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**MITE OUTBREAKS - TIMELY IDENTIFICATION FOR
EFFECTIVE IMPLEMENTATION OF ACARICIDAL CONTROL
MEASURES IN TEA LANDS**

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Feeding by mites have a long lasting effect on the tea bush when the damage is severe enough to cause either defoliation or a set back to growth. This is because, recovery of mite affected bushes is very slow, and further there is no compensatory growth following mite damage unlike in the case of feeding by some leaf eating caterpillars.

Mite outbreaks are often ignored or else control measures are adopted too late, leading to significant crop losses, especially in mite prone areas.

Mite outbreaks generally occur during dry weather periods. Occassionally, they continue into monsoonal weather.

The type and the magnitude of damage, the significance of the attack and type of approach towards control measures, differ from species to species.

Four species of mites (Order Acarina) feed on tea in Sri Lanka namely:

Oligonychus coffeae, Red Spider Mite
(Family:Tetranychidae),

Brevipalpus californicus, Scarlet Mite
(Family:Tenuipalpidae),

Hemitarsonemus latus, Yellow Mite
(Family:Tarsonimidae),

Calacarus carinatus, Purple Mite
(Family:Eriophyidae)..

Vigilance should be kept during the following periods when outbreaks could be expected :

- Upcountry, S.W.quarter
(Dimbula/Maskeliya/Dickoya/
Pundaluoya - from
December to
March, may
continue up
to May/June.
- Mid country - from July
to October and
also from
January to
April
- Uva and N.E.quarter
of up country - from May to
October,
and in
January/February
mini drought
- Low country - from
January/February
to April and
in July in
Balangoda,
Deniyaya and
Rakwana
districts. Very
occasionally
in other areas.

Identification and decision making on control measures

1. Red Spider Mite (R.S.M.)- *Oligonychus coffeae* (Neitner)

It is the largest and more common of the four tea mites and is the only one that can be seen with the naked eye when fully grown.

It is the only mite that answers the "thumb test" - the thumb, pressed on the upper surface of infested leaves, will leave blood spots on the thumb indicating the presence of live R.S.M.

Their cast skins appear as white 'dust' concentrated in patches in between veins (Fig.1) and not uniformly distributed.

In advanced stages of infestation the affected foliage appears ruddy bronze owing to brown necrotic tissue developing around feeding punctures. After a severe attack, the tea acquires a scorched appearance and takes a long period to recover.

The discolouration is confined to the upper surface of leaves while the undersurface remains fresh green (Fig.2).

Where R.S.M. is common: R.S.M. is most common in the Uva, mid-country around Kandy and Matale and in some areas of Sabaragamuwa Province, especially Balangoda, Rakwana, Deniyaya and Morawak Korale districts. Though less common, outbreaks do occur in up-country districts as well.

When to ignore the R.S.M.: The incidence of R.S.M. noticed on the roadside or when it makes its first appearance towards the end of a dry weather period can usually be

ignored. Heavy rain physically dislodges R.S.M. from the surface of leaves, but R.S.M. is unaffected by mild rain or the occasional showers that occur during dry season.

Where to spray: R.S.M. appearing in pockets, in the form of bronzed patches inside a tea field, during dry weather periods, should be spot sprayed.

A sample of leaves from the seemingly unaffected bushes at the periphery of the affected patch can be tested with the thumb for actively feeding young mites. Spraying should encompass the infested bushes outside the discoloured patch.

2. Scarlet Mite (S.M.) - *Brevipalpus californicus* (Banks)

Scarlet Mite resides at the leaf base and along the mid-rib and veins. S.M. imparts a sickly dull appearance to the upper surface of affected leaves and scorching appears on the underside, near the leaf base, along the midrib and radiating half way down the veins (Fig.3). It feeds mainly at the leaf base and causes heavy and fast defoliation and the affected bushes can easily be detected due to their sparse foliage.

Where scarlet mite is common: S.M. outbreaks are common in the up-country districts of Dimbula, Dickoya, Maskeliya and Pundaluoya and in Haputale; it is unusual in the low country.

Pockets of S.M. first appear in December in the S.W. monsoon quarter and in June in Uva. Outbreaks are common in fields in the third year from prune or in older fields.

When and where to spray: When pockets suspected as affected by Scarlet Mite are first noticed, at which stage the leaves are still intact, the leaves of adjoining, seemingly unaffected bushes should be examined for active live mites so that control measures could be adopted at the early stage of infestation in order to avoid heavy defoliation leading to long unproductive periods (10 x hand lens may be sufficient for an experienced person).

3. Purple Mite (P.M.)- *Calacarus carinatus* (Green)

In the very early stages, P.M. infestation mimics R.S.M. attack, the differentiating feature being that, P.M. causes scorching on the undersurface first and the discolouration (brown) is in a diffuse band along the margin starting from the leaf tip and spreading towards the base (Fig.4). This under surface scorching at the margin, starting from the leaf tip is never seen with the R.S.M. Another distinguishing feature is that the cast skins of P.M. are comparatively smaller (Fig.5), but uniformly scattered on the leaf lamina on both sides.

In advanced stages of attack the foliage acquires a purple colouration and the affected leaves are uniformly scorched on both sides.

More often than not, it is too late to spray an acaricide if the tea has turned purple.

Where purple mite is common: P.M. is more common in the districts where Scarlet Mite outbreaks occur and are often associated with the latter. But, unlike S.M., Purple Mite can be more common on fields in the first year from prune.

