



# Coconut Research Institute of Sri Lanka



Advisory Circular No B 16

## COCONUT MITE AND ITS MANAGEMENT

The Coconut mite scientifically known as *Aceria guerreronis*, is an introduced pest to Sri Lanka. It was first reported in the Kalpitiya peninsula in late 1997. Currently it is occurring in Northern, North - central, Western and Eastern provinces and Gampaha, Matale and Hambantota districts. The pest damages the nuts.

### Nature and Identification of Damage

The coconut mite is microscopic in size therefore, it could not be seen by naked eye (Fig :1). It is worm like in shape and lives in large aggregated colonies beneath the perianth of nuts, from just after fertilization up to harvesting stage. The young nuts of 3-6 months old are most vulnerable to the pest. The mites feed on the meristematic tissues beneath the perianth. The initial symptom of the damage is a yellowish white triangular patch with the base at the level of the perianth (Fig;2). Later the patches become necrotic and gradually enlarge with the continued feeding of the mites (Fig;2). Due to the damage the nuts fail to develop normally and become deformed or smaller in size. (fig 3) Sometimes "Y" shape deep cracks develop at the level of the perianth. The nuts severely damaged may fall prematurely.

### Management of the pest

A successful and sustainable management method for coconut mite has not yet been developed here or in any other countries. Therefore, the present strategy in the management of the pest is to reduce the damage and the spread as much as possible.

### Reduce Spread

The pest spreads mainly by wind and infested materials. Therefore, it is strongly advised to avoid transportation of infested fresh nuts and husks to un- infested areas. Infested material kept over one month after harvest are free from live mites and could be transported. Also, infested fallen immature nuts in the estates should be collected and burnt or buried to reduce the spread in the estate.



Fig 1 : Aceria Coconut Mite  
(Enlarged Photograph)



Fig 2 : Initial symptoms on young nuts



Fig 3 : Mature bunch with the damage



## Reduce Damage

It is important that coconut growers are vigilant and aware of the symptoms of the damage. If the pest damage is found the following recommendations could be followed to manage the pest.

- a. If the infestation is reported in few palms in an area for the first time, cut and burn all nuts in the infested palms.
- b. Apply 30% used engine oil on nuts of infested palms (see "A" below for preparation). It is especially recommended for infestations in boundary areas, home gardens, selected heavily infested palms or blocks. If properly applied this treatment kills almost all mites on the nuts resulting in discontinuation of damage and prevention of any further damage (curative action). The nuts with no damage at the time of treatment will not develop fresh damage until harvested (preventive action). Apply the mixture at 2-monthly intervals to the newly developing untreated nuts until the damage is reduced to a very low level. It will not be necessary to repeat application on already treated nuts.
- c. Interim recommendation: Apply palm/vegetable oil and sulphur mixture (see "B" below for preparation). If properly applied over 90% of the coconut mites can be killed by this mixture. The mixture can be sprayed from ground level using a modified knapsack sprayer or a power sprayer. Apply the mixture at 3-4 month intervals, preferably in dry months such as January, April and July to the bunches starting from the newly opened inflorescence up to 6-7 months old bunch. Unlike the 30% engine oil mixture, this mixture is not deleterious to the natural enemies of the coconut mite. It has been shown that damage levels can be reduced significantly and the treatment is cost-effective to the grower.

## Preparation and Application of Chemicals

### A. Used Engine Oil Mixture

#### Ingredients to prepare one litre :

Water	700 ml (3.5 cups)
Used (waste) engine oil	300 ml (1.5 cups)
Soap powder/liquid	6g (one tablespoon)
Wheat flour	6g (one tablespoon)

Please ensure that used engine oil is not mixed with kerosene oil.

#### Method :

1. Add soap powder/ liquid to water and stir well.
2. Add flour to the soap water mixture and stir well to form a homogenous mixture.
3. Add used engine oil to the soap and flour mixture and mix thoroughly.
4. Transfer the prepared mixture to a plastic bottle.

#### Application :

Climb the tree with the plastic bottle.

Thoroughly shake the bottle and pour a little amount of the mixture on the palm of the hand. Rub the mixture on the palm and the fingers. It is advisable to wear rubber gloves. Apply the



Fig 4: Application of used engine oil mixture



mixture on the perianth and the nut surface adjoining the perianth of all nuts of 2nd to 6th old bunches from the opened inflorescence. The size of the smallest button nut, which should be treated, is about 4-5 cm long. The treated nuts will appear black in colour, but later fade leaving the greenish black. Sometimes, depending on the quality of engine oil shallow, longitudinal fissures occur on the treated nut surface which has no impact on the nut. Generally one person could treat 30-40 palms, in a day. One litre of the mixture is sufficient to treat 8-10 palms.



Fig 5: Young bunch treated with used engine oil mixture



Fig 6: Recovered, mature nuts

## B. Palm /vegetable oil and sulphur mixture

### Ingredients to prepare one litre :

Palm oil	200 ml (1cup)
Water	800 ml (4cups)
Soap power	12g (2 tablespoons)
Wettable sulphur 80%	5g (1 tablespoon)

### Method :

1. Mix water, soap powder and sulphur.
2. Add palm oil in to the above mixture and mix thoroughly.

usually 01litre of the above solution is enough to spray on to one palm. It is not necessary to climb the palm to spray the mixture. The knapsack sprayer can be modified by inserting a flexible plastic tube between the tap and the lance of the sprayer. The lance with the nozzle of the sprayer can be tied on to a bamboo to aluminum pole, by which, up to 40 feet high trees can be reached.



Fig 7: Application of palm oil mixture

## **Future Strategies**

Chemical methods provide only short term control of the pest. Therefore, it is hoped to develop an integrated management method for long term sustainable management of the pest. Priority is being given to biological control methods using natural enemies of the pest. Currently studies are being carried out on local predatory mites and an entomopathogenic fungus.