

Foxglove Aphid on Desert Lettuce Crops

John C. Palumbo, Department of Entomology, Yuma Ag Center



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.

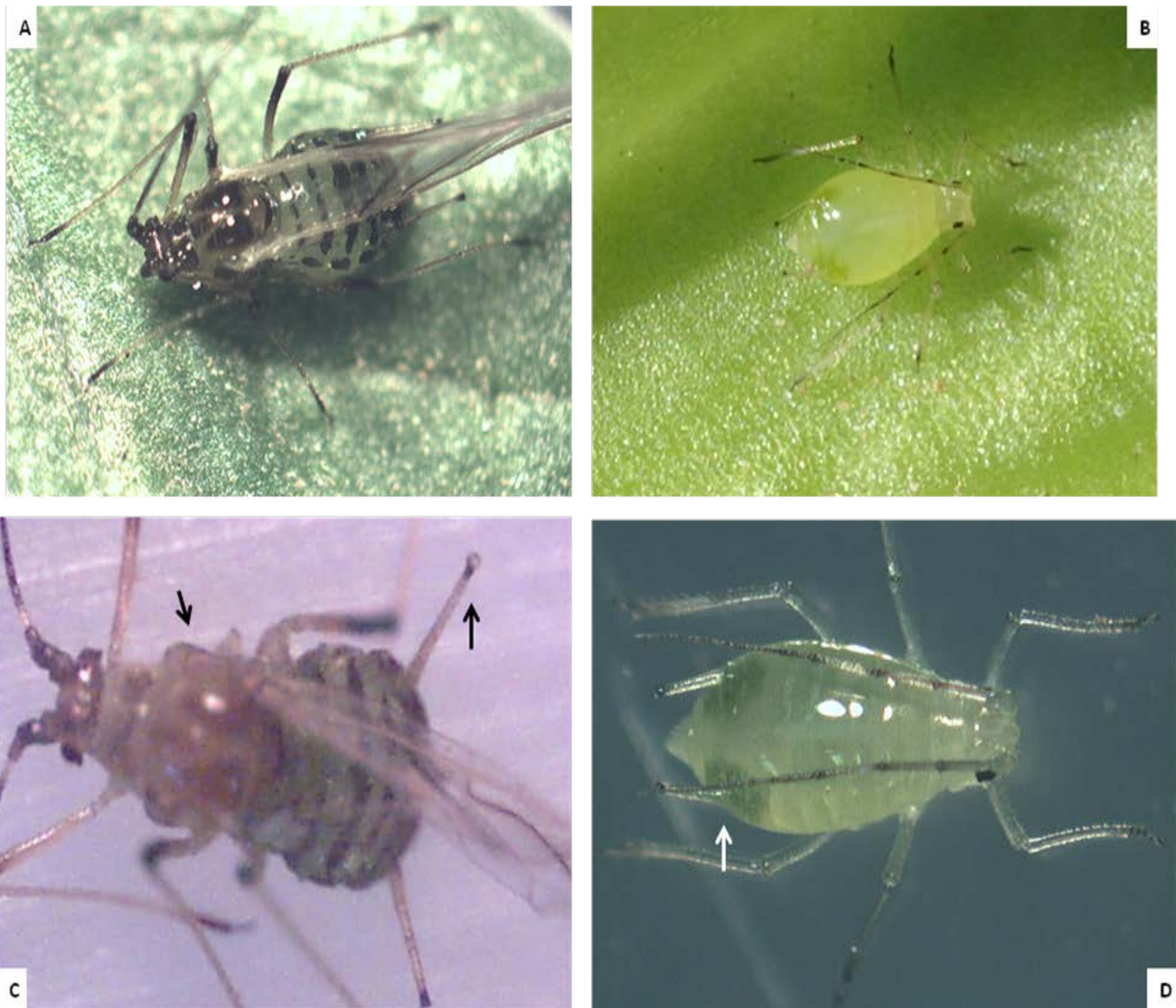
Economic Damage

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 cornicle

Relative Efficacy of Foliar Insecticides Against Aphids

Product	IRAC ¹ MOA	Foxglove aphid	Green peach aphid	Potato aphid	<i>A. lactuca</i> ¹	Lettuce aphid ²	Cabbage aphid	*Comments
Lannate	1A	•	•	••	•••	•	•	Tank mix with another product ; provides thrips control; PHI: 10 d on lettuce;.
Dimethoate	1B	••	••	•••	•••	•	••	Tank mix with another product ; has some thrips activity; PHI: 7 d on broccoli, cauliflower; 14 d on leaf lettuce
MSR	1B	•••	••	•••	•••	•••	•••	PHI: 14-21 d on head lettuce, 7 d on broccoli, cauliflower and cabbage; Use high label rate
Orthene	1B	•••	••	•••	•••	••	•••	Tank mix with another product ; provides thrips control; PHI: 21 d for head lettuce and celery ; 7 d on cauliflower
Malathion	1B	•••	•	•••	•••	•	••	Tank mix with another product, use highest labeled rates; PHI: 7 d on head lettuce; 14 d on leaf lettuce;
Bifenthrin	3	•••	•	•••	•••	•	•	Numerous generics available; tank mix with another product at >4 oz for best control; PHI:
Imidacloprid	4A	••	•••	•••	•••	•	•••	Generics available; higher rates for residual aphid control; PHI: 21 d on all crops
Assail	4A	••	•••	•••	•••	•	•••	Use at high rates (4 oz for Assail 30G); PHI: 7 d on leafy vegetables and Cole crops
Closer	4C	•••	•••	•••	•••	••	•••	Use at high rates (1.5-2 oz for aphids); PHI: 3 d on leafy vegetables and cole crops
Voliam Flexi	4A+28	••	•••	•••	•••	•	•••	Use at higher rates; PHI: 3 d on broccoli, cauliflower and cabbage, 7 d for leafy vegetables
Fulfill	9B	••	••	•••	•••	•	••	Tank mix with another product for foxglove aphids; Initiate sprays at first signs of aphids, PHI: 7 d
Beleaf	9C	•••	•••	•••	•••	•	•••	Use at higher rates; PHI: 0 d on leafy vegetables and cole crops
Movento	23	Foxglove aphid	•••	•••	•••	•••	•••	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 (14+ d)
••	Marginal residual control (7-10 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.**