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GROWTH AND PRODUCTION COMPARISON OF HIGHBUSH, LOWCHILL HIGHBUSH, AND RABBITEYE BLUEBERRY CULTIVARS IN EAST TEXAS

Kim Patten, Elizabeth Neuendorff, and Gary Nimr

INTRODUCTION

Rabbiteye blueberry cultivars, like Tifblue and Climax, have been the standard in Southern blueberry production for many years. These cultivars are high yielding and vigorous even in East Texas soils. Several new cultivars of rabbiteye blueberries and lowchill highbush have been released over the last few years. These new cultivars have not been tested against the standard cultivars. The lowchill highbush in particular have traits such as early ripening that are important. A planting was established in 1984 to compare plant performance and fruit quality of several lowchill highbush, highbush and rabbiteye blueberry cultivars. This planting has been similarly replicated at other sites in the South.

MATERIALS AND METHODS

Ten cultivars of blueberries were planted at Overton, Texas. The soil was sandy loam with an organic matter content of 0.03%. One gallon of peat moss was incorporated into each planting hole prior to planting. There were 12 plants for each cultivar. The lowchill highbush cultivars were O'Neal, Cape Fear, Blue Ridge, and Georgiagem; the highbush cultivars were Croatan and Bluechip, and the rabbiteye cultivars were Climax, Tifblue, Brightwell, and Baldwin. Plant growth was measured at the end of every year. Fruit quality and yield were measured in 1988.

RESULTS

In the fourth year, yield ranged from 10 lbs (4.5 kg) per plant for Brightwell and Baldwin to 1 lb (0.45 kg) for Georgiagem and Bluechip (Fig. 1). Plant canopy volume followed the same trend as yield (Fig. 2). Overall, all rabbiteye cultivars had considerably higher yields and larger canopies than highbush or low-chill highbush cultivars.

One interesting growth result was the change in rate of growth with time. After the first and second year of growth, O'Neal and Blue Ridge were equal in plant height to the rabbiteye cultivars (Fig. 3). For the last two years, however, there was little growth in the lowchill highbush cultivars compared to the rabbiteye cultivars.

The lowchill highbush cultivars apparently lack long term vigor. After growing very rapidly for the first couple of years, they appear to slow down once the initial incorporated soil organic matter has decomposed.

Bloom dates for cultivars in 1988 are indicated in Fig. 4. In 1986 and 1987, bloom dates were 1 week earlier. In general, the early blooming O'Neal flowers 2 weeks ahead of Tifblue.

Observations relative to ripening sequence, plant yield and fruit size across harvest dates can be made (Fig. 5 and 6). Concentrated ripening is very important in ease of picking fruit. The majority of O'Neal, Blue Ridge and Georgiagem ripen over a 10 day period. Ripening of Cape Fear and Croatan was more spread out, while Bluechip had one major harvest date. All rabbiteye cultivars, except Climax, ripen over a long time period. Baldwin, for example, was picked over 50 days. The largest fruit throughout the harvest was from Bluechip. All cultivars, other than Bluechip had a marked decline in fruit size across the picking season. Ripening in 1988 was 7 days later than in 1987.

Fruit quality data for these cultivars are not presented. To summarize, quality of the lowchill cultivars was a little better than that of the rabbiteye cultivars, with the exception of fruit firmness. As a consequence, growers should not consider the lowchill highbush for mechanical harvesting.

DISCUSSION

Rabbiteye blueberry cultivars outperformed both highbush and lowchill highbush cultivars in terms of growth and yield. Vigor of the highbush began to decline rapidly after the second growing season, while rabbiteye vigor continued to increase with time. What this means to any potential lowchill blueberry grower is that these cultivars will require a completely different management technique than rabbiteye blueberries. Currently, we have an experiment examining cultural practices that can be used to increase lowchill highbush productivity. The following preliminary observations were made. First, there must be an increase in the amount of supplemental organic matter added to the soil, both in the form of soil incorporation and as a mulch. This organic matter will need to be re-applied on a yearly or alternating yearly basis. Second, heavy pruning will be needed to stimulate new growth. This can begin as soon as overall plant growth begins to decline. Pruning after harvest in June should allow ample time for re-growth during that growing

season. Canes within 1 to 2 feet of the ground should be selectively removed. Third, the lowchill 1 to 2 feet cultivars are overall less tolerant of poor soils and water. If your site is anything less than ideal, stick to rabbiteye blueberries.

