ROLE OF MUTATION IN CROP IMPROVEMENT

Mutation changes the characteristic of organism causing variations in the same. These variations ultimately result in revo-lution of new races or species. Hence, mutation provides raw material for the evolution of species. In nature their is spontaneous mutation which has resulted in evolution of several plants and animals species. But frequency of spontaneous mutation is extremely slow. It takes thousands of years in evolution of a species. The scientists use mutagens to create variations in organisms. Such works were started after 1927 when Muller and Stalder discovered mutagens. The first crop improvment programme was initiated swedan by Nilssen-Ehle (1929). He selected several crop variety varieties, fruit, trees, vegetables and ornamentals for his work. They were treated with various doses of different mutagens. This result in evolution of new varieties of these plant. They were finally released to farmer for cultivation.

Similar works were also started by workers of America Russia, Germany, Japan and India. In our country the first mutation breeding programme was carried o

wheat variety NP-797. It was a high yielding, disease resistant variety but it was high not linked by the farmers of India because it had no bristles. This variety of treated with Y-rays and a new variety with bristles which was develop. It was now cultivated in different parts of India as NP. 836. Similarly the rice variety Taichung from Taiwan was not preferred by farmers of this country because of sticky grains and low starch content. This was also treated with Y-ray and a variety with non-sticky grains and high amylase content was developed. It has been named as Taichung-65. It is widely cultivated in India.

With the use of mutag a variety of castor tree named as Aruna has been develop. It matures only in 110 days. It also has high yie Similarly new strains of Penicillium ha been developed through mutation. Thes strains are capable of secreting high quantative of Penicillin. According to t reports of Atomic energy comession (1985, 1990) about 606 new variety of different plants have been develop through mutation.

List of varieties released by use of induced mutation.

Types of crop	No. of Release Upto oct 1973	variety till Jan 1984	Variety released in ...
Cereals	54	190	NP 836, sharbati, Sonora
Bread wheat	8	30	Pusa lerma, NIT 5643.
Durum Wheat	4	15	Jagannath, I/T 48, I/T 60
Rice	15	66	Hybrid mutant 95
Barley	22	69	RBD-1, DL-253.
Oats	5	10	Pusa, Parivati (French bean
Legumes	21	51	Hans (Pea), Ranjan (Lentil) Trombay vishe -khi (Pigeon pea) Pant moong 2, TAP-7 (Mung bean.
Fruits tree	7	19	Pusa lal Meerutis, R
Other crops.	16	78	(Tomato) Aruna, Sowbhagy (157-B), RC-8 (Castor be MW-7, Rasmi, Pusa ageti (cotton), RLM 198, RLM 514 (Mustard), New hybrid Bajra 5 (NHBS), Pusa 46 (Pearl millet), CO 997, CO. 6608 (Sugarcan MDUI (Chilli) JRC-7447 (Jute
l Gop	98	235	
amental	47	227	
al	145	606	

Mutation Importance in Evolution → If the mutation is minute or not visible than it may be harmful or useful to us. The gene mutation is particularly more important which brings about the changes in the structure and functions of gene. Any changed in gene ultimately cause change in chromosome and lastly cause the origin of new species, which is a great evolutionary signi-ficance.

Devaries considered that mutation provides the raw material for evolution. They are ultimate source of for inheritant variation on which evolutionary changes depends, since, mutation with small effect are important in evolution. This are turned as micro-mutation and their efficiency sometime not visible. If these small variation proof than to be advantage to the organism and it has greater value in evolution.