



Evaluation of Deltapine® Cotton Varieties on Two Soil Types

Trial Objective

- Each season researchers at the Bayer Learning Center near Scott, Mississippi evaluate a group of new cotton varieties for adaptation to the growing conditions on two distinctly different soil types.
- This trial was conducted to evaluate current and new product evaluator (NPE) program varieties in both a deep sandy soil type and a heavy clay production system.
- This trial is intended to identify candidate varieties with acceptable yield potential and fiber quality for the production environments tested.
- Cotton varieties quickly change, and understanding new varieties, along with the associated management practices, can aid growers in making better decisions about variety placement and management.

Research Site Details

Location	Soil Type	Previous Crop	Tillage Type	Planting Date	Harvest Date	Potential Yield (lbs/acre)	Seeding Rate (seeds/acre)
Scott, MS Buckshot site	Sharkey Clay	Corn	Conventional	4/29/2022	9/30/2022	1,000	42,000
Scott, MS Highway site	Commerce Silt Loam	Corn	Conventional	4/29/2022	9/25/2022	2,000	32,000

- All inputs were per local standards. Relevant, system-specific applications were made as follows:
 - » Buckshot Field
 - Nitrogen (N) was soil-applied as 140 lbs N per acre from 28-0-0 liquid fertilizer.
 - Three applications of plant growth regulator (PGR) (generic 4.2% mepiquat chloride) were applied at:
 - 9 nodes at a rate of 10 ounces/acre,
 - 13 nodes at a rate of 10 ounces/acre, and
 - 18 nodes at a rate of 12 ounces/acre.
 - Irrigation was applied as needed.
 - All defoliation was per local standards.
 - » Highway Field
 - Nitrogen was applied as 85 lbs N per acre from 28-0-0 liquid fertilizer.
 - Three applications of plant growth regulator (PGR) (generic 4.2% mepiquat chloride) were applied at:
 - 9 nodes at a rate of 12 ounces/acre,
 - 13 nodes at a rate of 16 ounces/acre, and
 - 18 nodes at a rate of 16 ounces/acre.
 - Irrigation was applied as needed.
 - All defoliation was per local standards.
- Very low levels of boll rot were observed across the study.



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No applications were required for corn earworm (*Helicoverpa zea*) or tobacco budworm (*Heliothis virescens*). Western tarnished plant bug (*Lygus hesperus*) was controlled using 5 to 7 applications of labeled and appropriate compounds for the Buckshot and Highway sites, respectively. To indicate insect pressure in both sites, the Deltapine® variety, DP 1822 XF, without Bollgard® technology was used.

Table 1. Deltapine® cotton varieties, trait technologies, and relative maturities planted at the Buckshot and Highway fields at the Bayer Learning Center at Scott, Mississippi in 2022

Deltapine® Variety	Trait Technologies	Relative Maturity
DP 1908 B3XF	Bollgard® 3 XtendFlex® cotton	Very Early to Early
DP 2012 B3XF	Bollgard® 3 XtendFlex® cotton	Early
DP 2115 B3XF	Bollgard® 3 XtendFlex® cotton	Early
DP 2020 B3XF	Bollgard® 3 XtendFlex® cotton	Early to Mid
DP 1822 XF	XtendFlex® cotton	Early to Mid
DP 2123 B3XF	Bollgard® 3 XtendFlex® cotton	Early to Mid
DP 1725 B2XF	Bollgard II® XtendFlex® cotton	Early to Mid
DP 2333 B3XF	Bollgard® 3 XtendFlex® cotton	Mid
DP 2349NR B3XF	Bollgard® 3 XtendFlex® cotton (NR = Nematode resistance, naturally selected)	Mid to Full
DP 2127 B3XF	Bollgard® 3 XtendFlex® cotton	Early to Mid
DP 2038 B3XF	Bollgard® 3 XtendFlex® cotton	Mid
DP 2239 B3XF	Bollgard® 3 XtendFlex® cotton	Mid
DP 1840 B3XF	Bollgard® 3 XtendFlex® cotton	Mid to Full
DP 2141NR B3XF	Bollgard® 3 XtendFlex® cotton (NR = Nematode resistance, naturally selected)	Mid to Full
DP 2143NR B3XF	Bollgard® 3 XtendFlex® cotton (NR = Nematode resistance, naturally selected)	Mid to Full
DP 1646 B2XF	Bollgard II® XtendFlex® cotton	Mid to Full
DP 2055 B3XF	Bollgard® 3 XtendFlex® cotton	Full

