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15 October 2013

To: John D. Lawrence, Associate Dean, Extension Programs and Outreach
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From: Andrew Lenssen and Roger Elmore, Agronomy, Iowa State University

Re: Fall Seeding Cover Crops in 2013

Many crops were planted later than normal in Iowa in 2013, resulting in delayed harvest. This in turn delayed planting of cover crops and some are not yet planted. October 15 is often seen as a cutoff date for seeding cover crops. Farmers may be interested in seeding cover crops this fall, but because of weather-related harvest delays did not get them seeded by mid-October.

Seeding specific cover crops in Iowa after the 15 October cutoff date may still provide substantial reduction in nutrient losses and soil erosion potential. Success in reducing nutrient losses and soil erosion potential depends on several important factors including choice of cover crop species, method of seeding, and location within Iowa.

The cover crop species choice was likely made by farmers when they signed up for IDALS-approved cost share. Cover crops that establish well at this time and protect soil while reducing nitrate flux in Iowa include winter rye (*Secale cereale*), winter triticale, and winter wheat. The winter rye and triticale will have slightly better overall establishment and survival than winter wheat, but the variety planted can make a big difference.

Winter rye, triticale, and winter wheat still have a good opportunity to emerge and grow this fall, with a good chance of survival over the winter and regrowth in the spring. This feature greatly improves nitrate reduction compared to cover crops that will not survive the winter in Iowa: oat, oilseed radish, barley, yellow mustard, and annual ryegrass (*Lolium perenne* var. *multiflorum*) and others. These species, regardless of variety, will not accumulate a significant amount of nitrate with late-fall planting dates, and given their low C:N ratio when they winter kill this year, any accumulated nitrate will most likely be lost through leaching or volatilization prior to uptake by next year's corn or soybean crop.

The planting method is extremely important with late cover crop seeding. Drilling cover crop seed into soybean stubble should provide good establishment of winter rye, triticale, and wheat, providing decent overall soil protection. Broadcasting seed followed by use of a field cultivator for incorporation will likely leave soil unprotected from water and wind erosion especially if the

previous crop was soybean. This practice is not recommended with soybean since it likely will result in greater soil erosion than if the field was not planted to a cover crop, regardless of using a winter cereal – that will survive the winter - or an oat-radish mixture or other crops that will not survive the winter.

The use of a single cutoff date for seeding cover crops for the entire state of Iowa is not a reasonable method from the scientific perspective. We know well that northern, central, and southern Iowa have very different optimal planting date ranges for corn and soybean, and cover crops follow the same principal. The Midwest Cover Crop Council has an excellent cover crop selector tool. The tool has information specific to Iowa and provides recommended planting date ranges for a wide range of cover crops by county (<http://mcccdev.anr.msu.edu/VertIndex.php>). The tool automatically accesses long-term weather data when a specific county is selected, and science-based research results are then applied by species. However, it must be understood that the tool uses long-term weather data and probabilities of successful establishment given those data. Actual weather conditions encountered will determine successful establishment, overwintering, and environmental benefits of cover crops.

In summary, we believe that farmers planting cover crops beyond 15 October should still be eligible to receive cost share benefits for planting cover crops. Specifically, planting winter rye, winter triticale, and winter wheat should still accrue substantial environmental benefits through reduced nutrient losses and soil erosion. These three crops are still within the recommended planting window as fall cover crops. Delayed or late planting of cover crop species that have little or no chance of adequate establishment and subsequent accumulation of nutrients will confer much less benefit and are not recommended. Seeding operations that require substantial tillage are counterproductive and also not recommended.