

Biological Control (continued)

Biological control is a method whereby suitable natural enemies from the native homeland of the weed is used to regulate its population densities in the region where it is a problem. Through international collaboration three such natural enemies have been identified for mikania control in PNG and Fiji. They include two pretty butterfly species (*Actinote anteus* and *Actinote thalia pyrha*) and a rust causing fungus called *Puccinia spegazzinii* that attacks mikania leaves and petioles.

The two butterflies were introduced from Indonesia where they are already being used to control mikania. These are being host-tested before they will be released in Fiji and PNG. This is to ensure that they will not harm any non-target native or useful plants when released in the wild.

It is hoped that mikania infestations in Fiji and PNG can be reduced to a level where it will not be seen as a weed to farmers and the natural environment.

WILL BIOLOGICAL CONTROL COMPLETELY ERADICATE MIKANIA FROM FIJI OR PNG?

NO. The biological control agents will not eradicate mikania. Instead, they will only limit its growth and reduce the negative effects it has on crops and on the general environment. Mikania will still continue to be present in the Pacific Islands but only at low densities.

A successful biological control program will mean that farmers will spend less time weeding mikania, spend less money buying herbicides to control it and reduce health and environmental risks associated with weed control. In forest clearings it will no longer contribute to suppression of forest regeneration.

Mikania, mile-a-minute or wa bosucu (call it by whichever name you prefer) will still be present in Fiji, PNG or the Pacific islands even when under biocontrol so it can still be used for herbal medicine or other purposes.

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Mikania micrantha

MIKANIA
WA BOSUCU,
MILE-A-MINUTE WEED,



Ecology and Control Options

WHAT DOES MIKANIA LOOK LIKE?

Mikania is also known as mile-a-minute, or *wa bosucu* in Fijian. It is a creeping vine with heart-shaped leaves, usually found growing up, over and around other plants.



The heart-shaped leaves of mikania grow in pairs along the stem.



South of the Equator (e.g. in Fiji and PNG), mikania produces clusters of small creamy-white flowers. These flowers produce many light weight seeds that are spread over large distances by the wind.

Mikania can grow over and smother other plants including food crops and fruit trees as seen on this banana plant.



IS MIKANIA A NATIVE PLANT?

NO, NOT TO THE PACIFIC ISLANDS

It is originally from the tropics of South and Central America and the Caribbean, but has spread to many countries in Southeast Asia and the Pacific. In the Pacific mikania is considered an alien or introduced species. It appears to have been introduced accidentally into Fiji in the early 1900s – it was first reported in Fiji in 1907.

IS MIKANIA A USEFUL MEDICINAL PLANT OR IS IT A WEED?

BOTH. It is a useful medicinal plant but it is **ALSO** a serious weed.

Mikania is used both here and in its native range of South America as a medicinal plant for the treatment of cuts and bruises. Recent biochemical research has shown that it has antimicrobial (germ-killing) properties.

Despite this, Mikania is **ALSO** a serious weed because of the way it can grow very quickly over other plants and smother them, blocking out sunlight and competing with them for water and valuable soil nutrients.



HOW CAN WE CONTROL MIKANIA?

Physical Control

Many farmers use this as their main method of weed control. They clear the weeds from around their crops by using their hands, cane-knives, hoes, or motorized slashers. However, because mikania grows back so quickly, such efforts must be continuously repeated. This method can thus be time-consuming, labour-intensive and, in the long run, expensive.

Control Using Herbicides or Weedicides

There are some chemical herbicides available (e.g. Paraquat, 2,4-D) that can be sprayed onto mikania to kill it. However these herbicides can also cause damage to the crops underneath the mikania. Herbicides can also be very expensive

There are also serious environmental risks and health concerns about the use of large quantities of herbicides.



Biological Control

One of the reasons that mikania grows so fast and has become a weed in the Pacific is because it has no *natural enemies* in the introduced range. In its native home range many pests and diseases keep mikania under control. These natural enemies are absent in Fiji and PNG, and the other islands in the Pacific where mikania was introduced.