

Section I
Vectors of Plant Pathogens

RETHINKING GREEN PEACH APHID THRESHOLDS ON POTATOES

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Green peach aphid (GPA), *Myzus persicae*, is important to Idaho potato growers because it transmits potato leafroll virus (PLRV). Since 1977, commercial growers in Idaho have determined the need for foliar insecticides applied mid-season to reduce aphid numbers (and so limit the spread of PLRV) by using the following economic thresholds recommended by University of Idaho Cooperative Extension (*UI Current Information Series 339*):

southwest Idaho: "apply control measures if you find more than 40 green peach aphids per 50 leaf sample in 2 consecutive weeks anytime before August 1"

central and eastern Idaho "apply control measures if you find more than 10 green peach aphids per 50 leaf sample in 2 consecutive weeks anytime before August 1"

Since then we've attempted to refine those thresholds by designing a "score card" (*UI Extension Special Publication 7*) that growers can use to modify thresholds to better account for their own agronomic and IPM practices that alter the probability of infection and symptoms. But widespread occurrence of PLRV in Idaho during 1996 gave us pause to reflect on the validity of our recommendations. Here we

- critically re-examine both the research base from which our thresholds were derived (Byrne & Bishop. 1979. JEE 72: 809-811),
- analyze the statistical validity of field scouting protocols
- reassess the underlying biological assumptions about vector:pathogen relationships.

We believe the threshold concept validly can be applied to management of PLRV, but that implementation via improved "early detection" surveys that supplement or replace current field scouting will be the key.