NATIONAL RESEARCH CENTRE FOR GRAPES, PUNE

Proceedings of the Eighth Meeting of Research Advisory Committee held on 19-20th July 2006

The Eighth meeting of the Research Advisory Committee NRC, Grapes was held on 19 & 20th July, 2006 at the NRC, Manjri, Pune. The meeting was chaired by Dr. G.L. Kaul, Ex VC, Assam Agricultural University, Jorhat. The following members attended the meeting:

1. Dr. S.N. Pandey - Assistant Director General (Hort.), ICAR New Delhi
2. Dr. R.M. Pandey - Ex-Director, IIHR, Bangalore
3. Dr. Y.R. Sarma - Ex-Director, IISR, Calicut
4. Dr. R.P. Srivastava - Ex-Principal Scientist, CISH, Lucknow
5. Dr. S.N. Sharma - Prof. & Head, Department of Agronomy, BHU, Varanasi
6. Mr. Mahendra Shahir - President, MRDBS, Solapur Unit (IMC Member)
7. Dr. G.S. Karibasappa - Sr. Scientist, NRC for Grapes, Pune – *Member Secretary*

All the scientists of the Centre attended the meeting. Mr. Sopan Kanchan, President, Grape Growers' Federation of India was also present in the discussions held on 20th July as a Special Invitee.

Agenda Item 1: Confirmation of the proceedings of the last meeting

It was reported that no comments were received from the members on the proceedings circulated soon after the meeting. As such, the proceedings were formally confirmed.

Agenda Item 2: Report on the action taken on the decisions of the last meeting

a) The Member Secretary presented the report on the action taken on the decisions made in the last meeting as well as on the suggestions given by the stakeholders such as representatives of Grape Growers Association, the owners of the wineries visited and growers whom the members met last time. The members appreciated prompt action taken on almost all the items, and advised to continue follow-up wherever required.

b) *'Programme-based' approach in research management*: The Chairman had been asked to present the model for the NRC to adopt Programme-based approach in

research planning, implementation and reporting. Accordingly, he developed a frame work on the basis of the projects reported in the Annual Report (2004-05) of the NRC for Grapes, and then interacted with all the scientists (except the Director who was indisposed) one day i.e 18th July prior to the meeting, to fine tune the same. Based on the exercise made, the model was presented by him to the RAC in the meeting on 20th July, and the same was accepted with a few modifications. The final version of the model is attached with these proceedings at Annexure I for ready reference.

It was informed by the Chairman that the model would help in promoting interdisciplinary approach in most of the programmes, and break the man-made barriers among the scientists, besides organizing the work on a problem or a subject in a systematic manner, thus doing away with the adhoc approach being normally adopted. It was, therefore, advised that the Centre should circulate the model to all the scientists of the Centre, and hereafter adopt it without any dilution or change. All the research activities should be placed in the relevant programme, and reporting of the results done programme-wise in the Annual Reports and other technical reports, and also for presentations in different fora including RAC. It was also suggested that progress made in each programme should be linked to the previous reports, so that continuity of the programme is maintained.

Agenda Item 3: Interaction with the stakeholders

The Members visited grape growing area and high-tech nursery in Narayangaon, one winery in Chakan on 19th July, and NRC's grape fields and nursery blocks within the Centre's premises next day. The participants in these interactions made several useful suggestions, based on which following recommendations were made:

i. Evaluation and selection of exotic wine genotypes for their suitability to produce quality wines under Indian conditions is a top priority. For importing new varieties funds required be sought under the National Horticulture Mission (NHM).

ii. The growers showed considerable interest in cultivars such as Red Globe, A 17-3 and Fantasy Seedless among different grape varieties. The Centre should, therefore, popularize these after standardising production technology and improvement in keeping quality for export purposes.

iii. Thompson Seedless being a major variety, its production problems involving chemical berry thinning and insect pest control (mealy bugs / thrips) should be taken on priority basis.

iv. The factors contributing to the high costs in viticulture, both for table and wine grape production, should be assessed taking into consideration the farmers' point of view. All recommendations should be accompanied by cost benefit analysis.

v. There is an urgent need for establishing a high-tech nursery at the NRC, similar to the one visited at Champagne Indage Winery at Narayangaon. The nursery had imported advanced grafting machines, and is following induced callusing and rooting in cold chambers and plant establishment techniques under protected as well as under field conditions. The Members felt that NRC should become a role model for other grape nurseries in the country in the use of advanced nursery techniques and management skills, instead of waiting for some grower to do it and then replicate it.

vi. Top priority should be given for the establishment of certified nurseries in the grape growing regions of the country for supply of genuine elite, disease and pest free planting material. It was learnt that the Department of Agriculture & Cooperation, New Delhi had already circulated norms for certification of planting material of fruit crops including grapes on the advice of the ICAR. These norms need to be first followed in the nursery operations at the Centre, and simultaneously given a wide publicity among the growers. At the same time, the Centre may take up with the Govt. of Maharashtra, to begin with, to issue necessary notification for enforcing the norms to make the nursery- men in the State accountable, and help the growers to get genuine planting material from these nurseries. Once this State takes a lead, other grape growing states would follow.

