

## SESSION SUMMARY OF GENERAL DISCUSSION PATHOLOGICAL ASPECTS

The afternoon session on September 18 was devoted to two short formal papers by Dr. Kajiwara and Dr. Kenneth. These are presented in the proceedings of the Symposium. Dr. J. Singh also offered a paper on the subject "Relative disease reaction of maize varieties to downy mildews over varied environments (based on international downy mildew—1969—1973)".

The remainder of the time was taken up with the discussion of topics of general pathological concern. These several topics were suggested by various participants.

1. **International cooperation and the need for a facility for comparative study of downy mildews of maize and other diseases of this crop and sorghum wherein uniform field environments might be maintained and uniform host materials employed was discussed.** The need for isolation, such as a small island in a warm temperate or subtropical climate, would be paramount. The initial cost of such a facility and its maintenance would be very high. No formal action was taken.

2. **Epidemics and forecasting.** No appropriate data to use in a computerized system are available for downy mildew diseases of corn and sorghum. It was pointed out that even if the occurrence of these diseases could be forecast a few weeks in advance, not much could be done to reduce their severity beyond what is now being done at the present time.

3. **Axenic culture of downy mildew pathogens.** A number of participants addressed themselves to this question pointing out advantages of such pure cultures on artificial substrates. Inoculation methods could be improved, physiological differences and similarities among species might be explored with greater facility. It was cautioned, however, that pathogenicity is often **lost in vitro**. The need for exchange of information on methods and materials and of isolates of the few species already in culture was emphasized.

4. **Physiologic specialization:** Preliminary experiments in the Philippines suggest that specialized pathogenicity within a species may exist. More work is needed to verify this and to extend studies to include other species. The need for uniform host differentials and uniform environments is especially important in studies of this kind. Axenic cultures of the pathogens would greatly facilitate such research.

5. **Taxonomic considerations:** Extensive discussion was given over to the comparative morphology of the species of *Sclerophthora* and *Sclerospora* that parasitize corn and sorghum. Their similarities and differences were pointed out so that grouping could be made. Symptomatology as an adjunct to classification was discussed. The hazard of using fixed and stained material and materials of different ages was emphasized.

6. **Diagnosis:** The similarities and differences in symptoms among the diseases were brought out. Chlorotic striping is common to all the diseases. Brown stripe downy mildew is unique in that no phyllody is observed. In crazy top disease, phyllody is most pronounced yet the two pathogens of these respective diseases are

morphologically similar. It was pointed out that **crazy top** is the name of a disease and, to avoid confusion, the term should be used only in connection with that disease. The same symptom in other diseases should be referred to as phyllody and not crazy top.

**7. Seed transmission:** Sorghum seed free from attached glumes never gave rise to infected seedlings. Seeds with glumes attached and harboring oospores did, in a low percentage of cases, give rise to diseased plants. The possibilities of seed transmission in corn was discussed. It was stated that the very low percentage of infected plants that bear ears and kernels and the inferior size of these, plus artificial drying of seed and ageing, all reduce the chances of seed transmission in corn to levels below practical considerations.

**8. Inoculation techniques:** Methods and materials were described for both large-scale field inoculations, wherein several hectares may be involved, and for small pot experiments in the greenhouse or laboratory. Spreader rows are effectively used in same areas. Infected leaves placed in whorls of plants is a technique used in Taiwan. Also, spreading infected plants in test plots has been employed. Conidial suspensions placed in small (8–12 liter) spray tanks and then sprayed on plants in late evening is effective in establishing infection.

**9. Sporulation:** The many factors affecting sporulation was discussed. Sporulation depends on a supply of photosynthate and hence a light period is needed. The possible effect of herbicides and of growth substances sporulation was pointed out.

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