A CASE STUDY

Asian Journal of Bio Science (April, 2010) Vol. 5 Issue 1 : 142-144

Species richness and host-plant diversity of genus *Thrips* (Thysanoptera: Insecta) in Kashmir valley

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(Accepted : February, 2010)

Key words : *Thrips* spp., Host-plant complex, Kashmir

The genus *Thrips* belongs to insect order Thysanoptera, sub-under Terebrantia and family Thripidae. The various species belonging to this genus are minute insects, gregarious in nature and feed on different parts of host-plants, *viz.*, leaves, flowers fruit, etc., resulting in withering, browning and occasionally death of leaves. Some species, like *Thrips tabaci*, are also known to transmit spotted wilt virus disease. The previous records of thrips species, belonging to genus *Thrips* from the Kashmir valley, have been provided by Singh (1946), Bhatti (1980), Bhagat and Lone (1986, 1991 and 1991a), Bhat (1991) and, Lone and Bhagat (1990 and 1991).

The various thrips species, belonging to genus *Thrips* under sub-under Terebrantia and family Thripidae of insect order Thysanoptera, with their host-plant complex and distribution in Kashmir Valley are given as under:-

Thrips alatus Bhatti :

- *Muhlenbergia* sp., Yus
- *Parrotiopsis jacquemontiana*, Ari
- *Plectranthus rugus*, Ari
- *Senceio jacquemontiana*, Lol.
- *Solanum melongena*, Gan
- *Trifolium pratense*, Gan.
- *Verbascum thapsus*, Ari.

T. bukkieni Priesner :

- *Taraxacum officinale*, Bij

T. carthami Shumsher :

- *Carthamus tinctorius*, Pam.
- *Euphorbia helioscopia*, Pam.
- *Malus domestica*, Kas.(=*Pyrus malus*)
- *Oxyria digyna*, Aha
- *Prunus dulcis*, Kas. (=*Prunus amygdalis*)
- *Pyrus communis*, Ana
- *Ranunculus* sp., Tar.
- *Salix aegyptica*, Haz.
- *Stipa sibrica*, Sha.
- *Viburnum grandiflorum*, Dac (= *Viburnum foetidem*)
- Unidentified host plant-species

Thrips corydalin n. sp. (undescribed) :

- *Corydalis govaniana*,Tan

T. flavus Schrank :

- *Allium cepa*, Kas
- *Chrysanthemum vulgare*, Tan. (=*Chrysanthemum leucanthemum*)
- *Crocus sativus*, Pam
- *Euphorbia helioscopia*, Pam
- *Lythrum salicaria*, Haz.
- *Malus domestica*, Ali (*= Malus pumila*) (= *Pyrus malus*)
- *Mentha arvensis*, Ali
- *Oenothera drumondi*,Bij
- *Oenothera glaziowiana*, Ban.
- *Polygonum complexicaula*, Tan.
- *Prunus dulcis*,Kas (=*Prunus amygdalis*)
- *Pyrus communis*,Kas
- *Ranunculus laetus*, Bar.
- *Ranunculus* sp., Tar
- *Senecia jacquemontiana*, Lol.
- *Valeriana stracheyi*, Uri.
- Unidentified host plant species, Tar.

Thrips farmosanus kali Bhatti :

- *Senecio jacquemontiana*, Tar, Lot.

T. flavidulus (Bagnall) :

- *Polygonum affinis*, Gul-Ala.
- *S. jacquemontiana*. Lol.
- *Swertia petiolata*,Ala
- *Valeriana stracheyi*, Uri.

T. florum Schmutz :
- *Carduus edelbergii*, Yus.
- *Taraxacum officinals*, Ana.

T. garuda Bhatti :
- *Capsicum annum*, Ana.
- *Solanum melongena*, Kas.
- *Trifolium repens*, Uri.
- *Verbascum thapsus*, Haz.

