Potato Leafhoppers Versus Your Quality Alfalfa

Each summer southern winds blow in the pesky potato leafhopper (PLH) which causes more damage to alfalfa than any other insect pest. Alfalfa growers need to stay on top of the situation to prevent significant damage to both the current and subsequent harvests.

The PLH feeds on alfalfa by piercing the stems and leaves and sucking the carbohydrates out of the plant. Saliva from the PLH causes the phloem tissue to restrict flow. Heavy infestations of PLH can impact both plant growth and persistence. In one study at Iowa State University, PLH infested plots matured 30% slower than uninfested plots (Hutchins and Pedigo, 1990). PLH's decrease plant vigor in nodal development and stem elongation.

Impact on plant growth and persistence

Just as important is the impact of PLH feeding on the alfalfa root system. In a Wisconsin trial (Hogg, et al, 1997) showed root weights were significantly lower for untreated plots at the end of the establishment year and for each of the two subsequent years. A Purdue University trial, researchers found significantly lower concentrations of carbohydrates in untreated versus treated plots (Shaw and Wilson, 1986). Measured regrowth after harvest was shorter for the PLH infested plots. Althought smaller roots and lower carbohydrate reserve don't guarantee a loss of persistence, they most certainly don't help the cause in years where other stresses like poor winter/spring survival environments, diseases and intensive cutting schedules are working against alfalfa plant survival. Even when there is not a case of significant or measurable stand loss, research has shown PLH damaged stands may suffer in terms of yield potential, stand vigor and longetivity.

Impact on forage yield and quality

Impacts on yield and quality depend on level of infestation and time in the stand. The earlier in the growth cycle that PLH infest a stand, the greater reduction in forage yield if left untreated. Yield losses have been measured from 0-95% which doesn't include subsequent yield reductions in cuttings and years following the initial infestation.

Impacts on quality and are interesting in that they may actually be positive contributors to forage quality. In an Iowa State University study (Hutchins, et al., 1989) PLH damaged forage were analyzed. Some of their findings included: 1) PLH feeding had little effect on whole plant part iin-vitro digestibility; 2) PLH had little effect on whole plant neutral detergent fiber (NDF) concentrations but there was a trend toward lower stem NDF% and a higher leaf NDF%, and 3) PLH feeding reduced both whole plant and leaf crude protein (CP) concentrations but tended to raise stem CP%. Based on this study and others, the greatest forage quality impact of PLH feeding may be when measured on a nutrient yield basis (pounds per acre) rather than on a concentration basis.

Watch Potato Leafhopper Thresholds

Potato leafhoppers suck immense value out of alfalfa each summer. The table below lists proposed new economic thresholds for leafhoppers which are somewhat higher than the standard 0.1 leafhoppers per sweep per inch-height of alfalfa. This table is for an alfalfa crop value at $80 per ton. S=standard alfalfa; T=potato leafhopper tolerant alfalfa (>50% resistance).

Canopy	Cost of Treatment									
Height	**$8/acre**		**$10/acre**		**$12/acre**		**$14/acre**		**$16/ac**	
	S	**T**	**S**	**T**	**S**	**T**	**S**	**T**	**S**	**T**
inches										
4	**29**	**71**	**37**	**87**	**44**	**103**	**52**	**119**	**60**	**136**
8	**33**	**75**	**41**	**91**	**48**	**107**	**56**	**123**	**64**	**140**
12	**37**	**79**	**45**	**95**	**52**	**111**	**60**	**127**	**68**	**144**
16	**41**	**83**	**49**	**99**	**56**	**115**	**64**	**131**	**72**	**148**