

Minutes of 21st Research Council Meeting held on 31st July, 2021

The 19th Research Council Meeting (RCM) of Sher-e-Kashmir University of Agricultural Sciences & Technology of Jammu (SKUAST-J) was convened on 31st July, 2021 in the Seminar Hall of Division of Economics & ABM, SKUAST-J, Main Campus, Chatha under the Chairmanship of Prof. J.P. Sharma, Hon'ble Vice Chancellor, SKUAST-Jammu to assess the status of on-going research activities and chalk out road map for research to be taken in future.

Prof. M.C. Sharma, former Director-cum Vice Chancellor, Indian Veterinary Research Institute, Izatnagar, Bareilly and Prof. Pardeep K. Sharma, former Vice Chancellor, SKUAST-Jammu, were present as invited experts of eminence in Veterinary Sciences and Agriculture, respectively. Dr. Jag Paul Sharma, Director Research, SKUAST-J; Dr. S.K. Gupta, Director Extension, SKUAST-J; Dr. S.E.H. Rizvi, Director Education, SKUAST-J; Mr. Rajesh Talwar, Comptroller/Director Planning & Monitoring, SKUAST-J; Dr. Bikram Singh, Dean, Faculty of Agriculture; Dr. M.S. Bhadwal, Dean Faculty of Veterinary Sciences & Animal Husbandry; Mr. K.K. Sharma, Director Agriculture; Dr. K.L. Sharma, Jt. Director, Sheep Husbandry; Dr. Javed katoch, Jt. Director, Animal Husbandry Department, Dr. M.A. Wani Joint Director (Fishrbies), Mr. Ashwani Khajuria, Chief Horticulture Officer, Samba and I/c KVKs, SKUAST-J; Dr. Shahid Ahamad, Associate Director Research; Dr. Pardeep Wali, Associate Director Research, Dr. Mahital Jamwal, Deputy Director Research; Heads of Divisions of Faculty of Agriculture, Chief/Senior Scientists & Heads of Krishi Vigyan Kendras, Incharge Stations/Sub-Stations, Principal Investigators of adhoc projects; Chief Agriculture Officers, Chief Horticulture Officers as well as other officers of Agriculture, Horticulture and other line departments participated in the meeting (Annexure I).

At the outset, Prof. J.P. Sharma, Director Research, SKUAST-J welcomed the Chairman, experts and participants and particularly acknowledged the generous attitude of Hon'ble Vice Chancellor for organizing such a prestigious meeting. Prof. Sharma introduced the experts and highlighted their achievements and awards in respective fields of expertise. Director Research hoped that scientists attending meeting shall be benefited by the vast experience and suggestions/remarks of the experts. Prof. Sharma appreciated strong linkage and coordination between University and line departments. Prof. Sharma made a power point presentation "Salient activities/achievements

of Directorate of Research”. It was apprised that mandates of Directorate of Research included identification and prioritization of researchable issues; development of research programmes, coordination of university research activities and implementation; and monitoring and evaluation of research programmes. It was informed that Directorate of Research has other constituent units such as PME Cell, IPR Cell, REC and Seed and Planting Material Cell, besides ACHR, Udheywalla, ACRA Dhiansar and other regional stations and sub-stations. Prof. J.P. Sharma outlined the thematic areas of the University including:

- Basmati Improvement Programme with focus on R.S. Pura Basmati
- Wheat Improvement Programme with focus on yellow rust resistance
- Maize improvement with focus on development of composite varieties
- Oil seed and pulses improvement
- Organic farming
- Bio-prospecting of herbal plants
- Improvement of fruit, vegetable and ornamental crops and their value addition
- Intensification of livestock production and productivity
- Characterization of indigenous breeds of animals
- Diagnostic and therapeutic management of important livestock diseases
- Livestock feed, fodder and forage crop improvement
- Epidemiology of important livestock diseases and their zoonotic potential
- Food safety and environmental hygiene
- Livestock feed, fodder and forage improvement
- Development of climate resilient crop varieties
- Designing/improving prototypes of hill and mountain relevant farm machinery

