

# PROGRESS ON, AND THE FUTURE OUTLOOK FOR, MANAGING TROPICAL FRUIT DISEASES

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Most plant diseases are caused by fungi and a significant portion of those that are not are caused by oomycetes. Thus, it is not surprising that many diseases on tropical fruit crops are managed with fungicides or pesticides that affect oomycetes. Unfortunately, some of the most effective products are prone to reduced efficacy due to a build-up of resistant populations of the pathogen. For other diseases, effective products do not exist. For example, there are few or no chemical options for managing diseases that are caused by bacteria, viruses and some fungi (e.g. those causing vascular wilts). Although I will briefly discuss the chemical management of tropical fruit diseases, I will *Focus* today on non-chemical measures. In many situations, disease-resistant host plants are most desirable. The production of disease-resistant hosts will be discussed via conventional breeding and selection programs, as well as by nonconventional measures, such as the use of somaclonal variation, mutation breeding and different molecular approaches. Diverse cultural measures will be outlined beginning with the frontlines of defense against exotic diseases, exclusion and quarantine. Also discussed will be the generation and use of pathogen-free planting material, and the use of various disease-avoidance measures such as raised beds, containerized production and protected agriculture. Various post-harvest measures will be discussed including the use of established (e.g. controlled atmospheres and ionizing radiation) and experimental technologies (e.g. hypobaric storage and cold plasma). I will close with remarks on biological control and induced resistance. Sustainable production of tropical fruit crops should rely on evidence-based criteria when devising disease-management strategies. In the final analysis, effective disease management often involves holistic combinations of the most economic and effective measures that are available.

**Keywords:** tropical fruit disease management, conventional breeding and selection, somaclonal variation, mutation breeding, protected agriculture