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A mutant recombinant of linseed with very low levels of linolenic acid

Two flax (*Linum usitatissimum* L.) mutants having reduced linolenic acid content in their seed oil (M1589 = 19.1% linolenic; M1722 = 23.4% linolenic) were crossed to determine whether further reductions could be achieved by recombination of the mutant genes. Extensive transgressive segregation was evident in the F₂ for both linolenic acid (1.2-36.6%) and linoleic acid (14.7-55.2%), which were strongly negatively correlated ($r = -0.97$), F₂ plants homozygous for both the M1589 and M1722 mutations had very low levels of linolenic acid (<2%) and high levels of linoleic acid (>46%).

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Mutant heterosis in rice

In the variety TKM6 a high yielding semidwarf mutant has been induced. This TKM6 mutant was used in test crosses with a number of other varieties and mutants to examine the extent of heterosis of dwarfs in rice and to select superior crosses. The following is an excerpt of the published data.

	Plant height cm	No. of prod. tillers	TGW g	Grain per plant g	Yield increase over better parent
TKM 6	144.0	10.7	1.8	13.0	
TKM6 mutant	87.7	9.0	1.8	15.2	
TKM 6 mut X TKM 6	136.3	18.3	1.8	30.0	97.6%
TKM 6 X TKM 6 mut	140.3	15.3	1.9	25.6	69.1%
IR8	80.0	10.0	2.4	19.7	
TKM6 mut X IR8	96.0	11.0	2.7	27.5	40.0%
IR8 X TKM6 mut	96.0	11.0	2.6	26.7	35.6%

It appears from the "backcross" of the mutant with its original variety, that an increase in number of productive tillers occurs in the hybrid, leading to a striking grain yield increase, while the semi-dwarf culm length (the main mutant character) reverts to the normal phenotype. In the cross with IR8 on the other hand, there is only a minimal increase in tiller number but a substantial increase in TGW leading to more than 30% yield increase over the better parent.

REFERENCE

ANANDAKUMAR, C.R. and SREE RANGASAMY (School of Genetics, Tamil Nadu Agricultural University, Coimbatore 641003 India) Heterosis and Selection Indices in Rice. *Egypt. J. Genet. Cytol.* 14 (1986) 123-132