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Japanese tall cultivar "Norin 28". The shattering was found to be caused by a single recessive gene, sh-2, linked to the sd-1 locus. The shattering gene seems to have been transmitted to many semi-dwarf cultivars together with sd-1, not only from "Dee-geo-woo-gen" but also from the indica-cultivar "Ai-jio-nan-te" and the japonica cultivar "Shiranui".

(S. Oba, F. Kikuchi, Institute of Agriculture and Forestry, University of Tsububa, Ibaraki 305, Japan)

Variations in characters of diploid-like plants derived from gamma-irradiated tetraploids in rice (Oryza sativa L.)

Populations of artificial autotetraploids of rice (Oryza sativa L. cvs. "Nipponbare" and "Fukunishiki") were repeatedly irradiated with gamma-rays through several generations. Plants which did not differ in appearance from the original diploid plants occurred occasionally in the populations. Nine diploid-like plants were obtained so far, and their generations were advanced without irradiation in order to examine the mode of segregation of characters in their progeny. The results indicate that diploid-like plants with multiple mutant characters could be obtained and that dominant characters, i.e. awned spikelet and coloured apiculus, were included in the mutant characters. The diploid-like plants had  $2n = 24$  chromosomes.

(K. Yamamoto, H. Fukuoka, Y. Kageyama, G. Takeda, Faculty of Agriculture, University of Tokyo, Tokyo, 113 Japan)

Semi-dwarf mutants for rice improvement

MARDI and the National University of Malaysia embarked on a programme to induce resistance against blast in rice in 1978. MARDI also obtained semi dwarf mutants of cvs "Mahsuri", "Muda", "Pongsu seribu" and "Jarum Mas", which are under evaluation. The popular local rice variety "Manik" was subjected to gamma irradiation (15-40 krad) and 101 promising semidwarf mutants have been obtained following selection in  $M_2-M_6$ . 29 of them show grain yields of 6.0 - 7.3 t/ha, compared with 5.7t for "Manik". Other valuable mutants were found showing long grain, less shattering, earlier maturity, and glutinous endosperm. One mutant, resistant to brown plant hopper yields 6.3t/ha.

(Ramli Othman, Mohammad Osman, Rusli Ibrahim, Nuclear Energy Unit, Prime Minister's Department, Kompleks Puspatri, Bangi, 43000 Kajang, Malaysia)

Progress in the exploitation of new dwarfing genes in Chinese rice breeding

Use of dwarfing genes in rice breeding in China began in the late 1950's. Since then, the major source of dwarfism has been "Ai-Zi-Zhan" with a gene allelic to sd-1 from "Dee-Geo-Woo-Gen". Since the 1970's, Chinese rice breeders paid attention to exploring new dwarfing gene sources and these efforts resulted in at least 7 sources non-allelic to sd-1. The late indica variety "Gui-Yang-Ai No. 1" possessing gene dq(t) or sdg(t) proved to be most promising. The new sources include mutants induced by irradiation in "Nanjing 11" and "Nanjing 15". The new genes are integrated in breeding to further improve plant type and adaptability.

(L.H. Zhu, Z.Q. Xie, Department of Agronomy, Nanjing Agricultural University, Nanjing, China)



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