It was apprised to the house that Flagship Areas of research have been assigned to all the Divisions of different faculties. In Decemeber, 2020, 12 crop varieties were released by the University out of which three basmati varieties Jammu Basmati 118, Jammu Basmati 123 and Jammu Basmati 138 have been notified by CVRC inin 86th Meeting of Central Sub-Committee on Crop Standards held on 15th March, 2021 and proposals of the remaining crop varieties are submitted for notification. It was also informed that 11 new proposals for release of varieties have been examined by Research Evaluation Committee (REC) of the University which include

JAUW 672 (wheat), SJPC 01(maize), Mustard Jammu 13-5, Rapeseed (JGS 12-3), JAUM 0936 (moong) and Bhaderwah Rajmash 39, SJPW 1 and SJPW 2 (walnut), JWSP 06(Guava red flesh) and Sel 1001 (Kagzi Lime).

It was further informed by Prof. Sharma that at present 80 adhoc research projects worth Rs. 44.5 crore are operational in the University. From January to July 8 projects worth Rs. 14.73 crore have been funded by different agencies including NABARD. Under product testing programme from January to July 2021 products of 12 companies have been tested at SKUAST-Jammu with earnings of Rs. 32.75 lakh. Under participatory research programme, 30 rajmash collections from Bhaderwah and walnut germplasm from Dachhan and Marwah areas have been collected as repository of germplasm. Bheej Vahan concept have been started to drop seeds of high yielding varieties at the doorsteps of farmers. It was apprised by Prof. J.P. Sharma that the Bio-Control Laboratory at Udheywalla is ISO certified and in this lab. mother cultures of beneficial microbes are being maintained and multiplied. About 9000 kg of biofertilizers have been supplied by this lab. to different agencies including Department of Agriculture, farmers, CAZRI, SKUAST-Kand KVKs. Prof. Sharma highlighted the emerging trends in R&D in agriculture and allied sciences with following focus areas.

- Smart Crop production in context of climate change management
- Landless farming/soilless farming
- Vertical farming
- Organic crop/animal husbandry
- Nano-technological interventions in agriculture
- Artificial intelligence/precision farming
- Deployment of microbes (consortia) in agriculture
- Ecological farming
- Processing and value addition (Secondary and tertiary agriculture).

Mr. K.K. Sharma, Director Agriculture, Jammu highlighted following researchable issues:

- Bakanae disease is becoming a serious problem in high yielding varieties of basmati rice and therefore its management requires attention of the University scientists.
- Need of area expansion under bio-fortified varieties of wheat such as WB 02 and HD 3226; and for this he requested the University to produce breeder seed of these varieties.

- Armyworm in maize is a serious problem of and felt need to work on its management.
- In addition to the existing mushroom types cultivated by farmers, medical mushroom species may be recommended for increasing farmers' income and round the year production.
- Beekeeping is a major activity towards doubling farmers' income; and for this nucleus seed needs to be maintained. There is need of diversification in beekeeping by utilizing different products such as bee venom, jelly, bee wax, etc. and a complete package of practices needs to be developed. Extraction of honey needs to be done scientifically and for this support of the university was requested.
- More support in testing of farm machinery. It was desired that Farm Machinery Testing Centre at SKUAST-Jammu should provide testing facility for different types of machinery and equipments so that testing is done at local level and farmers do not remain at loss by using these equipments.
- Due to shrinking labour resources, farm mechanization is very important and for this Department requires cooperation of the University particularly in hills for people working in hills are also benefitted by farm machinery.
- Micro-irrigation using rain guns and rain pipes needs to be standardized.
- Solar driers need to be standardized for local products so that their quality is not degrade by using crude techniques.
- With respect to oilseed crops, the temperate areas remain monocropped during winter. Therefore, Toria crop varieties may be recommended to get 2nd crop.
- Seed requirement of ginger and turmeric is very high and if the University produces seed, the Department will lift all types of seeds.
- Research should also be conducted based on **One District One Product** concept of the Govt.

