

PEA APHID RESISTANCE

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Acyrtosiphon pisum (Harris); R. C. Berberet, J. L. Caddel, and A. A. Zarrabi

PLANT CULTURE

Greenhouse

Container Flat (6 x 31 x 55 cm or similar size)

Medium Soil mix (eg. 8 parts sand; 3 peat; 3 perlite; 1.4% by vol. lime)

Temp/Light..... 20 + 4°C and 16+ hour daylength

No. of Plants 60 to 70 per replicate in rows 3 cm apart

No. of Repts 3 minimum

Other Scarify seed and treat with fungicide to prevent damping-off; sow seed 1 cm deep and cover with vermiculite

APHID COLONY

Source Colony consisting of blend of several field collections from area of adaptation, replenished annually

Rearing Susceptible alfalfa in greenhouse (eg. Ranger, Caliverde, OK08)

Temp/Light..... 20 + 4°C and 16+ hour daylength

INFESTATION PROCEDURE

Age of Plant 1 day after emergence; cotyledon stage; count seedlings at time of infestation

Method Sprinkle aphids onto seedlings

Rate Minimum of 2 aphids per seedling; add aphids as needed to maintain high numbers

Length 21 to 28 days; spray with malathion or diazinon to terminate infestation; rate plants 7 to 10 days after spraying

RATING

1 Resistant..... Tall, normal trifoliolates

2 Resistant..... Tall, minimal chlorosis

3 Resistant..... Tall, with some chlorosis and wilting of trifoliolates

4 Susceptible..... Short, with extensive chlorosis and wilting

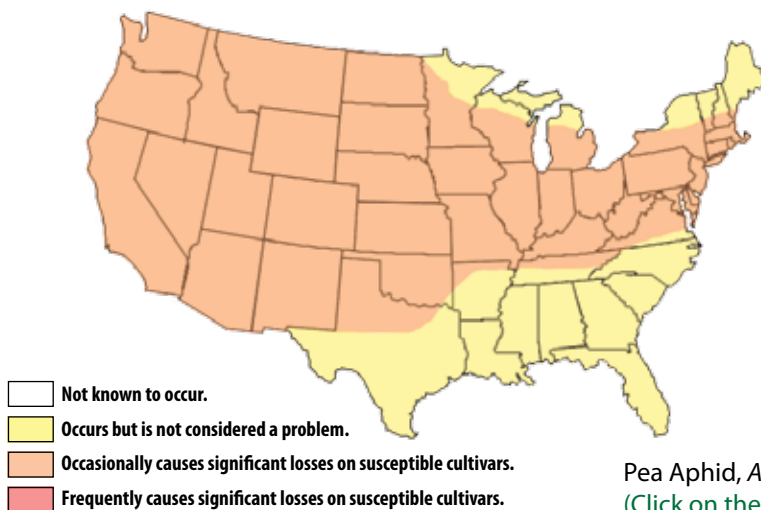
5 Susceptible..... Dead (=total emerged - classes 1 to 4)

CHECK CULTIVARS

	Approximate Expected Resistance (%)	Acceptable Range of Resistance (%)
Resistant		
CUF-101**	55	40-65
PA-1**	55	40-65
Kanza	45	35-55
Baker**	45	35-55
Susceptible		
Caliverde	5	0-10
Moapa 69**	5	0-10
Vernal**	5	0-10
Ranger	5	0-10

Values for resistant standards are totals of 1's, 2's and 3's.

DISTRIBUTION AND SEVERITY OF PEA APHID



Pea Aphid, *Acyrtosiphon pisum* (Harris)
(Click on the map above for a larger version.)

SCIENTIST WITH EXPERTISE

R.C. Berberet

Oklahoma State University
Department of Entomology
Stillwater, OK 74078
(405) 744-5527

CORRELATION TO FIELD REACTION

Field performance of alfalfa selected for resistance to pea aphid has conformed closely with expected results based on greenhouse evaluations.

BIOTYPES

Several biotypes of pea aphid are known to exist and performance of resistant cultivars may vary depending upon the biotype(s) present. It may be advisable to test cultivars against aphid populations in areas where they will be grown.

HELPFUL INFORMATION

The best procedure for collecting aphids from fields for colony establishment is tapping from infested stems. Fewer will be injured and chances of including natural enemies will be much reduced compared to sweeping. Field collected aphids should be held in isolation for 2 to 3 weeks to check for presence of parasites.

ALTERNATIVE METHOD

Resistance evaluations may also be conducted in growth chambers. Planting and infestation procedures are the same as for greenhouse tests. Temperature should be maintained at 20 ± 1°C, with relative humidity of 55 to 65% and 16 hour minimum daylength at 13,455 lux of light.

REFERENCES

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