

An obvious possibility is that the multifactorial system is enabling or forcing r to become functional in some cells. We cannot, however, dismiss the possibility that the system acts to bypass the r locus, and the production of color has nothing to do with r.

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3. A gene for iron chlorosis.

In the progeny of coop ear 54-613-1 (Oh 51A X "sh₂" pr selfed), four out of eleven plants were pale yellow striped and grew to approximately half the height of the normal sibs. One such plant was selfed and bred true in 1956. A complete nutrient solution including minor elements failed to bring about development of full green color in the greenhouse. Minor elements Ca, Mg, Fe, Mn, Cu, Zn, in combination with sulfate, phosphate, nitrate, and borate ions were added separately in excess. Not all possible combinations were tried. The Fe SO₄ treatment resulted in development of full green color whereas no other treatment was effective in overcoming the chlorosis.

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4. Interaction of endosperm genes.

Several new combinations of ha with su₂, du, and wx were synthesized and identified during the past year and showed some rather unusual interactions both with respect to the percent amylose in the starch and with respect to the temperature at which starch grains lose birefringence under polarized light. Data are given on page 120.

It appears that su₂ alone and with du and wx will reduce birefringence end point temperature to about 55° C. Alone and in combination with su and su₂, ha raises the end point. Further the same genes, *i.e.* du and wx, which are lowered by su₂, also lower ha. The gene su which raises su₂ is also raised by ha.

With respect to amylose content, no combination with ha resulted in higher amylose than ha; su₂ combination with ha gave an unusually low value. The intermediate value of ha wx is of interest.

<u>Gene Combination</u>	<u>% Amylose</u>	<u>Birefringence End Point, °C</u>	<u>Phenotype</u>
Normal dent	27	68	Normal dent
du	38	69	dull dent
ha	61	89	tarnished dent
su	30	65	wrinkled
su ₂	42	55	translucent, full
wx	0	68	opaque
du ha	58	70	translucent, full
du su	64	68	wrinkled
du su ₂	48	56	translucent, full
du wx	0	70	opaque, shrunken
ha su	60	85	translucent, full
ha su ₂	40	83	opaque
ha wx	15	72	opaque, shrunken
su su ₂	56	66	wrinkled
su wx	0	67	wrinkled
su ₂ wx	0	53	opaque

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5. Recombination with Y and su₂ in T6-10b.

The interchange point in T6-10b is very close to Y. Repeated back-crossing of y^T/YN to a du su₂ stock since 1951 has finally resulted in a Semisterile YY su₂ su₂ plant. This will permit a test for linkage between su₂ and y in the homozygous translocation. If linkage is found, y will have been placed on the long arm of chromosome 6 distal to the translocation point. In the absence of linkage the position of y will remain uncertain.

6. Close linkage of v, ms-si, and rg on chromosome 6.

Material heterozygous for Yy, for a new "male sterile silky ear" mutant, and for a new recessive ragged leaf seedling mutant supplied by E. G. Anderson, who had located them on chromosome 6, was planted out.

Data from y si/Y Si selfed gave 48 Y Si: 1 Y si: 1 y Si: 39 y si for which recombination by maximum likelihood is 1.8%.