



# Alfalfa NPGS Germplasm - Leafhopper Resistance

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**Potato leafhopper (PLH), one of the most economically devastating pests of alfalfa in the eastern half of the United States and Canada, causes seedling mortality, adult plant stunting, and significantly reduced forage yield and quality. In the 1980s, a glandular-haired trait conferring resistance to PLH was discovered in wild alfalfa germplasm maintained by the USDA National Plant Germplasm System (NPGS) unit in Prosser, Washington. This trait was used to develop PLH resistant breeding lines and commercial cultivars.**

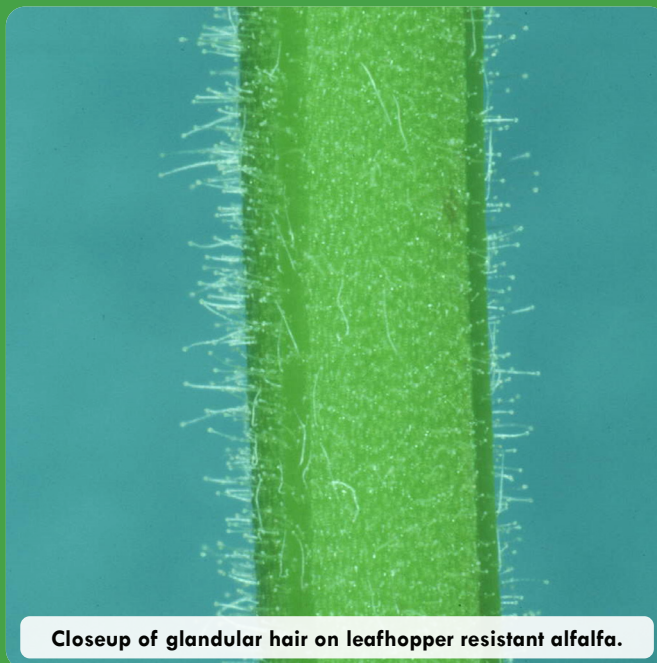


Photo by William O. Lamp, University of Maryland

Closeup of glandular hair on leafhopper resistant alfalfa.

## PROJECT GOALS

- ✓ Produce alfalfa cultivars with natural resistance to potato leafhopper

### Problems Addressed

When PLHs feed on alfalfa, it yellows foliage and stunts plant growth. The damage reduces yield and quality during mid-summer cuttings, and to subsequent crop harvests if severe enough, causing significant economic loss for U.S. producers. Prior to the 1980s, there were no alfalfa cultivars with resistance to PLH; the pest was managed by harvesting herbage early, leading to reduced realized yield potential. While insecticides can manage PLH, this method poses economic costs as well as environmental and safety hazards.

### Solutions Developed

USDA scientists identified the PLH resistance glandular hair trait in wild relatives of cultivated alfalfa. Resistance mechanisms likely include non-preference, tolerance, mortality, and decreased feeding. A collaborative breeding program incorporated the glandular hair trait into several breeding lines, which were released and subsequently used by alfalfa breeding companies to develop modern commercial cultivars with PLH resistance. U.S. producers now have access to economically and environmentally friendly pest management that has helped stabilize alfalfa yield and forage quality.



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