

approximately equal to the yield of the original variety hybrid.

Heterosis in the varietal hybrid appears to have decreased slightly following independent selection within each variety. Heterosis following reciprocal recurrent selection appears to have increased markedly from 19.2% in the original to 30.2% following 6 selection cycles even though the midparent has also increased.

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1. Chlorophyll mutation in DES treated opaque-2 maize.

It was reported earlier that out of 559 surviving plants from homozygous opaque-2 seeds treated with nine different concentrations of DES, 176 plants showed three types of chlorophyll sectors, i.e. yellow, albino, and yellow green (MNL 43:136, 1969).

One particular plant in the 0.005 M treatment had a yellow green sector on the 13th leaf. When selfed, it segregated 21 normal and 28 yellow green plants in the  $M_2$ . The  $M_3$  segregation from six yellow green and three normal plants is shown in the following table.

Table 1  
 $M_3$  Segregation of mutant seedlings from selfed yellow green and normal plants.

S. No.	Line	Total No. of plants	Yellow green	Yellow	Albino
1	Yellow green	6	-	6	-
2	"	12	7	4	1
3	"	11	4	7	-
4	"	16	6	3	7
5	"	7	5	-	2
6	"	9	4	4	1
7	Normal	14	10	4	-
8	"	7	-	5	2
9	"	<u>9</u>	<u>-</u>	<u>4</u>	<u>5</u>
		91	36	37	18

The yellow green seedlings continued to be yellow green even at maturity, similar to the parent yellow green plant in the  $M_2$ .

It is surprising how the selfed yellow green and also normal segregated to give 37 yellow and 18 albino in the  $M_3$  out of a total of 91 seedlings. It is possible that these mutants might be segregating in the  $M_3$ . Further tests are in progress.

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## 2. Thin layer chromatographic studies of DES induced chlorophyll mutants.

The chlorophyll of about one-two week old seedling leaves of normals and DES induced yellow and yellow green mutants was extracted with petroleum ether and acetone (8:3). The chlorophyll extracts were spotted on glass plates spread with silica gel G (E. Merck), and developed with petroleum ether-acetone solvent (5:2). Table 1 illustrates the qualitative and quantitative differences between normals, yellow green, and yellow mutants.

Table 1

Pheno- type	No. of spots	$R_f$ Values				
		Green	Yellow	Bluish green	Dark green	Yellow
Normal	5	0.361	0.399	0.476	0.861	0.987
Yellow green	5	0.361	0.399	0.476	0.861	0.987
Yellow	2	0.361	0.399	-	-	-

In general, the normal has all the five spots which were intense. In yellow greens, the yellow pigment ( $R_f$  0.399) was more intense and dark green ( $R_f = 0.861$ ) was quite weak compared to normal. In the yellow mutant, only two spots,  $R_f$  values 0.361 and 0.399, were present. The identification and the spectrophotometric studies of these substances are in progress.

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