vii. Basic and strategic research are required to be initiated on priority basis to resolve pink berry problem, to study the specific biochemical pathways and identify the conditions that lead to the appearance of pink colour in the berries vis-à-vis the natural green berries. Physiological studies are required to monitor changes occurring in the plant / berry systems. Supportive data may be obtained from Dr. J.M. Khilari, Vice-president, Maharashtra State Grape Growers' Association. If

studies under controlled environmental conditions are required, the Phytotron facility at IARI can be arranged through ICAR. Proposals may be sent to Deputy Director General (Hort.), ICAR, New Delhi to develop walk-in growth chamber facilities at the Centre.

viii. Strategic programs are required for promoting biocontrol agents and biofertilizers for grape production. A program on establishing microbial consortium and a repository of PGPR's such as *Pseudomonas fluorescence*, *Bacillus*, *Azospirillum* and P solubilizers etc) along with *Trichoderma* should be the immediate future priority. Basic work on selecting the isolates needs to be prioritized. The compatibility of bioagents with the common agrochemicals need to be tested as a component of IPM. Since *Verticillium lecanii* is effective against mealybugs, there is a need to select improved strains through mutation, using irradiation or chemical mutagens, suitable for high temperature and low humidity.

ix. The Committee took note of the fact that few manufacturers of biopesticides had come forward to get their formulations / products tested for bio-efficacy against diseases and insect pests of grapes at this Centre. It was felt that the Centre could invite other manufacturers also to get their products tested.

x. Monitoring of pesticide inputs, individual chemical / formulation wise, is required in grape growing areas over the years, to see the impact of IPM strategy. When systemic fungicides are used for control of downy mildew and powdery mildew, it should be monitored for any evolution of pesticide tolerant strains.

xi. A survey for the presence leaf roll virus and establishment of its etiology is a high priority. For the disease confirmation most reliable diagnostic techniques such as Electron microscopy, PCR and ELISA techniques should be adopted. This step is very important while establishing disease free mother vines, which serve as source of planting material. Tests may also be done to study the effectiveness of hot water treatment of shoots/cuttings in elimination of viruses. The Centre should take a proactive lead in preventing the spread of viruses.

xii. As there is a need to develop pesticide spraying technology for effective delivery of pesticides and coverage of canopy, the concerned scientist should be sent to Spain, which has some of the best manufacturers of sprayers in the world, for

interaction and development of equipments suitable for Indian conditions. The funds for this programme could be sourced under National Horticulture Mission.

xiii. The Entomologists should be encouraged to receive training in reputed Indian laboratories for basic and applied research on management of mealybug.

xiv. The amount of nitrogen recycled through incorporation of pruned biomass and green manuring in the soil should be quantified, instead of relating only to quantity of biomass.

xv. The Committee felt that better weed management was required in the vineyards of the Centre. A survey of the weed flora should be taken up and appropriate package developed to keep the entire farm weed-free.

xvi. All collaborative programs in the areas of research, extension/ training and developmental activities with any other agencies (private/public) should be supported by duly executed MOU.

Project wise recommendations

1.1.1 Management of genetic resources of grapes

i. More emphasis requires to be laid on breeding for wine varieties.

ii. A large collection of related species are available at Agharkar Research Institute (ARI), Pune that should be brought and tested at NRC for Grapes. Rajendra Shembekar Farm has developed 2 red wine varieties H5 and H6 , which are available with them. These should be collected and tested at NRC for Grapes. Anab-e-Shahi Seedless mutant from the same farm should also be collected and tested at NRC for Grapes.

iii. Initiate intergeneric crosses through protoplast cultures for introgression of disease resistance with fruit quality.

iv. Introduce Early Girl variety from UC, Davis, California.

v. The *in vitro* propagated material should be screened for possibility of soma clonal variations.

1.1.2a Grape germplasm information system (concluded project)

i. There should be provision for EC and IC numbers and molecular marker information in the grape germplasm database.

1.1.3 Molecular tagging of downy mildew resistance in grapes

i. As work is initiated on tagging of powdery mildew and seedlessness also the title of the project may be changed accordingly.

ii. Explore the possibilities of patenting of the molecular markers identified for selection of downy mildew resistant genotypes.

2.1.1 Evaluation of grape rootstocks for salinity and drought tolerance

i. In rootstock trials, the rootstocks / cultivars / varieties and scions on their own roots should be included as controls, and study taken up using Lysimeters, as advised by the RAC last year.

ii. One set of promising rootstocks each be given to the selected growers in 4 different regions in Maharashtra representing different soil types for simultaneous testing of the long-term performance of commercial varieties on these rootstocks, apart from the tests being made at the Centre.