T. hawaiiensis (Morgan) :
- Unidenlified plant, Tan.

T. longiceps (Bagnall):
- *Bergenia stracheyi*, Tar.
- *Polygonum affinis*, Gul.

T. palmi Karny :
- *Solanum melongena*, Che.

T. pillichi Priesner :
- *Euphorbia wallichii*, Uri.

Thrips tabaci Lindmann :
- *Achillia millefolium*, Che
- *Allium cepa*, Uri.
- *Allium sativum*, Kash.
- *Artemisia scoparia*, Che.
- *Chrysanthemum vulgare*, Haz. (=*Chrysanthemum leucantheum*)
- *Fagopyrum esculentum*, Gur.
- *Malus domestica*, Sri,.(= *Malus pumila)*
- *Narcissus poeticus*.Ana
- *Tagetus* sp., Haz.

T. vulgatissimus (Haliday) :
- *Myosotis sylvatica*, Gur.

Thrips sp.:
- Unidentified host plant species, Tar.

Key to various abbreviations used in above checklist, in connection with distribution of thrips species in various localities/areas of Kashmir valley, is given as under:

Ana-Aanatnag; Ari-Arizal; Aha-Aharbal; Bij-Bijbehara; Ban-Bandipore; Bar-Baramulla; Che-Cheshmashahi; Dac-Dachigam; Gan-Ganderbal; Gul-Gulmarg; Gur-Gurez. Haz-Hazratbal; Kas-kashmir; Lol-Lolab; Pam-Pampore; Sha-Shankracharya; Sri-Srinagar;Tan- Tangmarg; Tar-Tarsar; Uri-Uri; Yus-Yusmarg.

From the above given checklist, it is evident that a total of more than 16 species of *Thrips* are known for Kashmir valley, affecting about 46 species of plants, belonging to 40 different genera of various families, including agricultural, horticultural and fodder crops, and other economically important plants like forest trees, medicinal and aromatic, and ornamental plants, is known from different regions and localities of Kashmir valley.

Various economically important *Thrips* species of agricultural crops and medicinal plants are highlighted as under:

Affecting food crop:

Thrips tabaci, has been found to affect the food crop, buckwheat, *Fagopyrum esculentum*, in Gurez region.

Affecting fruit crops :

The major *Thrips* pests, damaging apple tree leaves, flowers and blossoms, include *Thrips carthami*, *T. flavus* and *T. tabaci*. The almond crop, *Prunus dulcis* (= *P. amgydalis*) and pear fruit tree (*Pyrus communis*), have been found to be attacked by *T. carthami* and *T. flavus* at many places of Kashmir valley. Severe infestations of these thrips, caused early fall of leaves and flowers, and also deformation of buds and fruits.

Affecting vegetable crops :

Brinjal (*Solanum melangena*) in this region is attacked by three species of thrips, *viz., Thrips alatus*, *T.garuda* and *T. palmi*, affecting leave of the host-crop. Heavy populations of *Thrips tabaci*, has been found to damage leaves of garlic plant (*Allium sativum*). Leaves of onion (*Allium cepa*) have shown the infestations of *T. flavus* and *T. tabaci*. In addition to these,leaves of red pepper (chillies) showed the infestation of *Thrips garuda*.

Affecting fodder/forage crop :

The leaves of woody fodder plants in this region, *viz., Parrotiopsis jaquemontiana* and *Viburnum grandiflorum*, have been found to be affected by *Thrips alatus* and *Thrips carthami*, respectively. Other fodder and forage crops like *Trifolium pratense, T. repens* and *Stipa sibrica*, showed infestations of thrips like *T. alatus, T. garuda* and *T. carthami*, respectively.

Affecting medicinal plants :

Leaves and flowers of the medicinal plants: *Crocus sativus, Mentha arvens*is, *Polygonum complexicaula*, and *Chysanthemum vulgare*, have been observed to be damaged by *T. flavus*, at many localities of Kashmir valley.

T. tabaci, a polyphagous species has shown wide

occurrence in this region, affecting medicinal plants such as *Chrysanthemum vulgare*, *Achillea millefolium* and *Artemisia scoparia*. Medicinal plants like *Corydalis govaniana* was found to be affected by *Thrips* sp., *Verbascum thapsus* by *T.alatus* and *T. garuda*, *Swertia petiolata* by *T. flavidulus*, and *Bergenia stracheyi* by *T. longiceps*.

Apart from the above mentioned medicinal plants, flowers of *Senecio jacquemontiana* were found to be affected by 4 species of genus *Thrips*: *T. alatus, T. flavus*, *T. farmosanus kali* and *T. flavidulus*.

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