Mr. K.K. Sharma apprised that certificate of production of biofertilizer, biopesticides and biocontrol agents has already been given to the University. He advocated safe agriculture and organic cultivation. The products emphasized that products needs to be organically certified and OFRC of SKUAST –Jammu should work on it.

Mr Sharma remarked that research and extension cooperation between SKUAST-J and Department of Agriculture is very good. KVKs are very well supporting the Department. He requested that researchable issues require attention of the University scientists so that farmers are benefitted and their income is doubled; and for the cost of production needs to be reduced. Introduction of nanourea in J&K UT was one such initiative. He also mentioned about packaging, grading, branding and marketing of farm produce and mentioned about initiatives already taken.

Mr. A.K. Khajuria, Chief Horticulture Officer, Samba said that target of Department of Horticulture is to increase productivity of fruit crops and thrust is to increase income of farmers. He highlighted the following researchable issues

- Dense and ultra dense cultivation of fruit crops for increasing farmers' income is priority area and in this regard technical support of SKUAST-J is required.
- Management of mango malformation and canopy management. In mango there are no clonal rootstocks so canopy management is required.
- Availability of early maturing varieties of *Kagzi* lime are required so that early availability of the lemon in the market would fetch better prices to farmers.
- Graft timing standardization in walnut/citrus as well as availability of tissue culture developed plants are in demand which needs to be worked out.
- High value crops like dragon fruit must be evaluated under Jammu conditions and their package of practices need to be worked out by SKUAST-Jammu.
- In dates there is problem of fruit set and the University needs to work on it and give guidelines for its popularization.
- Package of practices for kiwi may be developed for its promotion and popularization among farmers.
- In olive, commercial plantation can be initiated and oil extraction units may also be established.
- In citrus crops, insect pests, nutrient deficiencies, viral infections and diseases are prevalent, therefore, an integrated spray schedule as ready reference for implementation is required, particularly in *Kandi* areas.

- SKUAST-J expertise is also required in canopy management for reduction in planting distance in litchi.

Dr. Javed Katoch, Jt. Director, Animal Husbandry Department deliberated on the following points:

- Round the year fodder availability in hilly areas of Jammu region. The state is deficient in fodder production, the field functionaries may be trained in enhancing the feed/ fodder production by using new technologies to fulfill the requirement of the state.
- Poultry diseases and their management needs to be worked out
- Refreshers courses for the field Veterinarians on the advanced diagnostic techniques and therapeutics.
- There is need of trainings of field Veterinarians and associated staffs for handling the different machineries and equipments to be utilized in dairy/poultry farming.
- Emphasized to develop the strategies for acclimatization of animals purchased from other adjoining states for setting up of the dairy units as with respect to different climatic zones of UT of J&K to maintain the production.
- Tackling the problems of infertility and repeat breeding which is a common in dairy animals.

Dr. K.L. Sharma, Director Sheep Husbandry Department remarked that sheep and goat rearing is main source of livelihood of nomads in hills. There is no dearth of market for this sector, as we are importing sheep and goats from other states like Punjab, Haryana and Rajasthan. Dr. Sharma highlighted following aspects for consideration by the University:

- The state is importing sheep and goats from the adjacent state for the meat purpose to fulfill the need of the UT of J&K. So, we have lot of market potential and only there is need of enhancing the meat production.
- In production scenario, the UT is facing lot of anthelmintic drugs resistance against the parasites in the Sheep/ Goat, which hinders the production.

- Few pockets of state have certain weeds particularly Lantana, congress grass etc. which are causing abortions and other health problems in the Sheep and goats, and also depriving the soil/land from production of livestock fodder.
- Appreciated the efforts of the Division of Veterinary Gynecology, F.V.Sc. & A.H., SKUAST-Jammu in regard to synchronization of heat and in-vitro fertilization in Sheep and goats in getting multiple progeny.

Dr. M. A. Wani Joint Director Fisheries remarked that

- In J&K, 90% of production is of trout fish. Due to interference and climate water resources are shrinking as well as ecology of endemic species is shrinking. He requested for recommending better management measures which can be adopted.
- There isample scope for ornamental fisheries and requested the University to come forward on this aspect.
- Advising the formulation of low cost feed by utilizing the locally available ingredients and recent technologies.
- Development of training modules for training the employees of the department.
- He also emphasized that SKUAST-Jammu should supply the seed and breeding stock of fishes for the Department/farmers.