The above may discourage the growing of lowchill highbush cultivars, however in marketing fresh fruit, earliness is the key to profitability. Prices received for fruit in May and early June may be 2 to 3 times prices received for July fruit. The prices encountered this year were artificially high due to the drought in Michigan. Remember that 85% of all fresh market blueberries in North America are picked between June 18 and July 28. Acreage of blueberries being planted in the United States is markedly increasing. Within ten years, the \$15/flat for late June berries may be \$8-10/flat. Therefore, it behooves growers in the South to focus either on tonnage, such as with Tifblue, or on earliness. The later is a strategy that needs serious consideration, especially for growers in the southern part of the state.

YIELD

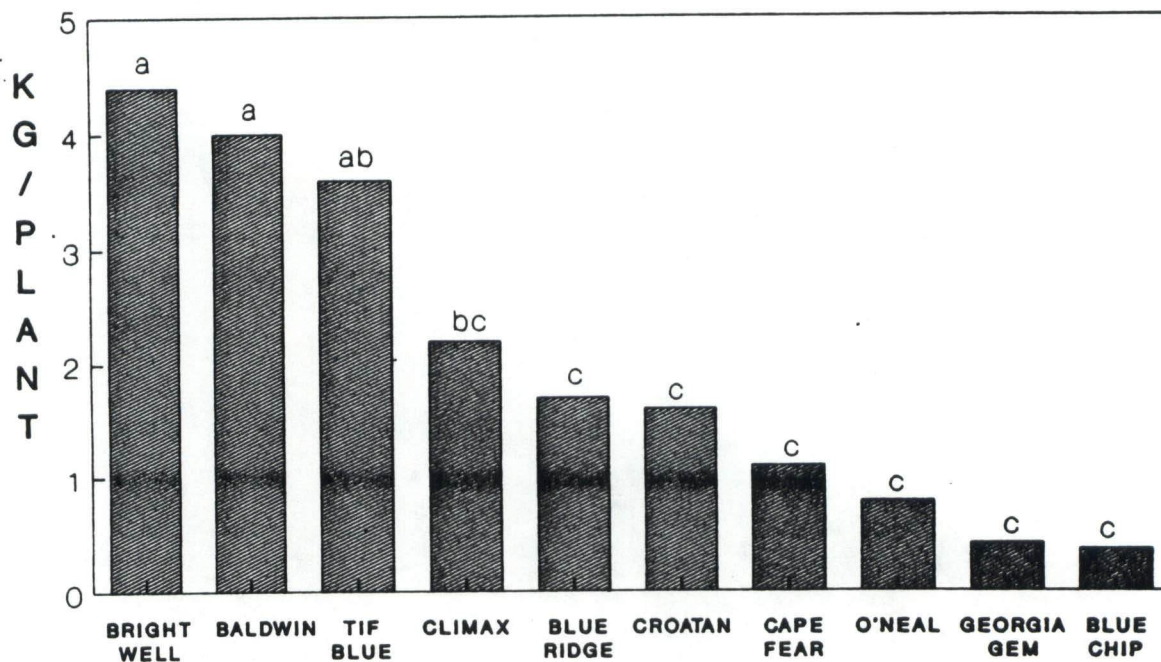


Figure 1. Total plant yield for highbush, lowchill highbush, and rabbiteye blueberry cultivars in 1988.

