

Mites and Insects Affecting Tree Establishment



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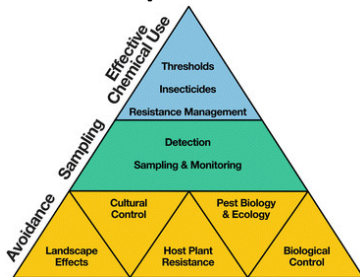
Pistachio Acreage, Statewide

Year	Acres			Change
	Bearing	Non-bearing	New plantings	
2010	137,102	78,234	6,730	
2011	152,944	73,392	11,000	4,270
2012	177,738	62,308	13,710	2,710
2013	202,997	68,068	24,500	10,790
2014	220,527	73,940	18,000	(6,500)
2015	232,655	69,312	7,500	(10,500)
2016	239,385	72,582	10,000	2,500
2017	250,385	79,582	18,000	8,000
2018	264,095	90,000	30,000	12,000
2019	288,595	105,000	35,000	5,000

Sources: CPC, ACP, NASS

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Principles of IPM



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Using Pesticides

- Disclaimer: Labels often change and reflect the law how pesticide can be legally applied. The following information in this presentation is for the purpose of general education only and does not constitute an endorsement or recommendation for use.



Arthropod Pests on Pistachio

- Species that can affect establishment of trees
 - Hemipterans, soft scale and aphids
 1. Brown soft, *Coccus hesperidum*.
 2. Black scale, *Saissetia oleae*.
 3. Frosted scale, *Parthenolecanium pruinosum*.
 4. European fruit, lecanium, *P. corni*.
 5. Cotton aphid, *Aphis gossypii*



Arthropod Pests on Pistachio

Black scale

- Description (adult)
 - ~1/8" in length
 - Dark brown to black w/H-shape on dorsum.
- Damage
 - Honeydew in spring
 - Black sooty mold.
 - Reduction of photosynthesis.
 - Reduce shoot growth.



Arthropod Pests on Pistachio

Black scale

- Monitoring
 - Early to mid-January
 - Examine one-year-old fruiting wood for **live** and **parasitized scale**. Examine several 12" dormant shoots throughout orchard.
 - In Feb. **moderate** population = 1 to 5 live scale/inch.
 - **Heavy population** = 10 or greater per inch.



Arthropod Pests on Pistachio

Black scale

- Management
 - Biological: **usually keep populations under economic levels.**
 - Chemical: Narrow range oil (caution), IGRs.
 - Avoid pyrethroids if possible.



Arthropod Pests on Pistachio

Cotton aphid

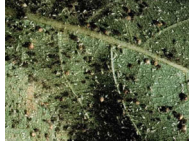
- Description
 - Adult ~1/16" in length and yellowish green to greenish black.
 - Develop on underside of leaves in colonies (winged and wingless forms occur)



Arthropod Pests on Pistachio

Cotton aphid

- Damage
 - Honeydew in spring
 - Black sooty mold
 - Reduction of photosynthesis.
 - Large populations can reduce shoot growth.
- Monitoring
 - In spring, examine newly-budded trees.
 - No threshold developed.



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Arthropod Pests on Pistachio

Cotton aphid

- Management
 - Biological: Convergent lady beetle, *Aphelinus* spp. lacewing, and syrphid flies
 - Cultural: Control weedy hosts, reduce dust, **avoid applying excess nitrogen.**
 - Chemical: Neonicotinoids, pyrethroids, spirotetramat, narrow-range oil.



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Arthropod Pests on Pistachio

False chinch bug

- Description
 - Small light-brown bug ~1/8" long, similar in appearance to a lygus bug.
- Damage
 - In spring, feeding on young trees can cause trees to wilt and die.
 - Feeding on older trees can result in severe leaf-drop.



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Arthropod Pests on Pistachio

False chinch bug

- Management
 - Cultural: mow ground cover **before bloom in spring.**
 - Chemical: primarily broad-spectrum insecticides
 - Apply morning or early evening.
 - More effective if trunk guards removed.



Arthropod Pests on Pistachio

Darkling beetles

- Description
 - Adults 1/8 to 1/2" long and black to bluish-black.
 - Larvae, light yellow that inhabit soil.
- Damage
 - Feeds on 3 - 4 wk-old Kerman bud of newly-grafted trees.
 - Also can feed on Kerman shoots following first dormant period.



Arthropod Pests on Pistachio

Darkling beetles

- Management
 - Cultural: avoid discing weeds in or outside of orchard at time of budding.
 - Chemical: after assessing population/damage, can treat with broad-spectrum insecticide – carbamate.



Arthropod Pests on Pistachio

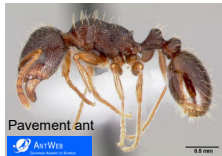
Ants: southern fire ant, *Solenopsis xyloni*.

- Direct damage
 - Directly feeds on emerging buds 3 – 4 weeks post grafting.
 - Girdle base of bud.
- Indirect damage
 - Tend honeydew-producing hemipterans. Disruption natural enemies.



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Arthropod Pests on Pistachio



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Arthropod Pests on Pistachio



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Arthropod Pests on Pistachio

Ants: Management

- Granular baits very effective
 - Insect growth regulators
 - Pyriproxyfen Esteem
 - Methoprene Extinguish
 - Stomach poisons
 - Abamectin Clinch



Arthropod Pests on Pistachio

Leaffooted bug

- Damage (direct)
 - Early-season feeding results in nut drop
 - Later-season feeding results in kernel necrosis.
- Damage (indirect)
 - Associated with Botryosphaeria, panicle and shoot blight.



Arthropod Pests on Pistachio

Leaffooted bug

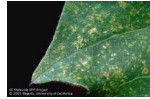
- Management
 - Cultural: avoid interplanting with pomegranate and/or planting pomegranate hedgerows.
 - Pesticides: pyrethroids only class with residual activity.



Arthropod Pests on Pistachio

Web-spinning mites

- Description
 - 1/20" long early nymph stage with 6 legs, later stages with 8. Overwinter as reddish-orange females.
- Damage
 - Appears as small areas of dead plant material, or stippling. 3 to 4 mites per leaf sufficient to cause defoliation.



Arthropod Pests on Pistachio

Web-spinning mites

- Management
 - Cultural: minimize dust, well-watered trees, avoid pyrethroids.
 - Biological: sixspotted thrips, and spider mite destroyer...
 - Chemical: several available products.



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