

# FAO/IAEA International Symposium on Plant Mutation Breeding and Biotechnology



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## CAVENDISH BANANA SELECTED FROM TISSUE CULTURE SOMACLONAL VARIATION: EVALUATED AND ADOPTED IN MANAGING EPIDEMICS OF FUSARIUM OXYSPORUM F.SP. CUBENSE TROPICAL RACE 4 IN COMMERCIAL PLANTATIONS IN THE PHILIPPINES

Epidemics of Fusarium Wilt caused by *Fusarium oxysporum f. sp. cubense* Tropical Race 4 is a serious threat to the sustainability of the more than 80,000 hectares of Philippines Cavendish industry. The industry brings about a billion US\$ annual export and providing direct employment to a nearly 500,000 people in Southern Philippines. In 2013, 3,000 hectares were reported abandoned due to severe infection, and more than 6,000 hectares are infested in various levels of incidence. Eradication and exclusionary measures were implemented but inadequate to prevent epidemic spread and build up.

Five Giant Cavendish Tissue Culture Variants (GCTCVs) developed by the Taiwan Banana Research Institute were introduced and field evaluated in multi-location trials in Foc TR4 affected farms in Southern Philippines. GCTCV 218 and GCTCV 219 proved most acceptable options in managing Foc TR4 epidemics. Disease incidence ranged from zero to 20 % on the test Cavendish variants compared to check varieties Gran Naine and Williams, which suffered disease incidence up to 100% . GCTCV 218 and 219 remained resistant even after 4 ratoons. GCTV 218, moderately resistant, is more acceptable by growers with its big bunches and good fruit quality. It is acceptable in current markets. GCTCV 219 is highly resistant and has sweet fruits but its bunch and agronomic characteristics are inferior. The use of GCTCV 218 is now widely adopted by banana growers in rehabilitating severely affected farms. Since 2014, more than 10 million GCTCV 218 tissue culture seedlings have been planted in more than 5,000 hectares with successful outcomes. The commercial plantings of these varieties also provide opportunities for further selection of improved phenotypes. The success of the GCTCVs indicate that selection from variation caused during in-vitro mass tissue culture production is a noble approach of banana improvement.

### Country or International Organization

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