance genes like <i>Sr65</i> , <i>Lr80</i> etc. for future wheat improvement and disease management strategies	Systematic efforts will be undertaken to identify, validate, and deploy novel disease resistance genes in breeding programmes, with the objective of broadening the resistance base and achieving durable protection against evolving rust pathogens.
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Theme 6: Integrating breeding pipelines and advanced genomic techniques

Theme leader: Dr Om Prakash Ahlawat

Suggestion	Response
Prior information about markers associated with the traits is important for marker assisted selection. Under this project, there should be a clarity about plant material, work and techniques used	A comprehensive list of functional markers associated with relevant traits have been included in the project. The plant material generated in different themes would form the base material for this project

Theme 7: Wheat and barley technologies for better quality, health, and industrial uses

Theme leader: Dr Dinesh Kumar

Suggestion	Response
Strengthening genetic and molecular studies of genes/QTLs affecting malt quality traits, especially under sub-tropical environmental conditions across locations	The studies to understand the genetic and molecular basis of malt quality under sub-tropical climates will be taken up

Theme 8: Climate-smart regenerative agriculture and resource efficient agricultural practices for improving productivity, profitability, and soil health in wheat-based cropping systems

Theme leader: Dr Subhash Chandra Gill

Suggestion	Response
Regenerative agriculture studies needed. New varieties need to be produced regenerative agriculture	The project on regenerative agriculture has been initiated. Screening of genotypes has been initiated for their suitability under natural farming. The breeding programme under natural farming has been proposed

Theme 9: Impact assessment of wheat and barley technologies and research prioritization for crop diversification

Theme leader: Dr Anuj Kumar

Suggestion	Response
For impact assessment, direct feedback of farmers for technology adoption needs to be carried out. More focus should be given on yield gap as compared to knowledge gap	The suggestions have been incorporated in the project activities

D. Achievements and progress of the ongoing projects:

Followed by theme-wise presentations and discussion, program-wise presentations were made by Dr Arun Gupta (Pre-breeding and Crop Improvement), Dr Om Prakash Ahlawat (Biotechnology and Plant Physiology), Dr Pradeep Sharma (Crop Protection), Dr Subhash Chandra Gill (Resource Management), Dr Sunil Kumar (Quality & Basic Sciences), Dr Chuni Lal (Barley Improvement), Dr Anuj Kumar (Social Sciences), Dr Amit Sharma (Seed Program) and Dr Pramod Prasad (Regional Station, Shimla) on the achievements made in the research programmes for past 5 years (Annexure 3). The RAC committee discussed, appreciated the progress, and approved the closure of these 9 projects.

E. Discussion

Dr. SK Pradhan, ADG (FFC), emphasized to work in the direction of genomic assisted breeding to select desirable genotype by combining diverse disease resistance, abiotic stress tolerance, climate resilience, biofortification, and nutrition enhancing genes in wheat. He suggested use of molecular breeding approaches, including marker-assisted selection/backcrossing (MAS/MAB), to develop barley lines with malting quality comparable to exotic cultivars. He highlighted β -glucan, FAN (Free Amino Nitrogen), and DP (Diastatic Power) as the major quality parameters where exotic genotypes currently outperform indigenous ones under identical environmental conditions, indicating clear genetic advantages. Dr. Pradhan underscored that multiple diseases resistance should be a priority in Crop Protection programs.

Dr. A K Sharma praised the comprehensive survey and surveillance works in monitoring pest incidence and for releasing 15 biofortified wheat and barley varieties in last 5 years. He invoked scientists to prioritize the need of entomological research on wheat. He highlighted the need to study the impact of western disturbances on yellow and stem rusts and advocated to give due cognizance towards new pathotypes entering India. Dr. Sharma advocated that survey and surveillance should be given due importance and appreciated the limited usage of fungicide in wheat crop. He also highlighted the importance of soil bacteria in nitrogen fixation that make a film around roots thus reducing reliance on external N application and its future use.

Dr. PC Sharma admired the work being done at institute leading to record production and for wider spread of biofortified varieties to substantial area in the country. He suggested to improve yield gap in wheat. He threw praise to the institute for attending school and college students and for imparting training. He hailed the efforts of ICAR-IIWBR for no epidemic spread in India in the field of wheat. Also, he accentuated to have a good pool of wild species and landraces to tackle future vagaries.