When and where to spray: Tea in the immediate neighbourhood of pockets of purple colouration needs to be examined microscopically to check for the spread of Purple Mite and if they bear actively feeding mites the discoloured pocket and also its neighbourhood must be sprayed. (Note: A very careful examination is necessary to see P.M. under 10x lens; it would be preferable to use a microscope for this purpose).

On the whole Purple Mite outbreaks are the least common.

4. Yellow Mite (Y.M.)- *Hemitarsonemus latus* (Banks)

Feeding of Yellow Mite is confined to the tender leaves, the unopened bud and the very tender stem. When examined with a 10 x lens, the mites appear as a fine dust in the early stages of feeding.

The typical corky tissue formation on the under surface, in the form of a diffused band on either side of the mid-rib becomes visible after a few days from their feeding. Therefore, symptoms of Yellow Mite feeding appear on lower, mature leaves of a shoot (Fig.6).

When and where Y.M. is common: Outbreaks are common in free growing tea. Unlike the other 3 types, Y.M. is more commonly encountered in post-monsoon weather. In prolonged dry weather Y.M. declines in number.

Even though outbreaks may be of a short duration the bushes take a much longer period to recover from the set back and therefore, it is very important to control Y.M. in immature tea, in tea recovering from prune and in the nursery.



Fig. 1 - Patchy appearance of brown colouration due to Red Spider Mite.



Fig. 2 - Discolouration of tea due to Red Spider Mite. Note the fresh green colour on the under surface of some affected leaves.



Fig. 3 - Under surface of leaf attacked by Scarlet Mite showing cast skins and scorching at the leaf base and along the midrib.



Fig. 4 Visual symptoms of Purple Mite attack.
 Right : Dorsal surface showing uniform discoloration of advanced stage of attack.
 Middle : Under surface of moderately infested leaf showing intense scorching in marginal band.
 Left : Marginal diffuse band of scorching seen in early stage of attack.

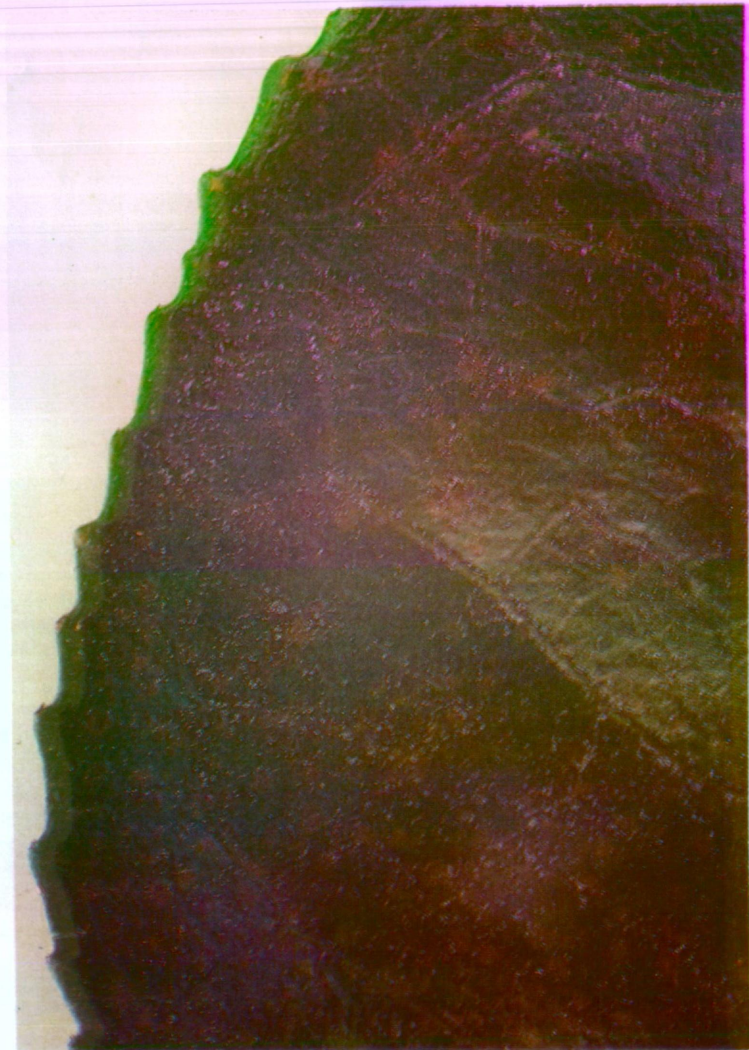


Fig. 5 - Comparative size of cast skins and live stages of Red Spider Mite (left) and Purple Mite (right)



Fig. 6 -

Damage symptoms of Yellow Mite. along
Note brown corky tissue in a diffuse band along
the midrib on under surface of lower leaves.

When not to spray: If the newly opened terminal leaves appear fresh green in colour, while the lower leaves exhibit typical Yellow Mite feeding symptoms, the mites have disappeared and there is no point in spraying.

The occasional attacks in mature tea can be controlled by hard plucking. Since the affected flush is brittle it makes flaky teas.

When control of Y.M. is necessary: If the tender leaves display a brownish colouration, the mites would be still feeding which situation could be confirmed by microscopic examination, or using a 10 x lens.

Acaricidal spraying for Yellow Mite is needed only in the case of nursery and in areas rested from plucking.

Acaricidal control of tea mites: Please refer TRI Advisory Circular I 7 for recommendations.

Efficient spraying equipment in good condition should be used at all times.

Microscope facilities are available at all TRI stations.