Safeguarding Soil Serves Societal Needs

Cellulosic ethanol made from crop residues has become a reality, placing additional burdens on the soil resource. Preserving the soil resource is a fundamental for meeting current and future societal needs.

A recently published article in *Agronomy Journal* summarizes the benefits of using stover for biofuel production, related benefits and risks, the role for crop residue and management strategies, and integrated technologies to sustain harvest and protect the soil. It is one of a series of papers that emerged from an ASA, CSSA, and SSSA workshop on crop residue removal for advanced biofuel production held in Sacramento, CA in 2017. The article reviews strategies for safeguarding soil including limiting where and how much residues are harvested, modifying tillage practices to keep the soil covered, adding cover crops, and incorporating perennials on the landscape.

It is important for research and modeling to highlight the need for synthesis and meta-analysis of long-term studies to provide scientifically defensible life-cycle analysis for addressing changes in soil organic carbon related to directly to harvesting feedstock. Reaping the economic, energy, and greenhouse gas mitigation benefits of harvesting corn stover can be realized provided harvest is done in a judicious manner that does not result in erosion or degradation of the non-renewable soil resource.


Start Right to Finish Well

Weather variability and concern for Great Lakes water quality emphasize improved corn nitrogen (N) management strategies that reduce risks for early applied N losses. In-season N applications help synchronize fertilizer application with uptake, but deliberating between early (V4) and late (V11) sidedress may require adjusting fertilizer strategies to satisfy early corn N demands.

In a new article in *Agronomy Journal*, researchers report on a six site-year study that investigated multiple starter N placement and sidedress timing combinations on corn growth, yield, and profitability in years of normal, excessive, and deficit rainfall. The authors found that splitting N applications improved synchrony of N application with corn uptake but delaying sidedress N until V11 resulted in few yield and profitability benefits. Increased N rates afforded by the subsurface-banded starter stabilized yield and profit across variable weather conditions. The infurrow starter placement was unable to sufficiently supply N until V11 sidedress time and occasionally reduced yield when sidedress was delayed from V4 until V11.

Starting right to finish well may require greater subsurface-banded starter N rates than those used in the current study if full sidedress is applied at V11. The results suggested the V11 timing may still be considered as a rescue application.

Adapted from Rutan, J., and K. Steinke. 2018. Pre-Plant and In-Season Nitrogen Combinations for the Northern Corn Belt. Agron. J. 110. View the full open access article online at http://dx.doi.org/doi:10.2134/agronj2018.03.0153

Photo courtesy of Dennis Pennington.

![Corn at growth stage R5 displaying signs of lower canopy firing in Lansing, MI, 2 Sept. 2016.](https://example.com/corn_r5_sprayer_2016.jpg)

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