

SESSION SUMMARY OF THE GENERAL DISCUSSION: CONTROL MEASURES GENETICS AND RESISTANCE BREEDING

International Testing

The downy mildew international trial presently being coordinated by the Inter Asian Corn Program should be continued. However, the entries will change from year to year except for few resistant and susceptible checks, may be two each, that will be included in the trial from year to year. The procedures in conducting the test will be the same. Countries developing resistant varieties may submit entries for screening. However, the entries must have acceptable level of resistance to farmers, and are promising or released varieties. The entries may be evaluated for yield in IACP Trial #2.

The Downy Mildew Yield Trial being coordinated by the U.P. at Los Baños, College of Agriculture (UPLBCA) will be discontinued. Instead entries will be included in IACP Trial #2. Eventually most of the entries in IACP Trial #2 will be downy mildew resistant especially for testing in Southeast Asia.

CIMMYT is presently testing progenies in Asia particularly in India, Philippines, Nepal and Thailand. The breeders from the national programs feel that some materials given by CIMMYT for testing are not useful to them because they are all susceptible to downy mildew. The group wants CIMMYT to put together populations that have downy mildew resistance in their population, getting resistance from the known resistant germplasm in the region. CIMMYT will start a cooperative project with UPLBCA to develop populations resistant to downy mildew and generate progenies for evaluation in Asia, South and Central America and Africa.

Uniform Testing of Promising Chemicals

The programs in the Philippines, Taiwan and India have identified chemicals that can control downy mildew. However, the control is not economical. More tests are necessary including different chemical combinations or combination of chemical control and plant resistance. The group feels that there is no need of uniform testing of promising chemicals at this time. There should be regular exchange of information between researchers working on this problem in the region.

Future Breeding Programs for DMR Varieties

A regional breeding program was started between Taiwan, Philippines, Indonesia and Thailand which Dr. Carañal reported. Forty S₁ lines selected for yield and resistance to downy mildew were identified in this cooperative efforts. These lines are now being recombined. Either Taiwan or Thailand will generate progenies to be evaluated for yield and mildew resistance in each cooperating country. The breeders feel that the derived population mentioned about which originally came from crosses between Caribbean Composite and five Philippine DMR varieties is not broad enough. No definite plan was formulated for continuing the cooperative work.

There are now several breeding programs in progress in the region and in most cases using the same germplasm. In order to save time, manpower and money a more systematic screening and progeny testing on a regional basis should be implemented. Suggestions are to develop only few broad populations with resistance to downy mildew, high yield potential and other good agronomic traits. Early maturity is one important major characteristics that has to be included in these populations. However, no definite plans were discussed.

There is a consensus to continue IACP Trial #2 and include downy mildew resistant varieties.

The group agreed to preserve the resistant germplasm especially to local varieties. Because of poor storage facilities and expansion in breeding for resistance in different countries, the original local varieties are hard to find. The Philippines do not maintain these varieties anymore. TARC agreed to help in storing the resistant germplasm for longer periods. Likewise, CIMMYT agreed to store larger amount of seeds for the breeders. Countries interested can then request from CIMMYT seeds for their breeding program.

Downy Mildew Newsletter

The participants feel that the downy mildew newsletter should be continued. Dr. Charles G. Shaw from Washington State University agreed to continue the publication. He requested the participants to submit news items, information for dissemination, research finding, etc.

Inheritance Study in the Region

Inheritance studies in India, Philippines, Thailand indicate polygene inheritance while in Taiwan monogenic. In general the results of the international nursery indicate that the relative resistance to different species in Asia is very similar with severity of the disease in the Philippines in greatest and least in Taiwan. It was again recommended to study the inheritance by making diallele crosses between inbreds from Taiwan (resistant to *S. sacchari*), Philippines (resistant to *S. philippinensis*), India (resistant to many species), Thailand (resistant to *S. sorghi*) and Indonesia (resistant to *S. maydis*). This could be one regional project.

V. R. Carangal