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Foxglove Aphid *Aulacorthum solani*

Distribution

The foxglove aphid (FGA) is found almost world-wide, but was first found infesting commercial lettuce fields in the desert in 2002. Although it has been reported on a wide range of hosts in California for many years, it was not previously thought to occur in Arizona. Based on recent observations in Yuma, it now appears that FGA has become established in the desert and is considered a serious aphid pest in desert produce crops. This species is principally considered a serious pest of potatoes throughout the U.S, and is only considered an occasional pest of lettuce and leafy vegetables grown in Canada. FGA will also occur on citrus, celery and tomatoes, and has been reported on flowers such as Easter lily, foxglove, gladiolus, pansy, salvia, tulip, and violet. A number of common desert weed hosts will also harbor FGA including common chickweed, dock, dandelion, pigweed, purslane, and shepherdspurse.

Description and Seasonal Development

Like other aphid species found on desert vegetables FGA reproduces asexually and is parthenogenic throughout the year. There are five nymphal instars with an average developmental time of 12-13 days during normal spring growing conditions (~60 F). Apterous adults begin producing progeny almost immediately. Apterous adults are pear-shaped and the tubercles at the base of the antennae are straight-sided, facing neither inward as in GPA, nor outward, as in PA. The abdomen is green in color with a pale head and thorax. The cornicles are moderately long, thin, and tapered, varying in color from almost colorless to dark, and with dark tips. The distinguishing characteristic of FGA is the dark green patches at the base of the cornicles. On spring crops a newly emerged adult can be reproductively active for 2-3 weeks and can produce an average of 60 offspring. Winged adults are similar in size and the abdomen is pale green, olive green, or green, but the head and thorax vary from dusky-yellow to almost black with a brown tinge. The winged adult usually has dark bands across the abdomen.

Economic Damage

FGA populations in potatoes can cause young potato leaves to curl apparently from toxic saliva as it feeds. This aphid also transmits numerous plant viruses, but none have been associated to date on desert crops.

- Lettuce: FGA are serious pests of all spring lettuce types (leaf, romaine and head) and typically begin showing up in December, but are generally most active in Feb and March. They are more mobile on lettuce plants and tend to disperse more throughout the plant. They tend to colonize more intensively in lettuce heads and romaine hearts than either GPA or PA. FGA damage lettuce by contamination of harvested plant parts.
- Cole crops: FGA have not been found to infest cole crops.
- Spinach: FGA have not been found to infest spinach.
- Celery: FGA are serious pests of desert celery. They primarily colonize the protected young growth on maturing plants and will contaminate celery hearts at harvest rendering them unmarketable.

Insecticidal Control

The best way to manage aphids in desert growing areas is to follow a preventative foliar approach. Fields not planted with imidacloprid are routinely treated with foliar insecticides upon detection of aphid colonization. Foliar sprays should be applied for aphid control based on a simple action threshold; when an average of 10% of plants has aphid colonies (2 or more immature apterous aphids) present. Plants should be sampled 5-7 days following sprays and retreated if the threshold is exceeded again. Below is a chart that summarizes relative efficacy of most products labeled for foxglove aphids in lettuce:



A) Foxglove Aphid (FGA) mature alate, B) Mature FGA apterous nymph, C) FGA Alate; note the light thorax and dark tips on cornicles, D) FGA apterous form; note dark patches at base of cornicles.

Aphid Management in Desert Produce Crops - 2018



Relative Efficacy Index For Aphids in Desert

Product	IRAC MOA	Green peach	Potato aphid	A. lactuca ¹	Foxglove aphid	Lettuce aphid ²	Cabbage aphid	Comments*
Lannate	1A	Red	Yellow	Green	Red	Red	Red	Tank mix with another product ; provides thrips control; PHI: 10 d on lettuce;.
Dimethoate	1B	Yellow	Green	Green	Yellow	Red	Yellow	Tank mix with another product ; has some thrips activity; PHI: 7 d on broccoli, cauliflower; 14 d on leaf lettuce
MSR	1B	Yellow	Green	Green	Green	Green	Green	PHI: 14-21 d on head lettuce, 7 d on broccoli, cauliflower and cabbage; Use high label rate
Orthene	1B	Yellow	Green	Green	Green	Yellow	Green	Tank mix with another product ; provides thrips control; PHI: 21 d for head lettuce and celery ; 7 d on cauliflower
Malathion	1B	Red	Green	Green	Green	Red	Yellow	Tank mix with another product, use highest labeled rates; PHI: 7 d on head lettuce; 14 d on leaf lettuce;
Bifenthrin	3	Red	Green	Green	Green	Red	Red	Numerous generics available; tank mix with another product at >4 oz for best control; PHI:
Imidacloprid	4A	Green	Green	Green	Yellow	Red	Green	Generics available; Soil: use 0.25 lb AI/ac or higher for residual aphid control; PHI: 21 d on all crops
Platinum	4A	Green	Green	Green	Yellow	Red	Green	Soil: use highest rate for residual aphid control; PHI: 30d on all crops; effective as post-plant side dress
Assail	4A	Green	Green	Green	Yellow	Red	Green	Use at high rates (4 oz for Assail 30G); PHI: 7 d on leafy vegetables and Cole crops
Sequoia	4C	Green	Green	Green	Green	Light Green	Green	Use at higher rates (>2.0 oz) when lettuce aphid present; PHI: 3 d on leafy vegetables
Sivanto	4D	Light Green	Green	Green	Green	Yellow	Green	Use at high rates (10-14 oz); PHI: 1 d on leafy vegetables and Cole crops; may take a few days to see reduction inaphid numbers.
Fulfill	9B	Yellow	Green	Green	Yellow	Red	Yellow	Tank mix with another product for green peach aphid, foxglove aphids; Initiate sprays at first signs of aphids, PHI: 7 d
Beleaf	29	Green	Green	Green	Green	Red	Green	Use at higher rates; PHI: 0 d on leafy vegetables and cole crops
Movento	23	Green	Green	Green	Green	Green	Green	Use a penetrating adjuvant at 0.25%v/v or higher; PHI: 1 d for Cole crops, 3 d for leafy vegetables

Good residual control (7-14 d)
 Marginal residual control (4-6 d)
 Poor residual control (1-3 d)

¹ *Acyrtosiphon lactucae* ; no common name
² *Nasonovia ribisnigri*; aka "red aphid"

* Always consult the label before applying any of these products on leafy vegetables or cole crops.