

#### 4. Studies of chlorophyll suppressors.

Several nonallelic pleiotropic genes have been described which result in light endosperm and albino seedling phenotypes. Segregating stocks of four such genes,  $\underline{Lw}_1 \underline{lw}_1$ ,  $\underline{Lw}_2 \underline{lw}_2$ ,  $\underline{W}_3 \underline{w}_3$ , and  $\underline{Ps} \underline{ps}$  were supplied by Dr. D. Robertson and added to a fifth type  $\underline{Cl}_1 \underline{cl}_1$ . In 1956 the five stocks were outcrossed to the open pollinated heterogeneous varieties Cornell 11 (C11) and Minnesota 13 (M13). In the summer of 1957, these crosses were selfed and, at maturity, ears segregating for kernel color were selected and stored.

The dark and light kernels were hand separated, counted, and  $X^2$  values for 3:1 segregations determined. Light colored kernels were grown in germinators to determine seedling characteristics. Green seedlings were classified as (a) misclassification, (b) heterofertilization, (c) suppressor gene mutant.

Stocks with presumed suppressor genes were increased last summer and the following new suppressors have now been isolated:

<u>Pleiotropic gene</u>	<u>Suppressor designation</u>	<u>Amount of Chlorophyll</u>
$\underline{Lw}_2 \underline{lw}_2$	S $\underline{lw}_2$	Partial
$\underline{Cl}_1 \underline{cl}_1$	S $\underline{cl}_1$ . (Possibly allelic to $\underline{Cl}_3$ )	Partial
$\underline{Ps} \underline{ps}$	S $\underline{ps}$	Complete

In 1958, crosses were made between the five major gene stocks and the suppressors  $\underline{Cl}_3$  and  $\underline{S} \underline{ps}$ . Segregating trihybrid progenies have been observed.

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#### 5. Suppressor action in controlled environments.

The several suppressor stocks were germinated under day light white (wave length 650-410), blue (545-420), and red (620-580) light tubes.  $\underline{S} \underline{lw}_2$  showed an interesting difference in apparent quantities of chlorophyll present when compared to the normal  $\underline{Lw}_2$ .

Thus: $\underline{Lw}_2$ -		Amount of Chlorophyll		$\underline{S} \underline{lw}_2$ -		Amount of Chlorophyll	
	White	Red	Blue		Blue	White	Red
	Light	Light	Light		Light	Light	Light
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The differences appeared to be quantitative rather than qualitative. The  $\underline{S} \underline{lw}_2$  absorption spectra (measured in a Beckman spectrophotometer) rather closely approximated the  $\underline{Lw}_2$  - curve in blue light, however,  $\underline{S} \underline{lw}_2$  had much less chlorophyll than the  $\underline{Lw}_2$  - in the other light chambers.

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