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THRIPS

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Thrips are early-season pests of seedling cotton. In much of Texas, they are a minor pest but can be severe in areas prone to cool, wet conditions when plant growth slows down. They are numerous in cotton grown near maturing small grains, onion fields, or seedling corn.

The most common species of plant-feeding thrips in Texas cotton are western flower thrips, *Frankliniella occidentalis*; flower thrips, *Frankliniella tritici*; onion thrips, *Thrips tabaci*; and tobacco thrips, *Frankliniella fusca*. The western flower thrips is the predominant species in the High Plains, Rolling Plains, and Trans-Pecos areas (Fig. 1). Flower thrips tend to dominate in the remainder of the state except in the Lower Rio Grande Valley, where onion thrips prevail in cotton near onion fields. In most areas, thrips appear on growing plants throughout the year.

Figure 1. Adult western flower thrips (top) and larva (bottom). *Source: David Kerns*

Thrips are slender, cigar-shaped, straw-colored insects about 1/15-inch-long (Fig. 2). They have piercing and sucking, cone-shaped mouthparts. Adults have narrow wings fringed with hairs and can drift long distances in the wind (Fig. 3).

Figure 2. Adult thrips. *Source: David Kerns*

Figure 3. Wings of adult thrips. *Source: Adam Kesheimer*

In the thrips life cycle, egg-to-adult development takes about 16 days: Eggs inserted into the plant tissue by the female's sharp egg-laying tube (ovipositor) hatch in about 6 days. Two larval stages require about 6 days for completion; then, the prepupal and pupal stages take an additional 4 days. The average life span of a mated female is about 35 days, and each female can produce fifty or more eggs.

Thrips can reproduce without mating. Mated females produce both males and females; unmated females produce only males.

DAMAGE

Thrips attack leaves, leaf buds, and very small squares (flower buds), causing a silvering of the lower leaf surface, deformed or blackened leaves, and terminal and square loss. Feeding most often occurs in the new terminal growth and on the underside of the leaves. Their feeding ruptures cells, causing stunted plants and crinkled leaves that curl upward (Fig. 4). Severe infestations can destroy terminal buds, causing excessive branching of the plants and delayed plant growth.

Although thrips are thought of as primarily a cotton pest, the larvae of western flower thrips are an important predator of mite eggs.

Thrips damage is most evident during cool, wet periods when small cotton plants grow slowly and damage from blowing sand, diseases, herbicide injury, nematodes, rain, and wind further compound the plant damage. Under some conditions, heavy infestations may reduce stands, stunt plants, and delay fruiting and maturity.

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Figure 4. Young cotton leaves damaged by thrips. *Source: Suhas Vyavhare*

Management and decision making

Cultural management. Avoid planting cotton during cool conditions so that young plants will not be affected when plants are most susceptible to thrips damage.

Not planting cotton near small grains and onions helps alleviate thrips migration into the field.

Biological control. Many small predators such as predaceous thrips, minute pirate bugs, and spiders feed on thrips. Since thrips enter the field during and soon after plant emergence, these predators are usually not present in high enough numbers to control a thrips infestation. However, these control agents help reduce thrips numbers at the infestation source, such as small grains and weeds, before they migrate into the cotton field.

Scouting. Begin inspections once the cotton reaches approximately 50 percent stand emergence. Twice a week, as the cotton emerges and before true leaves appear, scout fields where postemergence sprays will be used. Thrips can migrate in great numbers from adjacent weeds or crops, especially small grains, and cause significant damage within a few days.

Randomly select 25 plants from four regions of the field and closely examine them, looking for adult and

TABLE 1. SUGGESTED INSECTICIDES AND RATES FOR MANAGING THRIPS IN COTTON.

INSECTICIDE (TRADE NAME)	APPLICATION RATE	AMOUNT OF FORMULATED PRODUCT PER ACRE	ACRES TREATED PER GAL OR LB OF FORMULATED PRODUCT	MODE OF ACTION GROUP (IRAC[1])
Seed treatments				
Imidacloprid (Gaucho, Acceleron, generics[3])	0.375 mg AI[2]/seed	–	–	4A
Imidacloprid, Thiodicarb (Aeris)	0.75 mg AI/seed	–	–	4A, 1A
Thiamethoxam (Cruiser 5 FS)	0.375 mg AI/seed	–	–	4A
Thiamethoxam, Abamectin (Avicta Duo Cotton)	0.49 mg AI/seed	–	–	4A, 6
Thiamethoxam, Abamectin, Imidacloprid (Avicta Elite Cotton)	0.865 mg AI/seed	–	–	4A, 6
Acephate (generics[3])	0.28–0.4 lb/100 lb seed	–	–	1B
In-furrow treatments				
Imidacloprid (Velum Total) (Admire Pro)	 0.237–0.305 lb AI/acre 0.266–0.331 lb AI/acre	 14–18 fl oz 7.4–9.2 fl oz	 9.14–7.11 17.30–13.91	1A
Foliar treatments				
Acephate (Orthene 97, Acephate 90, generics[3])	See product labels for information.			1B
Dicrotophos (Bidrin 8EC) (generics[3])	0.1–0.2 lb AI/acre	1.6–3.2 fl oz	80–40	1B
Dimethoate (Dimethoate 4E) (generics[3])	0.125–0.25 lb AI/acre	4–8 fl oz	32–16	1B
Spinetoram (Radiant SC)	0.0332–0.0625 lb AI/acre	4.25–8 fl oz	30–16	5

[1]IRAC = Insecticide resistance action committee (1A = Carbamates, 1B + Organophosphates, 4A = Neonicotinoids, 5 = Spinosyn, 6 = Avermectins)
[2]Active ingredient
[3]Rates vary depending on formulation.

immature thrips. Look carefully through the terminal growth, picking it apart with a pencil lead or other pointed object, uncurling all of the leaves—thrips often hide in tight locations, especially during rainy, windy conditions. Look at the tops and underside of each leaf, paying particular attention between the leaf veins where they intersect the petiole (the stalk that attaches a leaf to a stem).

Chemical control and action threshold. Consider using in-furrow systemic insecticides (Table 1) or seed treatments in areas with a history of frequent, heavy thrips infestations (Fig. 5).

Where in-furrow or seed treatments have been used, base subsequent applications of foliar insecticides on the action threshold and occurrence of thrips larvae (Table 2). The appearance of larvae indicates that the preventive insecticide is no longer inhibiting thrips colonization. Research shows that applying foliar sprays after significant thrips damage has occurred does not result in increased yields. Base your decision to apply insecticide on the number of thrips present and the plant development stage.

Figure 5. Healthy cotton seedling from treated seed.
Source: Suhas Vyavhare

TABLE 2. THRIPS ACTION THRESHOLD.

COTTON STAGE	ACTION THRESHOLD
Emergence to	
1 true leaf	1 thrips per plant
2 true leaves	2 thrips per plant
3 true leaves	3 thrips per plant
4 true leaves	4 thrips per plant
5–7 leaves or squaring initiation	Treatment is rarely justified.