

**Habitat Management for
Suppression of Stink Bug Pests of
Tomato in Northern California**

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STINK BUG PESTS OF TOMATO

- **Conspere stink bug, *Euschistus conspersus* Uhler (native).**
 - **Red-shouldered stink bug, *Thyanta pallidovirens* (Stal) (native).**
 - **Southern green stink bug, *Nezara viridula* (L.) (introduced).**
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CONSPERSE STINK BUG



RED SHOULDERED STINK BUG



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Second in Importance

SOUTHERN GREEN STINK BUG



Sporadic, Late Season



Adult

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Egg Mass

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Little Stinkers

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Life Cycle

Egg (in masses)

Five Nymphal Stages (wingless)

Adult

DAMAGE TO TOMATO FRUIT



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CONSPERSE STINK BUG

- **The major pest of processing tomato in Northern California.**
 - **Requires three habitat patches:**
 - Leaf litter for over-wintering**
 - Spring weeds for first generation**
 - Tomato for second generation**
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BLACKBERRY (*Rubus* spp.) PROVIDES LEAF LITTER FOR OVERWINTERING ADULTS



BLACKBERRY COMMON IN RIPARIAN HABITATS



**SPRING GENERATION HOST:
WILD RADISH (*Raphanus sativus*)**



**SPRING GENERATION HOST:
CHEESEWEED (*Malva parviflora*)**



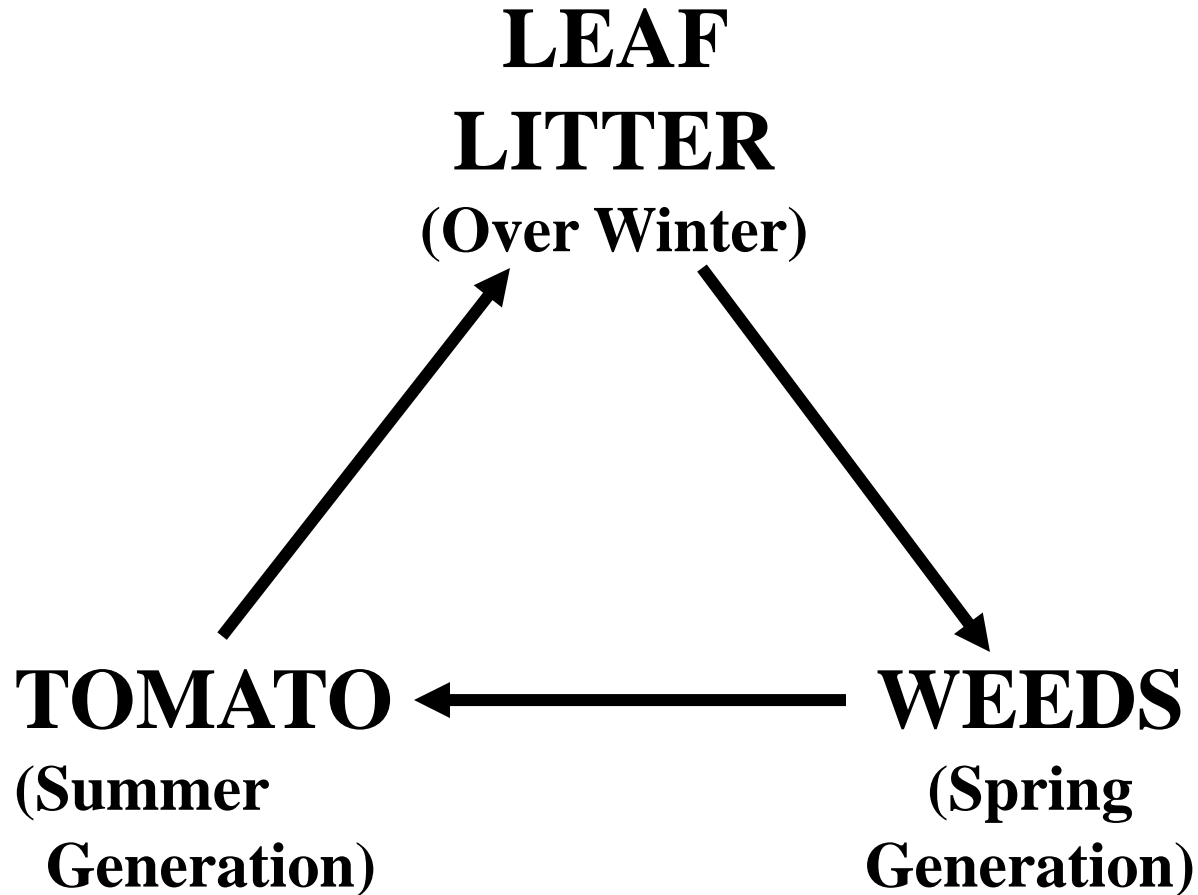
**SRING GENERATION HOST:
BLACK MUSTARD (*Brassica nigra*)**



TOMATO IS HOST FOR SECOND GENERATION



SEASONALITY OF CONSPERSE STINK BUG



HABITAT MANAGEMENT

- **Manage over-wintering habitat.**
 - **Disrupt spring generation.**
 - Control weedy hosts
 - Use weeds as a trap crop
 - Replace weeds with native grasses
 - **Goal: Prevent stink bugs from invading tomato for second generation, where egg parasites and predators are of limited effectiveness.**
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MONITOR AND TREAT

- **No fixed treatment threshold.**
 - **Dynamic treatment threshold.**
 - **One stink bug per meter predicted to cause 5% damaged fruit at harvest.**
 - **Treat with insecticide as needed (e.g., Methamidophos) to keep damaged fruit at acceptable level.**
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What About Stink Bugs and Hedgerows?



**Do Hedgerows Provide Over-Winter
Site and Food for Spring Generation?**



RESULTS FOR 2008

- **Stink bugs over-winter in hedgerows.**
 - **First generation of stink bugs can develop on certain hedgerow plants.**
 - **Egg parasites of stink bugs occur in hedgerows (low level of mortality).**
 - **Do hedgerows suppress or enhance stink bugs in adjacent tomato crops?**
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A photograph of a Toyon bush with white flowers and a clump of Deer Grass in a field. The Toyon bush is a large, dense shrub with green leaves and numerous small, white, star-shaped flowers. It is situated in a field of tall, dry, yellowish-brown grass. To the left of the Toyon bush is a clump of Deer Grass, which is a tall, thin, grass-like plant with a central stalk and many fine, radiating blades. The background shows a dirt road and a clear blue sky.

**Toyon: Floral Resources for
Pollinators, Seeds and Fruit
for Stink Bug Nymphs**

**Deer Grass: Over-winter
Site for Adult Stink Bugs**

SUMMARY

- **Conspere stink bugs over-winter in leaf litter, and emerge in mid-March.**
- **First generation develops on weeds.**
- **Second generation develops on tomato.**
- **Habitat management: Prevent buildup of leaf litter and manage weeds during the spring.**
- **Goal: Prevent the adult stink bugs from invading tomato, where biological-control agents are not very effective.**