Technical Session-I

Agenda No. 1: Confirmation of Proceedings of 20th Research Council Meeting

TECHNICAL SESSION-1

Dr. Mahital Jamwal, Deputy Director, put before the house Agenda item 1 i.e. Confirmation of Proceedings of 20th RCM. The same were confirmed by the Chairman, Prof. J.P. Sharma and the house.

Agenda No. 2 Action taken on 20th RCM

Action taken by different units of the university in response to issue raised by line Departments in 20th RCM was reviewed. Action taken with respect to improvement of rootstocks for drought tolerance in mango, guava and citrus ; low seed germination and improvement of varieties in Raj Harad; post harvest technology for strawberry; tissue culture of date and dragon fruit and availability of hybrid seeds of papaya.were discussed

The Hon'ble Vice Chancellor and the Chairman of RCM intervened and remarked that minor issues like information on hybrid seeds availability sources should be resolved in the meeting itself rather than making them points of action. Prof. J.P. Sharma enquired from Dr. Sunil Kumar, Head Division of LPT about the results of his concluded DST-SEED project on promotion of functional foods to which Dr. Sunil replied that developed products have been analysed at CSIR-IIIM, Jammu. He further explained that shelf life of *Kalari*, after addition of herbal supplements would increase. The chairman further enquired about the takers of this technology or its commercialization, to which Dr. Sunil explained that this technology is yet to be used on commercial scale.

The Chairman enquired from Dr. L.M. Gupta, Head Division of Agroforestry about improvement work on Harad varieties, to which Dr. Gupta explained that four new selections of Harad have been introduced. They have started fruiting and their performance is being evaluated. The HOD further explained that the recommendations given can help improve seed germination in Harad. The chairman remarked that such information if already existed should have been passed on to the concerned department in the meeting itself. Prof. Sharma took serious note of the action taken by the Fruit Science Division and vague information presented in the RCM report.

Regarding diagnostic trainings, Dr. M.S. Bhadwal informed that trainings have been conducted and information shared with the concerned Department. The Chairman asked Dean, FVSc. & AH about mechanism of sharing information. Prof. M.C. Sharma advised to make abstract of information and pass on to Department as well as share on some portal. Prof. Sharma further remarked that information should be made as small documents for distribution to the farmers and filed functionaries free of cost.

Regarding availability of perennial grass varieties for ensuring round the year availability of fodder in Kandi area, Prof. B.C. Sharma responded that experiments were conducted and information submitted to Directorate of Extension for further validation through KVKs. On being asked by Hon'ble VC about findings of GIS soil fertility mapping and revival of village ponds, Dr. Vikas Sharma and Dr. Vevek Arya, respectively, responded that both the projects stand completed, as per the comments of the expert of the 20th RCM, information in the form of technical bulletins have been passed on to the concerned.

The chairman remarked that Industry Meet was organized for commercialization of the technologies. However, none of the technologies catches up well with the industry people. Prof. Sharma asked Dr. Anju Bhat about status of technologies of PHT Division. On value addition of Karonda and nutritional content of ingredients of pumpkin toffee, the chairman remarked that the product developed should find clients. They are of little significance if they are not going to farmers, department of Industry. Prof. J.P. Sharma expressed anguish that there was no benefit of technologies which do not find place in extension system and are not worth commercialization.

The chairman directed that the Products of the University should be properly displayed at outlets in the campus; and asked the scientists to do an impact analysis of their technologies. There is need to commercialize technologies by giving them to Private Companies and earning royalties for them. The university should be known for its products.

Dr. Anish Yadav apprised that germplasm of Bakerwali goat has been registered and papers submitted to NBAGR through Directorate of Research. Dr. R.K. Salgotra informed that germplasm of R.S. Pura basmati and Bhaderwah rajmash has been registered and IC Nos. obtained. With respect to GI registration of Doda Guchhi, Dr. Salgotra informed that main applicant is Department of Agriculture and they have to submit their application directly to Registrar GI office Channai and SKUAST-Jammu will provide technical or scientific information in this regard. He further apprised that a private party has already filed GI tag application of Doda Guchhi which may lead to restrictions to the farmers of the region.

