

Whiteflies In Arizona: Seasonal Cycle

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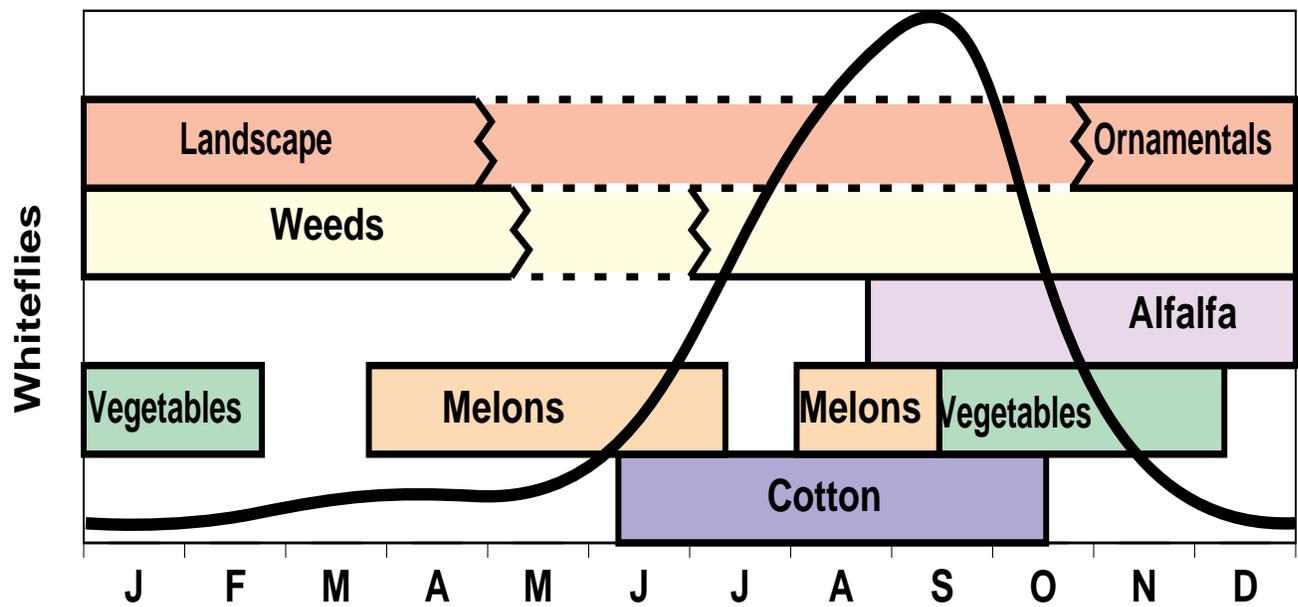
Whiteflies Depend on Host Plants to Complete their Cycle

Successful management of the sweetpotato whitefly (SPWF) must take into consideration the complexities of its seasonal cycle. The insect does not pass through a resting or dormant period as may be seen in the pink bollworm winter diapause. Thus, SPWF survival from season to season depends greatly on the availability of suitable host plants for feeding and shelter from environmental extremes. Unfortunately, the SPWF has an extensive list of host plants (numbering in the hundreds) on which it can survive. Not all hosts are equally suitable for reproduction, but all contribute to the overall seasonal survival. Many are cultivated hosts, while still more are either weedy species associated with agriculture or ornamentals grown in home landscapes. The cultivated hosts can be viewed as lush islands on which whiteflies can

thrive, while these other hosts might serve as bridges between these islands allowing easy passage from one crop island to the next.

Seasonal Cycle

SPWFs are at their lowest levels during the winter. During this time they survive on fall/winter vegetables (broccoli, cauliflower, lettuce), winter weeds (mallows), perhaps on some perennial hosts (alfalfa, citrus, and volunteer or undestroyed cotton regrowth) and on urban landscape ornamentals (Lantana, Hibiscus, mints, roses, etc.). Late winter and early spring hosts include spring melons, vegetables and various winter weeds in decline. Once cotton is planted and germinates, it is a potential host for whiteflies. When spring vegetables are harvested, this leaves spring/summer melons and cotton as major hosts. With the decline of summer melons, a huge influx of whiteflies in



