MISSISSIPPI SOYBEAN PROMOTION BOARD
PROJECT NO. 65-2016 (YEAR 1)
2016 Annual Report

Title: **Maximization of Yield and Economic Returns for Non-irrigated Soybean Production in Mississippi**

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BACKGROUND

Over half of the soybean in Mississippi are grown under dryland conditions without irrigation. One component of the Early Soybean Production System (ESPS) is planting early-maturity varieties early in the growing season to avoid regular summer drought conditions. This drought avoidance strategy has helped increase the yield of both irrigated and dryland soybean. While yield of irrigated soybean can reach well over 80 bu/acre, yields of dryland soybean are significantly lower.

In order to increase profitability of dryland soybeans in Mississippi, yields need to be increased and/or the dryland production system needs to be optimized to reduce production costs. Much of the soybean research in Mississippi has focused on irrigated production, with much less time being devoted to dryland systems. Research is needed to identify the contribution of agronomic factors such as raised beds, row spacing, maturity group, and planting to dryland soybean yields.

OBJECTIVES

Objective 1: Determine if planting flat or planting on raised beds is most profitable for dryland soybean production.

Objective 2: Determine if wide rows or narrow rows maximize yield and profitability under dryland conditions.

Objective 3: Determine if early-maturing (MG III) or later-maturing (MG IV) varieties maximize profitability of dryland soybean production systems.

Objective 4: Determine if early (April) or late (late-May) planting dates maximize profitability of dryland soybean.

PROGRESS/ACTIVITY

Due to wet conditions throughout April, the first planting date for this study was not planted until May 7th while the second planting date was not planted until June 10th. Despite the differences in planting dates, no differences were observed in yield between the two planting dates with yields averaging 45-48 bu/A. Surprisingly, yield differences were not observed between flat planted soybean and soybean planted on raised rows. This is likely due to the dry conditions experienced after planting on both dates.

Yield differences were observed between maturity groups (Table 1). Maturity group IV soybean yielded 4 bu/acre more than MG III soybeans.

Table 1. Yield by maturity group

Maturity Group	Yield	Grouping
IV	49.0	A
III	45.0	B

These results are consistent with other research results for both dryland and irrigated soybeans in Mississippi.

Yield differences were also observed between row spacings. Soybeans planted in narrow rows (20 in.) yielded 5.2 bu/acre more than wide row soybeans (40-in.).

Table 2. Yield by row spacing

Row Spacing	Yield	Grouping
Narrow (20-in.)	49.6	A
Wide (40-in.)	44.4	B

Narrow rows allowed the soybeans to develop a canopy faster and intercept more light throughout the growing season compared to the wide row soybeans. This is especially important with the later planting dates.