

# Department of Biosystems Engineering and Soil Science

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## BENEFIT OF SPLIT NITROGEN APPLICATIONS IN NO-TILL DRYLAND CORN PRODUCTION SYSTEM

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**Key Takeaway:** Split application is recommended in no-till dryland corn production systems when all the recommended nitrogen (N) rate is 120 lbs. N/A or greater.

### Introduction

- Applying all the recommended N in no-till dryland corn prior to, or at, planting is not recommended. One exception is the application of anhydrous ammonia.
- Split N fertilizer applications lowers the risk of N loss and improves yield compared to single application.
- A recommended N management practice for corn growers in Tennessee is to split-apply a third of the recommended N at planting and sidedress the remaining N fertilizer.
- Information on the response of newer corn hybrids to split and single applications is limited.

### Objective

- Compare the effect of single and split N fertilizer application at 4 N rates on corn grain yields.

### Trial

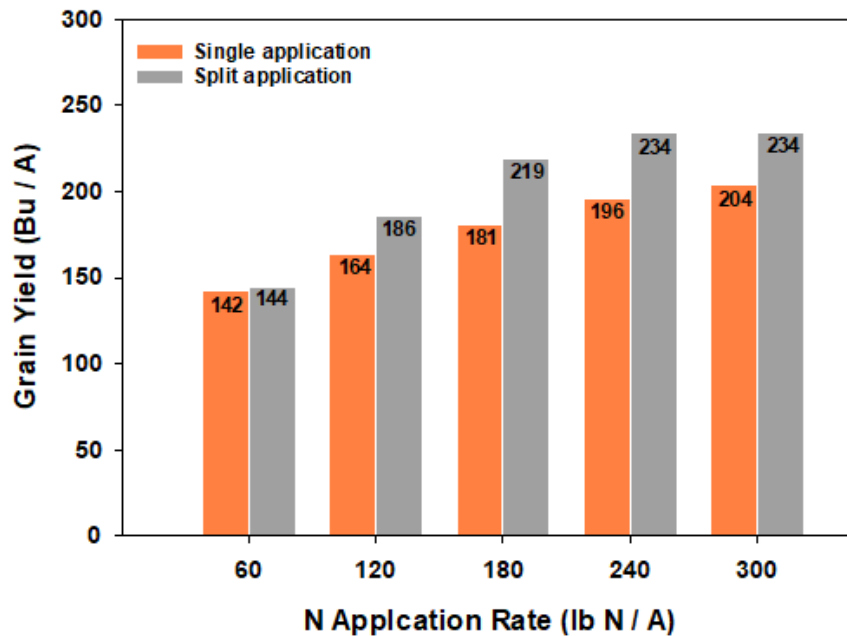
- **Years:** 2021.
- **Experimental Design:** RCB/4 Replication.

- **Locations:** Milan and Springfield, Tennessee (three trials per location).
- **Production System:** no-till dryland.
- **N Treatments:** Single and split application (single application - all N was applied at planting; split application - 60 lbs. N/A was applied at planting and the remaining N applied between V4 to V6).
- **N rates:** 60, 120, 180, 240 and 300 lbs. N/A
- **Crop/varieties:** Corn/Corn/AgriGold A6544VT2RIB, Dekalb 67-44, and Dyna-Gro D57VC51
- **Crop management:** University of Tennessee recommendations for dryland corn.

### Results

- Split N applications increased corn yield over single N applications at the 120 lbs. N/A and beyond (Figure 1).
- Split N applications at the 180 lbs. N/A increased corn yield over single N applications at the 240 lbs. N/A rate.
- There was no significant yield difference at the 180 lbs. N/A rates and beyond for split N fertilizer application.

## Benefit of Split Nitrogen Applications



*Figure 1. (A) Ammonia loss at sampling time and (B) cumulative ammonia loss from N fertilizer treatments over the 18-day period in 2020. Average across six trials.*



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