



Cotton Field Check

Management Updates from UC Cooperative Extension
August 10, 2004



All Things in Moderation

Even with the pressure to produce high quality, non-sticky cotton, it is important to follow the basic tenets of IPM.

1. Visit and sample the fields regularly.
2. Treat only when the population exceeds the action threshold.
3. Be realistic about yield potential and strive for the shortest season possible. Delaying harvest makes your fields available for aphid and whitefly migration late in the season.
4. Manage the crop to a successful termination. Take care with late irrigations; avoid situations that lead to re-growth before and after defoliation
5. Use defoliant appropriate to your situation to minimize the length of time that lint is exposed to green leaves. If required, treat the fields to reduce adult whitefly or aphid populations.
6. Practice good insecticide resistance by rotating compounds with differing modes of action.
7. Visit the field between defoliation and harvest to ensure that aphid and whitefly are not present in damaging numbers.
8. Always read and follow labels

Suggested Final Insect Management Considerations for 2004 Bringing in Another Clean Crop

Peter B. Goodell, Larry D. Godfrey, and Robert Hutmacher
UC Cooperative Extension

The 2004 cotton season has been exceptional in many respects. Ideal weather through the spring and summer ensured uniform stands, compact date of planting, vigorous early growth, and early and exceptional fruit retention. The lack of insect pressure during fruiting has also been a welcome relief to cotton growers. While the crop is progressing well and several weeks early in most locations, whitefly and aphid must still be in the forefront of PCAs and growers. During the past two seasons, growers in the San Joaquin Valley have taken seriously their responsibility and produced high quality, sticky-free cotton.

With all the good news, PCAs and growers must still carefully watch the fields for the migration and buildup of whitefly and aphid during the critical period from first open boll to the last boll picked.

The Situation

The reports of whitefly populations in fields first appeared in mid-July. Though present in widely scattered locations, to date only limited treatments for whitefly have been required. In general, most fields experience an adult population exceeding thresholds before nymphs trigger control measures.

Aphids have been present in cotton fields for most of the season but their populations in most cases have not required treatment. PCAs and growers watched the populations and reported that in most cases, the population decreased or disappeared and are to be commended for “staring down” the threat and not over reacting.

The maturity of the cotton crop in the San Joaquin Valley is fairly uniform due to the tight planting window. This should make pest management somewhat easier since fields are similar in their development and insecticide treatments somewhat synchronized. Harvest preparation and the harvest itself should occur within a smaller window than last year, limiting the amount of inter-field migration problems. Of course, Pima fields will follow after Acala fields and could experience late season migration of both pests.

The University of California prohibits discrimination against or harassment of any person employed by or seeking employment with the University on the basis of race, color, national origin, religion, sex, physical or mental disability, medical conditions (cancer-related or genetic characteristics), ancestry, marital status, age, sexual orientation, citizenship, or status as a covered veteran (special disabled veteran, Vietnam-era veteran or any other veteran who served on active duty during a war, or in a campaign or expedition for which a campaign badge has been authorized).

University Policy is intended to be consistent with the provisions of applicable State and Federal Laws.

Inquiries regarding the University's nondiscrimination policies may be directed to the Affirmative Action/Staff Personnel Services Director, University of California, Agriculture and Natural Resources, 1111 Franklin, 6th Floor, Oakland, CA 94607-5200 (510) 987-0096.

Crop Conditions and Cultural Practice Impacts

Fields with higher late season vigor may be more attractive to and support higher late season populations of aphids and whiteflies. This late season vigor could be due to higher water, more nitrogen, or later plantings. Such vigorous plants could result in regrowth of new leaves after the first defoliant application and support late, concentrated populations of aphids and whiteflies. Fields should be watched carefully until the day of harvest, to prevent honeydew deposition on lint.

Making Whitefly Treatment Decisions

Making treatment decisions late in the season can be complicated. Sampling using the existing guidelines (see www.uckac.edu/whitefly) is the first step. In most of the cases seen this year, the triggering factor tends to be adults but leaves should be inspected closely for immature insects. Take care to identify the whitefly as Silverleaf and not one of the other species that could be present (see www.uckac.edu/whitefly for identification tips). Decisions should be based on population demographics and crop development. If control is required, there are three main approaches:

- Situation 1. Insect Growth Regulators (IGRs) to manage a population from increasing by stopping its development
- Situation 2. Non-pyrethroid chemistry to manage adults, limit population establishment and protect open cotton. Products include organophosphates, carbamates and organochlorines.
- Situation 3. Pyrethroid combinations to knockdown adults and limit honeydew secretion just prior to defoliation.

Several steps are required to formulate a control strategy.

- First, what is the target, adults or immature whiteflies or both?
- Next, how long before defoliation?
- Is there open cotton (this might limit adulticide choices)
- How well (and quickly) does the field defoliate?

These questions will direct you toward one of the approaches listed above. See UC Pest Management Guidelines for details (www.ipm.ucdavis.edu).

Insect Growth Regulators (IGRs). These products are most useful in preventing whitefly populations from building within the field. They prevent development and emergence to adulthood and can sterilize the eggs when females feed on leaves. With both Courier and Knack, time is required for the population to cycle out. Depending on the situation, some adulticide might be warranted. Residual action can be expected for at least 21 days. If there is less than 21 days until harvest aid application, other conventional products could be utilized.

Non-pyrethroid and combinations – Useful during Situation II when an adult invasion is not overwhelming but gradual. Both Centric and Assail (chloronicotinylns or neonicotinoids) have shown promise in reducing adult population prior to cutout. There is some concern about the efficacy of products that require translaminar action after leaves have begun to “*harden off*”. In addition, these products may have already been used once and the concern for serious insecticide resistance management looms. Other choices are limited but include Lorsban combined with endosulfan (Thiodan/Thionex).

Pyrethroid combinations: These are useful options when a large migrating adult population (Situation III) occurs, especially near defoliation. While knockdown is good, residual control is limited. When combined with an organophosphate, a synergism occurs that enhances control. This approach can be applied right at defoliation when DEF is used. If aphids are present or other defoliants besides DEF are used, combining the pyrethroid with an organophosphate insecticide such as Lorsban

or Curacron or a cyclodiene such as endosulfan will provide synergy and limit the aphid buildup. *Always read and follow the pesticide label.*

Aphid Management:

The action threshold during late season after lint is exposed is between 5-10 aphids/5th leaf. Managing aphids late season can be challenging when trying to rotate different insecticide chemistries. Dependence on a single mode of action, such as chloronicotinylns, may facilitate resistance development. Efficacy is important, since the threshold (5-10 aphids /5th leaf) is so low. Aphid populations at this part of the season tend to be rather persistent and do not fluctuate rapidly up or down as they do during the mid-season. Populations on severely cut-out and/or plants stressed by defoliant may occur on regrowth or green patches (such as near mid-ribs) on leaves. In addition to the chloronicotinylns, aphid control products include Lorsban, Dibrom (do not apply after open boll), Curacron,, and Thiodan/Thionex.

Aphids and Whitefly

Making decisions when both pests are present requires evaluation of the most threatening insect. Combination treatments will likely be needed. Keep in mind that the use of pyrethroid combinations for whitefly control will likely flare aphids, if present. If whitefly adults were of primary concern, Lorsban/Thiodan would also help reduce aphid.