

Pests, diseases that we don't want

Source: BIOSECURITY AUTHORITY OF FIJI

Fiji has been fortunate to avoid several major pests and diseases that are common in other countries around the world. We have thriving agricultural industry and produce high quality crops for export as well as local consumption.

However, it is becoming increasingly difficult to maintain this status in today's world, where free trade and extensive people movement can result in the invasion and establishment of exotic (foreign) pests and diseases in our country. In this Biosecurity feature we look at some major pests and diseases that are a threat to Fiji's agricultural industry. These are just a few of the pests and diseases that BAF is safeguarding against.

1. Foot and mouth disease

Foot and Mouth Disease (FMD) is a highly contagious disease affecting the cloven-hooved animals such as cattle, pigs, sheep and goats. It is found in Africa, the middle East, Asia and South America with occasional outbreaks in the United Kingdom, Ireland, France and the Netherlands in 2001. It is not fatal in adult animals but can kill young animals and cause production losses.



Blister like sores on the tongue and lips in the mouth is one of the early signs of the Foot and Mouth Disease

FMD can be spread through introduction of new animals carrying the virus into susceptible herd. Also through contaminated materials like clothing, instruments, vehicles, and meats and other animals products such as unpasteurised milk, cheeses and uncooked meat from infected animal.

Early signs of FMD include fever and sores like blister on the tongue and lips in the mouth, on the teats and between the hooves. FMD often makes animals weak and unable to walk and eat.

Economic impact of an outbreak of FMD in Fiji- FMD would have very serious effects on Fiji's livestock industry since many animals found in the country are susceptible to the disease. Fiji's trade in livestock and livestock production could face severe restrictions from non-infected FMD countries which includes Australia and New Zealand.

Eradicating FMD also costs a lot of money. An outbreak of FMD in United Kingdom in 2001 saw slaughtering of 10 million animals and estimated cost in damages and losses of £8 billion (approx FJD 23 billion) as part of the efforts to control the disease.

2. Newcastle disease

Newcastle disease (ND) is one of the most important poultry diseases worldwide. It can be found in parts of Africa, Asia, South America and Papua New Guinea.



Infected bird showing signs of gasping, nasal discharge and swollen eyes

Spread of the disease is usually by direct contact with infected or diseased birds. The virus can be present in frozen poultry meat, manure, exhaled breath, on contaminated equipment or on in carcasses, water, food or clothing.

Sudden death, high mortality, loss of appetite, coughing, gasping, nasal discharge, bright green diarrhoea and nervous signs such paralysis and twisting of the heads are all symptoms of the disease.

Economic impact – an outbreak of the

Newcastle disease in Fiji could devastate Fiji's poultry industry, affecting the livelihoods of several small poultry farmers. Fiji could also face trade restrictions.

In 1999, an outbreak in Newcastle disease in Australia resulted in slaughtering of \$1.9 million meat chickens amongst other birds and cost AUD 24 million (approx FJD 43 million) to eradicate.

3. Taro leaf blight

Taro leaf blight (TLB) is a fungal like disease of major importance to all taro growing countries like Fiji. It is a disease caused by water mould-like fungus that attacks the leaves and stalks of taro.



Taro leaf destroyed by leaf blight

Right condition a farm can be wiped out in less than a week This disease can be found in Papua New Guinea, Solomon Islands, Hawaii, Samoa, American Samoa, Thailand and the Philippines.

The first sign of the disease is a small circular speck, brown on the upper leaf surface and water soaked below. Infection often begins on the lobes where the water droplets accumulate. The circular spores begin to enlarge and become irregular in shape. It also becomes dark brown in colour with yellow margin.

The TLB spores can be spread by wind, rain, infected planting materials and contaminated farm equipment.

Economic impact- Taro leaf blight is a major threat to Fiji's \$20 million taro export. It can also have a devastating impact on all our livelihoods and our food security.

TLB was introduced in Samoa in 1993 and within months, the whole taro industry had been totally wiped out causing millions of dollars loss in export earnings, loss of staple crop, as well as loss of a cultural icon for Samoa.

4. Bacterial crown rot and papaya ringspot disease

Bacterial crown rot (BCR) and Papaya ringspot (PRS) are devastating diseases of papaya worldwide.

Bacterial crown rot can be found in Tonga, Philippines, Malaysia and Indonesia. The disease causes yellowing along the leaf edges and water soaked areas on the bases of leaf stalks, crowns, and along leaf mid-ribs. The fruit can have large dark spots on the skin and water soaked flesh.

BCR can be spread by infected seeds, running water, contaminated farming equipment, animals and birds.

Papaya ringspot disease (PSR) can be found in Queensland Australia and Hawaii. PSR is spread from plant to plant by aphids, which are small sucking insects. There is no cure for PSR.

