JACOBSEN, BARRY J.^{1*}, KEN KEPHART² and JOYCE ECKOFF³, ¹Department of Plant Sciences and Plant Pathology, Montana State University, Bozeman, MT 59717-3150, ²Southern Agricultural Research Center, Huntley, MT 59037 and ³Eastern Agricultural Research Center, Sidney, MT 59270. Fungicide and insecticide seed treatments: effects on stands, yields and disease control

Sugarbeet stands profoundly influence the recoverable sucrose yield per acre by influencing both tons/A and quality factors such as impurities and sugar loss to molasses. Seed decay, soilborne pathogens such as Pythium sp. Aphanomyces cochlioides, Fusarium sp. and Rhizoctonia solani, plus seedborne pathogens such as Phoma betae can dramatically reduce stands. Fungicide seed treatments must protect the seed from seedborne pathogens, a wide range of soilborne seed decay fungicide prior to germination and plus post emergence damping-off caused by the aforementioned fungi. With the advent of systemic insecticide seed treatments we can now control a range of soil inhabiting insects and insects such as the beet leaf hopper that transmits the curly top virus. In four years of field research at Huntley, MT and Sidney, MT and greenhouse research at Bozeman, MT we have compared new insecticide and fungicide seed treatment combinations to a standard thiram-metalaxyl (Apron, Acquire, Allegiance) seed treatment. Research has shown that clothiodan (Ponch/NipsIt) and thiamethoxam (Cruiser) are compatible with a wide range of fungicides and that control of curly top infection is equal at the 60 gm ai. insecticide/seed unit rate. Control of curly top was dependent on using a variety with at least a moderate level of resistance. The addition of the fungicides azoxystrobin (Dynasty), hymexazole (Tachigaren), pyraclostrobin (Stamina) and some experimental materials has provided significant stand and yield increases in some environments. Greenhouse testing has shown that combinations of insecticides plus one or more of the aforementioned fungicides results in improved control of Pythium sp. A. cochlioides, Fusarium sp. and R.solani compared to the standard thiram-metalaxyl seed treatment.