COTTON Innovate
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## Cotton has natural Velcro for Petal development

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Plant Velcro the term is used to define the plant trichomes which function as a suture between different tissues and link them together to coordinate their growth and generate complex plant structures. Trichomes are epidermal extension of surface tissues and continue to divide and form the specialized structure. Trichomes are classified as unicellular and multicellular based on cell division. By nature itself they been destined to form certain function, based up on that trichomes divided into glandular and non glandular types. Glandular trichomes are secretary nature and produce array of metabolites and plant defense substance to evade insect and pathogen invasion. While, non-glandular trichomes function to reduce heat, increase tolerance to cold or drought, facilitate water absorption and protect from UV. In cotton, this 'Velcro' binds different flower parts together to shape their growth and aids successful reproduction.

In Arabidopsis leaf and stem trichomes are regulated by a MYB–bHLH–WD40 transcriptional complex, in which the R2R3 MYB GLABRA1 (GL1) plays a crucial role. In case of Antirrhinum majus, the MIXTA gene, which encodes another type of R2R3 MYB, controls the conical shape of petal epidermal cells. MIXTA-like gene of cotton, GhMYBML10, is highly expressed in petals and responsible for petal development (Machado et al., 2009; Walford et al., 2011; Tan et al., 2016). At the very early flower bud stage, the bracts or bract lobes and the tips of sepals are joined together by entangled trichomes forming a protective envelope around the internal immature petals and reproductive tissues while they grow. Upon use of RNAi for hindering the expression of GhMYBML10 produced the petals with cork screw type and resulted in poor aestivation of petals and sepals.
Cotton is a surface fibre and being used as model for cell development. As we consider that small organs doing less functions. Recent incites revealing how these small organs doing greater roles in cell evolution. These phenomena could be inferred for further understanding of the fluidity of fibre and it could be used for superior fibre improvement.

Suggested Readings

- Machado, A., Wu, Y. R., Yang, Y. M., Llewellyn, D. J. and Dennis, E. S. 2009.The MYB transcription factor GhMYB25 regulates early fibre and trichome development. Plant J. 59: 52-62.
- Tan, J., Walford, S.-A., Dennis, E. S. and Llewellyn, D. 2016. Trichomes control flower bud shape by linking together young petals. Nature Plants 16093.
- Walford, S. A., Wu, Y. R., Llewellyn, D. J. and Dennis, E. S. 2011. GhMYB25-like: a key factor in early cotton fibre development. Plant J.65:785-797.
- Yang ,C. and Ye, Z. 2013. Trichomes as models for studying plant cell differentiation. Cell. Mol. Life Sci. 70:1937-1948.

**MGMG visits :** Dr Rishi Kumar, Principal Scientist visited village Rangari ,a MGMG adopted village on 31.12.2018 to sensitize the farmers regarding cleanliness drive and to maintain cleanliness not only in their fields but in the village also. Dr S.K. Verma, organized farmers meeting at village Nezadela Kalan under Mera Gaon Mera Gaurav on 29/11/2018 . The farmers were advised on the problems of wheat and other general problems. The residue management in wheat as well as in cotton was also discussed


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