Acorbat Revista de Tecnología y Ciencia

Integrated management of FOC TR4 in bananas: The Philippine experience

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Contribución:
Tecnológica

Sección:
Fitosanidad

Recibido:
15 Diciembre, 2023
Aceptado:
15 Enero, 2024
Publicado:
16 Abril, 2024

Cita:
Corcolon BM. 2024. Integrated management of FOC TR4 in bananas: The Philippine experience. *Acorbat Revista de Tecnología y Ciencia* 1(1): 85
https://doi.org/10.62498/ARTC.2485

The Philippines is still one of the top global producers of Cavendish bananas and the primary exporter in Asia. Despite some challenges, Cavendish banana remains to be the second leading export commodity of the country valued at USD1.1B. However, in recent years, there was a steady decline in the Cavendish production areas brought about by the threat of *Fusarium* wilt TR4. Based on official government report, the total area planted to Cavendish in 2022 was 84,328 hectares which was 0.6% lower than the previous year due to abandonment or shifting to alternative crops in some of the affected areas. While the 2023 Cavendish banana production area has not yet been officially reported, further decrease in area is expected. *Fusarium* wilt TR4 is mainly confined in the Davao Region of Southern Philippines where the major commercial banana plantations are located. More than 50% of the total Cavendish area are operated by corporate farms that are members of the Pilipino Banana Growers and Exporters Association (PBGEA) while the rest are owned by independent banana growers.

An integrated disease management approach was already developed by each corporate banana plantation and is generally being implemented to prevent further occurrences of FW TR4. This was based on the concepts of early detection, early eradication and area isolation. Biosecurity protocols are in place to prevent spread of the disease. The infected plants are eradicated either through rice husk burning or chopping of infected plants and treated with Urea. The use of beneficial microorganisms such as *Trichoderma* and other biocontrol agents is widely adopted as supplemental treatment for infected sites. An effective weed control program is also an integral part of managing the disease as some weed species are known to be possible reservoir of the fungal pathogen. The construction of deep perimeter canals and regular maintenance of primary and secondary canals are as important to ensure good drainage conditions.

The Philippine banana industry has resorted to the use of the Taiwan Banana Research Institute's GCTCV somaclones to avert widespread outbreak of the disease. A series of field evaluations of these GCTCV somaclones have been conducted to identify the most promising somaclone that is resistant to TR4 coupled with stable

agronomic characteristics and good market potential. GCTCV 218 was initially identified to be the best somaclone that can be grown commercially and with better market acceptability. To date, selections from the original GCTCVs have already been developed and used to replant areas that were affected with TR4. The use of these somaclones/selections not only prevented rapid spread of TR4 but also provided the banana industry ample time to developed the integrated disease management approaches for TR4.