- Experimental design was an un-replicated strip plot conducted at two locations:
 - Highway site had 6-row plots, with each plot size as 0.25 acre.
 - Buckshot site had 12-row plots, with each plot size as 0.5 acre.
- » Harvest was completed with commercial machinery.
- » Seed cotton and lint samples were sent for high volume instrument (HVI) testing, turnout, and lint value calculations.



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Understanding the Results

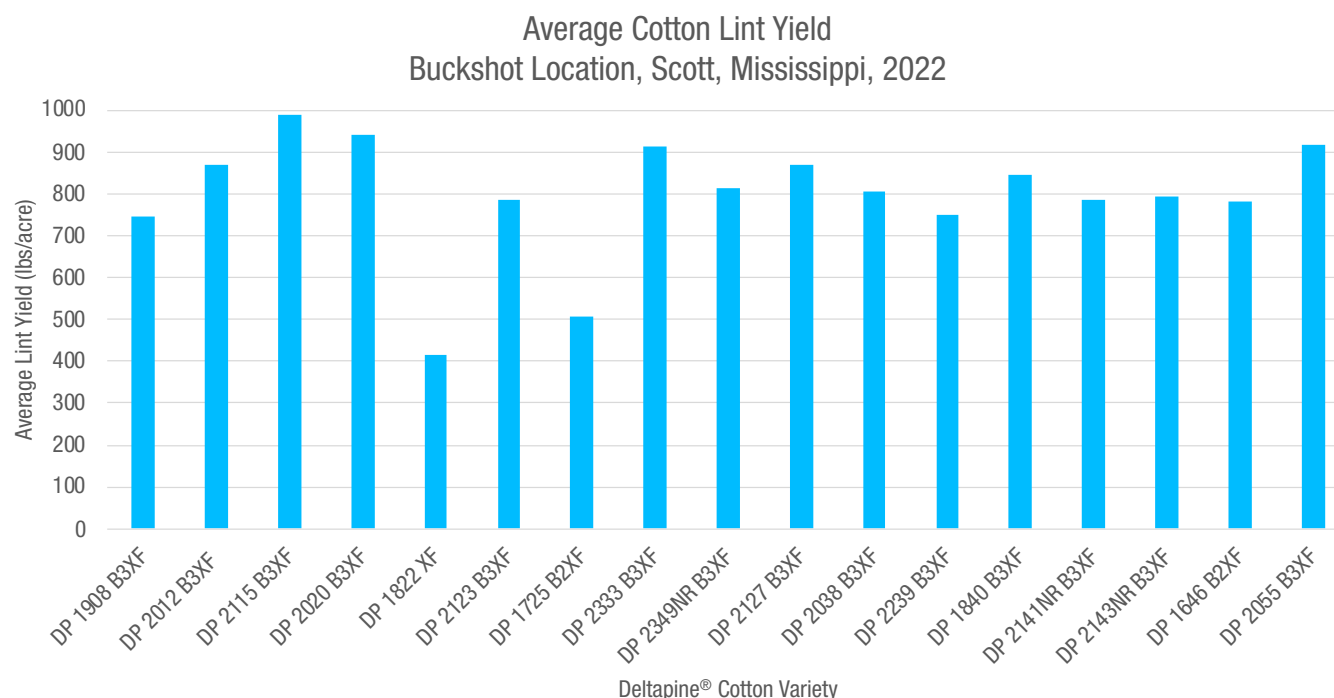


Figure 1. Average lint yield for 17 Deltapine® cotton varieties tested at the Buckshot site at Scott, Mississippi in 2022.

