Zea mays (maize) develops in growing points called meristems that form and divide new cells. The *lateral suppressor1* (*las1*) mutant is defective in axillary meristem initiation and encodes a GRAS transcription factor. This novel *las1* mutant produces barren stalks and fails to develop female inflorescences for reproduction. The *compact plant2 (ct2)* mutant is a semi-dwarf with a fasciated ear phenotype and increased spikelet density in male inflorescences. The *ct2* gene regulates the maintenance of the shoot apical meristem (SAM) and acts in the *clavata* pathway. Producing *las1*; *ct2* double mutant will enable us to test how the *las1* gene, which is responsible for axillary meristem initiation, is affected by altering meristem maintenance. Data was collected for ear number, tassel length, branch number, and plant height for quantitative analysis and statistical comparison. The *ct2* mutant partially suppresses the barren stalk *las1* phenotype, suggesting that *las1* is also involved in maintenance of axillary meristems. However, the *las1* mutant suppresses the *ct2* mutant's increase in tassel branch number. This indicates that *las1* is involved in the initiation and/or maintenance of axillary meristems during reproductive development. These results indicate a developmentally specific complex genetic interaction between initiation and maintenance to control axillary meristem development. The *fasciated ear4* (*fea4*) gene is also involved in meristem maintenance and encodes a bZIP transcription factor. A double mutant analysis with *fea4* and *las1* is being analyzed and will further confirm the *las1* involvement in the meristem maintenance pathway. In summary, these results provide evidence that *las1* functions in axillary meristem maintenance in as well as initiation in a developmentally specific manner.