Prof. R.K. Samnotra informed about the Promotion of off season high value vegetable cultivation. The chairman directed do an impact analysis of the varieties/technologies developed

by the Division and submit report in terms of figures showing impact of technological interventions and how much change each of them brought.

Dr. Gurdev Chand, Head Division of Plant Physiology presented achievements of hydroponics project. He informed that hydroponic units have been established in 7 KVKs and one at Division of Plant Physiology, SKUAST-K. 42 trainings have been conducted in which 990 farmers participated. It was further intimated that in another NABARD funded project 30 new units in three districts of Samba, Kathua and Jammu (10 in each district) are being established. Scientific Staff of KVKs and Department of Agriculture have also been imparted trainings in this technology. Hon'ble Vice Chancellor appreciated efforts of Dr. Gurdev Chand in popularization of hydroponics technology.

Agenda No.3. Research Findings/Recommendations of concluded projects:

I. Agriculture and allied sciences

Dr. B.C. Sharma, Prof. & Head, Division of Agronomy presented results of projects operational in the Division including one on performance of wheat variety JAUW 672 and four AICRP (Weed Management) projects. It was informed that evaluation of wheat variety JAUW 672 was done under limited irrigation conditions at Chatha. Dr. Jagpal Sharma, Director Research and Prof. Pardeep K. Sharma, advised that for recommending variety under rainfed ecologies, it should be tested at ACRA Dhiansar. With respect to recommendations of experiments on weed management, it was advised that these may be passed on to OFRC and KVKs for validation and inclusion in package of practices.

Dr. R.K. Samnotra made presentation of breeding and production trials of the Division. Dr. Bikram Singh presented salient achievements of Division of Plant Breeding & Genetics and informed that four varieties of field crops i.e. JAUW 672 (wheat), SJPC 01 (maize), Mustard Jammu 13-5 and JGS 12-3 (Rapeseed) have been developed and presented in REC for release.

Dr. L.M. Gupta made presentation of experiments conducted in the Division of Agroforestry and informed that two varieties of Kalmegh have been identified. Prof. Pardeep K.

Sharma and Dr. Jagpal Sharma advised Dr. L.M. Gupta to submit Raj Hard selection for release as variety.

Dr.R.K. Gupta presented research finding of Division of Entomology and made recommendations that application of fluensulfone [2G@2.0](#) kg a.i./ha significantly reduces PCN population. However, the high cost of chemical is the major constraint in its large scale application.

Dr. R.K. Salgotra presented recommendations of completed projects at School of Biotechnology. It was reported that six blast resistant and five bacterial blight resistant semi-dwarf and agronomically superior basmati lines have been developed for further evaluation and release. CAPS marker has been developed for selection of *Co-2* for gene responsible for providing resistance against anthracnose disease in common bean. Similarly with respect to non-basmati rice, it was informed that eight lines pyramided with two blast resistance genes and superior agronomic traits have been developed for hill ecology. They are being evaluated for 2nd year under multi-location trials at Chatha, Rajouri and Bhaderwah for further promotion under AICRP trials. With respect to *Brassica juncea*, 10 lines pyramided for white rust resistance genes have been developed and shall be evaluated for stability of agronomic and quality traits. Dr. Salgotra informed that pyramided stocks possessing different resistance genes have been developed at School of Biotechnology in crops such as rice, brassica and peas. They are available to be utilized by Division of Plant Breeding & Genetics/ Division of Vegetable Science and Floriculture for crop improvement.

Dr. A.P. Singh, presented experimental findings of ACRA, Dhiansar. It was advised by Director Research and Dr. Pardeep K. Sharma that recommendations of the experimental results may be passed on to KVKs for validation.

Dr. Sanjeev Kumar presented experimental results of PRSS, Samba and informed that material developed under different projects is at different stages of evaluation and Moong variety JAUM 0936 is already identified for release.

