



[WWW.MSSOY.ORG](http://WWW.MSSOY.ORG) → MSPB WEBSITE

## WITH UP-TO-DATE SOYBEAN PRODUCTION INFORMATION

### MISSISSIPPI SOYBEAN PROMOTION BOARD PROJECT NO. 65-2017 (YEAR 2) FINAL REPORT

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

**Project leader:** John Orlowski ([john.orkowski@msstate.edu](mailto:john.orkowski@msstate.edu))

#### 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 normally much lower. In order to increase profitability of dryland soybeans in Mississippi, yields from dryland production need to be increased/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 rate 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 (maturity group III) or late-maturing (maturity group 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

Surprisingly, yield differences were not observed between flat-planted soybean and soybean planted on raised rows in both years (Table 1). This is likely due to the dry conditions experienced after planting on both dates.

Yield differences were observed between row spacing's in 2016 only (Table 2). Soybeans planted in narrow rows (20 in.) yielded 5.3 bu/acre more than those planted in wide row soybeans (40 in.). Narrow rows allowed the soybeans to develop a canopy faster and intercept more light throughout the growing season compared to the wide rows. This is especially important with the later planting dates.

Yield differences were observed between maturity groups (Table 3). Maturity group IV soybean yielded 4 and 13.9 bu/acre more than MG III soybeans in 2016 and 2017, respectively. These results are consistent with other research results for both dryland and irrigated soybeans in Mississippi.

Due to wet conditions throughout April, the first planting date for this study was not planted until May 7<sup>th</sup>, while the second planting date was not planted until June 10<sup>th</sup>. Late planting resulted in 3.2 bu/acre higher yield than



[WWW.MSSOY.ORG](http://WWW.MSSOY.ORG)



**MSPB WEBSITE**

## **WITH UP-TO-DATE SOYBEAN PRODUCTION INFORMATION**

early planting (Table 4) in 2016. Despite the differences in planting dates, no differences were observed in yield between the two planting dates in 2017, with yields averaging 47.5 bu/acre.

Similar to our work on soybean row spacing in irrigated soybeans, narrow rows in dryland soybean produced greater yield than soybean planted in wide rows. Also, weed pressure was significantly less in the narrow rows compared to the wide rows in the study plots.

### **END PRODUCTS—COMPLETED OR FORTHCOMING**

This work is being prepared for publication in Agronomy Journal. The results of this work will also be presented at multiple grower meetings in Mississippi.

## WITH UP-TO-DATE SOYBEAN PRODUCTION INFORMATION

**Table 1. Yield from planting on flat or on raised beds**

Year	Planting	Yield	Grouping†
2016	Flat	46.4	A
	Raised	47.6	A
2017	Flat	48.3	A
	Raised	46.6	A

†Values in the same column and within a year followed by the same letter are not statistically different at  $P \leq 0.05$

**Table 2. Yield by row spacing**

Year	Row spacing	Yield	Grouping†
2016	Narrow (20 in.)	49.7	A
	Wide (40 in.)	44.4	B
2017	Narrow (20 in.)	47.4	A
	Wide (40 in.)	47.5	A

†Values in the same column and within a year followed by the same letter are not statistically different at  $P \leq 0.05$

**Table 3. Yield by maturity group**

Year	Maturity Group	Yield	Grouping†
2016	IV	49.0	A
	III	45.0	B
2017	IV	54.4	A
	III	40.5	B

†Values in the same column and within a year followed by the same letter are not statistically different at  $P \leq 0.05$

**Table 4. Yield by planting date**

Year	Planting date	Yield	Grouping†
2016	Early	45.4	B
	Late	48.6	A
2017	Early	47.5	A
	Late	47.5	A

†Values in the same column and within a year followed by the same letter are not statistically different at  $P \leq 0.05$