Dr. P S BIRTHAL appreciated the work done in pre-breeding, varietal development, resource management, quality, and natural farming. He stressed the need for interdisciplinary research by formulating 3-4 major platforms. He emphasized to have the work on reducing the cost of cultivation and breaking the yield barriers to maintain quality and competitiveness of wheat producing systems. He felt the need to reduce the yield gap in wheat by yield enhancement and stability. He highlighted that impact assessment should be a part of maximum of the projects of agronomy and economists and extension specialists should be partner in every project.

Dr. Kuldeep Singh lauded the team IIWBR for record production and meeting all ATRs sought during previous RAC. He suggested that NBPGR has developed a core set of wheat germplasm (during 2015-16); the information generated during last 10 years in network projects should be used for planning work under germplasm project and can be evaluated in multi-environment for targeted traits.

Shri Rajender Singh Sandhu, a progressive farmer, appreciated the efforts of the institute scientists for meeting out previous RAC recommendations and congratulated for releasing 76 varieties in last decade. He underscored that scientists should keep on working for benefit of farmers, and maximize use of social media platforms to make aware the end users about the technologies provided by ICAR-IIWBR and for wider publicity.

Shri Gurcharan Singh Sandhu, another progressive farmer, appreciated the efforts of IIWBR and ICAR in supporting farmers. He invited scientists to organize an event for farmers of Punjab especially at Sri Muktsar Sahib. He also urged that more farmers should be connected through WhatsApp group so that the advisories issued by the institute should be percolated to wider group of farmers.

The Chairman appreciated the progress of various projects and expressed satisfaction on actions taken on previous RAC recommendations. He lauded the work done in the field of pre-breeding, varietal development, seed program, quality improvement, resource management, plant protection, extension and pathotyping. He commended the hard work by the farmers, researchers, and policy makers for record production during 2024-25. He voiced that no disease epidemic in wheat is strength of the programme and capacity building programmes should/can be organized in online mode. He stressed to safeguard interests of wider beneficiaries by clearing myths/negative campaign on social media particularly regarding gluten and wheat-based products by writing simply understandable articles. He emphasized the use of media for technology dissemination and awareness towards health consciousness. The chairman invoked to revise new themes in the light of suggestions given. He underscored the need for having balanced fertilization for better productivity and soil health and efforts to be made for inclusion of these recommendations in the package of practices of the states. He pointed out that efforts should be made to diversify 2.0 m ha wheat area having low productivity with other crops. He

also raised concern about the duty-free import of malt barley, which makes imported material significantly cheaper and adversely affects domestic production. He stated that imposing an import duty would promote indigenous malt barley cultivation and improve income prospects for Indian farmers. However, he noted that such corrective measures require policy-level intervention.

F. General suggestions of RAC

Based on the deliberations and discussion, the following general suggestions emerged:

- i.** Acknowledging the progress achieved by conventional breeding and need for supporting it, including, *inter alia*, by genomics-assisted breeding with more focus on difficult to breed traits, was emphasized.
- ii.** A document should be published containing achievements and impact of the institute since inception.
- iii.** *Leymus* and *Elymus* species which form tertiary gene pool of wheat should be used in pre-breeding project for the introgression of desired variability, especially the biotic (rusts and other diseases) and abiotic (drought and salinity) stress tolerance. ICAR-NBPGR has partially characterized nearly 65 accessions of *Elymus* and *Leymus* species, which may be acquired and used.
- iv.** For Fe and Zn biofortification in wheat, GWAS studies should be carried out for marker trait association and further validation should be done using biparental/multiparent crosses.
- v.** The strategy to phase out wheat cultivation in (approx. 2 mha) low yielding districts with other suitable crops should be worked out in consultation with other crop-based institutions by providing economically and ecological sound options to the farmers.
- vi.** Development of disease forecasting models for wheat diseases is very important especially for stripe rust as it causes serious crop losses under conducive conditions and role of western disturbance in occurrence of stripe rust need to be investigated.
- vii.** The IPM modules information generated in past five years by ICAR-IIWBR should be synthesised as a single module.
- viii.** Organic farming and IPM need to be validated. An experiment on seed treatment with biological control agents need to be undertaken against stripe rust to investigate its effect on stripe rust disease management.
- ix.** The differential set (seed) should be preserved in the medium-term storage modules. Efforts should be taken to devise molecular approach for differentials to reduce screening load.
- x.** The Wheat Crop Health Newsletter should also be brought in Hindi or regional languages for the benefit of farmers.
- xi.** Amount of nitrogen saved by applying nano-urea should be analysed and calculated.

