

Nutrient Management, Variety Trials, and Pest Control in Potatoes - Bridging the Gap between “Conventional” and “Organic” agriculture

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Cavendish Farms conducts collaborative trials to evaluate new potato varieties, crop responses to fertilizer and manure and pest control practices. Although these trials are “conventional”, some of the information has application for “organic” production.

Beetle Trenchers

Colorado Potato Beetles (CPBs) can develop resistance to commonly used insecticides. Populations of CPBs on PEI were confirmed to have resistance to several chemical families (synthetic pyrethroids, organo-phosphates and carbamates) of insecticides. In response to grower frustration, a “trencher” machine was constructed to lay plastic trenches as a barrier to the movement of adult beetles in the spring, prior to egg laying. The plastic lined trenches, if constructed correctly, allows beetles to enter the trench but exiting is difficult due to the steep incline and slippery plastic, especially if covered with a fine film of soil. Several farmers encountered problems in laying the plastic without any folds on the side walls. If a fold or crease occurred, beetles could “walk out”. In several instances, growers had placed the trenches along hedge rows of spruce and Balsam fir trees that exuded gum which fell on the trenches and became mixed with fine soil. This rough surface provided excellent traction for the beetles and the traps did not work satisfactorily. With experience, progress has been made in “fine-tuning” plastic lined trenches and flangers. Future control measures for these formidable and versatile pests will require a range of techniques to achieve acceptable results.

New potato varieties for organic farms

Desirable traits for new potato varieties, adapted to reduced input conditions would be rapid growth of foliage to compete with weeds, lower requirements for nutrients, resistance to different strains of Late Blight, relatively early maturity, resistance to Colorado Potato Beetles and other insect pests and high quality to command a premium price when sold by variety name.

Nutrient management

Crops remove nutrients from the soil which can be replaced by manure, rock bearing minerals or concentrated fertilizers. Cavendish Farms evaluated beef manure as a fertilizer to assess “nutrient credits”. Partially composted beef manure added to the soil at the rate of 25-28 tons/acre prior to planting, increased yields of the varieties Shepody and Russet Burbank from a pay weight of 50-70 cwt/ acre in non-fertilized plots to 140-160 cwt/acre in manured plots. Applications of nitrogen, phosphorous and potassium in concentrated fertilizers resulted in much higher yields of 200-250 cwt/acre. Even when the full chemical fertilization program was practiced, potato yields continued to increase when manure was added to the plots. The yield response from manure may be due to several factors - supplies of nutrients, increased microbial activity and increased water holding capacity.

Key Words: nutrient management, varieties, Colorado Potato Beetles

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