PS VI -5

Implementing IPM for bean golden mosaic virus in common bean in Brazil

Josias Correa de Faria - *Embrapa Rice and Beans*

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Bean golden mosaic virus (BGMV) is the causal agent of the most destructive viral disease of common beans in Brazil. It is efficiently vectored by the whitefly *Bemisia tabaci*, which is also a significant insect pest for this crop. With the commercial approval of the first genetically modified (GM) common bean resistant to BGMV, using RNAi technology, by the Brazilian National Biosafety Committee, the next challenge became the insertion of the trait into commercial varieties and thereafter the food chain. Keeping BGMV under control has brought about the so far hidden whitefly-born pathogen Cowpea mild mottle virus (CPMMV), a Carlavirus. Eventually, other geminiviruses not present yet may appear. Therefore, the GM crop with resistance to a disease will help to diversify the toolbox for Integrated Pest Management (IPM) in common bean. An integrated approach to pest management including this novel technology became a challenge and is considered essential to achieve both agricultural and environmental sustainability, in addition to contributing to food security and grower profitability. The tools analyzed include whitefly host-free period, elimination of hosts for both virus and whitefly, GM resistance to BGMV and conventional resistance to Bean common mosaic virus/Bean common mosaic necrosis virus, planting time, the use of sentinel areas (early common bean planting to check in advance whitefly population and the degree of virus incidence), chemical control, building professional capacity (training), and an innovative alert system. There are encouraging results with the required adoption of whitefly host-free period and adoption of regular crop-pest survey to evaluate the real need for chemical control. The associated use of whitefly monitoring/reporting system and the alert by the sentinel may help growers to make the correct decision on growing common beans or an alternative crop to maximize income with lower risk of crop losses.