2.2.1 Standardization of canopy architecture to maximize the production of export quality grapes

i. Canopy architecture should be studied in toto in a single major commercial variety rather than taking different aspects in different varieties. This is essential to evolve a complete package of practices for a single variety.

ii. Girdling and berry sizing studies should be made in 2 major cultivars, such as Tas-A-Ganesh and Thompson Seedless, and data presented in the next meeting of the RAC.

2.3.3 Developing petiole nutrient norms for wine grapes

i. Correlate soil-plant relationships for nutrient uptake and removal for optimum productivity and high wine quality.

2.4.1 Improving water use efficiency in grapes

i. The recommendations available from the experiments on mulch, antistress measures and use of subsurface method of irrigation should be validated through a trial taken up in a larger block.

Dr. A.K. Upadhyay, Sr. Scientist (Soil Science) proposed 2 new experiments

Expt. 1. Interaction of potassium and water levels in irrigation system in grapes

i. The experimental design should be Strip Plot, where irrigation levels are major plots and K levels are sub plots.

ii. Record fruit quality and disease incidence in all treatments.

Expt. 2. Effect of different rootstock on petiole nutrient content and yield of Thompson Seedless

i. Brix yield and fruit qualities including shelf life should be recorded.

2.5.1 Use of bioregulators in grapes (concluded project)

i. Recommendations based on cost benefit ratio should be given to the farmers.

A new experiment on endogenous levels of hormones at different P nutrient levels can be initiated in the nutritional experiments, completely recast in the existing trial, where the hormonal applications are not done and yet successful in improving bunch and berry qualities. The revised proposal be sent to Dr. R.M. Pandey for its refinement before presenting in the next SRC.

Dr. S.D. Ramteke, Scientist SS (Plant Physiology) proposed a new project.

Survey of weed flora in grape growing regions:

i. The objectives of the survey should be to identify the weed flora of vineyards and effect of weed management practices on yield and quality attributes of fruits. The Committee suggested to keep minimum number of treatments (i) No management, (ii) use of bio-mulch, (iii) use of plant extracts and (iv) hand weeding.

3.1.1 Improving fungicide use efficiency in grapes

i. The Centre should have 3 or 4 units of the disease forecasting models for both downy mildew and powdery mildew installed in different agro-climatic zones of grape growing regions in peninsular India through collaborative efforts, train the workers in its use, monitor the progress made and data being collected.

A new project was proposed by Dr. Indu S. Sawant, Sr. Scientist (Plant Pathology)

Isolation, characterization, bio-efficacy, evaluation and formulation of viticulturally important microorganisms

i. The title of the project be revised to make it more precise.

ii. Repository of cultures should be maintained in duplicate with a facility of -80^{o} C for storage of cultures.

3.4.1 Integrated management of insect pests on grapes

i. It was decided that the scientist concerned will prepare an IPM modules on the basis of past work and send the same to Dr. R.P. Srivastava for further refinement. It was further suggested that in next two years, the IPM module should be tested in the field to arrive at a definite conclusion.

ii. All out efforts are needed to create facilities and expertise for mass multiplication of the lady bird beetle, the mealy bug predator, at this Centre.

3.5.1 Monitoring of agrochemical residues in grapes

i. NRCG should constantly search for new and safer chemicals to be used in vineyards.

The Committee also suggested some basic studies on the following aspects:-

i. Biphasic pattern of berry growth in commercial varieties of grapes should be worked out.

ii. Study should be initiated to find out the photosynthetic efficiency of leaves and berries and their contribution to berry growth. This should be followed by the translocation of photosynthates from leaves to different stages of berry growth.

iii. Low arginine and proline ratio can be taken as an index of senescence. This should be confirmed in commercial varieties of grapes.

iv. Polyamine levels and shelf-life of grapes are positively correlated. This should also be confirmed in commercial varieties of grapes.

General Recommendations

1. The researchable issues which had emerged during the deliberations in the International Symposium on Grape Production and Processing held on 6 – 11th February, 2006 at Baramati (Pune), Maharashtra, should be noted for future guidance.

2. The Committee noted the lack of adequate technical support to the scientists of this Centre which was hampering the progress in research activities. To provide sufficient manpower support, the Committee suggested that new research proposals with clear-cut objectives may be sent for financial support under National Fund Project, as the financial support under AP Cess fund had been discontinued.

3. The Committee felt that, the Centre had in the short span of its existence done a commendable job in developing the infrastructure facilities. It advised the young team of scientists to develop strong linkages with peer groups for effective planning and implementation of their programmes. The Committee urged them to develop the NRC as a Centre of Excellence in grape research.

4. The Chairman advised the Member Secretary to send the draft of the proceedings to all the RAC members for refinement at their end before putting up the same to him.

The meeting ended with vote of thanks by the Member Secretary to the Chair and all RAC members. He thanked the Director and scientists and other staff of the Centre for their support and cooperation in conducting this meeting.

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(G.S. KARIBASAPPA)	(G.L. KAUL)
Member Secretary, RAC	Chairman, RAC
NRC for Grapes, Pune	NRC for Grapes, Pune