PLANT VOLUME

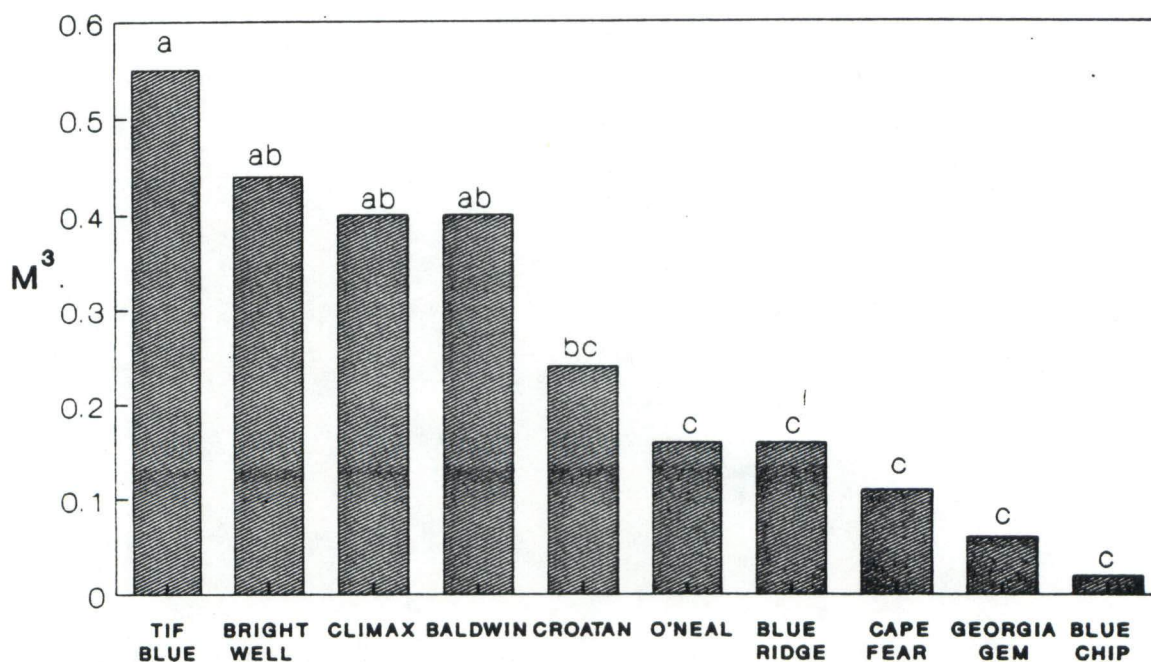
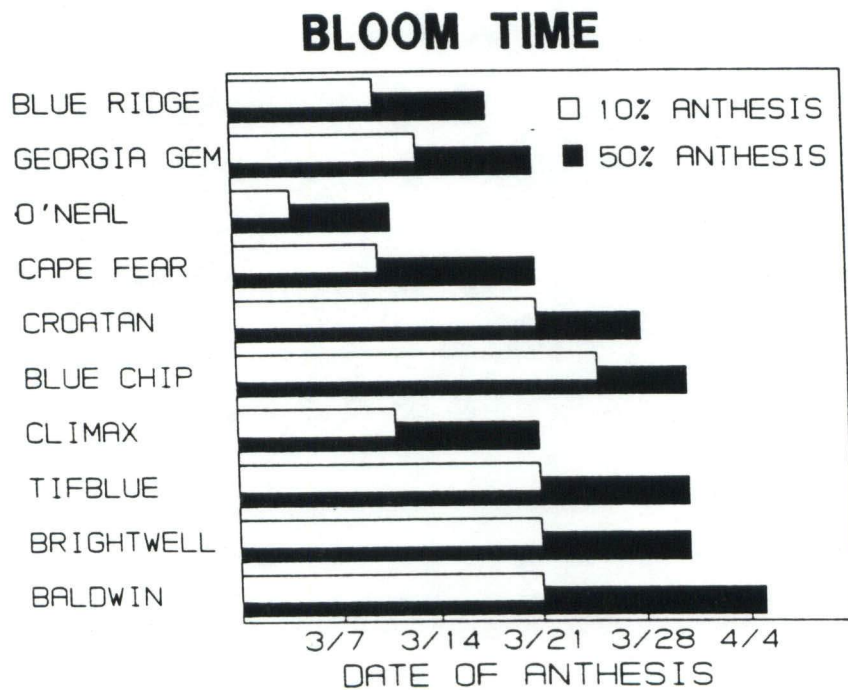
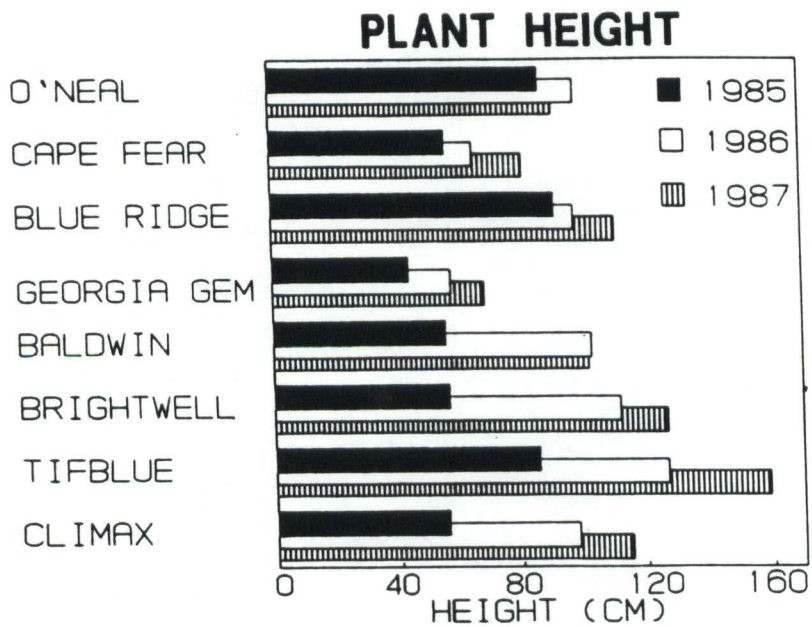


