Potential for gene contamination between Gossypium hirsutum and Abelmoschus esculentus by morphological study of flowers and interspecific hybridization

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Abstract

Background and methods: The cotton sector in Cameroon is facing many problems, such as controlling various cotton diseases and parasites. The control of all these to improve yields has enabled Cameroon to introduce trials on BT cotton since 2012. The present work aimed to study the potential contamination of transgene between cotton and okra through a floral study and interspecific hybridizations. A total of 160 interspecific crosses were carried out between Gossypium hirsutum and Abelmoschus esculentus in comparison to 75 intraspecific crosses.

Results: The result shown that, both species present Malvaceae characteristics. Flowering progressing from the base to the tip of the fruiting branches in the horizontal direction on the same branch and in the vertical direction on successive branches in identical position started 65 and 68 days after sowing respectively for the two varieties Q 302 and L 484, unlike in okra where it started in vertical direction 32 days after sowing for a duration of 28 days. The interspecific crosses in both directions resulted in failures which occurred 3 days after pollination when okra was used as female parent and 11 days afterwards when Gossypium hirsutum was used as the female parent. The intraspecific crosses showed knotting rates without significant difference. The A E $\times$ A E crosses showed the fruit set rate of about 3 fruits containing well-formed seeds per day, the fruit set rate of the cross between Q 302 $\times$ L 484 being 1.5 fruits formed per day whereas the crosses L 484 $\times$ Q 302, Q 302 $\times$ Q 302, L 484 $\times$ L 484 were 1.6, 1.7 and 2 fruits per day respectively.