

Biological control against a number of the 'prickly pears'

Investigations into biological control agents against prickly pears began in 1912. Over 150 insect species were studied throughout the world, with fifty-two species selected for transport to Queensland. Following intensive host specificity testing, eighteen insects and one mite were released in Queensland. Nine insects and the mite remain established in Queensland. These species are:

- *Cactoblastis cactorum*, a stem-boring moth
- *Dactylopius ceylonicus*, a cochineal mealybug
- *Dactylopius opuntiae*, a cochineal mealybug
- *Dactylopius confusus*, a cochineal mealybug
- *Dactylopius tomentosus*, a cochineal mealybug
- *Dactylopius austrinus*, a cochineal mealybug
- *Chelinidea tabulata*, a cell-sucking bug
- *Tucumania tapiacola*, a stem-boring moth
- *Archla gocheirus funestus*, a stem-boring beetle
- *Tetranychus opuntiae*, prickly pear red spider mite

These biological control agents continue to keep several prickly pears and tree pears under control. It is important to remember not all the agents attack all prickly pears and tree pears. The most successful of these species were the moth *Cactoblastis cactorum* and five cochineal mealybugs, *Dactylopius ceylonicus*, *D. opuntiae*, *D. confusus*, *D. tomentosus* and *D. austrinus*. The other agents are still around but not in sufficient numbers to provide control.

***Cactoblastis cactorum* (cactoblastis moth)**

Larvae of this moth were introduced from Argentina in 1925. *Cactoblastis* proved to be the most effective agent against the common and spiny pest pears, destroying massive infestations of these prickly pears in Australia. It keeps these two pest pears controlled to an acceptable level most of the time although it is less effective in some coastal and far western areas. The larvae collectively eat out the contents of the pads leaving empty pad skins and piles of mushy droppings. The orange and black larvae are occasionally observed on the outsides of pads. *Cactoblastis* also attacks most types of prickly pear but is not effective against them.

***Dactylopius* spp. (cochineal insects)**

All female cochineal insects are small sessile mealy bugs that spend their adult lives permanently attached to their host plants sucking plant juices. They are covered by a fine white waxy secretion and when crushed yield a carmine colouring. The adult males are small free-flying insects that do not feed.

***Dactylopius ceylonicus* (Monacantha cochineal, Argentine cochineal)**

This South American mealy bug was released in 1914 and 1915 to control drooping tree pear. It destroyed the dense infestations existing at that time. It is specific to drooping tree pear and today remains the only effective biological control agent for drooping tree pear. This insect needs to be distributed manually.

***Dactylopius opuntiae* (prickly pear cochineal)**

This mealy bug was introduced from Mexico and southern USA between 1920 and 1922. It is effective against common pest pear, spiny pest pear, velvety tree pear and Westwood pear and remains the main biological control agent against velvety tree pear and Westwood pear. This insect spreads slowly in nature and can be assisted manually.

***Dactylopius confusus* (prickly pear cochineal)**

This mealy bug was introduced from Florida and released in 1933 against spiny pest pear. It remains effective against spiny pest pear in central Queensland but spreads slowly. This insect can be spread manually.

***Dactylopius austrinus* (tiger pear cochineal)**

This mealy bug was introduced from Argentina in 1932. It is specific to and effective against tiger pear. It rapidly reduces tiger pear populations but dies out in a paddock after the destruction of tiger pear. It needs to be reintroduced after tiger pear regrows.

***Chelinidea tabulata* (prickly pear bug)**

This plant sucking bug was introduced from Texas in 1921. It was effective against dense common pest pear before *Cactoblastis cactorum* was but is now relatively ineffective. This insect also attacks most other prickly pears. The adult is a pale brown bug up to 20 mm long that leaves characteristic round bleached spots on the surface of the cactus.

***Tucumania tapiacola* (prickly pear moth-borer)**

This moth was introduced from Argentina in 1934 against tiger pear. Its solitary larvae feed internally and eat out tiger pear pads with limited effect. It has been observed attacking common pest pear and *Harrisia* cactus.

***Tetranychus opuntiae* (prickly pear spider mite)**

This mite was introduced from southern USA and Mexico in 1922. It was effective against common pest pear but is now rare and difficult to find. It causes distinctive scar tissue formation around the areole.