Dr. Vikas Sharma presented results of the experiments at Organic Farming Research Centre. The Director Research advised him to mention the nutrients in terms of N,P and K rather

than as organic manures. Hon'ble Vice Chancellor Directed the Incharge OFRC to maintain the Centre and its surroundings in presentable form and establish sub-units within the Centre.

II. Veterinary Sciences

Dr. A.K. Gupta, Head, Division of Veterinary Pharmacology & toxicology, F.V.Sc. & A.H. presented a concluded research project on "Estimation and evaluation of antimicrobial residues in foods of animal origin in Jammu region and their impact on human health". Dr. M.C. Sharma, Expert from Animal Science and Dr. J.P. Sharma, Hon'ble Vice Chancellor, SKUAS-J and Chairman of the 21st RCM suggested for the preparation of pamphlets in local languages for creating the awareness among public for judicious use of the antibiotics.

Dr. Sunil Kumar, Prof. & Head, Division of Livestock Products Technology, F.V.Sc. & A.H. presented a concluded research project on "Quality attributes of functional Kulfi wrapped with Karrageenan based bioactive films". The expert from Animal science desires for patent filing and commercialization of the products.

Dr. Jonali Devi, Prof. & Head, Division of Veterinary Physiology & Biochemistry, F.V.Sc. & A.H. presented a developmental project on "Gujjar and Bhakarwal women empowerment through improved managerial practices in livestock rearing and awareness in aspect of personal health hygiene and sanitation". There was no comment in respect of the work from the members of the house.

Dr. Rajiv Singh, Prof. & Head, Division of Veterinary Medicine, F.V.Sc. & A.H. presented a concluded research project on "Studies on iodine deficiency in livestock and its management" and "studies on dermatological disorders in livestock and their management". Dr. M.C. Sharma, Expert from Animal Sciences pointed out that topical application of iodine compound in the livestock for the management of iodine deficiency is not practically feasible at farmer's level. So, the only solution is to provide the iodine enriched feed supplement to the niche area of iodine deficiency. He also mentioned that PI used old diagnostic indicators/markers for the diagnosis of iodine deficiency in livestock. He also commented on the dermatological disorders project that use of cheaper and traditional herbal compounds for the formulation of skin products should be popularize.

Dr. Anish Yadav, Professor & ICAR-National Fellow, Division of Veterinary Parasitology, F.V.Sc. & A.H. present the findings of ongoing National Fellow project on "Development of

sensitive and specific diagnostic assay for the detection of warble fly infestation in goats and eradication of the disease from Jammu and Kashmir”. He has developed the cost effective and quick diagnostic test for the early diagnosis of goat warble fly infestation and also developed low cost treatment regimen against the goat warble fly infestation.

Dr. Utsav Sharma, Professor & Head, Division of Veterinary Gynaecology and Obstetrics, F.V.Sc. & A.H. presented a students research work on “ Effect of exogenous progesterone implants in post-partum cattle with an extended post-partum anestrus interval”. He was highlighted that progesterone based sponge for cattle was developed by the Division. He also mentioned that in future we want to add some vehicles to increase the slow release of progesterone for better results.

Dr. Mohd. Raashid, Associate Professor & Head, Division of Veterinary Microbiology & Immunology, F.V.Sc. & A.H. presented a student research work on entitled “*Investigation of extended-spectrum beta-lactamase producing Escherichia coli in bovines from Jammu*” His findings were on the antibiotics resistance genes in the *Escherichia coli* from various sources. Dr. M.C. Sharma, suggested for creating awareness among the public and

Remarks of the invited experts of eminence:

Prof. Pardeep K. Sharma, former Vice Chancellor, SKUASTY-Jammu observed that:

- SKUAST-Jammu is progressing well under the dynamic leadership of Prof. J.P. Sharma who is putting his best for improving ranking of the University.
- We should look into the real farm situations.
- Concrete points put up by the line departments and presentations made by Heads of Divisions were appreciable
- For overall development of the University, both upstream and downstream research is required and agenda of the applied research is set by the feedback of the line departments to solve site specific problems. Feedback from Extension functionaries is important for deciding researchable issues. People from other disciplines including IT and Biology should also be involved
- We have to be very vigilant while framing the experiments. Every experiment should have 1-2 clear cut objectives and conclusions should be relevant to objectives.

