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Interactions between Auxin and the tassel-less4 Mutant in Maize

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tassel-less4 (tls4) is a mutant in *Zea mays* (maize) which is characterized by its deficiencies in inflorescence development resulting in a smaller tassel, the male reproductive structure in maize. The *tls4* mutant is also characterized by reduced plant height and narrow leaves. This phenotype is characteristic of mutants with defects related to the plant growth hormone, auxin. One of the primary functions of auxin is the control of organ formation in meristems, such as the tassel meristem. To explore the relationship between the *tls4* mutant and auxin, several double mutant analyses were performed between *tls4* and mutants with known functions related to auxin. The auxin biosynthesis mutants *vanishing tassel2 (vt2)* and *sparse inflorescence1 (spi1)* were crossed with *tls4* to determine how the gene responsible for the tls4 mutant interacts with auxin. Both *vt2* and *spi1* had significant interactions with *tls4* indicating that *tls4* function is related to auxin. Additional, double mutant analyses were performed between *tls4* and the auxin transport mutant *barren inflorescence2 (bif2)* and the auxin signaling mutants *Barren inflorescence1 (Bif1)* and Barren inflorescence4 (Bif4). These also had significant interactions with *tls4* strengthening the hypothesis that *tls4* functions in the auxin pathway. Further characterization and cloning of *tls4* will provide a more complete picture of how auxin functions in plants.