Figure 2. Plant canopy volume after four years growth for highbush lowchill highbush and rabbiteye blueberry cultivars.



Figures 3 & 4. Plant height (Fig. 3) and bloom time (Fig. 4) for lowhill highbush, highbush and rabbiteye blueberry cultivars.

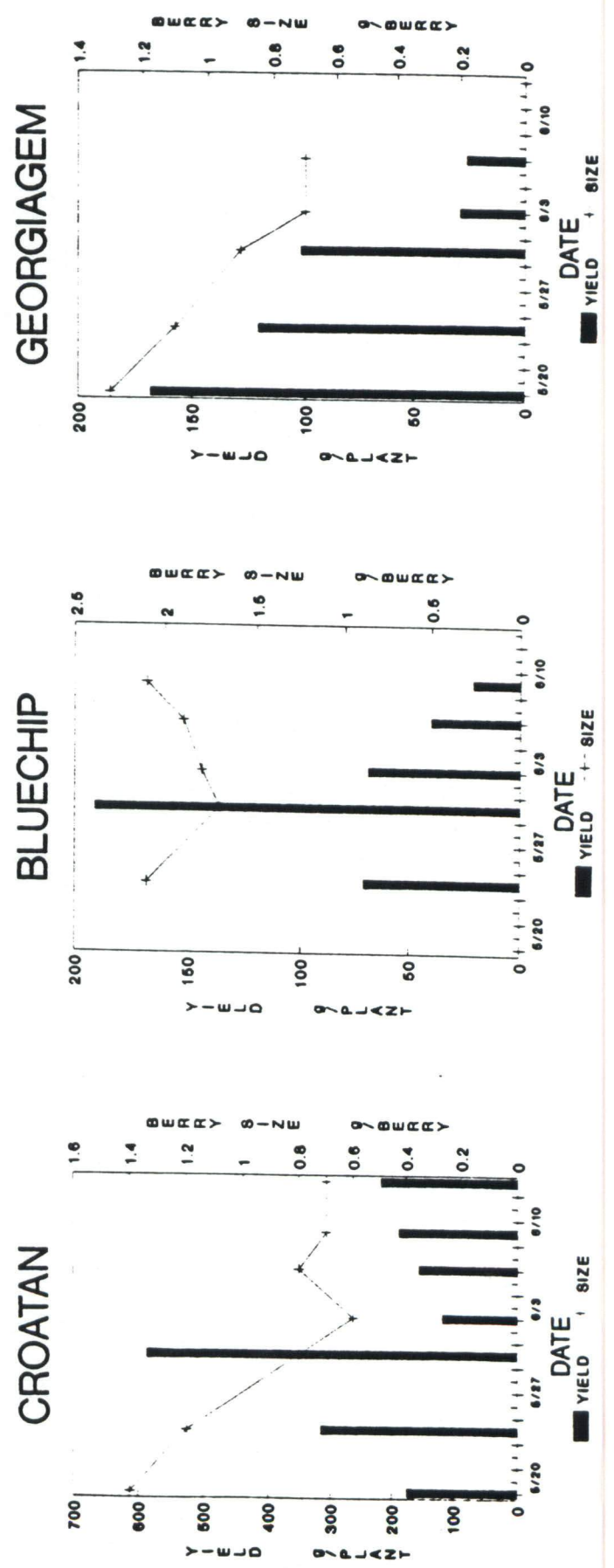
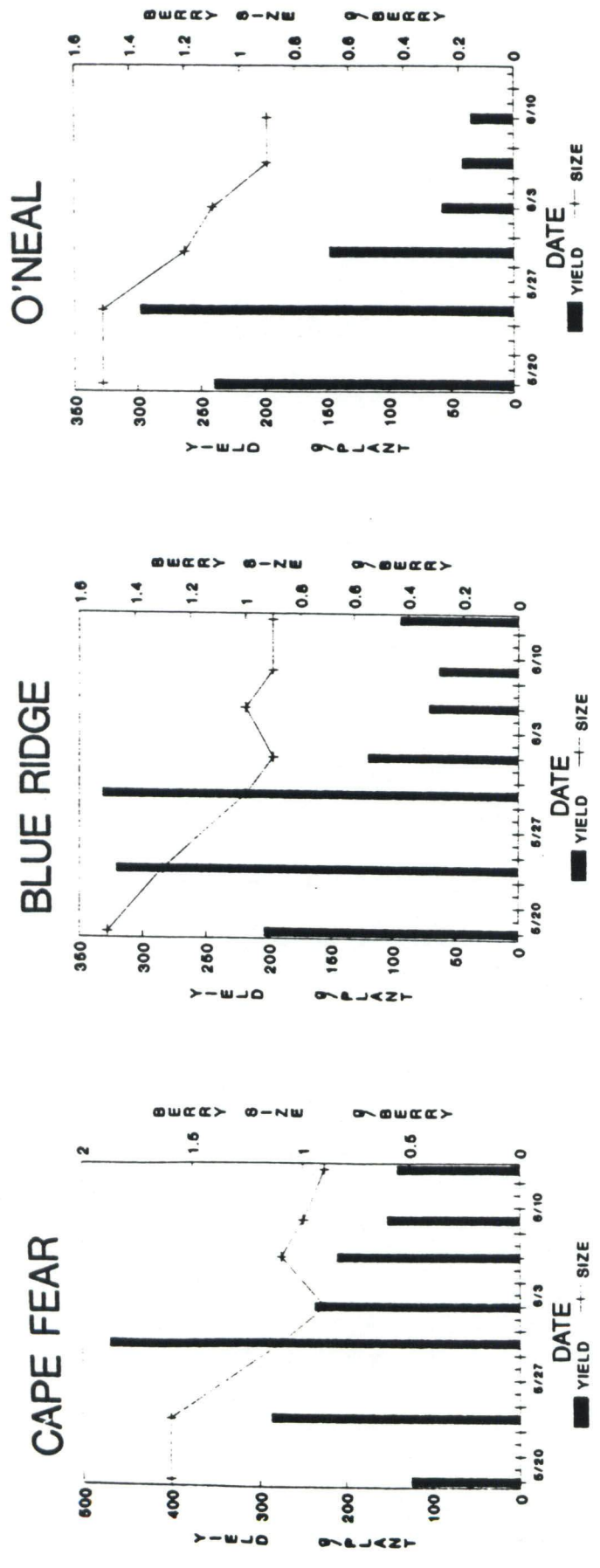
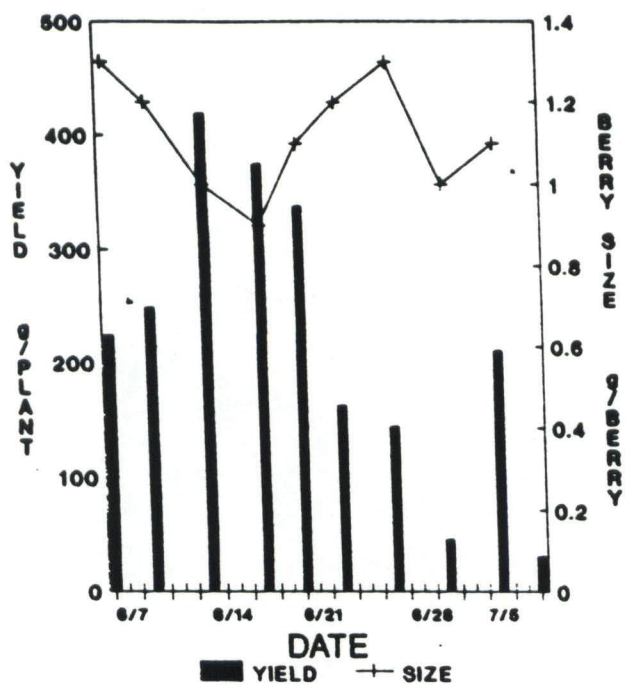
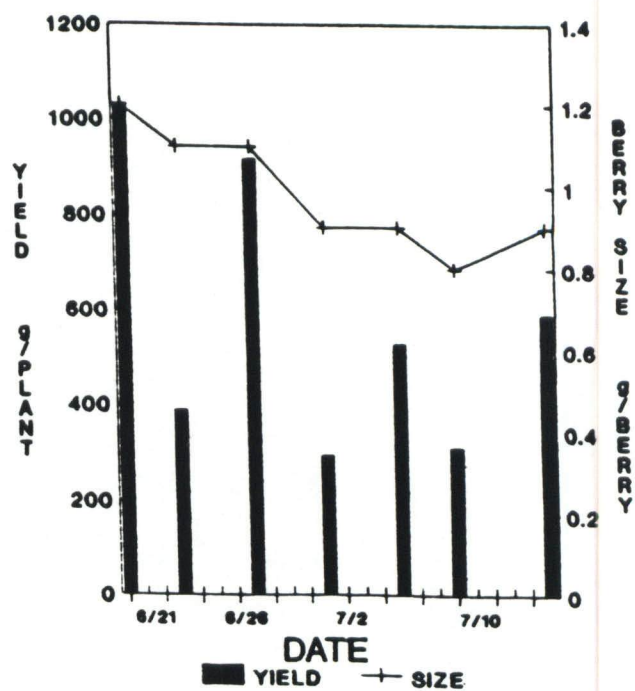