- xii.** The practice of saving one irrigation should be included in package and practices of wheat.
- xiii.** Systematic characterization of Indian malt barley varieties is needed to identify genes/QTLs associated with key malting quality traits.
- xiv.** Increased public and industry awareness is essential for improving barley's market acceptability to encourage farmers to adopt barley cultivation. Barley team should improve media visibility to showcase barley's value in malt, food, feed, and health sectors.
- xv.** Interface meeting should be organized with private company for popularizing barley.
- xvi.** The work and methodology of glycaemic study in barley should be published in a reputed journal.
- xvii.** The glycaemic index (GI) studies should be expanded to include relevant landraces and *T. durum* genotypes.
- xviii.** Wheat awareness programs should be arranged in border districts of Punjab and Rajasthan.
- xix.** Newly joined scientific staff at collaborating institutes and SAUs involved in AICRP should be continuously trained and even the training can be online followed by formal examination and certificate distribution. For offline training, if possible, TA can be met from ICAR-IIWBR budget as per rules.
- xx.** Regional stations at Dalang Maidan, Shimla and Hisar are assets and need priority. Work on fencing and growing of dhaincha in un-reclaimed fields at Hisar farm should be done.

G. Recommendations:

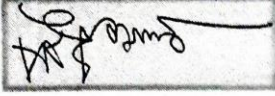
After deliberations, following recommendations were offered by the RAC:

- 1.** The genetic base of Indian wheat varieties should be broadened by incorporating landraces and traditional varieties from India and elsewhere into the crossing programs. The institute should attempt zone-specific crosses in wheat and barley and make segregating populations accessible to researchers nationwide. Accordingly, ICAR-IIWBR should play an aggressive role in generating improved germplasm and breeding materials for utilization by the wheat breeding centres of the country.
- 2.** There is need to strengthen development and mapping elite diverse material through genomic assisted breeding by combining diverse disease resistance, abiotic stress tolerance and nutrition enhancing genes to develop wheat varieties that are climate-resilient, better in nutrient value and high-yielding.
- 3.** IIWBR staff be trained in predictive breeding to exploit the advantages of combining of genomic selection and speed breeding. Since it is five-year plan, predictive breeding should be the focus. AI based predictive breeding is emerging as an important area of

research, hence timely training of the faculty and adopting it in breeding programme be a priority.

4. Public Education and Evidence-Based Outreach: Educating and sensitizing the masses—particularly farmers, consumers, and end users—has become an urgent necessity. The Institute should proactively leverage social media and digital platforms to disseminate evidence-based, scientifically validated information in engaging and accessible formats. This may include well-curated articles, short videos, podcasts, infographics, slogan and creative competitions, and farmer–consumer interaction forums. Such initiatives would help counter prevailing myths and misinformation related to gluten, nutritional quality, productivity, climate resilience, and sustainability of wheat and barley, and restore public confidence through facts, transparency, and credible science.
5. Suitable varieties should be developed for organic and regenerative agriculture along with genotypes having higher nutrient use efficiency.
6. Herbicide resistance in weeds is an emerging problem and for the management of herbicide resistance in weeds, herbicides having different mode and mechanism of actions should be used in combinations.
7. Survey and surveillance should be given due importance. Development of disease forecasting models for wheat diseases is very important especially for stripe rust in wheat as it causes serious crop losses under conducive conditions. The role of western disturbance in occurrence and spread of stripe rust need to be investigated.
8. Study should be carried out to generate knowledge about whether biotypes of pink stem borer attacking on wheat are same or different from rice.
9. Identify and characterize germplasm for key health-related attributes (β -glucan, micronutrients, antioxidants, glycaemic properties, multigrain *etc.*) to support health-based product development. Research should be done on maximum feasible content of various components in multigrain atta (percent wise), nutritional facts, and shelf-life.
10. Develop focused MAS/MAB breeding populations for priority malt and food quality traits, with early-generation negative selection to eliminate undesirable alleles. This approach will create robust pre-breeding resources and strengthen long-term breeding program to develop high-quality malt and food barley varieties.
11. The Committee emphasized the need to develop research interventions aimed at increasing the barley-cultivated area and production in the country. It was advised to identify appropriate varietal and agronomic solutions to promote barley as a viable crop in diverse environments.
12. There is need to carry out the impact assessment studies on introduction of newly released wheat and barley varieties in North-eastern region.

