SPIDER MITE SAMPLING AND THRESHOLD RECOMMENDATIONS ACROSS THE BELT

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Abstract

Sampling and treatment threshold recommendations for management of twospotted spider mites, *Tetranychus urticae*, in cotton were reviewed. Extension Service recommendations for states across the Cotton Belt, and also for Australia, were generally similar. With some variation among states, treatment was often recommended when spider mites (or evidence of mite injury) were present on 30-50% of plants (or leaves). Thus, most guidelines were based on the presence or absence of mites rather than estimates of population density. North Carolina suggests treatment when mites are causing "general leaf discoloration (chlorosis, bronzing, or both), plus live mites over most of the field and defoliation from mites in 25 percent or more of the field" (Bacheler 2008). Florida advises treatment when populations average "11-25 spider mites per leaf" or higher (Sprenkel 2008). The Australian government recommends "a nominal threshold of 30% of leaves infested," but has more specific guidelines based upon the rate of population increase and crop developmental stage (Farrell 2008). Several recommendations qualify that treatment should not be made unless populations are increasing (e.g., Catchot 2008, Parker et al. 2008). Other common components of recommendations indicate that two miticide applications may be necessary for adequate control (e.g., Bacheler 2008, Stewart et al. 2008), and spot treatments should be considered if populations are relegated to parts of a field (e.g., Sprenkel 2008, Parker et al. 2008, Studebaker 2009). Few recommendations are dynamic with treatment thresholds for specific crop developmental stages or rules for when spider mite applications should be terminated. However, Texas advises to "cease sampling and treating when NAWF=5 + 650-750 DD60s" (Parker et al. 2008). Also, Australia advocates increasing the treatment threshold to greater than 60% infested leaves when one open boll is present per meter and terminating treatments if more than 20% of bolls are open (Farrell 2008). No recommendations are specific to particular crop production systems such as irrigated vs. non-irrigated fields or for high risk areas. Mississippi recognizes that poor or late control of weedy vegetation prior to planting may increase the likelihood of spider mite infestations (Catchot 2008).

Specific sampling procedures are only occasionally mentioned in control recommendations. Some guidelines suggest monitoring field borders to detect early signs of infestations (and the potential for spot treatments). Recommendations in California (Godfrey et al. 2008) and Australia (Farrell 2008) recommend selecting leaves from the 5th or 3rd-5th node below the terminal, respectively. They also advise sampling from at least four areas of a field that are 40-50 meters from field borders. Australia also has additional sampling and treatment guidelines for mites on seedling cotton (up to 6-8 true leaves) which include counting mites on a per plant basis and scoring leaf damage (i.e., estimate of percent leaf area damaged by mites).

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