

natural systems agriculture

The Effect of Cover Crops on Nutrient Acquisition by the Main Crop

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The purpose of my research is to establish how Black Medic and Kura Clover cover crops enhance soil nutrient content and cycling and promote favorable conditions for nutrient uptake by the main crop. Cover crops can improve soil nutrient cycling in many ways such as reducing nitrogen leaching, erosion and nitrogen volatilization, adding organic matter to the soil, nitrogen fixation and enhancing beneficial microbial activity. Both Black Medic and Kura Clover are self-regenerating, nitrogen-fixing and mycorrhizal.

My experiment consists of field trials in Winnipeg, Manitoba and Indian Head, Saskatchewan as well as greenhouse experiments. I am investigating the nutrient benefits, namely nitrogen and phosphorus, accrued by the soil over the 5 year period in which the cover crops have been grown. I am also exploring the possibility that mycorrhizal colonization of the main crop is increased in the cover crop systems. Mycorrhizae are fungal symbionts which assist their host plant in the uptake of soil nutrients. My research objectives will be achieved through the study of the growth, nutrient uptake and mycorrhizal colonization of flax crops grown in rotation in systems with and without a cover crop.



Kura Clover cover crop before tillage and seeding. Previous crop was oats. Winnipeg, May 30, 2005.



Control plot with no Kura Clover cover crop. Previous crop was oats. Winnipeg, May 30, 2005.



Black Medic cover crop at seedling stage.
Previous crop was oats. Winnipeg, May 30,
2005
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Control plot with no Black Medic cover crop.
Previous crop was oats. Winnipeg, May 30,
2005.

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