

1. Male sterility from Vestigial glume plants and its restoration.

A case of cytoplasmic male sterility, previously known but apparently not reported, was uncovered in certain Vestigial glume lines of Coöp origin. In attempting to transfer Vg into sweet corn, numerous crosses and backcrosses to open pollinated varieties, inbred lines, and hybrids have been made. Both Vg and normal progeny from these crosses maintained a high degree of sterility. A few anthers were extruded in some plants but no viable pollen was detected.

A check of the Coöp records disclosed no note of this sterility in Vg stocks from their accession from Sprague's material in 1937 until the present observations were made in 1949. However, Dr. R. A. Emerson's records reveal that he had noted this sterility to be associated with certain Vg lines used in his chromosome 1 linkage studies as early as 1944.

Seed of this sterile type was sent last year to Dr. D. F. Jones who kindly furnished the following information. "R. R. St. John from the DeKalb Seed Company and G. H. Sprague at Iowa also obtained sterile plants from this source and these seem to be of the cytoplasmic type. Sprague's material was crossed with Iojap which Rhoades has found to be connected with the induction of cytoplasmic sterility ----- Unfortunately, St. John did not write up his results before his death."

In contrast to the constancy of this sterility in crosses to normal sweet corn, Vestigial x Tunicate hybrids shared pollen fertility in all segregation classes -- Vg, Tu, VgTu, and normals. Restoration appears to be complete, and from advanced generation and backcross populations there is evidence that it is under the control of a single dominant gene. This pollen restoration by Tunicate lines is partially responsible for the previously reported recovery of glumeless lines which shed pollen well (News Letter, 1952, p. 36). It may be of additional interest that Mr. Robert Snyder (see below) obtained restoration of the above sterility type with certain marker lines.

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