Subsurface banding litter reduces nutrient losses and improves yields

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USDA–ARS Subsurfer banding poultry litter in conservation tillage systems while planting soybe

USDA-ARS Subsurfer banding poultry litter in conservation tillage systems while planting soybean into corn stubble. Photo by Dr. Amanda Ashworth.

Poultry litter land application has the proven ability to increase crop yields and enhance soil health. However, surface applications have been scrutinized for water quality reductions from excess phosphorus runoff into neighboring waterbodies. To address these concerns and improve management options that prevent nutrient losses and aid in efficient poultry litter usage, a research team at the USDA–ARS developed a prototype tractor–drawn implement for subsurface applications of poultry litter in conservation tillage systems. This ARS "Subsurfer" has proven success in perennial pasture systems, but little information exists on appropriate crop seeding distance from poultry litter bands to increase crop yields and quality.

In an article recently published in *Agriculture & Environmental Letters*, researchers set out to evaluate corn and soybean planting distance (13, 25, and 38 cm) from subsurface litter bands compared with surface–applied poultry litter, inorganic nitrogen, and a control (zero rate) for identifying optimum crop yield (grain and forage) and quality under rainfed and irrigated conditions. All subsurface banding treatment distances had greater crop yields than surface–applied poultry litter. Overall, adoption of subsurface banding poultry litter (relative to surface litter applications and inorganic fertilizers) will enhance soil, water, and nutrient conservation in corn–soybean rotations.

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Ashworth, A.J., & Nieman, C.C. (2022). Evaluating optimum seeding distances from subsurface banding poultry litter in crop rotations. *Agricultural & Environmental Letters*, *7*(1), e20063. **https://doi.org/10.1002/ael2.20063**

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