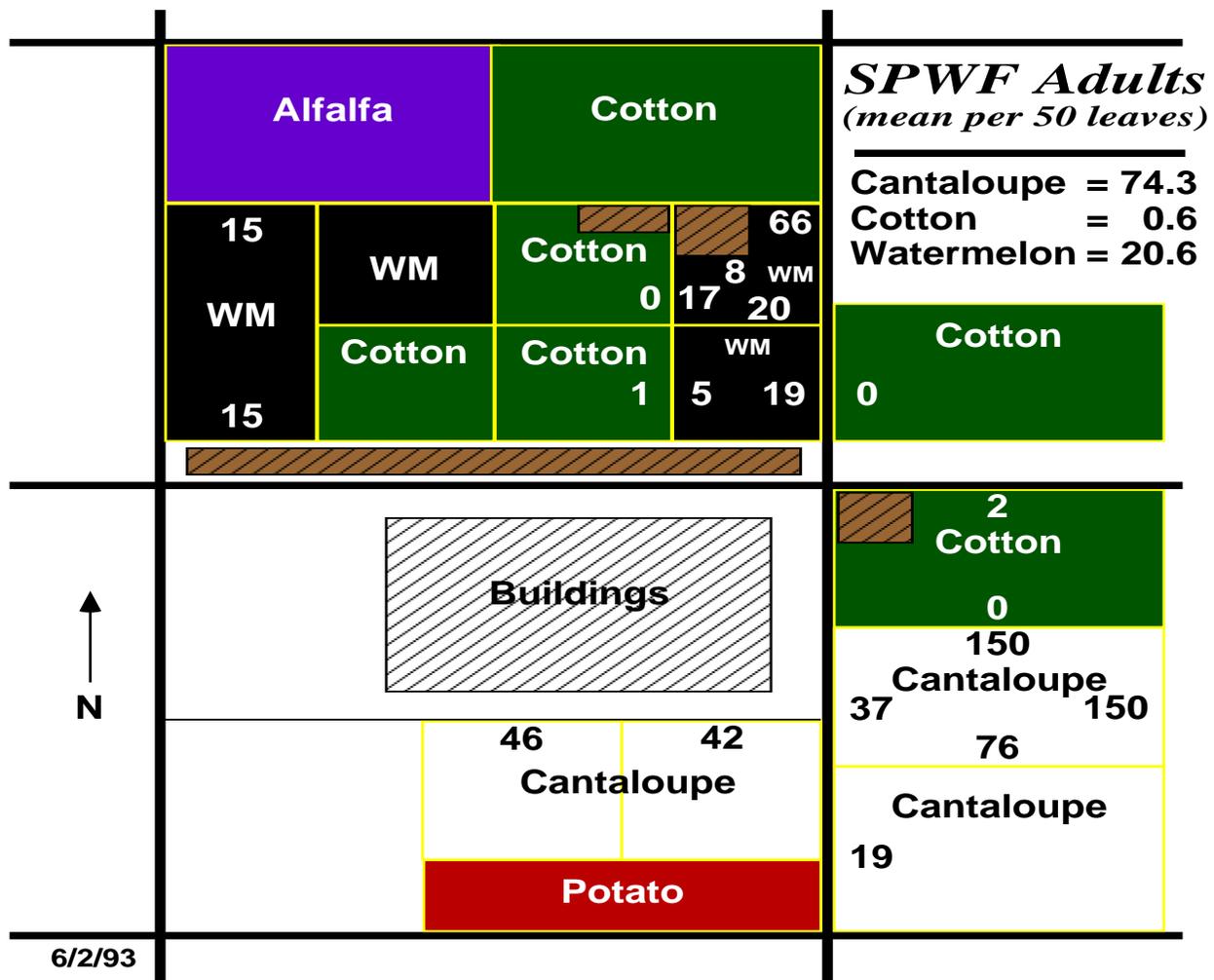
Host plants supporting year-round development of whiteflies. The line represents hypothetical fluctuations in whitefly numbers over the course of a year.

cotton can be seen. Then, before cotton is defoliated and harvested, fall plantings of vegetables provide for continuation of the SPWF seasonal cycle. Obviously what makes Arizona so ideal for the cultivation of numerous crops is also ideal for the annual survival of SPWFs.

Movement Between Crops

Movement between crops is influenced both by crop condition and whitefly preference for different hosts. Infield sampling on a single farm has shown that SPWF numbers in cantaloupes

and watermelons may be 100 times greater than in adjacent cotton. On this farm the highest number of SPWF adults were found in cantaloupes (1.5 / leaf), then watermelons (0.41 / leaf), then cotton (0.01 / leaf) in early June (see figure below). Melons are generally more attractive to whiteflies than cotton. Furthermore, cantaloupes are more attractive than watermelons. Both of these melon hosts will remain attractive to whiteflies as long as they are healthy and vigorously growing. As the vines decline or harvest is completed, the relative attractiveness of melons diminishes and cotton may become more attractive.



Leaf counts of SPWF adults reveal the spatial relationships among several crops on one farm (Watson et al., unpublished data).

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