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by

Lynn Brandenburger.....County Extension Agent, Smith Co.
Donald L. Cawthon.....Assistant Professor, Fruits
D. R. Earhart.....Research Associate, Vegetables
John Lipe.....Area Extension Horticulturist,
Fredericksburg
D. R. Paterson.....Professor, Vegetables, Roses
H. Brent Pemberton.....Assistant Professor, Roses
Stan Peters.....Technician I, Fruits
George Philley.....Extension Plant Pathologist
W. E. Roberson.....Technician I, Roses
James V. Robinson.....Extension Entomologist
G. A. Rowland.....Technician I, Vegetables
Ruth A. Taber.....Research Scientist, Plant Sciences
Liz Wellborn.....Research Assistant, Fruits

Texas A&M University Agricultural Research
and Extension Center at Overton

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SUMMARY OF BLUEBERRY CULTURAL RESEARCH AT OVERTON - 1982

Donald L. Cawthon, Assistant Professor
Liz Wellborn, Research Assistant
Stan Peters, Technician I

INTRODUCTION

To determine the feasibility of rabbiteye blueberry production in the East Texas area, variety evaluation research was initiated at Overton in 1973. By 1978, the blueberry production potential appeared promising and additional research was initiated to evaluate more varieties and investigate cultural production systems for blueberries. This report is an update on 1982 blueberry production from the original variety trials and initial (2 years) results of fertilization, mulch and irrigation experiments.

1982 VARIETY EVALUATIONS

The original variety trial block (established in 1973) consisted of 8 varieties (see Table 1) planted in replicated plots with 4 plants per plot. Plant spacing was 6 ft. between plants and 10 ft. between rows. All fruit was hand picked. Bluegem was not adapted to East Texas and the majority of the plants did not survive. By spring, 1982, no Bluegem plants existed.

As in previous years, Delite and Tifblue were most productive with 24,680 and 20,163 lbs. per acre, respectively (Table 1). Briteblue and Woodard were intermediate and Southland, Menditoo, and Garden Blue were low in productivity. Total fruit production has generally increased each year and the 1982 season (10th leaf) was, by far, the most productive.

In a new trial, 4 varieties were planted in 1978 for machine

harvesting. Replicated plots of Climax, Tifblue, Delite and Bluebell were established on a 6 ft. by 12 ft. spacing, mulched with sawdust and irrigated as necessary. Results of the first year of commercial production (1982) are presented in Table 2. Climax was most productive, followed by Tifblue and Delite. Bluebell produced less than half the yield of the other varieties.

Delite produced the largest berries but fruit quality was poor. Since the varieties were mechanically harvested on the same date, the low quality of Delite fruit as indicated by low soluble solids, high acidity and extremely poor color indicates that the Delite ripens later than the other varieties. Tifblue and Delite fruit had similar levels of soluble solids and acidity, but Tifblue fruit color was considerably better than Delite, suggesting that Delite develops color at a slower rate than other varieties. Climax and Bluebell produced the highest quality fruit.

CULTURAL RESEARCH

Studies were initiated in March of 1978 to investigate the effects of mulch (none, hay, sawdust) and fertilization (rate and timing of application) on production and fruit quality of 'Tifblue' blueberries. Plant spacing was 6 ft. apart in the row and 12 ft. between rows. The plants were established in a sandy loam soil (pH 5.3) and 1/4 bushel of peat was incorporated into each planting hole.

Influence of mulch. Plots were either not mulched or mulched with hay or sawdust within the row and 2 feet on either side of the row. All plots received equal fertilization and irrigation. Fruit production from plots mulched with hay was comparable to sawdust mulched plots in 1981 and 1982 (Table 3). Not using a mulch

significantly reduced yields. This decrease could be partially caused by 1) water stress due to excessive moisture loss without a mulch, 2) increased soil temperature in the primary root zone without a mulch, or 3) fertilizer injury due to a lack of nitrogen tie-up during mulch decomposition.

Fruit quality varied only slightly due to the mulching treatments (Table 3). Fruit color was the only quality attribute significantly affected and non-mulched plots tended to produce fruit with better color.

Influence of fertilization treatments. All treatments have received equal amounts of nitrogen (N) since establishment in single or multiple applications. Some treatments received phosphorus (P) and potassium (K) at the same rate as N or at one-third the rate of N. Fertilizer treatments and times of application are identified in Table 4.

