

Shatpada Treat: Production and use of the predatory mite *Typhlodromus (Anthoseius) transvaalensis* to control mites and thrips



Typhlodromus (Anthoseius) transvaalensis

Technology Description

Typhlodromus (Anthoseius) transvaalensis, a Type III generalist predatory mite, is a useful biocontrol agent for the broad mite or yellow mite (*Polyphagotarsonemus latus*), spider mites (e.g., *Tetranychus* spp.) and thrips (e.g., *Pseudodendrothrips darci*) in mulberry. It is also effective against various other phytophagous mites and thrips in vegetable and ornamental crops SHATPADA TREAT encompasses the production technology,

including the mass rearing apparatus with complete components, and delivery technology for effective use of the predatory mite in mulberry.

Background

Mites and thrips have been a persistent problem in mulberry throughout the sericultural belts of India. In recent years, however, massive outbreaks of the broad mite and thrips in the southern states of Karnataka, Andhra Pradesh and Tamil Nadu, have crippled the silk industry. Losses up to 70%, or even beyond, in leaf yield are being consistently reported from various areas in the south. Although chemical pesticides, including many new acaricides, have flooded the market, mulberry growers are reluctant to use them for the fear of residual toxicity to the silkworm as well as of human and animal health issues. Biological control is, therefore, the safest and most preferred solution for managing both mites and thrips in mulberry. The predatory mite *T. (A.) transvaalensis*, which was naturally found in the field, has shown biocontrol potential against these pests in field trials. Not less than 80% of control was achieved whenever the predator was released at an appropriate time. Consequently, the technology for production and use of this predatory mite has been standardised.

Benefits/ Utility

Pesticide (acaricide/insecticide) resistance is often cited as the reason for the failure of chemicals. Farmers are reluctant to use chemical pesticides fearing health hazards to themselves and their farmhands. Predatory mites of the family Phytoseiidae can be efficiently used to control spider mites, tarsonemid mites, thrips and other small pests such as whiteflies in multiple crops under both protected and open-field conditions. At least 20 species of predatory mites are commercially available around the world. *Amblyseius swirskii*, *Phytoseiulus persimilis*, *Neoseiulus californicus* and *N. cucumeris*

occupy the top slots, but are not marketed in India. Release of the technology for production and use of *T. (A.) transvaalensis*, a proven biocontrol agent for mites and thrips, has happened at an opportune time. As this predatory mite is safe to the silkworm, it can be used as a biocontrol agent in the mulberry ecosystem without any biosafety concerns. Further, its compatibility with the biocontrol fungus *Hirsutella thompsonii* [ICAR-NBAIR-MF(Ag)66] is an additional benefit.

Scalability

Production of the predatory mite can be scaled up easily by increasing the number of mass-rearing apparatus.

Business and Commercial Potential

Indian farmers have been waiting for commercial predatory mites for years. There is an immediate market for *T. (A.) transvaalensis* considering its potential as a biocontrol agent for both mites and thrips, which no single chemical pesticide can offer. Besides mulberry, this predatory mite has immense potential in several vegetable and ornamental crops, grown under protected or open-field conditions.

Financial Requirement

The cost of production of around 60,000 predatory mites is about ₹ 35,000 in the first cycle.



Release of the predatory mite



Shaker to release the predatory mite

Target Market/Customer

- The foremost target for *T. (A.) transvaalensis* is mulberry in Karnataka, Andhra Pradesh and Tamil Nadu considering the prevalence and persistence of both mites and thrips.
- The technology, however, has a wider scope and market as *T. (A.) transvaalensis* is capable of controlling a wide range of mites and thrips in several crops.

Social Impact of the Technology

- Chemical pesticides are usually not the first choice for mulberry farmers because of the susceptibility of the silkworm to the residues left behind on leaves. Being a perennial crop, acaricides and insecticides are discouraged in mulberry to prevent long-term negative impacts on human and animal health.
- Promotion of inexpensive and ecofriendly biocontrol technologies such as SHATPADA TREAT will have a positive economic and social impact in the long run.