# Biotechnology: News and Views

## Insect Immune System

A compound has been identified at the University of Nebraska, USA which can block the insect immune system. According to Dr. David Stanley Samuelson, Head of the Insect Biochemistry/Physiology Laboratory of the University, his work, if successful, could eliminate the use of pesticides in agriculture. He claims that even the most harmless natural bacteria can theoretically become a deadly killer of insects. The substance he discovered, blocks the production of certain hormones called "Eicosanoids" which are responsible for the activation of the insect's immune system. Ultimately this severely compromises the insect's ability to fight off bacterial infection, as the most beneficial natural bacteria may be able to invade and kill the insect. The initial research work conducted so far shows that it may eventually lead to an engineered bacteria that has this blocking substance and kills the host insect. Commercialization of the product in a spray for agricultural crops may take years. (Source: *AgBiotechnology News*, May/June 1991.)

## European Biotech Partnership Conference

The small biotech companies in Europe are organizing a 3 day conference from 16-18th October, 1991 at the Hague, Netherlands. The objective is to present their techniques and products to bigger companies. Thus the event is called the European Biotech Partnership Conference. It is sponsored by the Netherlands Industrial and Agricultural Biotechnology Association and several other biotech associations in Europe. (Source: *AgBiotechnology News*, May/June, 1991.)

## Biotech Business in China

Foreign companies and enterprises are now permitted to enter into joint ventures or work as wholly-owned enterprises in China, preferably in high technology such as biotechnology. At present no foreign company is involved in biotechnology of agriculture in China, although some companies are involved in pharmaceutical businesses.

The Chinese Government attaches high priority to the application of biotechnology in agriculture in the country. The State Science and Technology Committee every year publishes a report titled, "National Policy for Biotechnology," which examines the current status of biotechnology in the country and recommends specific strategies for large-scale benefits. Although Chinese scientists have made ample strides in agricultural biotechnology, the government is very eager to commercialize the technology and reap benefits as early as possible. The priority areas identified are breeding for high yield, quality, resistance to insects pests and various types of stresses, rapid propagation of plants, growth regulators and some other fields related to animal, poultry and fish. (Source: *AgBiotechnology News*, January/February 1991.)

## Field Testing of Genetically Engineered Plants

Genetic engineering is one of the future hopes to increase productivity, evade pest attacks, protect the environment and decrease the cost of production. In cotton, genetically engineered material has reached the stage of extensive field testing. So far 24 companies and 12 research institutions in the USA have received permits from the Animal and Plant Health Inspection Service, United States Department of Agriculture, for field testing of their synthesized material. Since the commercial adoption of engineered plants has economic incentives, more and more private companies are becoming involved but not many in cotton. In cotton only three companies have received permits during 1991-92 to undertake field testing of her-

bicide-tolerant and Bt gene material. Calgene Inc. has permission to test cotton genotypes tolerant to the herbicide "bromoxynil" for the 3rd year. DuPont Company continues to evaluate the performance of "sulfonylurea" for the 3rd year. Monsanto Company is in the field again to finalize results on the Bt gene. The permits issued by the Animal and Plant Health Inspection Service of the USDA, which are valid for one year, are restricted to field testing and do not allow the marketing of the product.

## USSR AgBiotech Institute

The USSR's Institute of Agricultural Biotechnology, Building No. 4, Pskovskaya 12, Moscow 127253, is looking for joint ventures in various fields of agriculture. The main areas of interest are bulk seed production of F1 generation through the use of male gametocides, plant growth regulators, virus-free seed in vegetables and cow insemination technology. (Source: *AgBiotechnology News,* November/December 1991.)

## Use of Biotechnology in Commercial Cotton Hybrids

The development of commercial cotton hybrids, like many other self-pollinated crops, has a number of limitations. Genetic Male Sterility still has better prospects for commercial adoption than the Cytoplasmic Male Sterility system. However, one of the constraints of Genetic Male Sterility has been the identification of fertile plants at an early stage and their elimination before they share the inputs with sterile plants. With the development of herbicide-specific genotypes in cotton, through the use of biotechnology, it seems quite feasible that herbicides can target only the fertile plants, destroying them at an early stage, even before thinning, thus leaving the field with only sterile plants for pollination with identified male parent.

Secondly, in the case of identified combiners, only the seed developed on the female parent can be used as hybrid seed. The self-seed of the pollen parents has to be discarded, except for a small quantity required to continue the male parent. One approach could be to develop self-incompatible lines which could be maintained with pollination from their regular B lines. The self incompatible lines would behave as self-sterile but fertile for out-crossing. The reciprocal cross combination seed can be harvested from both the complementing parental lines(identified combiners). It is anticipated that biotechnologists somewhere in the world may already be working along these lines.

## Review Article " Biotechnology of Cotton"

The third article in the series of ICAC review articles on "Biotechnology of Cotton," published by ICAC and CAB International is at final stage of publication. The publication will be mailed to the member governments at the end of this year.

## AgBiotechnology Outlook: 1991-92

There are different views about the impact and prospects of genetically engineered plants and animals on the environment. Governments are framing regulations and a number of countries have set rules to test the synthesized material. *AgBiotechnology,* a bimonthly publication on agricultural research/business conducted a survey to see how people feel about the impact and future of biotechnology in agriculture and business. The survey covered new product projections, university AgBiotechnology activities, assessment of government regulations, pros and cons of AgBiotech patents, venture financing and the future of agricultural biotechnology. Sixteen private companies, 19 universities, 15 service organizations, 8 associations and 3 venture capitalists responded. Some of the universities and companies responding were from countries other than the USA. The results have been compiled in the form of a publication, *AgBiotechnology Outlook: 1991-92*, which is available from Freiberg Publishing Company, P.O.Box 7, Cedar Falls, IA 50613 USA.

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