

The third and fourth parts of the workshop deal with application of cell culture for the crop improvement. The papers cover wide range of applications namely cellular level selection for stress tolerance, herbicide tolerance, increased ability to protein synthesis and selection for salt tolerance, resistance to toxins of important diseases and also for base analogues. Procedures for various approaches on screening have been also presented in detail. Along with the previous chapters, this portion will provide the scientists an effective exposure on the methodology and possible applications of this approach. The paper on protoplast culture and fusion and generation of newer kinds of plants by Schieder and the paper "Beyond haploids" by Dr Carlson are very stimulating and underline the future perspectives very well. The portions on preservation of germplasm and genetic engineering makes advanced and comprehensive reading

for the practising scientists. There is also a detailed paper on cryopreservation and its scope and implications by Dr A. Withers.

On the whole this proceedings on cell and tissue culture and its application in Agriculture will be very much useful to those who would like to develop this subject for specialisation and practising. The deliberations of the conference by scientists from dozen countries and the recommendations will no doubt be well received by the other scientists working on this aspect. This will serve as a useful source book for frequent reference.

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## NEWS

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### IAEA ANNUAL REPORT

Now that almost all the countries throughout the world have started generating electricity with the Atomic Energy, the following brief review of the Annual Report of 1983 published by the International Atomic Energy Agency (Wagramerstrasse 5, P.O. Box 100, A-1400, Vienna, Austria) will be of interest to *Current Science* Readers.

The International Atomic Energy Agency now forecasts that nuclear power plants will take a 20% share in electricity generation in the year 2000. This will be supplied by a worldwide nuclear capacity of 485–725 gigawatts (electrical), significantly less than the 720–950 GWe projected in 1982.

In its annual report for 1983, now published, the IAEA notes that nuclear power plant investment costs continued their general strong rise during the year. As these costs constitute up to 80% of the total costs of nuclear-generated electricity, concern about nuclear power now relates to the technical and economic performance of nuclear power plants. Accordingly, in addition to the standardization of licensing procedures and the reduction of construction times, nuclear power plant reliability is being emphasized as a key question from the point of view of ensuring the

long-term competitiveness of nuclear power.

The world total of installed nuclear power generating capacity reached 191 GWe by the end of 1983, with 25 new plants being connected to the grid during the year. Three of these new plants were in developing countries. In total, nuclear power accounted for about 12% of the world's total electricity generation in 1983. In the near term, the IAEA expects that although work on several plants now under construction may be delayed or cancelled, the world total of installed nuclear generating capacity in 1985 will be 255–275 GWe, accounting for 15% of the world's electricity generation.

The report notes that renewed interest in small and medium power reactors, for both electricity and heat generation, may lead to new markets, if the economic competitiveness of such reactors can be established.

There was a continued slow-down in programmes for the development of advanced reactor systems in several countries, especially the United States. However, the report notes, 1983 was also marked by a trend towards increasing international co-operation—for example, in the development of liquid-metal cooled fast breeder reactors in Western Europe.

### *Nuclear safety*

Efforts to strengthen nuclear safety throughout the world were furthered by a variety of Agency activities. An Operational Safety Review Team, the first of its kind, visited the Republic of Korea to review the status of a nuclear power plant and assess its ability to continue operating safely. Six further safety guides were published as part of the Nuclear Safety Standards (NUSS) programme for the development of internationally agreed codes and guides for nuclear power plants. Preparations continued for the establishment of an Agency incident reporting system which will receive and compile information on incidents of safety significance at nuclear power plants.

Work continued on implementing Basic Safety Standards for Radiation Protection, with the publication of several new documents on specialized subjects and with preparations for a comprehensive training programme concerned with the Agency's radiation protection policies. Several Member States were given assistance in emergency planning and preparedness for radiological emergencies. An extensive revision of the Agency's Regulations for the Safe Transport of Radioactive Materials, designed in part to make them consistent with the Basic Safety Standards, is in its final stages.

### *Technical Co-operation*

The size of the Agency's technical co-operation programme (in current US dollars) doubled between 1980 and 1983. The Technical Assistance and Co-operation Fund, which is the largest source of funding for the Agency's technical co-operation activities, grew during this period from \$10.6 million to \$19.2 million. Three-quarters of the 1983 programme resources were earmarked for the transfer of nuclear techniques in fields such as agriculture, medicine and industry. The remaining 25% was allotted for work in nuclear safety and nuclear power development.

Significant progress was made during 1983 in two major special programme projects:

1. Implementation of a project for the eradication of the Mediterranean fruit fly in Egypt: training of the personnel who will operate an industrial plant for the mass-rearing of sterile flies and carry out release and other operations is being provided mainly by Mexico, at no cost to the project. An initial cost-benefit analysis indicates that the project, once fully operational, should yield a net benefit to Egypt of some \$50 million a year.

2. The number of countries participating in a project designed to strengthen the capability for non-destructive testing in Latin American industries almost doubled, reaching 13 by the end of the year. This project is being carried out by the Agency with the UN Financing System for Science and Technology for Development (UNFSSTD) and the UN Industrial Development Organization (UNIDO).

A 1980 agreement establishing the Asian Regional Co-operative Project on Food Irradiation was extended for a further year from 28 August 1983. Activities being carried out under a Regional Co-operative Agreement for Asia and the Pacific Region (RCA) expanded to comprise 14 projects, including four new projects on medical and biological applications of nuclear techniques, and a new project on basic science using research reactors.

### *Safeguards*

In 1983, as in previous years, the Secretariat, in carrying out the safeguards obligations of the Agency, did not detect any anomaly which would indicate the diversion of a significant amount of safeguarded nuclear material – or the misuse of facilities or equipment subject to safeguards under certain agreements – for the manufacture of any nuclear weapon, or for any other military purpose, or for the manufacture of any other nuclear explosive device, or for purposes unknown. The report says "it is considered reasonable to conclude that nuclear material under Agency safeguards in 1983 remained in peaceful nuclear activities or was otherwise adequately accounted for."

The report notes that negotiations started in May 1983 between the Agency and the Soviet Union on a voluntary offer to place some of the Soviet Union's peaceful nuclear installations under Agency safeguards.

### *Membership*

The report recalls that Namibia, represented by the United Nations Council for Namibia, became a Member of the Agency on 17 February 1983. The Government of the People's Republic of China applied for membership of the Agency on 5 September 1983; its application was unanimously approved by the IAEA General Conference on 11 October 1983, and China became a Member of the Agency on 1 January 1984. With China as a Member, all States with significant nuclear programmes and activities are now Members of the Agency and participate in its work.