

INTRODUCTION

Aphids are small, soft-bodied insects that occur regularly in New Mexico alfalfa fields. They are often held in check by beneficial insects such as ladybugs. However, aphids can become an economic concern, causing plant stunting, delayed cuttings, or even some plant death in young stands. Aphids reproduce extremely rapidly because the females can produce offspring asexually. Therefore, regular field sampling is recommended to ensure that outbreak populations can be controlled before they cause economic losses. Using resistant varieties of alfalfa and maintaining high populations of beneficial insects are the best options to keep aphids in check.

To monitor aphids, sample four quadrants in each field. Randomly select five stems from each quadrant and record the stem height for each section. Shake the stems over a sweep net or white cloth and record the number and species of aphids collected. Total all quadrants and calculate the average per stem to determine if insecticidal control is justified.

Pea Aphid

The pea aphid (*Acyrtosiphon pisum* Harris) adults are bright green, long-legged, and about 1/8 inch long (Figure 1). They may be winged or wingless. Pea aphids usually cause the greatest damage in spring and early summer and then again in the fall.



Figure 1. Pea aphid adult and nymphs. (Joseph Berger, Bugwood.org) To view color versions of these images, visit http://aces.nmsu.edu/pubs/_a/A339.pdf

Pea aphids congregate in dense colonies along the stems, terminal shoots, and leaves. Heavy infestations cause plants to wilt and turn yellowish green. Honeydew secreted by aphids is usually abundant on infested plants. Resistant varieties of alfalfa are very helpful in reducing pea aphid damage (Table 1).

Economic threshold: Insecticidal control is justified when counts in established alfalfa stands average 40–50 aphids per stem on plants less than 10 inches tall, or 70–80 aphids per stem on plants greater than 10 inches tall.

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Table 1. Aphid Resistance Level of Selected Alfalfa Varieties*

Variety	Proprietor	Varietal Characteristics ¹ Pest Resistance		
		Spotted Alfalfa Aphid	Pea Aphid	Blue Alfalfa Aphid
FSG 351	Allied Seed	R	R	R
WL319HQ	WL Research	R	HR	-
PG1459	Producer's Choice	-	R	-
WL343HQ	WL Research	-	HR	MR
FSG528SF	Allied Seed	-	R	-
56S82	Pioneer HiBred Int'l	HR	HR	HR
Cimarron VL600	Great Plains Research	HR	HR	R
Wilson	New Mexico State University	MR	R	-
AmeriLeaf 721	America's Alfalfa	HR	R	MR
Dona Ana	New Mexico State University	MR	R	-
58N57	Pioneer HiBred Int'l	R	HR	HR
Dura 843	Croplan Genetics	HR	HR	HR
HybriForce-800	Dairyland Seed Co.	-	MR	-
WL 550.RR	WL Research	R	HR	HR
59N59	Pioneer HiBred Int'l	HR	HR	R
WL 712	WL Research	HR	HR	R

* Adapted from Lauriault, et al. (2011).

¹HR = high resistance, MR = moderate resistance, R = resistant.

Blue Alfalfa Aphid

The blue alfalfa aphid (*Acyrtosiphon kondoi* Shinji and Kondo) resembles the pea aphid, but is bluish green rather than yellowish to light green. Blue aphids congregate in clusters on the terminal growth, unlike pea aphids that may be found over the entire plant.

Blue alfalfa aphids tend to build high populations in early spring, with populations usually declining when temperatures reach over 85°F. Severe stunting and leaf yellowing can result from aphids feeding on new alfalfa regrowth less than 6 inches tall or when temperatures are below 75°F. Several semi-dormant and non-dormant alfalfa cultivars are resistant to blue alfalfa aphid (Table 1).

Economic threshold: Insecticidal control is justified when 10–12 aphids per stem are found on regrowth in February through March. When alfalfa is more than half grown (stem lengths 10–15 inches long), the plant can tolerate 40 or more aphids per stem with little yield loss.

Spotted Alfalfa Aphid

The spotted alfalfa aphid (*Therioaphis maculata* Buckton) is a small, rapidly moving, pale yellow to gray aphid. It has four to six conspicuous rows of

dark spots with small spines on the upper abdomen and smoky-veined wings.

This aphid is usually found on the undersides of lower leaves. However, as the population increases, aphids can be found on all parts of the plant. Spotted alfalfa aphids secrete large amounts of honeydew and will readily fall from alfalfa plants when disturbed.

Infestations can increase rapidly under favorable conditions. However, rain and high humidity often reduce infestations or create conditions unfavorable for survival.

Spotted alfalfa aphids can reproduce year-round in warm climates, but reproduction is inhibited at temperatures above 95°F or below 45°F. As many as 20 generations can be produced each year. The winged females may passively migrate more than 70 miles with the aid of winds.

Spotted alfalfa aphids secrete and inject a toxin that causes considerable plant injury, and may even kill seedlings. In established stands, growth will be severely stunted where yellow or chlorotic areas appear on the leaves. Leaf veins frequently remain green.

Alfalfa varieties that are resistant to spotted alfalfa aphids offer considerable protection from yield



Figure 2. Cowpea aphids. (Whitney Cranshaw, Colorado State University, Bugwood.org)

and stand losses (Table 1). Insecticides are not commonly required for this pest.

Economic threshold: In seedling stands, insecticidal control is justified when one aphid per plant occurs. In established stands, control is justified when 30–40 aphids per stem are found in the spring.

Cowpea Aphid

The cowpea aphid (*Aphis craccivora* Koch) can cause significant losses in New Mexico and elsewhere and is more likely to require treatment than the other aphids. This small aphid is easy to distinguish because it is the only black aphid in alfalfa. The adult is a shiny black color, while immature aphids are grey (Figure 2). The legs and antennae are a whitish color.

Cowpea aphids inject a toxin that can stunt or even kill plants when populations are high. Early

infestations are patchy, so spot treatments are a possibility if infestations are noted early.

There are currently no alfalfa varieties available that are resistant to cowpea aphid, but check the website <http://www.alfalfa.org/pdf/2013%20NAFA%20Variety%20Leaflet.pdf>, which is revised every year with the most recent information.

Economic threshold: Insecticidal control is justified when 10–12 aphids per stem are found on plants less than 10 inches tall. Taller plants can tolerate more damage, so treatment is not recommended unless there are 40–50 aphids per stem.



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REFERENCES

- Lauriault, L., I. Ray, S. Thomas, C. Sutherland, J. Ashigh, F. Contreras-Govea, and M. Marsalis. 2011. *Selecting alfalfa varieties for New Mexico* [Circular 654]. Las Cruces: New Mexico State University Cooperative Extension Service.
- National Alfalfa and Forage Alliance. *2013 Winter survival, fall dormancy & pest resistance ratings for alfalfa varieties* [Online]. Available from <http://www.alfalfa.org/pdf/2013%20NAFA%20Variety%20Leaflet.pdf>

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