

COVER CROP IMPACTS ON CORN AND SOYBEAN NITROGEN ACCUMULATION AND YIELD

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Abstract

The need to retain soil N between economic crops has renewed interest in cover crops for the eastern cornbelt but their management remains a barrier to widespread adoption. We conducted a 3 site-yr study to determine effects of cover species (wheat or rye) and biomass management (burndown 40 d, 20 d, or 2 d preplant) on corn and soybean yields. Sites included a very poorly drained (w/and w/o tile drainage) and a well drained silt loam. With adequate drainage, cover biomass 40 d preplant averaged 16 (wheat) to 22 (rye) kg/ha, increasing 10-fold by planting. Early burndown produced the highest corn yields (9183 kg/ha), significantly greater than yields after the 2 d wheat trt., but not significantly different from the no cover control (7788 kg/ha). On poorly drained soils, corn yields were reduced by 39% and were not altered by cover crop species or burndown Timing. Treatment effects on soil N pools and crop N status will be presented.

Conclusions

- Postponing burndown (desiccation) increased C:N ratios and biomass of the cover crop.
- Soybean yields were unaffected by treatments or drainage.
- Corn yields were affected by drainage. Early desiccation of the cover crop produced higher yields, but not significantly different than the control.
- Soil nitrate values appear to be greater after the early desiccation times indicating the cover crop may not have had adequate growth to scavenge significant amounts of residual fall soil nitrogen.

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