- Appreciated Director Research for his vision on future thrust areas of the University including integration of Nanotechnology for bringing more precision in agricultural practices.
- Technologies developed should be relevant to farmers and must not be very complicated. Even small technological interventions can have bigger impacts.
- Academic research although very important but developmental research is even more important as we are responsible to farmers.

Dr. M.C. Sharma, Former Director-cum-Vice Chancellor, IVRI, Bareilly, in his concluding remarks stressed that:

- Research should be applicable, and innovative technologies and products should apply for patent and transfer the technologies to the industries which are the need of the hour.
- Scientists should bring more funds in the form of projects and justifies them by developing technologies and their commercialization.
- There is dire need to focus on the major diseases of livestock such as mastitis, H.S., B.Q. FMD, brucellosis, PPR etc for their control and management. Most of these diseases have an economical importance and causing heavy economic losses to the farmers. He suggested for the development of Package of Practices for the major diseases including parasitic diseases.
- University scientists should have close relationship with the line departments of the state for understanding their problems in the field situation and accordingly focus on the research.
- Reproductive problems in the dairy animals are also major issue, which should be address by using the recent and advance technologies.

Concluding Remarks of the Chairman:

Prof. J.P. Sharma expressed gratitude to Prof. Pardeep K. Sharma and Prof. M.C. Sharma for consenting to be the experts in 21st RCM of SKUAST-Jammu; and hoped that suggestions given by experts will go a long way in helping scientists of the University. Prof. Sharma appreciated the release of 12 crop varieties by SKUAST-Jammu in 2020 and notification of 3 Basmati varieties Jammu Basmati 118, Jammu Basmati 123 and Jammu Basmati 138 seed of which is

which is in great demand in adjoining states. The chairman mentioned about recently funded project to SKUAST-Jammu by NABARD and DBT. Hon'ble Vice Chancellor appreciated the cooperation and coordination between the University and Line Departments. Prof. Sharma further remarked that:

- Project formulation should be inter-disciplinary which would improve research quality and utilization of expertise of all concerned.
- Work should be done to improve fertilizer and water use efficiency involving Divisions of Soil Science, Agronomy and Agricultural Engineering
- Precision and conservation agriculture practices need to be adopted
- Organic farming is a thrust area and directed the Incharge Organic Farming Research Centre to manage the Centre properly. For this assured the Centre all facilities and financial support.
- Research Farm of School of Biotechnology, Honeybee Centre and Mushroom Centre are very well maintained and presentable.
- Herbal Garden needs to be updated for which the chairman assured financial support.
- One district one product should be kept into consideration while framing research proposals.
- Experiments on high density plantation of fruit crops should be done and advised HOD Fruit Science Division to look into the issue.
- Fish production needs be increased.
- Work should be done to grow Kishtwar saffron in other areas.
- Need of the hour is to work on low volume - high value crops
- Nutritional self sufficiency is not yet achieved. We need to achieve this by working on traditional millets, quality protein maize, zinc rich maize, etc.
- Bee keeping is another important area
- Modernization of farm machinery for weed management, post harvest operations, plant protection, etc. is required.
- Processing, value addition and marketing are very important areas.

- Economics scientists have to devise strategies for marketing of agricultural produce in J&K. The chairman advised the HOD, Economics & ABM to submit a Policy Paper on marketing to Govt. of J&K UT.
- Patenting and commercialization of technologies must be given priority.
- Identify 20 transferable technologies of SKUAST-Jammu and advised Director Extension to work on this.

The Hon'ble Vice Chancellor congratulated Director Research for successfully conducting the 21st RCM and expressed satisfaction over conduct of meeting in the august presence of eminent experts and Directors of line departments. Dr. Mahital Jamwal, Deputy Director Research, conducted the proceeding of the meeting and Dr. Pardeep Wali presented vote of thanks.