資 料

INDUCING SOMATIC MUTATION BY APPLYING X-RAYS TO GERMINATING SEEDS OF *ORYZA SATIVA*

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Various chlorophyll deficiencies due to gene mutation were induced in *Oryza sativa* at a high frequency by means of x-rays that were irradiated at gametogenesis or at fertilization.¹⁾ A further test was made by subjecting the germinating seeds of this plant to same rays, according to the method of STADLER.²⁾

Germinating seeds of a pure line of an agronomical variety, Sen-ichi (撰一), were x-rayed by a current of 5 ma. from a Coolidge tube with a molybdenum anticathode at 50 kv. for 90 minutes at a distance of 25 cm. The ears of 868 plants thus treated at their germination were examined for their progenies in the seedling bed. Out of 9272 ear pedigrees, 220 gave offspring containing some chlorophyll deficient seedlings, the details being as shown in Table I, whereas others bred true to normal green.

Table I. Number of ear pedigrees that segregated mutant seedlings.

Class	Chlorina	Xanthic	Cream & white	Variegated	Miscellaneous	Total
A	35	12	104	11	3	165
B	2	2	21	28	2	55
Total	37	14	125	39	5	220
%	16.82	6.36	56.82	17.73	2.27	100

Under class A we collected those ear pedigrees that segregated recessive chlorophyll deficient seedlings at a 3 : 1 ratio or *en masse*, and in class B those containing one or two mutants of sporadic occurrence. The proportion of the affected ear pedigrees to the total is 2.37 per cent, that is, 1.78 per cent of class A and 0.59 per cent of class B. Under the natural, or untreated condition, chlorophyll deficient mutation is rather rare, though plastid muta-

1) IMAI, Y., 1935, Chlorophyll deficiencies in *Oryza sativa* induced by x-rays. Jap. Jour. Genetics 11 : 157-161.

2) STADLER, L. J., 1928, Mutations in barley induced by x-rays and radium. Science 68 : 186-187. 1930, Somatic effects of x-rays in plants. Jour. Heredity 21 : 3-19.

tion of sporadic occurrence has been observed at times. In the treated case too, the majority of variegated seedlings in class B seem to be conditioned by such plastid mutation. However, general mutants, at any rate most of them, including various chlorophyll deficiencies, are regarded as due to gene mutation induced by x-rays at somatogenesis. There was no case in which all the ear pedigrees of an individual segregated mutants, somatic mutation affecting the progeny of only a part of the entire plant. The number of affected ears per individual is found in Table 2.

Table 2. The frequency distribution of the number of affected ears per individual.

Affected ears	0	1	2	3	4	5	6	7	8	Total
Frequency	750	69	24	9	10	2	3	0	1	868

The affected individuals attained to 118, or 13.59 per cent. In most cases, only a single ear was affected by somatic mutation, the frequency diminishing with increase of affected ears per individual.

発芽しつつある稲の種子に放射したX-線によつて
誘發せる體細胞突然變異

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摘 要

水稻「撰一」の發芽を開始した種子に X 線を放射した處、それから抽出した穗數 9272 中 220 穗からは次世代に種々の葉綠素不完全苗を生じた。その大部分は體細胞に惹起した遺傳子突然變異によるものである。