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COOPERATIVE REGULATION OF CUTICLE BIOSYNTHESIS IN MAIZE JUVENILE LEAVES BY ZMFDL1 AND ZMGL15 TRANSCRIPTION FACTORS.

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maize, cuticle, ZmFDL1, ZmGL15, juvenile and adult leaves

The outer cuticular layer is a complex hydrophobic lipid matrix that constitutes a barrier against water loss. In maize, we can distinguish two vegetative phases, the juvenile and the adult one. The cuticle, in juvenile and adult leaves, is characterized by distinct biochemical and physiological features. To gain insight into the genetic control of cuticle deposition during the juvenile phase in maize, we have analysed the role of ZmFDL1 and ZmGL115 transcription factors.

The MYB transcription factor *ZmMYB94/fused leaves1* (*fdl1*) is a key regulator of cuticle deposition in juvenile leaves and its expression profile is mainly confined up to the third leaf. Morphological and biochemical defects are not evident in adult *fdl1-1* mutant plants.

The APETALA transcription factor ZmGL15 is required for the maintenance of juvenile traits and it is involved in regulating the transition to the adult phase. The gl15 mutant exhibits alteration in cuticular waxes deposition within the third leaf, when the transition from juvenile to adult phase takes over, indicating that another factor is sufficient to promote wax biosynthesis in the first two leaves.

Previous analyses have shown that the ZmGL15 transcript level is altered in in *fdl1-1* mutant suggesting that the two factors could interact to promote the juvenile cuticular layer. ZmFLD1 might be necessary and sufficient to ensure a correct cuticle biosynthesis up to the third leaf stage, whereas in subsequent juvenile leaves its role is replaced by ZmGl15. To test this hypothesis, we have generated F2 progenies segregating for *fdl1-1* and *gl15-S* mutants. Results of their phenotypic and expression analysis will be presented.