

Innovation Lab for Integrated Pest Management

A simple solution to Vietnam's big dragon fruit problem

The dragon fruit is one of Vietnam's principal fruit crops, growing on approximately 36,000 hectares with 140,000 tons of production each year. It plays an important role in the country's economy because of its high export value compared to other locally grown fruits. It is one of the four crops that the Feed the Future Innovation Lab for Integrated Pest Management works on in its Exportable Fruit Crops in Vietnam project due to its economic importance.

However, this high value crop is threatened by a number of pests and diseases, the most serious being canker (*Neoscytalidium dimidiatum*), a fungal disease. The canker disease was first recorded in Vietnam in 2009 and by 2013 it had spread to over 10,000 hectares causing losses of dragon fruit ranging from 30-70 percent in individual fields. The disease is most severe during the wet season when infected fruits are not even suitable for sale in the domestic market. Farmers' attempts to manage this disease have resulted in high pesticide use and residues, making the fruit unacceptable for sale and export due to the market restrictions and demands.

The IPM Innovation Lab and its Vietnamese collaborator, the Southern Horticulture Research Institute, began working on a way to solve this problem. What they developed was a plastic sleeve to manage the canker along with other pests. Fruit bagging is a relatively common method for controlling pests on a variety of fruit crops, but not all bags are created equal given the specific farming practices of dragon fruit in Vietnam.



Dragon fruit in one of the IPM Innovation Lab plastic bags.

The project ran a study to evaluate the effectiveness of different types of fruit bags, looking at both the issues of fruit quality and cost to the farmers. They found a plastic sleeve made in Vietnam that resolved both the issues of cost as well as farming methods. The plastic sleeve cost only 300 VND a piece (roughly one cent) whereas the next cheapest option cost 800 VND, more than double the price, and others cost up to 5000 VND per bag.

In addition, in order to adhere to the Chinese import standards, a foliar spray must be applied to the fruit five to six times per growing cycle (which is 52-55 days). Some of the other bags had to be discarded after being opened for the spraying, raising the price. The plastic bags were able to keep their shape, so the farmers could easily spray and continue using the same bag. Furthermore, the plastic bag is transparent, allowing farmers to monitor the fruit's growth and quality.



Testing showed that canker disease incidence and severity in the IPM test areas using the plastic sleeves were significantly lower than those that did not use the sleeves. Moreover, the dragon fruits in the plastic sleeves also showed lower populations of insect pests such as green stink bugs and fruit flies. Based on these promising results, Vietnamese farmers are now using the plastic sleeves as one component in an integrated approach for the management of dragon fruit diseases and pests.