

Abstract

Fruit flies (*Bactrocera* spp.) infest fruit crops and as a result, countries wishing to export fresh produce are required to develop postharvest treatments that reduce the risk of introduction of these harmful species in target market countries. High temperature disinfestations protocols approved by biosecurity agencies enable trade in fresh fruits. While such treatments kill fruit flies, they also have a potentially adverse effect on fruit quality. The balance between defining a treatment protocol that results in an acceptably low biosecurity risk, while at the same time maintaining consumer acceptability of the produce after storage, is discussed with respect to Dragon fruit (*Hylocereus undatus*), a white-fleshed fruit of the climbing cactus cultivated in Viet Nam.

Vietnamese Dragon fruit can potentially host two fruit fly species, *B. dorsalis* and *B. correcta*. An experimental-scale High Temperature Forced Air treatment unit was used to conduct replicated confirmatory trials using infested fruit. Complete kill was achieved of an estimated population of 31,384 viable *B. dorsalis* eggs, the most tolerant life stage of the more tolerant species, when treated in Dragon fruit for up to 15 minutes at a fruit centre temperature (FCT) of 46.5°C or more.

Parallel fruit quality investigations compared fruit heated to FCT of 46.5°C (for 20 and 40 minutes), 48.5°C (for 50, 70 and 90 minutes) and non-heated control fruit, after periods of 2, 3 or 4 weeks of cold storage (5°C). Quality attributes examined included the external appearance of the fruit (skin colour, bracts, stem and body), the extent of damage to internal flesh, and acidity, soluble solids and taste. While there was clear evidence for damage to Dragon fruit at higher FCTs and longer durations, fruit quality was still commercially acceptable at a FCT of 46.5°C for 20 minutes after 4 weeks cold storage. This is compatible with requirements that are acceptable for international biosecurity agreements.