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Discussant Response : -

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To : -

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Biotechnology and the Improvement and
Industrialization of Cocoa

Dr Goldstein discussed what TNC/PACS should do in scientifically-weak countries in this paper. He severely stressed TNC/PACS should correct their unethical commercial behavior when dealing with the third world. He concretelly proposed the followings.

(1) TNC/PACS should apply a single standard in their dealings with the world scientific community, and behave in the third world as they do in the first world.

(2) TNC/PACS operating in the third world should invest a fraction of their earnings in improving the fundamental sciences in their host countries. He proposed to increase the quality of third world universities. For example, (a) Equiping and staffing university research laboratories with the best local people and visiting staffs.

(b) Bring visiting professors from the leading research universities of the First World to teach the strategic undergraduate courses in the fundamental sciences, and to do research in the local universities with local teams of professors and students.

(c) Stimulate and facilitate the radication of First World senior distinguished professors in retirement age who are still activity and successfully pursuing scientific research, in the Third World.

(d) TNC/PACS and Third World goverments should establish regional research centerswith potential or actual commercial interest.

I agree with these suggestions. In addition to these suggestions, germplasm resources information management is also important in Third World. TNC/PACS and Third World goverments should do the germplasm resources information management. Plant genetic resources, represented by primitive land races of crop plants and

their wild relatives, play a vital role in the world-wide agricultural community. Plant germplasm is providing genetic variability to crop improvement programs, thus reducing the threat of genetic vulnerability to pests, diseases and other environmetal hazards. Much of the World's germplasm, however, is rapidly disappearing. In fact, Harlan has stated, "The time is approaching and may not be far off, when essentially all the genetic resources of our major crops will be found either in the crops being grown in the field or in our gene banks" (Harlan, J.R. Our vanishing genetic resources. Science, N.Y.,188: 618-621, 1975). Because of the speed with which genetic resources are being eliminated, and because of the value of this genetic material to agricultural progress, TNC/PACS and Third World governments should make an effort to develop a network for the conservation and utilization of plant germplasm in Third World.

Administrators engaged in plant genetic resources network. If a plant breeder requires seeds with specific characteristics, he finds those seeds through the information system. If a curator of a collection requires control over storing and maintaining plant materials, he gains that control through the information system. If botanist is planning an expedition to collect new germplasm, he dicides to travel to certain locations, based on data in the information system. When administrators plant investments in various activities of germplasm conservation and utilization, they use the information system as a framework for value/cost analyses. Indeed, the ubiquitous role of information in genetic resources conservation and use leads to the conclusion that the information system is "central nervous system" for an effective world-wide network.