

# Biological Control Case Study

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## Cassava Green Mite

Another unwelcome migrant from Latin America, a spider mite, began to affect cassava in Africa around the same time as the mealybug. When the mealybug was brought under control this so-called cassava green mite became a significant pest.

### Challenge

The research team decided to follow an approach similar to that used for the cassava mealybug. They would look for a natural enemy of the green mite in its home territory in South America. In Colombia scientists found that another mite, rather than a wasp, was the main natural enemy of the green mite. They collected a vast range of candidate mites, hoping to narrow the group to a few candidates that might work in Africa. After undergoing quarantine and testing against non-target species, some were introduced into Africa but they failed to establish and soon died out. The green mites continued to thrive and damage cassava crops. This experience pointed out how difficult effective biological control can be to achieve.

The solution was to look in regions climatically similar to those where the green mite was established in Africa. Such conditions were found in Brazil. Two of the species from Colombia that had been tried and failed were also found in Brazil. The Brazilian mites did indeed establish in Africa but their spread was very slow.

### Intervention

Ten years after the first work, another predatory mite was found that both established itself in Africa and spread rapidly in farmer's fields. Studies of these mites showed that they did not have voracious appetites and it was thought that might be a disadvantage and that they might not be very effective at controlling the green mite. Now scientists believe that this trait is an advantage, allowing enough green mites to survive to prevent the dying off of the predatory mites. So far the predatory mite has only been found on cultivated cassava and on no other plants (unlike the first mites that were tried). In addition to feeding on the green mites, it seems to feed on pollen and on the sap that exudes from cassava leaves.

### Impact

The introduction of the predatory mite—called *T. aripo*—has not only reduced the damage caused by green mites throughout the cassava regions of Africa, it has contributed substantially to the science of biological control and to the knowledge of how mites work in complex food systems. Again this classic biological control costs farmers nothing and once established, is self-sustaining.