- The Buckshot location is a growth-restricted environment for many reasons, but many of the tested products demonstrated yield potential near 1,000 lbs/acre, or approximately 2 bales.
 - » High yield for this trial was 987 lbs/acre,
 - » average yield was 796 lbs/acre, and
 - » low yield was 415 lbs/acre.
- Of the varieties tested, 9 of 17 yielded greater than 800 lbs/acre and 4 of 17 yielded more than 900 lbs/acre.
- The top four yielding varieties include a range of maturities: early, early to mid, mid, and full. This yield performance data supports selecting varieties with different maturities to help manage risk.



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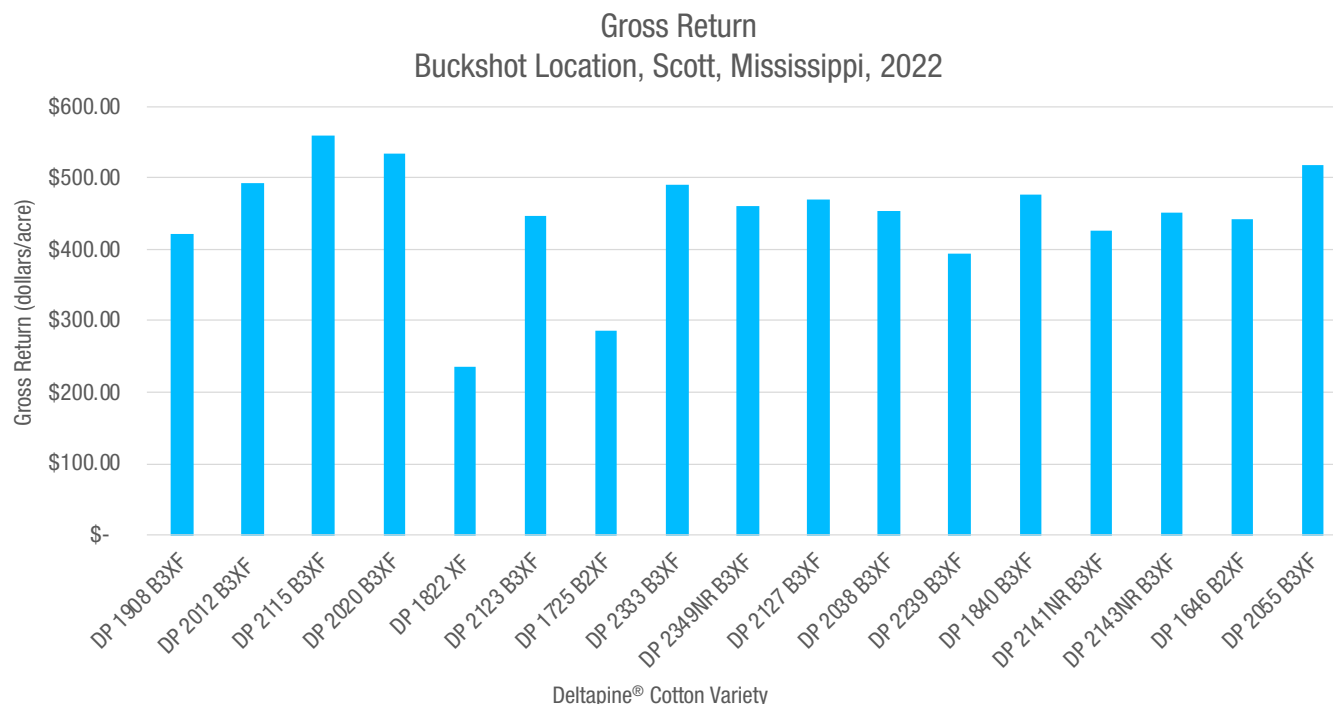


Figure 2. Gross returns per acre at the Buckshot site. Values ranged from \$236/acre to \$561/acre using the HVI established loan values.

