

## Potato Leafhopper and Hopperburn Disorder

Potato leafhopper (*Emposaca fabae*) may have more potential to cause significant yield loss to hemp than any other leafhopper associated with the crop. This results plant response to feeding injuries that produce a condition known **hopperburn**. Potato leafhopper produces hopperburn symptoms on many important crops including potato, alfalfa, beans and hops.

Hopperburn symptoms on plants typically show a yellowing at the tip of leaves. These symptoms may progress to include the entire leaf and is often followed by areas of leaf death. Leaf curling may also occur. Sharp reductions in photosynthesis and stunting are other symptoms that have been observed on some kinds of plants. To date, yellowing of the tips of leaflets and, perhaps, progressive leaf necrosis has been observed by potato leafhopper in hemp (Figures 1, 2).

Hopperburn is produced by plant reaction to the unique way that potato leafhopper feeds. They have piercing-sucking mouthparts typical of other leafhoppers that they use to rupture cells, feeding on the cell fluids released. However, potato leafhopper feeds on cells of the phloem, rather than the mesophyll, as do similar leafhoppers. Also, the saliva of potato leafhopper introduced as it feeds has toxic effects that further damage cells in the phloem. By disrupting these tissues movement of nutrients is disrupted and sugars accumulate in the leaves, resulting in the hopperburn symptoms.



**Figure 1.** Tip of hemp leaf showing mild symptoms of hopperburn. **Figure 2.** Hemp leaves showing advanced symptoms of suspected hopperburn. Photograph courtesy of Daniel Gilrein, Cornell University. **Figure 3.** Potato leafhopper nymph on hemp.

Potato leafhopper occurs in the eastern half of North America; it does not occur in Colorado. A related species of *Empoasca* (unidentified) does occur commonly in hemp in eastern Colorado. Feeding by this species, which feeds on mesophyll cells, produces light flecking (stippling) on the leaf, which is insignificant.

The importance of potato leafhopper and hopperburn to hemp is unknown. Differences in response to injury may be expected to vary among hemp cultivars, as it does with other crops.

Hemiptera: Cicadellidae



**Figures 4.** A hemp plant showing extensive yellowing at the tip of leaves due to hopperburn. In this Indiana field very few of the plants, including all of the immediately adjacent plants, did not show any evidence of hopperburn, suggesting there may be genetic differences in hemp to hopperburn.



**Figure 5.** Adult of an *Empoasca* species common in eastern Colorado hemp, where potato leafhopper does not occur. **Figure 6.** Feeding symptoms of this leafhopper appear as a minor flecking of the leaf and hopperburn is not produced.