Evaluation of Highbush Blueberry Cultivars

C. C. Zych, J. W. Courter and A. L. Shawkat*

Highbush blueberries are not a major fruit crop in Illinois at present, but interest in this crop appears to be increasing, particularly on a "pick-your-own" marketing basis. Cultivar evaluations have been undertaken at the Pomology Research Center at Urbana and at the Dixon Springs Agricultural Center at Simpson to provide information on the performance of the newer cultivars under Illinois conditions.

A limited planting of selected cultivars was established in 1965 at Simpson in a Grantsburg silt loam soil with an initial soil pH of 5.8. The plants were planted 6 feet apart in rows 12 feet apart, mulched with a sawdust, and irrigated as needed. Acid peat was mixed with the soil (1:1 by volume) and ammonium sulfate was applied annually after planting. No bird control was attempted and losses, though not measured, were considered to be high.

The yield data for a 6-year period are summarized in Table 1. The most productive of these cultivars in southern Illinois was 'Tifblue', a rabbiteye type, which produced the highest yield of any single variety in 1971 and also averaged highest over the 6-year period. The performance of this cultivar suggests a need for the evaluation of more of these types under southern Illinois conditions. 'Tifblue' should not be planted alone in solid plantings, however, since the rabbiteye cultivars are nearly self-sterile (1).

The fruit of 'Homebell' and 'Tifblue' was not considered to be as high in fresh dessert quality as most of the northern highbush types, being generally drier and not as highly flavored, but still very good for pies. It should also be noted that these rabbiteye types tended to be biennial bearing under these conditions. Both cultivars showed this tendency in yield with 'Homebell' being the most striking,

Table 1. Yields of blueberry cultivars at the Dixon Springs Agricultural Center, Simpson, Illinois, 1967 through 1972.

Cultivar	Season	Yield, pints per plant						Six-year total
		1967	1968	1969	1970	1971*	1972*	
Earliblue	Early	2.8	5.6	5.0	3.2	13.4	10.6	40.6
Collins	Early	2.5	6.6	8.7	5.3	18.4	10.2	51.7
Blueray	Midseason	5.0	5.2	11.1	8.9	24.5	24.8	79.5
Bluecrop	Midseason	2.9	3.2	7.0	5.4	13.0	11.4	42.9
Jersey	Midseason	2.7	3.8	15.0	10.7	23.7	11.8	67.7
Coville	Late	4.3	4.0	10.4	12.2	10.9	9.5	51.3
Herbert	Late	7.3	4.1	16.3	15.2	16.8	12.2	71.9
Homebell**	Very late	0.8	1.4	19.5	6.5	17.3	—	45.5
Tifblue**	Very late	6.0	10.5	23.3	11.8	37.2	16.9	105.7

*Pick-your-own method of harvesting.
**Rabbiteye blueberry cultivars.

*Professor, Associate Professor and Assistant Horticulturist, respectively, Department of Horticulture, University of Illinois, Urbana, Illinois.

producing too little fruit in 1972 to warrant harvesting for records.

'Blueray', 'Jersey' and 'Herbert' were the most productive of the northern highbush blueberry cultivars in this planting and all are considered to be good choices for new plantings if season of maturity is not an overriding consideration. The fruit of 'Herbert' is somewhat tender for long distance shipment but suitable for pick-your-own and home plantings where a high quality late cultivar is desired. 'Collins', though not quite as early as 'Earliblue', is preferred as an early cultivar.

Further north, at the Urbana location, a new planting of 20 cultivars was established in the spring of 1968 to provide some information on the newer cultivars. These plants were set 6 feet apart in rows 9 feet apart in a Drummer silty clay loam soil with an initial soil pH of 5.9, mulched with crushed corncobs and irrigated as needed. Different treatments were used at planting, resulting in an effect on early growth and subsequent yields (2). The treatments were, however, applied across all cultivars and the data reported in Table 2 may be used for relative comparisons. The entire planting was covered with nylon netting for bird control during the harvest season.

