

New EMS-induced allele of *terminal ear1* (*te1*) allele in the B73 background

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The maize gene *terminal ear1* locus encodes a Mei-2-like gene with multiple RNA-recognition motifs [1]. We have identified a new allele of *te1* in the B73 genetic background while screening a M2 EMS-treated population from the maize TILLING (Targeting Induced Local Lesions IN Genomes) project. The population was phenotyped in the summer of 2011 in West Lafayette, IN (Figure 1). Plants in family 04IAB73PS110D5 were segregating for wild type and terminal ear phenotypes in a 3:1 fashion, consistent with a recessive mutation. Due to similarities in phenotype of *te1* and our mutant (04IAB73PS110D5) an allelism test was performed. A homozygous plant from maize genetics stock number 326D (*te1-1*) was crossed to a phenotypically affected 04IAB73PS110D5 individual and 12 progeny were planted in the summer of 2013. All 12 progeny exhibited the *te1* phenotype. Thus, we refer to this new allele of *te1* as *te1-8*. This allele appears to be a slightly weaker allele than *te1-1* due to lower number of internodes with length asymmetry (Figure 1B,C) and also production of some terminal staminate florets [2,3].

A second family, (04IAB73PS122A6), also showed a striking similarity to *te1* (Figure 2). Plants were also segregating in a 3:1 fashion in the EMS-treated M2 generation, consistent with a recessive mutation in this line as well. However, allelism tests have not been conducted and we provisionally refer to this as *terminal ear-like-*122A6* (*te1-*122A6*). This mutant is also in an EMS treated B73 background. The mutant, *te1-*122A6*, produces more staminate florets than *te1-8* (Figure 2B), however it has a more severe internode length asymmetry phenotype (Figure 2C) [2,3]. Seeds carrying the *te1-8* and *te1-*122A6* alleles are being deposited at the Maize Genetics Cooperation stock center.

Figure 1. Mature plants of *te1-8* in a M2 segregating population. (A) *te1-8*, (B) *te1-8* stem with leaves removed, and (C) close up of *te1-8* stem showing asymmetric internodes.

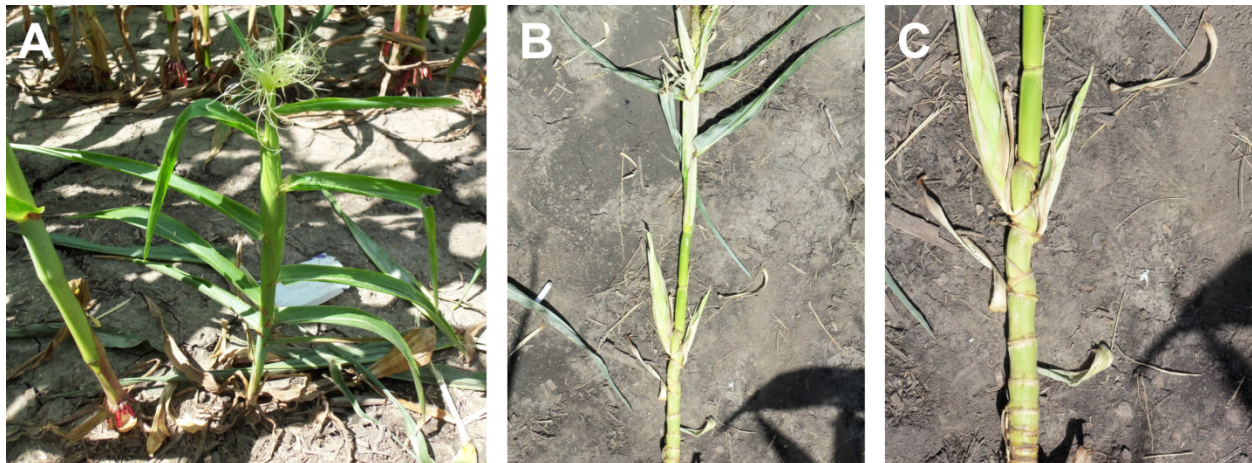
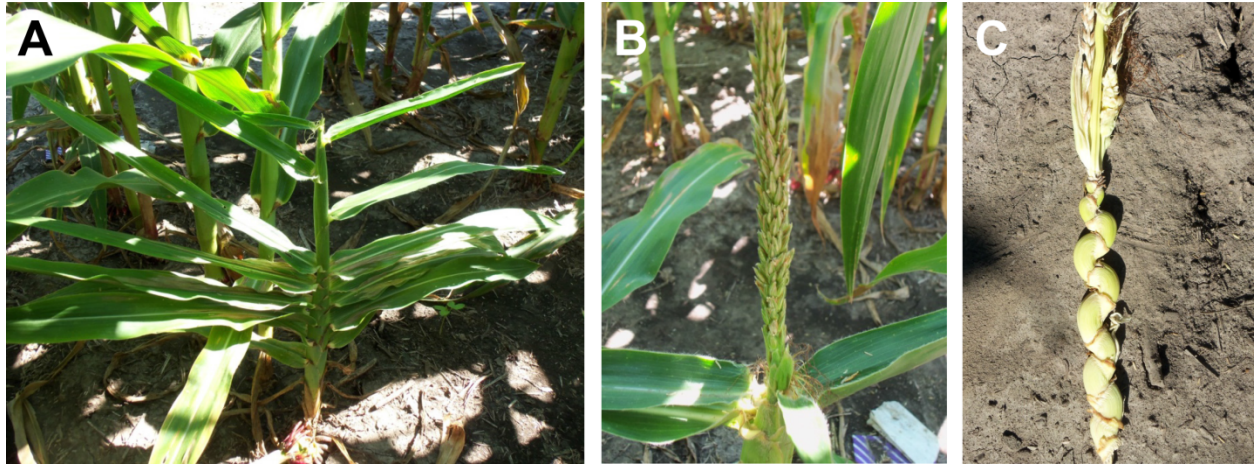


Figure 2. Mature plants of *tel-122A6* in a M2 segregating population. (A) *tel-122A6*, (B) close up of *tel-122A6* tassel, and (C) *tel-122A6* stem with leaves removed showing asymmetric internodes.



References

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- [2] Veit B (1998) Leaf initiation: New developments in an expanding field. *Plant Cell* 10:1407-1411
- [3] Irish EE (1996) Regulation of sex determination in maize. *BioEssays*. 18:363-369.