Early signs of PSR include



Papaya trees infected with Bacterial Crown rot



Papaya ringspot disease on green fruit

yellowing and vein-clearing of young leaves. Distinctive ringspot patterns on fruit consisting of concentric rings and spots, or c-shaped markings - these markings persist during ripening and can darken to become orange-brown rings as the fruit matures

Economic impact- Both BCR and PSR are threat to our thriving papaya export of \$6million in a good year as well as a lucrative local market for tourism and local consumption.

5. Sugarcane smut

Sugarcane smut is a devastating disease for sugarcane growing countries worldwide. It is a fungal disease that affects sugarcane. It can cause significant loss in production as well as reduce the quality of the cane juice.

The most recognisable sign of the smut disease is the "smut whip" which is a curved, pencil-thick growth, gray to black in colour that emerges from the top of the affected cane plant. The sugarcane smut spores can be spread by infected seed cane, running water, humans, insects and contaminated farm equipment.

Economic impact- An outbreak of sugarcane smut could devastate Fiji's sugar industry which is an integral part of the country's economy that directly and indirectly supports the livelihoods of 200,000 people and earns around \$200 million a year in export proceeds.



Sugarcane plant with an emerging smut whip

6. Lethal yellowing of coconut



Coconut trees infected by Yellow Lethal that are dead and resemble telephone posts

Lethal yellowing (LY) is a deadly plant disease which affects palms; most commonly in coconut and fan palms. Lethal yellowing is caused by a phytoplasma pathogen which is microscopic and similar to bacteria. The disease is transmitted by sap feeding insects that feed on infected coconut palms then transmit the pathogen to uninfected coconut trees.

The first sign that a coconut tree has been infected is the immature dropping of all of its fruit, irrespective of their size. In few months, the new flowers produced by the palm wither and blacken. Then the leaves progressively turn yellow and hang, starting from the lower leaves then moving to the top leaves. Once the top leaves have gone, the palm is dead and all which is left is something resembling a telephone pole.

Economic impact- the economic impact would be multi-faceted as a major trade commodity of coconut is copra, which yields oil that is extensively used in the production of other products like soap, margarine, cooking oil, cosmetics and variety of processed foods, ice cream and pastries. Lethal yellowing will not only affect Fiji's copra industry but also all other industries linked to it. The coconut tree, also known as the tree 'tree of life' has multiple uses in the everyday life, it is used in construction, creation of handicrafts, food and plays a role in cultural significance.



Giant African snail

7. Giant African snail

The Giant African snail (GAS) is one of the world's most destructive pest of fruits and vegetables. It can grow up to 30cm long and weigh up to a kilogram. The shell of the snail is cone shaped and pointed towards the end unlike our native snail species whose shells are mostly circular. The colour of the shell can vary, but is commonly brown with pale cream streaks.

GAS is known to eat around 500 species of plants including cocoa, papaya and peanut, most varieties of beans, peas, cucumbers and melons.

Economic impact- GAS can devastate Fiji's agricultural industry worth almost \$550 to \$600 million annually and our rich and diverse native forests which is also an integral part of the country's economy. GAS is difficult to eradicate. It took Florida almost 10 years and more than \$1million American dollars (FJD \$1.8m) to eradicate GAS.

8. Asian gypsy moth



Asian Gypsy Moth

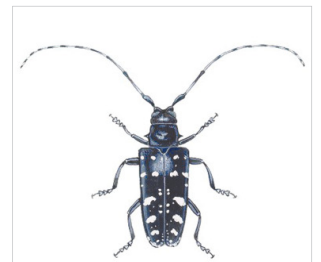
Asian gypsy moth is one of the most destructive pests of trees and shrubs. They are found in China, far eastern Russia, Korea and Japan.

The gypsy moth caterpillars feed on more than 500 species of trees and other plants including pine, oak, eucalyptus, fruit trees, willow and urban ornamental plants.

Economic impact- a major outbreak of the gypsy moth can also devastate Fiji's forestry and agricultural industry.

9. Asian longhorn beetle

Asian longhorn beetle is a serious pest that bores deep into hardwood trees, eventually killing them. It attacks willow, mulberry and other hardwood trees.



Asian long hornbeetle

Asian longhorn is a native to southern China, Korea and Japan and was found in parts of United States. The beetle larvae burrow deep into the heartwood of trees to feed, making this pest hard to control using insecticides.

Economic impact- would be very destructive as these beetles could potentially devastate Fiji's lush native forests, our timber industry and our rich flora and fauna.

Exotic pests and diseases can enter Fiji through passengers and imported cargo as such it is important for everyone to know about the biosecurity requirements of Fiji to help prevent introduction of these pests and diseases into the country and protect our agricultural industry and environment.

If you see any of the pest or signs of the mentioned diseases please contact the Biosecurity Authority of Fiji.