The meeting ended with the vote of thanks to the chair, members of RAC and staff of ICAR-IIWBR by the member secretary.



Consent via e-mail on
26/12/2025
AK Sharma
(Member)

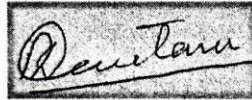
Consent via e-mail on
26/12/2025
Gurcharan Singh Sandhu
(Member)

Sharat K Pradhan
(Member)

Consent via whatsapp on
26/12/2025
PS Birthal
(Member)

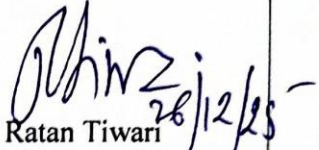
Consent via e-mail on
24/12/2025
Rajender Singh Sandhu
(Member)

Consent via e-mail on
26/12/2025
Dr PC Sharma
(Member)



P L Gautam
(Chairman RAC)

Consent via e-mail on
26/12/2025
Kuldeep Singh
(Member)


Ratan Tiwari
(Member)


Sunil Kumar
(Member Secretary)

Annexure 1: Action taken on the recommendations of 29th RAC (18 November, 2024)

S. No.	Recommendations	Action taken
1.	There is need to continue developing wheat varieties that are climate-resilient, better in nutrient value and high-yielding. This can best be achieved through genomic assisted breeding by combining diverse disease resistance, abiotic stress tolerance and nutrition enhancing genes.	<ul style="list-style-type: none"> • ICAR-IIWBR is already engaged in development and deployment of climate resilient, high yielding biofortified wheat varieties. • DBW 386: tolerant to heat stress (HSI of 0.67) and DBW 443: protein (13.4%), Fe (41.9 ppm) & Zn (43.0 ppm) (notified). • New project proposals combining different abiotic stresses have been approved in IRC covering genomic assisted breeding approach.
2.	Under the growing threat of climate change, there is need to revisit and redefine the wheat mega environments for future climates and prioritize target research accordingly.	<ul style="list-style-type: none"> • In every year's Director's report, comparative profile of seasonal temperature variations (on weekly basis) for each major zone (NWPZ, NEPZ, CZ, NHZ, PZ) is being published for past 5 years. This whole data will be analysed to understand the zonal behaviour and recommendation to be generated, if any change in zonation is warranted for. • AICRPW&B is coordinating research activities across various centres for mitigating the threat of climate change through robust varietal testing system across zones. Well defined zones and programs addressing issues specific to any region are in place. • In the present context, the genotypes released are also evaluated for their wider adoption and tolerant to climatic changes based on multi-locational trials in various zones. • A project entitled "Cluster demonstration on climate resilient and bio-fortified wheat" is addressing this issue at farmers' field.
3.	Herbicide resistance in <i>Phalaris</i> and <i>Avena</i> is widespread. However, it is not clear whether, the mutations are in single base pair or in multiple bases in a given locus or the mutations are in multiple loci. Studies to understand the molecular/genetic basis for the herbicide tolerance in	<ul style="list-style-type: none"> • Sequence analysis of the CT domain of ACCase gene among resistant and susceptible populations revealed two non-synonymous mutations, (Trp2027 to Cys and Ile2041 to Asn) endowing ACCase herbicide resistance (clodinafop) in the resistant populations of <i>Phalaris minor</i>. • An activity has been proposed on "Molecular studies on herbicide resistant weeds" under newly formulated Project: Innovative Weed Management Strategies Especially for Herbicide Resistant Weeds in Wheat.

