INSECTICIDE SEED TREATMENTS FOR SUGARBEET

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In Idaho, sugarbeet growers must deal with curly top (vectored by the beet leafhopper) and a number of pest problems such as root maggot, black bean aphid, sugarbeet root aphid, spinach leafminer, cutworms, and wireworms. Host resistance is the preferred way to manage for these problems, but insecticides are frequently needed to improve control. One class of insecticides, neonicotinoids, have proven to be an invaluable tool for managing some of the world's most important crop pests. Neonicotinoids represent the most effective insecticide chemical class for controlling sucking insect pests. Their broad spectrum of efficacy, together with systemic and translaminar action, pronounced residual activity, and mode of action as a competitive inhibitor on nicotinic acetylcholine receptors, make neonicotinoids a rapidly expanding insecticide class. To help alleviate pest related problems in sugarbeet production, studies to investigate the influence of host resistance and neonicotinoid seed treatments were initiated.

From 2006 to 2008, eight studies were conducted to assess the efficacy of Poncho Beta (60 g a.i. clothinanidin + 8 g a.i. beta-cyfluthrin/100,000 seed) and Cruiser Tef (60 g a.i. thiamethoxam + 8 g a.i. tefluthrin/100,000 seed) on commercial sugarbeet cultivars. In some studies the neonicotinoids (Poncho and Cruiser) were tested without the pyrethroid companion products. Poncho Beta and Cruiser had the same plant stand as the untreated check in the trials, but the Cruiser Tef treated seed consistently had reduced plant stand. Poncho and Cruiser reduced curly top in all studies compared to the untreated check (Fig. 1) and Poncho reduced curly top symptoms 6-10% more than Cruiser.

Figure 1. Curly top symptoms with the untreated seed (left) and Poncho Beta treated seed (right) in September on the susceptible sugarbeet cultivar Monohikari.

Although curly top control is improved with the neonicotinoids, combining these seed treatments with the best host resistance is still advisable. The seed treatments should pay for themselves even when tested on cultivars with the best curly top host resistance in production areas with a history of curly top. When the first generation spinach leafminer attacks plants with only a few leaves, controlling the pest can be economical. Poncho Beta and Cruiser Tef reduced incidence of spinach leafminer by 97-100% during early plant growth stages. Poncho Beta and Cruiser Tef also provided early season control of black bean aphid, but efficacy dropped off to just suppression by late August; on 21 Aug of both years, black bean aphid incidence was reduced by 60-73% compared to the untreated checks. Sugarbeet root aphid incidence recorded in mid-September on the main taproot was reduced by 80% with Poncho Beta and 50% with Cruiser Tef. The seed treatments also looked promising for the control or suppression of root maggot and wireworm.

Even though Poncho Beta reduced disease and pests at times more than Cruiser Tef, sugarbeet cultivars with these products had similar yields. When averaged over the trials, Poncho Beta improved yields over the untreated check by 3.3 t/A, a 9% yield increase. Thus, Poncho Beta paid for itself, even though a number of the trials had low to trace amounts of curly top pressure.