INTRODUCTION

The potato leafhopper, Empoasca fabae Harris, is a serious pest of some varieties of shrub willow (Salix spp.) in the eastern and midwestern United States and parts of eastern Canada, and can affect some vegetables, fruit trees, and grapevines. Both adults and nymphs feed on certain varieties of shrub willow, extracting sap from the leaves and causing a reduction in internodal growth, leaf curling, chlorosis, and early leaf drop. The damage can be severe and produce a substantial reduction in yield.

BIOLOGY

The adult potato leafhopper is approximately 3 mm (~ 1/8”) long, wedge-shaped, winged and light green in color. The nymph is wingless and smaller than the adult, but is similar in shape and color. When disturbed, adults readily jump or fly, whereas nymphs can be observed on the underside of leaves, generally moving sideways. Nymphs mature into adults in approximately 14-17 days. Mature females, with a life span of roughly 30 days, lay 2 to 3 eggs daily within the stems and leaf veins. Eggs are approximately 1 mm long, elongated and white, and hatch in 7-10 days. This life cycle continues until the end of the summer when cold weather kills all live stages. Adults are intolerant of frost conditions and overwinter in southern states. In the spring, they move north and west on the thermal winds arriving in the northern United States from May onward. The summer-time distribution range for potato leafhopper is from the Atlantic coast to the Rocky Mountains and as far north as southern parts of Canada.
Potato leafhopper, *Empoasca fabae* Harris

**SUSCEPTIBILITY**

Potato leafhoppers are sucking insects that extract plant sap directly from the leaf veins on the underside of the leaf, petioles and sometimes young stems. During the extraction process, they also inject a toxin that causes injury to the plant. The dual effect of feeding and toxin cause stunting of growth, leaf curl, and a complex of symptoms known as “hopperburn”. Hopperburn is characterized by a whitening of the veins, followed by leaves rapidly turning yellow, then brown, and then dying. Leaf curling is the most obvious symptom and is usually accompanied by reduced internodal growth, which can range from mild to severe. Severe hopperburn can stunt growth significantly, reducing yields substantially, and weakening the plant for damage by other organisms or environmental stresses such as drought. Varieties of shrub willow developed in Europe, based on pedigrees with *Salix viminalis* or *S. viminalis* x *S. schwerinii*, are highly susceptible to potato leafhopper. The *S. viminalis* hybrids developed in the New York breeding program display a range of susceptibility to potato leafhopper. Highly susceptible varieties display severe stunting and hopperburn when planted in areas where potato leafhopper is abundant. More resistant varieties can display the typical leaf curl characteristic of hopperburn with minor or no internodal growth reduction.

For more information on potato leaf hopper and the damage it causes to vegetable crops, visit www.nysipm.cornell.edu/factsheets/vegetables/potato/phl.pdf. For more information on shrub willow, please visit http://willow.cals.cornell.edu, www.doubleawillow.com or www.esf.edu/willow.

**MANAGEMENT**

Populations of potato leafhoppers can expand rapidly throughout the summer depending upon the time of arrival, host availability, and temperature. Under ideal weather conditions as many as six generations can occur over the summer months creating large local populations of potato leafhoppers. Shrub willows adjacent to alfalfa may be more prone to potato leafhopper problems. Heavy rains may dislodge nymphs from plants temporarily reducing their impact, and storms from the south can carry an influx of potato leafhopper into a region increasing their impact. While potato leafhopper is attacked by several predators, parasites, and fungal pathogens, effective control may require the use of pesticides. No recommended management practices are currently available although leafhopper on alfalfa can be controlled with chemical insecticides. Planting multiple varieties of shrub willow is encouraged, as is the planting of more resistant varieties in areas heavily affected by potato leafhopper.