

## ***Biosecurity Concerns in Hawaii***

*By Glenn I. Teves, County Extension Agent, UH CTAHR Cooperative Extension Service - Molokai*

In Hawaii, approximately 10 to 15 new **major** insect pests are accidentally introduced into Oahu annually. Although many seemingly unimportant pests are also introduced as well, we may not see or understand its impact on Hawaiian flora and fauna at that time. Oahu's major ports of entry are the most obvious introduction sites, including military installations. Another important entry point includes recreation and fishing boats into harbors such as Pokai Bay and Ala Wai.

A highly publicized accidental insect introduction into Hawaii water included the double-hulled, Hokulea, which was sprayed off-shore to stop the introduction of a fly. It's believed that the daily importation of over 1000 40-foot containers carrying most of Hawaii's food, supplies, and materials are a major source of invasive pests, including insects, plants, and microbes into Hawaii, and there are insufficient personnel to adequately inspect these containers for invasives.

Once in Hawaii, there's no strategy or regulatory trigger to prevent the introduction of invasives into neighbor islands, since there's no interisland quarantine inspection system of air or surface transportation systems. There are many instances where some islands have been spared introduction of a major pest years after the pest has been well established in Hawaii. A good example is the island of Molokai, where Papaya Ringspot Virus is not found, and where Banana Bunchy Top Virus has been eradicated and hasn't established itself, although there's hot spots on the island that need to be closely monitored due to the growth characteristics of the plant itself.

The Big Island of Hawaii has its own set of major pests that hasn't reached all other islands since establishing itself there. The two most important are the coqui frog and the small fire ant. Suspected entry points are believed to be nurseries importing new plant materials from areas these pests are found. Efforts to limit the movement of these pests have met with limited success. Areas adjacent to the port of Hilo are infested with Coqui frogs, so attempts to control them on farms will be of no consequence if reinfestation occurs on the Hilo wharf.

Papaya Ringspot Virus spread throughout Oahu, mostly through the movement of air borne aphids and high concentrations of monoculture systems in areas such as Waimanalo and Kahuku. The accelerated movement on the Big Island from Puna and Kapoho, throughout the island was the result of movement of infected plants. One example was the sales of infected seedlings at the Hilo Farmers Market. Large areas of papaya monoculture only increased the virility and evolution of the disease. Coupled with poor cultural techniques practiced by farmers and the unwillingness to cull diseased plants, these contributed to the loss of this \$30 million industry.

Many of these case studies show that without a strong quarantine and inspection policy, and implementation strategy, Hawaii will continue to face major threats to food security, its' native ecosystem, and also its physical landscape vital to the tourism industry. There are horror stories of lost opportunities in controlling a pest on neighbor islands due to poor coordination, decision

making, and implementation. Some of this may have been the lack of funds, while for others it's the lack of a clear strategy in determining when to eradicate a pest, and a quick analysis of benefit-cost ratios.

An example on Kauai illustrates this point. There were opportunities to eradicate Banana Bunchy Top Virus in a residential community, but there were concerns the community wouldn't be cooperative so plans were scrapped to eradicate. The disease moved rapidly to infest the island and reached farms in Kilauea on the northern side. Farmers were forced to destroy their banana fields with no discussion of compensation. This scenario caused major stress on farm families as some resorted to drugs and contemplation of suicide. One farmer had to destroy 25 acres while bearing the costs for effort.

Examples of effective biosecurity programs include New Zealand and Australia. For Hawaii, community-based programs biosecurity programs augmented with educational programs through agencies such as the Hawaii Invasive Species Committee would be the most important interim strategy since the wheels of government move too slow. This kind of NGO-initiated implementation strategy would set the stage, and the parameters, for a larger government program to be implemented.

In the meantime, farmers need to be self-regulating by developing strategies to prevent the movement of pests and disease in planting material. Seeds would be the preferred method of plant movement to prevent the introduction of farm-related pests to new farm areas. If the movement of seed is not possible, in the case of taro and banana, for example, clear inspection and treatment protocol of plant propagules need to be taught to farmers.

A major initiative to prevent the introduction of invasive pests and the movement of invasive pests once in Hawaii needs to involve county, state, federal, and NGO's. This fast response team must include participation by high level decision makers to facilitate a quick response to a specific invasive species problem.

One example of this type of effort include discussions on the development of a hot water treatment facility at Kaunakakai wharf as a last ditch attempt to control pests from establishing themselves on Molokai, include the little fire ant and the coqui frog.