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RESEARCH ARTICLE

OCCURRENCE AND HOSTS FOR A DESTRUCTIVE THRIPS *TABACI* LIND. (THYSANOPTERA : THIRIPIDAE)

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ABSTRACT

Thrips tabaci Lind. (Thysanoptera : Thripidae) is destructive, polyphagous pest of agricultural and other economically important crop plants. *T. tabaci* scrape its mouth parts on tender parts of the crop and feed on oozing sap, resulting white / brown specks / strikes on leaves / flowers and fruits and affect the growth of plant and quality of fruits. Therefore, host crop plants have been detected for *T. tabaci* from Western Maharashtra. It was found emerging economic important crops such as Onion *Allium cepa* L., Tomato *Lycopersicon esculantum* Mill., Cotton *Gossypium hirsutum* L., Garlic *Allium fistulosum* L., Tobacco *Nicotiana tabacum* L., Castor *Ricinus communis* L., Potato *Solanum tuberosum* L., Cucumber *Cucumis sativa* L., Bottle gourd *Lagenaria vulgaris* L., Cabbage *Brassica oleracea capitata* L., Cauliflower *Brassica oleracea botrytis* L. etc.

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INTRODUCTION

Adult thrips are small, cylindrical or cigar shaped insects measuring about 1 to 2 mm in body length. They are with two pairs of fringed wings. Their larvae are similar to their adults in appearance but without wings and smaller in size.

According to Kumar *et al.* (2013) there are more than 8000 species of thrips in the world. Thrips scrape their mouth parts over tender surface of crop plants and suck the cell sap resulting white and brownish specks or strikes on leaves, flowers and fruits of the crops. They affect the growth and yield of the crops adversely. Therefore, crop diversity of *Thrips tabaci* L. have been studied. Review of literature indicates that Thrips have been studied by several workers namely, Rahman (1952), Anthakrishnan (1969), Ananthkrishnan & Sen (1980), Mound & Kibby (1998), Eason & Burfield (2006), Kumar *et al.* (2012), etc with respect to diversity, crop range, occurrence and damage.

MATERIALS AND METHODS

Occurrence and damage of thrips have been studied by visiting field crops from Western Maharashtra specially Kolhapur, Sangli and Satara at 15 days interval during morning hours (8.00 a.m. to 9.00 a.m.) by spot observations. The thrips were

mostly found in flowers and tender parts of the crops like leaves, developing shoots and fruits.

Silvering or browning was the most common symptom of the damage by thrips, twisting and curling of crop plants have been accounted periodically.

For occurrence, thrips have been collected by beating flowers / 1 ft twig with finger and collecting thrips dropped on white paper used for collection. Various crop plants have been considered for collection and noting host crop plants and their damage.

RESULTS

Results recorded in table-1 and figs. 1 to 9 indicated that on onion and garlic incidence of thrips was started from November and steadily increased during the hot months while, on bottle gourd, cabbage and cauliflower incidence was noticed during the monsoon months but with relatively low population.

Incidence of thrips was also noticed on potato during the monsoon dry months and thereafter in rabi season in summer. *T. tabaci* was also noted in summer months on cucumber and also on cabbage and cauliflower especially in May.

On castor *T. tabaci* was seen in monsoon months and also in summer months. It has also been noted on cotton and tobacco

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during the monsoon months till September. *T. tabaci* was predated by an anthocord bug and a mite *Camosid* sp. *T. tabaci* was also found feeding on fungi causing powdery mildew on cotton and mulberry.

Anthophilous - flower feeding, phyllophilous - leaf inhibiting, poeophilous - grass inhibiting, phtaophilous - bark inhibiting and cecidogenous gall inhibiting. Monophagy corresponding to strict host plant specificity was comparatively rare and met

Table 1 Occurrence of *T. tabaci* on various crop plants in Kolhapur region

| Crops | June | July | August | Septem-ber | Octo-ber | Novem-ber | Decem-ber | January | Febru-ary | March | April | May |
|-----------------------|------|------|--------|------------|----------|-----------|-----------|---------|-----------|-------|-------|-----|
| <i>A. cepa</i> | -- | -- | -- | -- | -- | 5 | 5 | 6 | 7 | 8 | 8 | 8 |
| <i>A. fistulosam</i> | -- | -- | -- | -- | -- | 3 | 3 | 4 | 4 | 5 | 4 | 5 |
| <i>O. o. capitata</i> | 2 | 1 | 1 | 2 | 4 | 2 | -- | -- | -- | -- | -- | 4 |
| <i>O. o. batrytis</i> | 2 | 1 | 2 | 4 | 6 | 2 | -- | -- | -- | -- | -- | 5 |
| <i>L. esculantum</i> | 3 | -- | -- | -- | 2 | 3 | 2 | 2 | 3 | 4 | 5 | 4 |
| <i>L. vulgaris</i> | -- | -- | 1 | 3 | 3 | 2 | 2 | -- | -- | -- | -- | -- |

