

Average branch numbers were collected in a generation mean analysis study planted in February 2008 with parent P1 = Hi27 and parent P2 = *fl v4* (branched). Branch numbers were as follows: P1=11.1, P2=20.9, F1=16.0, F2=16.1, B1=13.1 and B2=16.5. However, seeds were classified as normal or flourey before planting, and the data were as follows: F2, 16.6 flourey vs. 15.5 normal; B1, 15.3 flourey vs. 11.0 normal; B2, 17.3 flourey vs. 15.8 normal. A GMA analysis revealed no significant non-additive effects. F2 segregation could generally be interpreted as a 1:2:1 affected by the linkage of flourey and the branching locus.

It is inferred that the branched tassel trait is governed by a single locus that we've designated *Brta* ("branched tassel"). We chose to symbolize branched allele as the capitalized *Brta* with normal as *brta*. The locus is on chromosome 2 and suspected to be somewhere between *v4* and *fl*. No other NILs we have on this chromosome show branched, including *sk1* (2-57) and *gs2* (2-50). Inheritance is simple and dominance absent. The *brt* phenotype bears no resemblance to described loci *ub* (unbranched) and *td* (thick tassel dwarf), nor does it lead to seed-bearing flowers in the tassel as in the highly branched *ramosa* mutants. Several genes greatly reduce or eliminate tassel branching (*ad1*, *baf1*, *lg1*) but none are in this region. The relevant NILs are now designated (*fl Brta v4*)^{Hi27} and (*fl Brta v4*)^y^{Hi27}.

Double-cob (*dbcb*) on chromosome 1

--Brewbaker, JL

Conversions of Hi27 to the variegated-pericarp allele *P-vv* were initiated in 1967 using Maize Coop Stock 63-2656-2/2655-5, a stock showing variation at the following loci: *A1*, *A2*, *C*, *et*, *lg2*, *R* and *P*. In a somewhat sophomoric way, we began a series of 10 backcrosses to Hi27 together with an extensive series of selfs and sibs aimed at preserving only the *P-vv* (with its *Ac* insertion). The "pure line" *P-vv* inbred has always been uniquely semi-dwarf, narrow-leaved, poor in seed set and irregular in expressivity of variations.

In 2001, in the 23rd cycle of breeding *P-vv*, we observed four sister lines with a trait we named double-cob (Figure 1). The mu-



Figure 1. Phenotype of Hi27 near-isogenic line (*dbcb P-ww*)^{Hi27}.

tant cobs normally split at the tip into two or three arms, and were not highly competent at filling seed. However, the trait proved to be considerably more stable than *P-vv* and to be inherited as a simple recessive. The linkage of the two loci is inferred from many of these segregations, but mapping has not been done. The double-cob trait has been carried through more backcrosses to Hi27 (which is *P-ww*) and a series of selfs to produce three sub-lines--(*dbcb P-ww*)^{Hi27}, (*dbcb P-vv*)^{Hi27} and (*dbcb P-ww*)^{Hi27}. All of these NILs are otherwise identical to recurrent parent Hi27 (Brewbaker, Crop Sci. 37:637, 1997) in maturity, color (e.g., bronze tassel), disease resistance, tassel and kernel type, etc. None of the 14 other chromosome 1 mutants among our NILs show the double cobs.

Floppy tassel (*Flta*) on chromosome 9

--Brewbaker, JL; Yu, H

Tassels of Hi27 and most modern inbreds are relatively erect in appearance (see accompanying article on branched tassels). In contrast, a tassel with lax branches that we characterize as "floppy" is rather common among tropical maize varieties. Breeders of popcorn and of waxy Asian maize ("glutinous" or "sticky" corn) also find such "floppy" tassels to be the norm, as we do also in our breeding of popcorns.

The floppy tassel trait (Figure 1) segregated monogenically in our conversions of inbred Hi27 to the gene *wx* (chrom. 9S-47.9). The mutant originated from MGC stock 70-1000-3/999-3 (*wx-a*), and had 6 backcrosses through 24 generations of breeding to Hi27. Floppy tassel was also observed in our digenic NIL with



Figure 1. Floppy tassel of *wx*^{Hi27} near-isogenic line.