22 October 1982, Volume 218, Number 4570 **SCIENCE**

Chemistry and World Food Supply

An international meeting* to be held in Manila on 6 to 10 December 1982 has the potential for constructive large-scale consequences. The conference will bring together from around the world experts on the scientific and technical aspects of the growth and distribution of food. Speakers will be drawn about equally from developing and developed countries. Considerable attention will be devoted to discussion of the role of chemistry in improving global nutrition.

This meeting comes at a time when chemistry-related discoveries in biochemistry, entomology, and plant physiology are opening new opportunities for research and applications. An important area in which chemistry will make an increasing contribution is that of finding improved methods for controlling insect pests. Many of the insecticides now used kill friend and foe alike. Some are toxic to higher animals.

Research on the biochemistry of living matter has revealed important common pathways; it has also disclosed differences. These differences can be exploited by creating analogs that block specific synthetic steps in the target organisms while having no effect on other creatures. Another form of biological warfare is that conducted by plants. At least some varieties that have developed resistance to pests have created chemicals that deter the pests. Further studies could reveal that this type of mechanism is broadly utilized.

The behavior of many insects is conditioned by chemicals. The examples that have had most publicity are the pheromones—sex attractants released by females—but there are other chemicals that serve as mechanisms for communication. Some of the pheromones have been identified, synthesized, and, in limited instances, broadcast to confuse males. One of the best uses for pheromones is in insect traps to obtain an indication of infestation. Were chemical attractants available for gravid females, farmers would be able to gauge accurately the necessity of applying insecticides. Large amounts of insecticides are now applied needlessly.

Another set of opportunities lies in research on the physiology of crop plants, particularly in the mechanisms of distribution of photosynthate between food portions and other parts of the plants. The importance of this matter was demonstrated in the Green Revolution. Species were chosen that channeled a large fraction of their photosynthate into grains rather than stems. It has been known for some time that plant hormones are involved, and it has been shown that broadcasting small amounts of such hormones at the right time can lead to enhanced food production.

The conference will deal with many other topics. It will examine opportunities related to recombinant DNA and such long-term goals as improving the efficiency of photosynthesis and nitrogen fixation. Several factors will make this international conference different from most. It will be broadly interdisciplinary. In addition to scientific experts, including five Nobel laureates, it will be attended by ministers of science and technology. Many of the participants will be connected with an existing network formed by the experiment stations operating under the Consultative Group for International Agricultural Research. This is an excellent mechanism, perhaps the best, for international transfer of technology. In addition, the U.S. Agency for International Development will monitor proceedings closely. Following the meeting, there will be a special workshop attended by some of the key participants in the conference. They will recommend the most promising areas for support by interested institutions and governments. The conference is sponsored by the International Union for Pure and Applied Chemistry and the International Rice Research Institute. It is the second in a series sponsored by the union titled CHEMRAWN (Chemical Research Applied to World Needs).—PHILIP H. ABELSON

*"CHEMRAWN II—International Conference on Chemistry and World Food Supplies: The New Frontiers"; more information can be obtained from the International Food Policy Research Institute, 1776 Massachusetts Avenue, NW, Washington, D.C. 20036.