

Ears:

(i) External character: Ears short 5 to 8 cm long, 4-6 cm in diameter, conical in shape, borne on short 3-5 cm long shank; average diameter of the shank 1.26 cm; ear enclosed in 8-10 husks that extend 6-10 cm beyond the tip of the ear; ears in general appearance resemble small compact heads of sorghum with similar type of branching. Some of the branches end in a spike of male flowers.

(ii) Internal characters: Ears in most cases devoid of cobs (pith), instead there is central rachis with primary, secondary and tertiary branches; branches short and stout, female spikelets borne on primary, secondary, and tertiary branches; rachilla of the female spikelets short; glumes hard and indurated, usually bearing two grains like double seeded sorghums; lemma and palea thin and papery.

Grain:

Grain small, roundish in shape, 7.1 mm in width and 7.4 mm in length, hard flinty type, deep yellow in colour.

Most of the tassels shed normal pollen. The pollen when used on silks of other maize varieties proved to be quite effective. No grain formation was obtained in self pollinated ears. Partial to normal setting was observed in the ears pollinated by composite pollen from the plants within the variety. Ears of self pollinated plants that fail to form grain present a clearer picture of the internal structure of the ear. The unusual feature of the ear is a slender sorghum-like rachis with primary, secondary, and tertiary branches bearing female spikelets.

Studies to ascertain the genetic basis of sorghoid characters in this type of maize are being undertaken both at the maize research station, Yousafwala (Montgomery) as well as in the department of Plant Breeding and Genetics in the West Pakistan Agricultural University at Lyallpur.

A. Ghafoor Bhatti

NOTE: Photographs of plants and ears of sorghoid maize were included with this report, but could not be reproduced here. They will be preserved in the News Letter files and are available for inspection.

MARQUETTE UNIVERSITY  
Biology Department  
Milwaukee, Wis.

1. The null-expression of the wx gene in a monoploid sporophyte test.

It is well known that wx wx wx constitution in the endosperm and the wx constitution of the pollen grain result in a

starch change from the Wx condition so that the starch grains of the waxy type stain red with iodine instead of purple. It is equally well known that starch grains in sporophyte tissue of the constitution wx wx are found to stain purple.

One possible testable explanation for such behavior of the waxy condition is that the expression of the wx gene is dependent upon dosage of the gene in the tissue involved. While this insight seems incorrect, (pollen of tetraploid wx wx wx wx plants stain red) it was felt important enough nevertheless, to test for expression of the wx gene in roots of monoploid plants.

In order to obtain the required monoploid wx plants the following mating was made: W23 A A, c c, r r, wx wx: X W23 A A, C C, RnJ RnJ, Wx Wx. By utilizing the R-navajo allele embryos that do not exhibit the dominant conditioned RnJ pigment, but whose aleurones do have pigment, can be easily selected in dried seed form. Such colorless scutellum, colored aleurone kernels are then the presumptive monoploids. The genetic constitution of the monoploid would then be A c r wx.

In order to confirm the genome constitution and test for starch type, these presumptive monoploids were germinated and seedling roots obtained. Each root cap was tested with iodine while the meristematic region was used for chromosome counts.

Three different seedling roots were found to have counts of ten chromosomes in late mitotic prophase cells. Iodine tests of starch grains from these three roots all showed a uniform dark purple staining indistinguishable from Wx Wx controls.

As with diploid pollen, monoploid roots do not alter the expression of the wx gene known in usual ploidy constitutions.

Irwin M. Greenblatt

NOTE: I would like to express sincere thanks to the staff of the Department of Agronomy, University of Illinois, for making field space and help available to the projects under study in this laboratory.

The address of this laboratory effective September 1, 1966 will be Biology Department, Northwestern University, Evanston, Illinois.