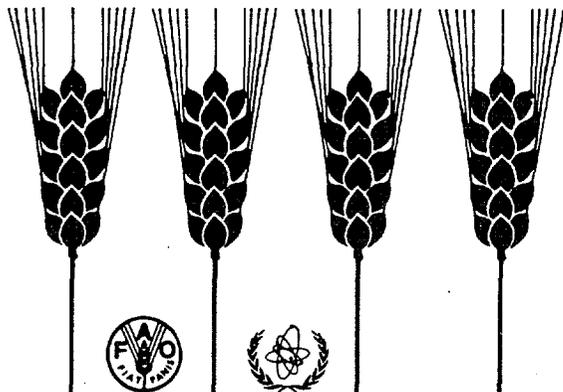




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# Mutation Breeding Newsletter

JOINT FAO/IAEA DIVISION OF ISOTOPE AND RADIATION APPLICATIONS  
OF ATOMIC ENERGY FOR FOOD AND AGRICULTURAL DEVELOPMENT  
INTERNATIONAL ATOMIC ENERGY AGENCY, VIENNA

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Report from the FAO/IAEA Plant Breeding and Genetics Section

In spite of a financial crisis of the UN-system, we were able to keep up essential activities.

The co-ordinated research programme on cereal improvement using doubled-haploids but also heterosis from induced mutations started in 1986 and continued during the past year. A new regional co-ordinated research programme for Latin America, primarily for rice improvement had its first co-ordination meeting 30 March - 3 April 1987 in Quito, Ecuador. The co-ordinated research programme for identification and use of induced semi-dwarf mutants as alternative genetic sources for rice breeding completed its work with the final co-ordination meeting at Hangzhou, China, July 1987. In-vitro culture technology for mutation breeding is given high priority, e.g. for improving crop plant resistance to diseases. At the first co-ordination meeting of a new programme in September 1987, it was decided to concentrate efforts first on studying the use of toxins for in-vitro screening of resistant mutants and comparing toxin resistance with the reaction to pathogen attack under greenhouse and field conditions.

Oil seeds and industrial crops have unfortunately so far received lower priority in FAO/IAEA projects, but we now look forward with some optimism to establish a global network on sesame improvement, in co-operation with the FAO Plant Production and Protection Division. A consultants meeting for this purpose was hosted by IAEA in Vienna in September 1987. The use of mutagenesis to accelerate the domestication of new crop plants - relevant for developing as well as for developed countries - had been subject of an expert discussion already in November 1986 (see MBNL No. 29). FAO and IAEA were advised to pay attention to this important task, but we still have to see whether funds become available.

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Vegetatively propagated plants like root and tuber crops, bananas and plantains, or woody perennials are looked upon frequently as a particular domaine of mutation breeding, which is not yet reflected in spectacular results. Much research for technology development has been done under co-ordinated research programmes from 1972 onwards and technology transfer is now undertaken through a number of technical assistance projects in countries such as Ghana, Panama, Zambia, Uganda, Thailand. During 1988 we may strengthen co-operative research on the use of in-vitro techniques in this field.

While most emphasis in the Section's research programmes is technology advancement, more work is actually concerned with assisting plant breeders in developing countries through training, advice and other support. The Section services 40 country projects and 3 regional projects under the IAEA Programme of Technical Assistance and Co-operation. During 1987, 33 fellowship holders completed their training abroad and two training courses were held, one at the IAEA Laboratory Seibersdorf, the other one at the National Agricultural University La Molina in Peru.

The success of mutation breeding all over the world can best be judged by the fact that the two issues of our Mutation Breeding Newsletter printed in 1987 listed 106 additional cultivars derived from mutation induction or the use of induced mutants in cross breeding.

The Plant Breeding Unit of the IAEA Laboratory at Seibersdorf (Austria) continued to place much emphasis on technology development for mutation breeding (including in-vitro culture techniques) of banana, plantain and other vegetatively propagated crops. As a service for breeders of seed propagated crops, numerous seed samples have been given mutagenic treatments with gamma rays or fast neutrons and the laboratory will now also start to work on mutation breeding using haploids. Bob Conger from the University of Tennessee (Oak Ridge, USA), during a one year sabbatical, helped us to make advances in somatic embryogenesis from single cells, which is so important for improving the efficiency of mutation breeding using in-vitro cultures.

The staff situation at present is as follows:

At Headquarters:

Alexander Micke (FRG)	Head, Plant Breeding & Genetics Section
Mirosław Maluszynski (POL)	Technical Officer
Nobuo Murata (JPN)	Technical Officer
Lhamo Halgand (FRA)	Secretary
Kathy Weindl (CAN)	Secretary

At the Laboratory:

Thorsten Hermelin (SWE)	Head, Agriculture Laboratory, Seibersdorf
Frantisek Novak (CSR)	Head, Plant Breeding Unit, Seibersdorf Lab.
Helmut Brunner (AUS)	Technical Officer
R. Afza (BGD)	Lab. Technician
J. van Dören (NET)	Lab. Technician
[R.B. Conger (USA)]	Returned to USA in June 1987]