

## Insights from 2012 Spider Mite Problems for Future Management Decisions

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Spider mite infestations across the entire Texas High Plains were among the worst we have had to deal with in a number of years. Populations were predominately the Banks grass mite, *Oligonychus pratensis* Banks which are supposedly easier to control than the two-spotted spider mite, *Tetranychus urticae*. But, individuals had difficulty controlling mite infested fields with a single miticide application and in many instances mites were never controlled with multiple applications. As we look back on the season there are some factors that contributed to the rapid mite infestation development and poor control.



**Banks grass mite colony. Photo by Ed Bynum**

One factor was that the timing of our hot, dry conditions this summer provided an ideal environment for mite populations to get out of hand. Daytime temperatures began to reach the high 90's and into the 100's during the last half of June and again at the end of July. Coupled with the dry conditions mite populations were able to become established across the field in June. Then in July corn fields were in the grain development growth stages, which further enhanced the reproductive capacity of mites. Once mite infestations were rapidly moving up the plant and causing extensive damage below the ear leaf, the populations had reached levels that even when a miticide application controlled 60% to 80% of the mites there were sufficient numbers left to rebound rapidly. One observation this year was that mite populations developed earlier and faster on corn grown under drip irrigation.

Another factor in some fields was that insecticides applied for other insects (southwestern corn borers, western bean cutworm, western corn rootworm adults, etc.) either eliminated natural predators and/or further stimulated the reproductive capacity of mites. Previous research by us and others have shown that pyrethroid insecticides will flare mites, even the use of bifenthrin will not control mites (except in a few locations). Applications of dimethoate for other insect pests are also ineffective at controlling mites because mites have developed resistance to this insecticide and dimethoate further eliminates the natural predators. Predators which are important in managing mite infestations are western flower thrips (early in the season when migrating out of wheat), six-spotted thrips, minute pirate bugs, predatory mites, and spider mite destroyer beetles (a small black lady beetle).



**Predatory mite. Photo by Ed Bynum**

Spray coverage is always a key factor as to the level of control that will be obtained with any miticide application. With the currently registered miticides and newer miticides, spray deposition into the canopy to where mite infestations are located is even more critical for effective control. Research has shown that Comite, Oberon, Onager, and now Zeal are effective under most situations and conditions. For this year, even when these products were mixed with crop oil but were sprayed during the heat of the day, many of the droplets may not have made it to the canopy. Also, for these products to be maximally effective they have to rely on help from natural predators. Fortunately, the products are very safe on the predators that eat mites. The predators act in concert with the miticides to "clean up" any escapees and usually extend control for the remainder of the season. When this balance is disrupted then mite infestations are free to blowup.

Therefore, some points to remember for managing mite infestations are as follows:

- Natural predators are key to sustainable mite management and should be preserved
  - If an established mite infestation is present a preventative miticide should be applied at least two weeks prior to any pesticide application that is “harsh” on predators when it is to be made at tassel and during the grain developmental growth stages.
  - Consider using pesticides which are softer on predators when spraying for southwestern corn borers, western bean cutworms, western corn rootworm adults, fall armyworms or any other corn pest.
- Scout fields at least once a week to know the dynamics of the mite/predator populations and damage
  - Consider treating if mite colonies are beginning to establish on the ear leaf and mite densities (eggs, immatures, adults) and damage continue to be increasing.
- Miticide applications to corn less than 3 ft tall only protect leaf tissue that the spray makes contact with and leaves that grow after application are not protected.
- Spray Coverage is critical
  - Use 5 gpa when applications are aerially applied and encourage applicators to spray the field early in the morning before the hotter times of the day.
- Do not rely on a single Mode of Action
  - Continued use of one product year after year and for multiple applications during a year is putting heavy selection pressure for resistance development. Fortunately, there are several miticide products available to choose from and to rotate to.