

# IMPACT OF SOIL CONSERVING SEEDBED PRACTICES ON ANNUAL RYEGRASS-CEREAL RYE ESTABLISHMENT IN BERMUDAGRASS SOD

M.M. Eichhorn, Jr.

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AUTHOR: LSU Agricultural Center, Hill Farm Research Station, 11959 Hwy 9, Homer, LA 71040  
(meichhorn@agctr.lsu.edu).

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## INTERPRETIVE SUMMARY

### Research Question

Beef and milk producers across the Coastal Plain of north Louisiana risk high levels of soil erosion on bermudagrass pastures when pastures are thoroughly prepared for fall plantings of annual ryegrass and cereal rye. If soil conserving seedbed practices are to be performed on bermudagrass pastures, producers must have information on the early season forage yield and beef and milk production potential of annual ryegrass-cereal rye following soil conserving seedbed practices. Because information is limited on soil conserving seedbed practices on a bermudagrass sod versus a thoroughly prepared seedbed for ryegrass-rye pastures, a 2-year study was conducted at the Hill Farm Research Station.

### Literature Summary

Higher forage yield performances of annual ryegrass and/or cereal rye from fall plantings in bermudagrass sods grown on Coastal Plain soils were reported when no till, reduced tillage, or chemical burndown seedbed practices were compared with undisturbed sods. The comparative yield performance of these grasses from fall plantings made into thoroughly prepared seedbeds of bermudagrass sod with these soil conserving seedbed practices has not been thoroughly investigated.

## Study Description

Field experiments were conducted in a common bermudagrass pasture on mixed Darley-Guyton (thermic, clayey, kaolinitic, Typic Hapludult) soil having a 0 to 4% slope. The soil tested high in P and K and had a soil reaction of pH 6.2. Each year, after the pasture was mob-grazed continuously for approximately 30 days with 3 cow-calf pairs/A, the following September seedbed preparation practices were carried-out 1) thoroughly prepared seedbed (TPSB) — 3 off-set diskings, 1 pulverizing disk, 1 harrowing; 2) reduced tillage A — 2 off-set diskings of the sod, 1 harrowing; 3) reduced tillage B — 1 off-set disking of the sod; 4) no till A — standing forage on sod cut to 2-inch stubble height and removed; 5) no till B — undisturbed sod; 6) chemical treatment A — Roundup at 1 qt/A (1 lb ai/A) broadcast on the sod; 7) chemical treatment B — Roundup at 1 qt/A (1 lb ai/A) broadcast on the sod, burndown sod burned; 8) chemical treatment C — Gramoxone Extra at 1 pt/A (.3 lb ai/A) broadcast on the sod; 9) chemical treatment D — Gramoxone Extra at 1 pt/A (.3 lb ai/A) broadcast on the sod, burndown sod burned; 10) chemical treatment E — Roundup at 1 qt/A (1 lb ai/A) broadcast on the sod, Gramoxone Extra at 1 pt/A (.3 lb ai/A) broadcast on burndown sod; and 11) chemical treatment F — Gramoxone Extra at 1 pt/A (.3 lb ai/A) broadcast on the sod, Roundup at 1 qt/A (1 lb ai/A) broadcast on the burndown sod. On September 20, Maton cereal rye seed was drill-planted into seedbeds at 60 lb/A and over-seeded with drill-planted Marshall annual ryegrass at 20 lb seed/A. After a broadcast application of 50 lb/A of N as ammonium nitrate on October 15, potential forage availability on TPSB

was deemed sufficient by six independent observers for continuous grazing of stocker steers, stocked at 1.5 hd/A on November 12. Thereafter, forage cut to 3-inch stubble height on each seedbed practice was harvested, wet weight yields recorded, percent *dry* matter determined, and dry matter yields calculated. Where present, bermudagrass was separated from ryegrass-rye; the true yield for annual ryegrass-cereal rye was determined. Moreover, on the basis of dry matter yield intake requirements, beef and milk production across treatments were calculated. Overall, data collected from four replicated blocks of seedbed practices were subjected to statistical analyses using PROC GLM (SAS, 1989).

### **Applied Questions**

**Will the late fall yield performance of ryegrass-cereal rye on no till and reduced tillage prepared seedbeds of bermudagrass compare favorably with a thoroughly prepared seedbed?**

No. The November yield of 1,100 lb/A for the thoroughly prepared seedbed (TPSB) was significantly higher than those of no-till practices A at 248 lb/A and B at 149 lb/A. Yields of reduced tillage practice A at 583 lb/A and B at 461 lb/A were also significantly lower than that of TPSB. Calculated stocker-steer beef production advantage of TPSB over no-till practices A and B was 106 and 138 lb/A; over reduced tillage practice A and B, it was 76 lb and 93 lb/A, respectively. Jersey cow calculated milk production advantage of TPSB over no-till practices A and B was 295 and 320 lb/A; over reduced tillage practice A and B, it was 176 lb and 216 lb/A, respectively.

**Will the late fall yield performance of ryegrass-cereal rye on burndown bermudagrass sod following use of Roundup and Gramoxone Extra alone or in combination compare favorably with a thoroughly prepared seedbed?**

No. The November yield of 1,100 lb/A for the thoroughly prepared seedbed (TPSB) was significantly higher than those of chemical burndown sod treatments A at 369 lb/A, B at 393 lb/A, C at 228 lb/A, D at 382 lb/A, E at 457 lb/A, and F at 289 lb/A. Calculated stocker-steer beef gain/A advantage of TPSB over chemical burndown sod treatment A, B, C, D, E, and F was 105, 102, 126, 105, 93, and 117 lb beef/A, respectively. Jersey cow milk production advantage of TPSB over chemical burndown sod treatment A, B, C, D, E, and F was 245, 240, 295, 245, 220, and 275 lb milk/A, respectively.

### **Recommendations**

September drill-plantings of annual ryegrass-cereal rye in thoroughly prepared seedbeds out-yielded all drill-plantings made in soil conserving seedbeds on bermudagrass sods. Soil conserving practices for seedbed preparation of bermudagrass sods that will enhance annual ryegrass-cereal rye productivity in the fall need to be developed.