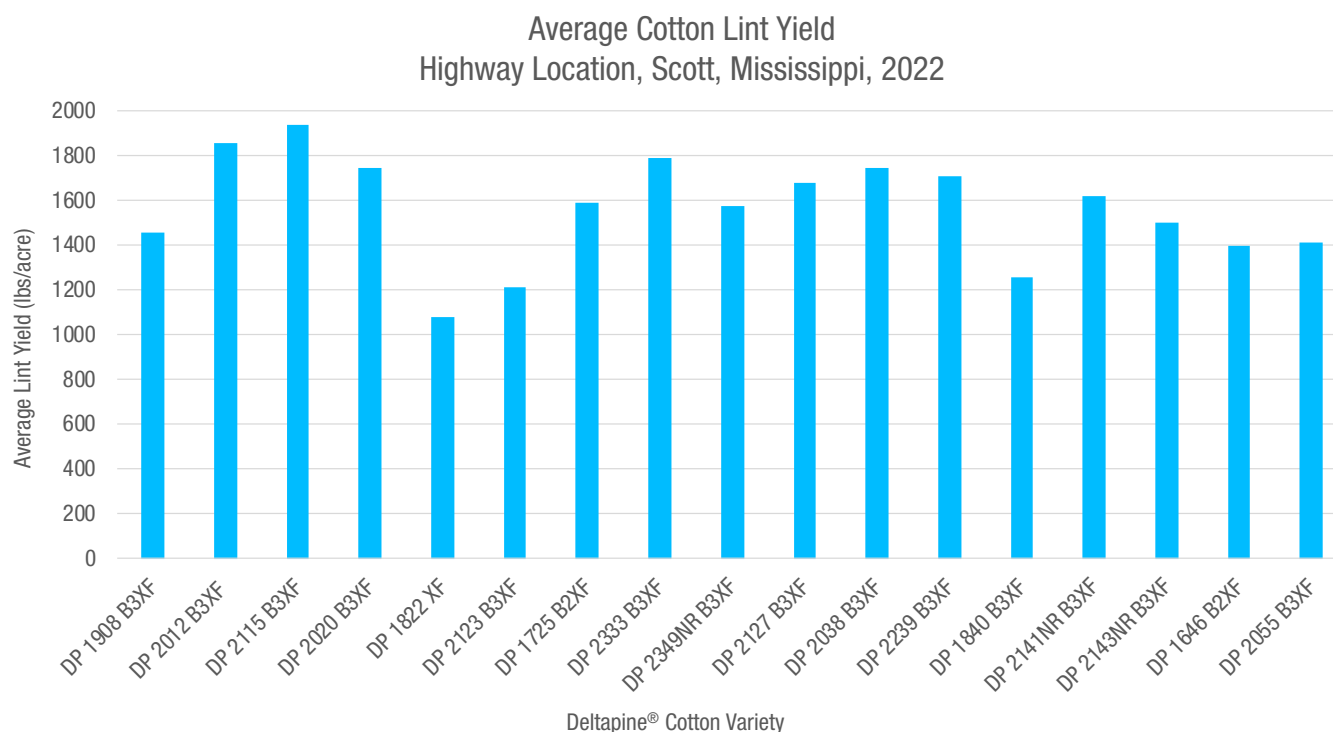


Figure 3. Average lint yields for 17 Deltapine® brand cotton varieties at the Highway site.



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- The Highway location typically has excessive growth. Therefore, it is managed with heavier PGR use, a lower seeding rate, and reduced N application. At this site, high yields are expected most seasons with 2022 being no exception.
 - » High yield for this trial was 1,943 lbs/acre,
 - » average yield was 1,565 lbs/acre, and
 - » low yield was 1,077 lbs/acre.
- Of the varieties tested, 8 of 17 yielded greater than 1,600 lbs/acre and 6 of 17 yielded more than 1,700 lbs/acre.