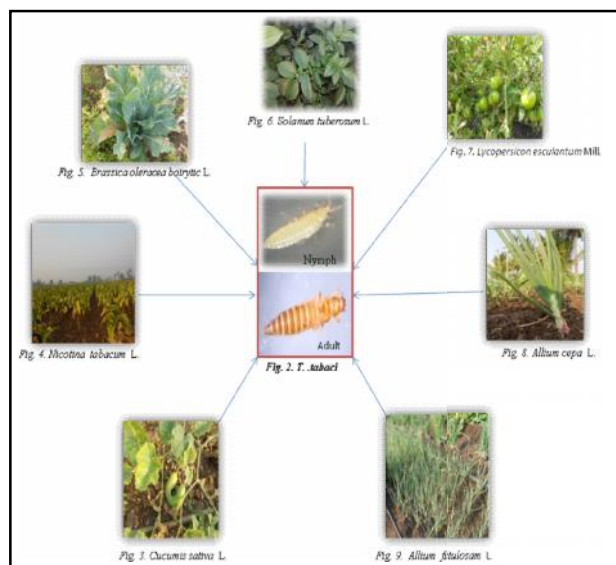
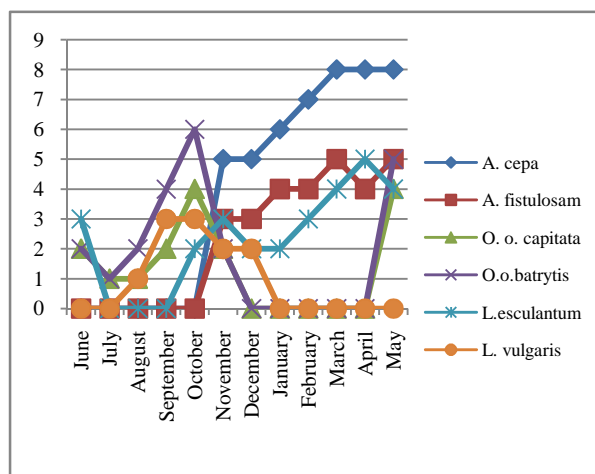


Fig1 Occurrence of *T. tabaci* on different crops

DISCUSSION

According to Ananthakrishnan (1969) thrips were very susceptible to environmental change and thriven under specific or microclimatic situations including temperature and humidity. They occurred on the tender succulent parts of plants, under the bark of dead and dying twigs or among decaying leaves of grass, feeding on fungal spores. Some thrips were able to produce galls on crop plants. Most of thrips were phytophagous but several predatory thrips have also been reported (Bailey, 1939). Based on the habitat, thrips were grouped into following types by Watson (1923):

with some species of thrips such as *Helionothrips kadaliphilus* on banana. All cecidogenous species (except few) are strictly monophagous. Oligophagy was more commonly reported in thrips as *Microcephalothrips abdominalis* was restricted to the family compositae. While, polyphagy have been reported in several species of thrips; *Caliothrips indicus*, *Scirtothrips dorsalis* and *Taeniothrips distalis* have very wide host range in different families of plants. Similarly, *T. tabaci* was also polyphagy as noted by Anandthakrishnan (1969). In the present work *T. tabaci* was found attacking about 10 host plants from Western Maharashtra (Kolhapur).

Localized temperature, humidity, light, wind speed, vegetation and host species diversity influenced the occurrence of thrips on crop plants (Cederholm, 1963). According to him there was considerable change in the numbers caught at different time of the day. In the present study, thrips have been collected during the morning hours (8.00 to 9.00 am). Samples of *Anaphothrips sundanensis* collected at an interval of every two hours between 8.00 a.m. and 9.00 a.m. on *Panicum maximum* Jacq. indicated reduced number of catches than in the subsequent samples taken after this time. A considerable varieties in abundance of *A. sundanensis* on *P. maximum* have been reported by Anandthakrishnan & Jagadish (1968).

Prior to the introduction of *Scirtothrips dorsalis* into the New World, the host range of this pest included more than 100 plant taxa among 40 families (Mound & Palmer, 2012). In India, *S. dorsalis* was very serious pest of chili (Butani & Verma, 1976). In the present study 10 host plants have been reported from Kolhapur region. *T. tabaci* was found migrating from onion garlic and bottle ground from dry months to cabbage, cauliflower and castor in monsoon months. Natural enemies in the form of parasitoids and predators played a very crucial role in pest management (Sathe & Bhoje, 2000; Sathe 2014, 2015) as ecofriendly control. Similarly, present pest, *T. tabaci* was found attacked by a predator Anthorid bug. The present work will be helpful for understanding the ecology of the pest and diversity of crops attacked and further designing appropriate control measures.

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