Figure 5. Yield and fruit size for highbush and lowchill highbush blueberry cultivars across harvest dates.

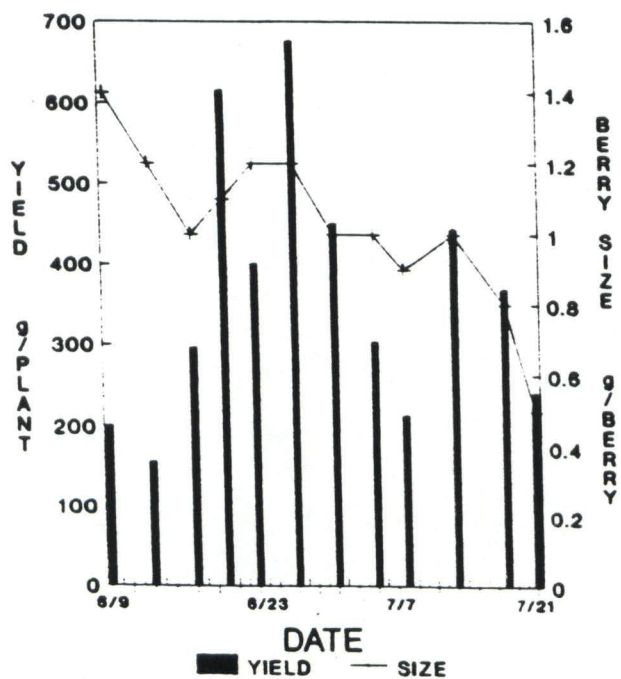
CLIMAX



TIFBLUE



BRIGHTWELL



BALDWIN

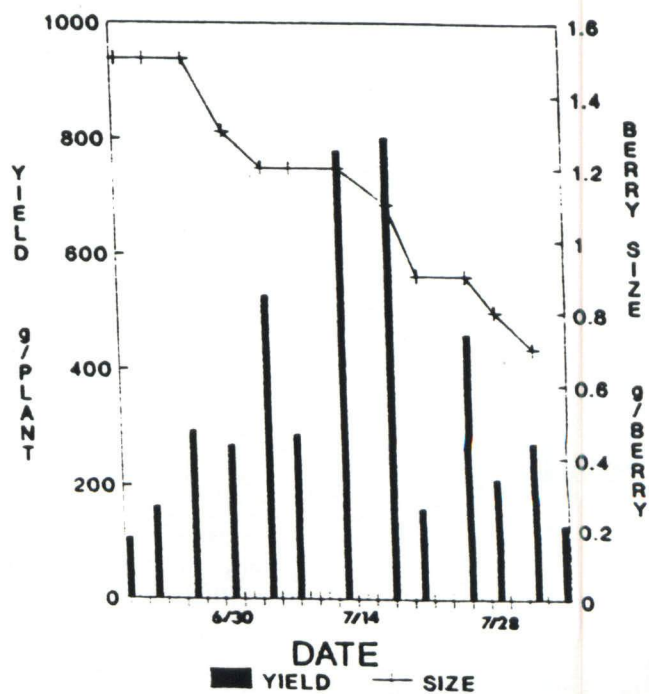


Figure 6. Yield and fruit size for rabbiteye blueberry cultivars across harvest dates.