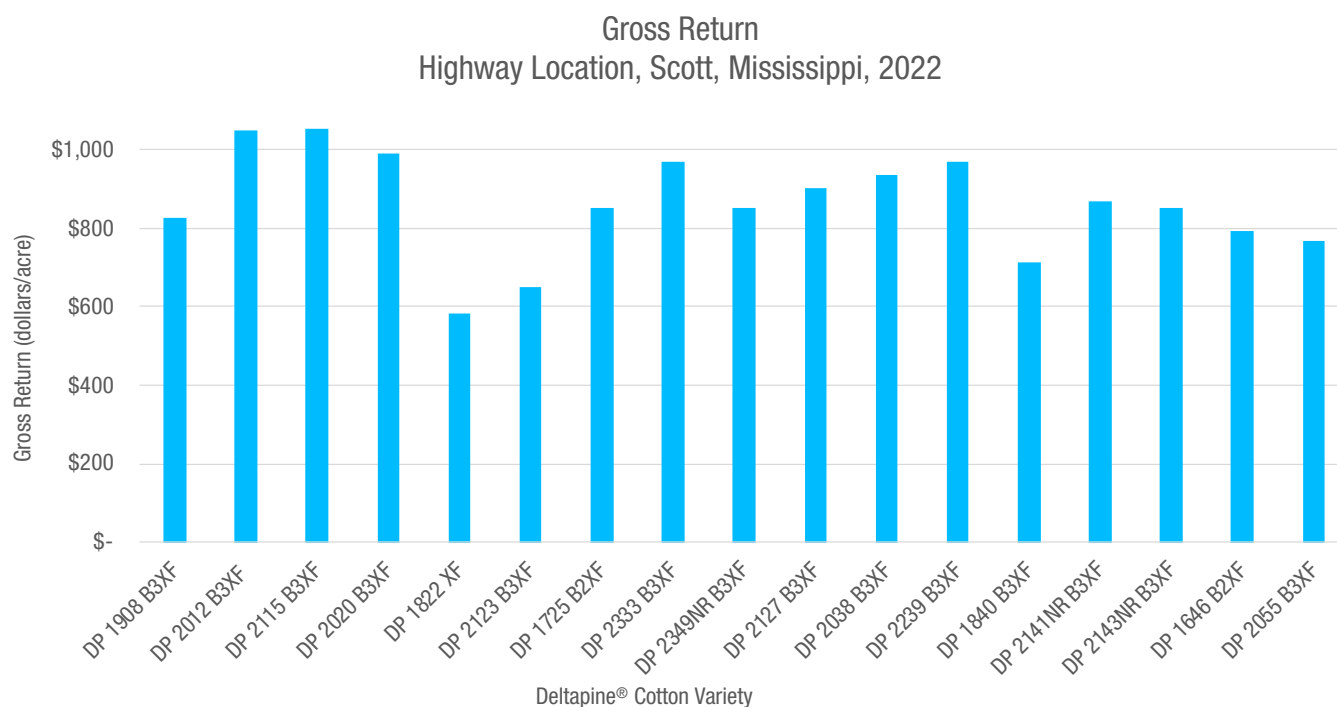


Figure 4. Gross returns per acre at the Highway site. Values ranged from \$584/acre to \$1,053/acre using the HVI established loan values.

- Observations of Bollgard II® XtendFlex® Cotton and Bollgard® 3 XtendFlex® technologies for this trial:
 - » All plots were scouted twice per week for insect pests, and appropriate controls were applied using economic threshold levels defined by the Mississippi State University Extension Service.
 - » Moderate to high *Heliothine* spp. pressure occurred during late July to early August. At that time scouting was intensified at both sites, and applications were not required in plots with either Bollgard II® XtendFlex® technology or Bollgard® 3 XtendFlex® technology.
 - » Deltapine cotton variety DP 1822 XF was used to help indicate insect pressure. This variety was substantially damaged mid-season (square and boll damage were between 30 and 50%); therefore, this variety was the lowest yielding treatment in either location. Other varieties had performance issues, particularly at the Buckshot site, but those issues were attributed to poor adaptation to the conditions present and not insect pressure.



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Key Learnings

- Deltapine has established a strong lineup of broadly-adapted cotton varieties and continues to make progress with new products like DP 2333 B3XF from the NPE program to offer growers options for broadly-adapted, high yielding, and high fiber quality cotton varieties.
- Each variety and the associated management practices should be evaluated for adaptation to soil and environment.
- Please see your local Deltapine or Bayer representative for more information on cotton variety placement.

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