	<i>Phalaris minor</i> and wild oat should be initiated.	
4.	Khapali wheat (<i>Triticum dicoccum</i>) is known to have low glycemic index (GI) and high protein content. QTL for low GI need to be mapped in <i>T. dicoccum</i> so that bread wheat varieties with low GI could be developed.	<ul style="list-style-type: none"> • <i>in vitro</i> Glycemic index profiling of 25 RIL lines of <i>T. dicoccum</i> populations developed by UAS, Dharwad was performed using standardized protocol. The GI of these RIL lines ranged between 38.3-64.3, with average GI of 50.8.
5.	“Indian Stem Rust rules” were developed around half a century ago by Nagarajan and Singh in 1975 (Plant Disease Reporter, 59:133-136), which may be revisited under the present-day climate change/global warming conditions, using modern day tools. Also, similar to the stem rust behaviour, specific information should be developed for other types of rusts.	<ul style="list-style-type: none"> • An initial review of the “Indian Stem Rust Rules” (Nagarajan & Singh, 1975) has been undertaken to identify areas requiring revision under current climate change and global warming scenarios, and relevant recent research and epidemiological information is being compiled to support the update. • The spread for stem rust from Nilgiris & Palani (Pulni) Hills to Central & Peninsular India and vice-versa is being critically monitored through planting of additional trap plot nurseries. • The modern tools such as GIS-based surveillance, molecular diagnostics <i>etc.</i> are planned to reveal the distribution and movement of stem rust prone areas. • Parallel efforts are also being tried to develop similar hypothesis for leaf and stripe rusts.
6.	The onset of yellow rust in the North-Western and Northern Hill Zone, vis-à-vis the Western disturbance be analyzed so that disease forewarning can be worked out to help studying the global movement of yellow rust and entry of new pathotypes into the country.	<ul style="list-style-type: none"> • Efforts have been initiated to obtain 20 years of historical weather data from IMD, including records of Western Disturbances. This dataset will be utilized to study the onset of yellow rust in the NWPZ and NHZ regions and to support the development of a disease forewarning framework. The framework will enable monitoring of global pathogen movement and facilitate early detection of new pathotypes entering the country.
7.	Genotype x Environment x Management is an important aspect that should be emphasised in the changing climate to meet the food security. Dedicated research should be initiated on G x E x M targeting varieties for inter/relay and multiple cropping systems and regenerative agriculture practices.	<ul style="list-style-type: none"> • System based research is being conducted on environment x management aspects. A new project has been taken to cater GxExM aspect. Work has been initiated for targeting varieties for multiple and regenerative agriculture practices.

8.	Assess historical yield gaps in wheat across states and identify factors responsible for the gaps and suggest remedial measures. Track farmers for continuance and dis-adoption of technologies demonstrated in their fields and identify reasons for dis-adoption.	<ul style="list-style-type: none"> • A project on assessment of yield gap and their determinants has been initiated.
9.	In IIWBR seed portal, the provision may be made for feedback on the performance of recommended varieties planted by the farmers during previous year.	<ul style="list-style-type: none"> • A dedicated “Farmers Feedback” section has been designed and made live on the IIWBR Seed Portal w.e.f. 15 September, 2025 for capturing on-farm performance of IIWBR varieties sown in Rabi 2024-25. (Responses received: >75) Link: https://iiwbrseed.in/feedback.aspx
10.	Systematic efforts should be made on defining the domains of barley in view of soils, water, climate, and comparative economics to understand the potential niche of barley under current and future climates and resource scenario. Barley group should try to improve elite varieties of malt and food barley for various quality traits. There is need to reinforce barley programme with more emphasis on developing transgressive genotypes using genomic assisted breeding. Work on natural farming and organic farming should also be started in barley.	<ul style="list-style-type: none"> • Barley in India thrives across diverse agro-climatic zones, especially arid, semi-arid, and low-input regions due to its drought, heat, and soil-stress tolerance. Its low water and fertilizer need, make it a profitable option for rainfed and groundwater-stressed areas. • Climate change is likely to broaden barley’s suitability owing to its resilience and low water footprint. • New food barley varieties like DWRB-223 and DWRB-244 offer superior nutritional quality, while malt varieties such as DWRB-219, DWRB-235, DWRB-238, and genotype DWRB 2512 provide excellent malting traits. • Hulled and hullless genotypes with strong malting, nutritional, and antioxidant properties strengthen future breeding efforts. • Marker-assisted breeding and large-scale natural farming evaluations are further supporting sustainable and climate-resilient barley production.
11.	Newly recruited staff at collaborating institutes and SAUs should be trained regularly for data recording and analysis.	<ul style="list-style-type: none"> • A two-day hands-on training program was organized on “Uniform Data Recording and Reporting in AICRP Wheat and Barley Trials” during 24-25 Feb., 2025 at ICAR-IIWBR. A total of 15 participants from various research institutions including private institute participated in it.

