

## **Reducing Nutrient Loss Using Cover Crops**

**By: Ken Schroeder**

Cover crops can be used effectively to reduce soil erosion, reduce the need for herbicides and other pesticides, protect water quality by limiting nitrogen leaching, and increase soil organic matter. All benefits worth considering when thinking about using cover crops.

With the high cost of inputs it becomes more important to find ways to conserve fertilizer and/or reduce the need for commercial fertilizers. Using cover crops enhances nutrient recycling by taking up nutrients that would otherwise leach out of the soil profile and potentially end up in the groundwater and local lakes and streams. Nitrate is often present in the soil at the end of the cropping season if not all the nitrogen applied was used by the growing crop. Also, decomposing crop residue and animal manures can add to the nitrate-nitrogen levels in the soil. Nitrogen in the nitrate form is water-soluble and therefore vulnerable to leaching when it rains.

**How can we recycle nutrients and reduce loss?** Cover crops reduce nitrate leaching by soaking up available nitrate for their own growth and use available soil moisture, thus reducing water available for leaching nutrients. Non-legumes such as cereal rye, wheat, oats, barley, and ryegrass are good nitrate scavengers. To maximize nitrogen uptake and prevent leaching, plant cover crops as soon after harvest of the previous crop as possible or consider interseeding. Annual cover crops like oats and barley should be planted by September first to be effective scavengers. Switch to rye when planting after September 1<sup>st</sup>. Legumes should be established in early to mid August in Wisconsin to avoid excessive winter killing of young seedlings.

**Can perennial cover crops be used in commercial vegetable production systems?**



Small-plot studies at Hancock, WI led by A.J. Bussan, UW-Madison Vegetable Production Specialist demonstrated the potential for perennial legume species to be incorporated into current vegetable rotations in Central

Wisconsin. Results showed that legumes could be underseeded in snap beans at the first trifoliolate leaf stage without yield reductions or increased residue in harvested pods. Sweet corn grown the following year where red clover, sweet clover, or alsike clover (established during snap bean production the previous year) was maintained in the understory and no nitrogen fertilization applied produced yields of seven ton/acre. In these studies, the perennial legume cover crops supplied between 50 and 100% of required nitrogen for the sweet corn crop. It is believed the nitrogen source was primarily decomposing cover crop residue and nitrogen released from the growing legume cover crop species. Additionally, significant amounts of legumes remained after the sweet corn harvest that could be utilized as nitrogen credits for a following crop.

**On-farm trial.** In 2009 red clover strips were interseeded in snap beans during final cultivation at 8 lbs./acre. In 2010 the red clover was suppressed with glyphosate, tilled under, and sweet corn planted using 50 lbs./acre less nitrogen on the red clover strips. Yields were the same on both treatments. This perennial cover crop system holds great potential as a production system. If interested in using this system on your farm, contact Ken Schroeder, Portage County Agriculture Agent [ken.schroeder@ces.uwex.edu](mailto:ken.schroeder@ces.uwex.edu) or 715-346-1316.

**Good time to consider cover crops.** If you aren't using cover crops this might be a good time to consider them. Check with your local NRCS office and ask about possible cost sharing for up to three years to establish a cover crop program. Funding may be available through the Environmental Quality Incentives Program (EQIP). Additional resources are available at your county Extension office and online at the Midwest Cover Crops Council website <http://www.mccc.msu.edu/>.