Soil Health Applied Research Alliance

albertasoilhealth.ca

ARECA Soil Health Initiative

This article is part of a series to promote better understanding of our agricultural soil resources along with practices that can influence soil health.

August, 2015

Are Cover Crops in Your Future?

Bob Blackshaw, Ph.D. Research Scientist, Agriculture & Agri-Food Canada, Lethbridge Research Centre

The generic term cover crop means different things to different people. Their benefits and uses are many. They can be used to prevent soil erosion, reduce soil compaction, improve soil quality, fix atmospheric nitrogen, reduce nitrogen leaching, suppress pest/weed populations and provide grazing for livestock. Cover crops are grown as a winter crop in a cool climate (hairy vetch, winter rye), a break crop in subtropical climates (black oat, rye), a fallow replacement (sweetclover, red clover, barley/pea mix), an intercrop in vegetable crops (cereals), and semi-permanent living mulches in vineyards and orchards (perennial grass/legume mixes).

Successful use of a cover crop will only occur if you have a specific purpose in mind. If soil erosion protection is your goal then you need a fast growing species that provides ground cover and is competitive with weeds; think cereals such as oats and rye. If soil compaction is a concern then choose species with taproots or deep root systems (tillage radish, sweetclover). If building soil fertility is the objective then legume crops are the choice. Possibilities include annuals such as field pea or hairy vetch, biennial sweetclover, and perennials such as alfalfa or red clover. Not only will soil nitrogen be higher but beneficial soil microbial populations involved in nutrient cycling and pest suppression will be increased. High biomass production of all cover crops is desirable to supress weeds and increase soil organic matter in the long term.

A concern for most farmers considering including cover crops in their cropping system is the lack of cash flow in that year. This is acceptable to some as they know increased profits from subsequently grown crops can more than offset this lack of revenue and long term soil health benefits are being accrued. There are some situations where, through grazing or forage harvest, revenues can be realized from cover crops while still retaining many benefits. For example, sweetclover can be harvested as hay without losing all of the soil nitrogen and organic matter contributions as decaying roots constitute 50% of the plant. Research at the Lethbridge Research Centre determined that yield of winter wheat inter-seeded with alfalfa was similar to monoculture wheat while alfalfa suppressed weeds and added 40 kg/ha of soil nitrogen. Alfalfa was killed in October and a successful crop was grown the following spring.[1]

There are many innovative ways to include cover crops in cropping systems if the mindset is in place. Grab your favorite beverage and start brainstorming with your friends!

[1] Cover crops with winter wheat: Under-seeding winter wheat with alfalfa can provide some advantages. June, 2014. AgAnex. http://www.agannex.com/field-crops/cover-crops-with-winter-wheat