Annexure 2: New thematic areas of the projects of ICAR-IIWBR

S. no.	Theme	Theme leader
1.	Maximization of wheat productivity by synchronizing genotype, environment and management (GxExM) interactions	Dr Hanif Khan
2.	Safeguarding wheat and barley improvement using untapped genetic resources Revised title: Harnessing untapped genetic diversity of wheat and barley germplasm to cater nutrition and mitigate future climate challenges	Dr Arun Gupta
3.	Enhancing resource use efficiency in wheat for better and consistent/ sustainable remunerations	Dr Chandra Nath Mishra
4.	Mitigating climate-induced challenges in wheat and barley production	Dr Sindhu Sareen
5.	Continued vibrancy in biotic stress management for sustaining production in wheat and barley	Dr Pradeep Sharma
6.	Integrating breeding pipelines and advanced genomic techniques	Dr Om Prakash Ahlawat
7.	Wheat and barley technologies for better quality, health and industrial uses	Dr Dinesh Kumar
8.	Climate-smart regenerative agriculture and resource efficient agricultural practices for improving productivity, profitability and soil health in wheat based cropping systems	Dr Subhash Chandra Gill
9.	Impact assessment of wheat and barley technologies and research prioritization for crop diversification	Dr Anuj Kumar

Annexure 3 (List of completed projects)

Crop Improvement

Wheat improvement for enhancing genetic gain and productivity under changing climate (CRSIIWBRCL20200020195)

Programme Leader: Dr. BS Tyagi (till 30/04/2025); Dr. OP Ahlawat (Since 01/05/2025)

Project 1: Developing high yielding and climate resilient wheat varieties (PI: Dr. BS Tyagi; till 30/04/2025); Dr Sindhu Sareen (Since 01/05/2025)

Project 2: Pre-breeding and germplasm enhancement (PI: Dr. BS Tyagi; till 30/04/2025); Dr Arun Gupta (Since 01/05/2025)

Project 3: New insights & basic studies for integrating molecular, physiological and bioinformatics tools for augmenting wheat improvement (PI: Dr. OP Ahlawat)

Crop Protection

Biotic stress management in wheat (CRSIIWBRCL20200030196)

Programme Leader: Dr. Pradeep Sharma (PI-CP) wef 12/06/2024

Project 1: Management of biotic stresses of wheat by integrating innovative approaches (PI: Dr. Pradeep Sharma) wef 12/06/2024

Project 2: Mapping phenotypic diversity in wheat and barley rust pathogens, identifying resistance sources, and upkeep of culture collection (PI: Dr. O.P. Gangwar)

Resource Management

Enhancing the productivity, sustainability and resilience of wheat-based cropping systems (CRSIIWBRCL20200040197)

Programme Leader: Dr. SC Tripathi (PI-RM)

Quality & Basic Sciences

Wheat Improvement for Industrial and Nutritional Quality (CRSIIWBRSL20200050198)

Programme Leader: Dr. Sunil Kumar (PI-QBS) wef 01/08/2024

Barley Improvement

Barley for Feed, Food and Industrial Purposes (CRSIIWBRCL20200060199)

Programme Leader: Dr. Omvir Singh (PI-BI)

Project 1: Barley improvement and technological interventions for yield, quality, and biotic and abiotic stress tolerance for better farmers' livelihood (PI: Dr. Om Vir Singh)

Social Sciences

Technology Outreach and Impact Evaluation (CRSIIWBRSL20200070200)

Programme Leader: Dr. Satyavir Singh

Project 1: Evaluation, dissemination, and impact assessment of production technologies (PI: Dr. Satyavir Singh)



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Dr K.S. Hooda
PS (FFC)

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F. No. 13-2/2021-CS-FFC

Dated: 02.02.2026

To,

The Director
ICAR-IIWBR
Karnal

Subject: Proceedings of the 30th RAC meeting held on 8th December, 2025 at ICAR-IIWBR, Karnal-regarding.

Sir,

Kindly refer to your email letter dated 30.12.2025 regarding above cited subject. In this context, the approval of Competent Authority is conveyed herewith the proceedings and recommendations of 30th meeting of RAC of ICAR-IIWBR, Karnal held in the hybrid mode on 8.12.2025. A copy of approved recommendations, timeline and Council's comments is attached herewith for further follow up actions.

This is issued with the approval of DDG(CS).

Yours faithfully

K.S. Hooda
(K. S. Hooda) 2/2/2026

Encl: As above.

