Control Measures

- **Fruit drop collection and burying:** This method will reduce the fly population in the following year. From mid October dropped fruits should be collected. The fruits should be buried into pits of 1.5 to 2 m deep and covered. Ants and the rotting process will destroy the larvae and pupae.

- **Bait splashing with malathion and a bait of protein**
  
  *Bactrocera minax* requires protein for egg development and is attracted towards protein food. Malathion is mixed with protein hydrolysate to prepare a bait spray.

Timing of bait spray:

The first splash should be done around 15 April, when flies start emerging. Repeat the treatment every week, until mid-May; every two weeks till 15 August. Apply the mixture in every second tree, using two or three splashes in each. Splashing should be done on dry and sunny days with a locally made broom or something similar.

Cover spray

A cover spray with dimethoate 30% EC @ 2ml per litre in early June followed up by a second treatment in late June, would provide high mortality of eggs in fruit.
The pest organism

*Bactrocera minax* is a big fruit fly species that is found in Southern China, India and in Bhutan. It has a wing span of 10 mm and the length of the body reaches up to 12 mm. The females possess a long and exposed ovipositor. The flies are brownish in color with yellow markings. The wings have a dark band along the outer margin and the general appearance is wasp-like. The maggots are creamy white with black mouth parts. They measure 12-15 mm when mature. The puparium is yellowish brown and 8-11 mm long.

The fruit fly causes fruit drop in October and November and is more important in orchards above 1000m altitude. It can also occur in shady orchards at lower altitudes.

Life cycle of *Bactrocera minax*

The first sexually mature, egg-laying females appear in early June, just prior to the first mandarin fruit reaching 11 mm diameter, which is the first stage susceptible to fruit fly oviposition.

From June onward oviposition spots can be observed on the upper half of fruit over 12 mm size. Later, fruits show round, brownish, hard spots of 1-2 mm diameter just under the skin.

In October the maggots become easily visible. The larvae (maggots) feed on the pulp and develop inside the maturing fruits. When the maggots are matured they leave the fruit by making an exit hole, and enter into the soil to pupate. They pupate in the soil at a depth of few centimetres. Puparia remain in the soil for 5 to 7 months and adults emerge in late April. Emergence of adult flies from the soil occurs over a four-week period from late April to late May.

Damage

Female flies lay their eggs in unripe fruits. The maggots feed inside, rendering the fruits useless and causing them to drop prematurely.