All plots were mechanically harvested with a Blueberry Equipment Co., Inc., mechanical harvester. Two to three harvests were required each year on 10-day to 2-week intervals. Plot yields were recorded in 1981 and 1982 and a fruit sample from each plot at each harvest in 1982 was frozen for later quality analysis.

Yields (Table 4) followed similar trends in both 1981 and 1982, although the amount of fruit produced was considerably higher in 1982 (the second production year).

Osmocote, a slow release balanced fertilizer (13.5-13.5-13.5), applied in a single application produced 40% more fruit (3702 vs. 2639 lbs/acre) in 1982 than comparable single applications of commercial fertilizer, although these differences were not statistically

significant. Yields from plots receiving single or split applications of fertilizer were not significantly different during the first 2 production years. However, definite production trends were established in 1982 indicating that smaller, more frequent fertilizer applications were more beneficial than large, single applications even though total fertilizer rate was the same. Plots receiving full N rate in 3 split applications and only one-third rate of P and K produced the highest yield both years.

Fertilization treatments had little effect on fruit quality in 1982. The only quality attribute significantly affected was fruit color. Plots receiving osmocote produced fruit with slightly lower anthocyanin content.

In summary, preliminary results indicate that a mulch is necessary for maximum fruit production under the conditions of this study. Hay and sawdust worked equally well as a mulch. Single applications of a slow release fertilizer such as Osmocote may be advantageous compared to a single application of commercial fertilizer. Split applications of commercial fertilizer appear to be superior to single applications. P and K fertilization rate could be reduced to 1/3 that of N with no sacrifice in yield or fruit quality.

Table 1. Blueberry variety production data, Overton, 1982.

VARIETY ^z	YIELD (lbs. per acre)
Delite	24,680 a ^y
Tifblue	20,163 ab
Briteblue	14,489 abc
Woodard	12,544 abc
Southland	8,080 bc
Menditoo	7,020 bc
Garden Blue	5,505 c
Bluegem	----- x

z Planting established March, 1973.

y Means separation by Duncan's multiple range test at 5%.

x No Bluegem plants were alive by the 1982 season.

Table 2. Blueberry production and quality data, 1982.

Variety ^Z	Yield (lbs./acre)	Berry wt. (g)	Sol. sol. (%)	Acidity (%)	Color (A ₅₂₀)
Climax	4673a	1.17bc	12.5ab	0.48b	0.367b
Tifblue	3986ab	1.29b	11.7b	0.56a	0.335b
Delite	2543b	1.63a	11.6b	0.59a	0.164c
Bluebell	1117c	0.96c	13.6a	0.37c	0.485a

^ZPlanting established March, 1978 and trained for machine harvesting.

Table 3. Influence of mulching treatment on yield and quality of 'Tifblue' rabbiteye blueberries.

Mulch treatment	Yield		1982 Quality			
	lbs. 1981	per acre 1982	Berry wt. (g)	Sol. sol. (%)	Acidity (%)	Color (A ₅₂₀)
None	635b	1496b	1.10a	12.8a	0.59a	0.409a
Hay	2390a	3863a	1.10a	12.7a	0.53a	0.387ab
Sawdust	2450a	3986a	1.13a	13.1a	0.57a	0.367b

Table 4. Effect of fertilizer type and number of split applications on yield and quality of 'Tifblue' rabbiteye blueberries.

Fertilizer type ^Z	Number of applications	Yield		1982 Quality			
		lbs. 1981	per acre 1982	Berry wt. (g)	Sol. sol. (%)	Acidity (%)	Color (A ₅₂₀)
Osmocote	1 ^Y	1588a	3702a	1.13a	12.8a	0.55a	0.332b
12-12-12	1 ^Y	2118a	2639a	1.19a	13.0a	0.51a	0.385a
12-12-12	2 ^X	1286a	3058a	1.09a	12.3a	0.58a	0.372a
12-12-12	3 ^W	2072a	3560a	1.19a	12.9a	0.55a	0.362ab
12-12-12	3N,1P&K ^V	2450a	3986a	1.13a	13.1a	0.57a	0.367a

^ZApplied at rate of 600 and 900 lbs of 12-12-12 in 1981 and 1982, respectively. Ammonium sulfate used as N source in 12-12-12.

^YFertilizer applied in March.

^XFertilizer applied in March and May.

^WFertilizer applied in March, May and July.

^VNitrogen applied in March, May and July. P&K applied only in March at one-third the rate of the other treatments.