Recommendations of 30th Research Advisory Committee (RAC) meeting ICAR-Indian Institute of Wheat & Barley Research (IIWBR), Kranal held during 8 December, 2025.

S. No.	Recommendations of 30 RAC Meeting	Timeline	Council Comments
1	The genetic base of Indian wheat varieties should be broadened by incorporating landraces and traditional varieties from India and elsewhere into the crossing programs. The institute should attempt zone-specific crosses in wheat and barley and make segregating populations accessible to researchers nationwide. Accordingly, ICAR-IIWBR should play an aggressive role in generating improved germplasm and breeding materials for utilization by the wheat breeding centres of the country.	It is very important aspect therefore the activity has been taken up in newly implemented institute's project. The activities will be started from this crop season itself	Very important work for broadening the gene pool. This should be taken up.
2	There is need to strengthen development and mapping elite diverse material through genomic assisted breeding by combining diverse disease resistance, abiotic stress tolerance and nutrition enhancing genes to develop wheat varieties that are climate-resilient, better in nutrient value and high-yielding.	5 years (2026-31)	Stacking of important gene in one background is a priority research work. The work should be started with proper planning.
3	IIWBR staff be trained in predictive breeding to exploit the advantages of combining of genomic selection and speed breeding. Since it is five-year plan, predictive breeding should be the focus. AI based predictive breeding is emerging as an important area of research, hence timely training of the faculty and adopting it in breeding programme be a priority.	5 years	Agreed for the proposal and need to be followed as per ICAR norms.
4	Public Education and Evidence-Based Outreach: Educating and sensitizing the masses—particularly farmers, consumers, and end users—has become an urgent necessity. The Institute should proactively leverage	In fast and easy to access media based outreach is targeted with more focussed	Agreed. But ICAR norms should be followed.

	social media and digital platforms to disseminate evidence-based, scientifically validated information in engaging and accessible formats. This may include well-curated articles, short videos, podcasts, infographics, slogan and creative competitions, and farmer-consumer interaction forums. Such initiatives would help counter prevailing myths and misinformation related to gluten, nutritional quality, productivity, climate resilience, and sustainability of wheat and barley, and restore public confidence through facts, transparency, and credible science.	approach and a well-planned approach will be initiated within one year, however, the awareness will remain a continuous activity tackling the recent issues cropping up with time	
5	Suitable varieties should be developed for organic and regenerative agriculture along with genotypes having higher nutrient use efficiency.	5 years,	Agreed.
6	Herbicide resistance in weeds is an emerging problem and for the management of herbicide resistance in weeds, herbicides having different mode and mechanism of actions should be used in combinations.	It is being practised to counter herbicide resistance in weeds and will remain regular part and parcel of weed management strategy	Agreed
7	Survey and surveillance should be given due importance. Development of disease forecasting models for wheat diseases is very important especially for stripe rust in wheat as it causes serious crop losses under conducive conditions. The role of western disturbance in occurrence and spread of stripe rust need to be investigated.	3 years.	Disease forecasting models need to be developed.
8	Study should be carried out to generate knowledge about whether biotypes of pink stem borer attacking on wheat are same or different from rice.	Within 3 years	Need to be confirmed.
9	Identify and characterize germplasm for key health-related attributes (β -	5 years (2026-31)	Agreed

	glucan, micronutrients, antioxidants, glycaemic properties, multigrain etc.) to support health-based product development. Research should be done on maximum feasible content of various components in multigrain atta (percent wise), nutritional facts, and shelf-life.		
10	Develop focused MAS/MAB breeding populations for priority malt and food quality traits, with early-generation negative selection to eliminate undesirable alleles. This approach will create robust pre-breeding resources and strengthen long-term breeding program to develop high-quality malt and food barley varieties.	The growing demand for barley-based products underscores the relevance of this activity, which will be implemented on a priority basis using robust pre-breeding resources.	This work need to be done for development of barley for malt purpose.
11	The Committee emphasized the need to develop research interventions aimed at increasing the barley-cultivated area and production in the country. It was advised to identify appropriate varietal and agronomic solutions to promote barley as a viable crop in diverse environments.	The exploratory efforts will start this year, with full-scale implementation targeted from the cropping season	Specific problem need to be considered instead of open ended suggestions.
12	There is need to carry out the impact assessment studies on introduction of newly released wheat and barley varieties in North-eastern region.	A project has been started for impact assessment	Agreed