

NITROGEN APPLICATION TIMINGS IN NO-TILL DRYLAND CORN PRODUCTION SYSTEM

N. Adotey, R. Blair, R. Adotey, and N. Montgomery
University of Tennessee

ABSTRACT

Right timing of nitrogen application is one of the practices of the 4 R nutrient stewardship. Three independent trials using a randomized complete block with 4 replications were conducted to determine the optimal (1) split rate, (2) proportion and (3) timing for sidedress N application in non-irrigated corn. In trial 1 (13-site years), five N rates were examined: 60, 120, 180, 240, and 300 lb N/A, which were applied at two split-applications. Split-applications included single- and split-application. In trial 2 (2 years), the N proportions evaluated included 180/0, 120/60, 60/120, 90/90, 40/100/40, 0/180 lb N/A. The proportion of N was applied at planting and/or at sidedress) for a total of 180 lb N/A. In trial 3 (2 years), the sidedress N timing evaluated included V6, V8, V12, V14 growth stage. Split-applications increased corn yield over single-applications at the 120 lb N/A and beyond except in 2023. There was no significant yield difference at the 180 lb N/A rates and the rates beyond for split-application. The optimal split proportion of N fertilizers was 60/120 lb N/A. In 2022, there was at least 15% yield penalty when 2/3 or more of the total recommended N was applied at planting. The optimal sidedress N application time was between V6 and V8. A 15-40% yield reduction were observed when N was delayed until the V14, respectively. Split application is recommended when N rates are greater than 120 lb N/A. If split application is recommended, then split apply 1/3 at planting and sidedress the remaining around V6 growth stage.