The Urbana planting has not yet reached the age at which maximum production may be expected, thus some changes may be expected in the yield ranking shown in Table 2. The yield potential for the first three harvest seasons for each of these cultivars is quite evident from the column of total pints per plant, with 'Coville' ranking at the top and 'Earliblue' at the bottom. Generally speaking, the late varieties produced higher yields than the early ones. Characters that may be as important as yield, however, should be considered in the selection of cultivars. The poor scars of 'Pemberton' and 'Stanley' would seriously affect shipping and keeping quality. 'Weymouth' berries are dark, soft, and have poor dessert quality. 'Dixi' has a large scar and is subject to cracking. In our judgement, 'Herbert' was still the best flavored of this group, although 'Darrow' was a very close second. Where extreme lateness or earliness are significant factors in cultivar selection, 'Lateblue' was unquestionably the latest, about one week later than 'Herbert'. Though not reported here because the plants originally set were 1-year rooted cuttings, 'Bluetta' was earlier than any other cultivar in this group and showed considerable promise as an early cultivar.

Table 2. Yields of highbush blueberry cultivars at the Pomology Research Center, Urbana, Illinois, 1970 through 1972.

Cultivar	Yield, pints per plant 1970	1971	1972	Three-year total
Coville	7.2	11.2	9.1	27.5
Berkeley	3.4	8.3	9.7	21.4
Lateblue	4.0	7.2	8.9	20.1
Pemberton	3.8	7.9	8.3	20.0
Atlantic	4.4	6.4	8.7	19.5
Burlington	5.3	6.1	7.0	18.4
Dixi	3.1	6.9	7.7	17.7
Darrow	4.2	7.7	5.4	17.3
Blueray	3.8	5.9	7.4	17.1
Bluecrop	3.3	6.6	6.5	16.4
Jersey	2.6	6.5	6.9	16.0
Herbert	3.3	5.6	6.6	15.5
Weymouth	3.1	3.4	8.4	14.9
Collins	2.8	4.6	7.0	14.4
Stanley	2.4	5.3	5.8	13.5
Ivanhoe	1.9	3.5	6.0	11.4
Earliblue	1.8	2.1	3.9	7.8

The introduction of 'Pioneer', 'Cabot' and 'Katherine' in 1920 served as a basis for the commercial highbush blueberry industry in the United States and improvement in available cultivars has continued since that date. The limited observations made on these plantings in Illinois indicate

that progress in highbush blueberry cultivar improvement is still being made, since some of the newer cultivars shows considerable promise in comparisons with the older, established ones.

Literature Cited

1. Eck, Paul and N. F. Childers (ed.) 1966. Blueberry Culture. Rutgers University Press, New Brunswick, New Jersey. 378 pp.
2. Zych, C. C., A. G. Otterbacher, and A. L. Shawkat. 1971. Effect of soil treatments at planting on newly set blueberry plants. Trans. Ill. State Hort. Soc. 104 167-170.

Fall-Bearing Red Raspberries

D. K. OURECKY*

Autumn-fruiting or fall-bearing raspberries have been known for nearly 200 years. Rapid advances have been made in breeding, so that it is now possible to have ripe fruit on summer and fall clones from June 20th until frost at Geneva, New York. With the advent of mechanical harvesting, a new approach to culture and production may be on the horizon. Fall-bearing raspberries produce two crops of fruit in one season. The summer crop ripens in late June or early July and is borne on canes which grew the previous year. The fall crop is produced on the upper portion of the current season's growth.

Mawe and Abercrombie described a "twice-bearing" red raspberry in 1778. Several American horticulturists referred to them in 1806 and 1832. The Ohio Everbearing black raspberry was discovered in 1832 and grown to some extent. Hedrick (1925), in the *Small Fruits of New York* described 48 autumn-fruiting red and hybrid varieties and 17 black varieties. Over 40 years ago, several polyploid fall-bearing varieties such as 'Erskine Park', 'La France' and 'Hailsham' were grown. These varieties produced very soft, low quality, dark, dull, coarse, crumbly fruits and lacked hardiness. They were used in breeding but failed to be of any value.

One of the most widely grown English varieties, 'Lloyd George', produces a small fall-crop which ripens very late in a favorable season. This variety has been used extensively in many breding programs. In New York, 'Taylor', 'Marcy', 'Milton' and 'Indian Summer' were selected from 'Lloyd George' parentage.

'Indian Summer' originated from the breeding program where breeding for earliness was the objective, howover, it was noted to produce a fall crop very late in October. The fall crop ripened too late in northern areas but 'Indian Summer' was grown extensively on Long Island and southward where the growing season was longer than at Geneva.

'Ranere', or 'St. Regis', (Fig. 1) is a selection from the American red raspberry. It was grown to some extent 70 years ago but is nearly non-existent today. The berries are very small, poor in quality and only a few were borne at the tips of the canes in late August.

'Marcy', a late ripening large fruited variety, crossed with 'Ranere' produced 'September'. 'September ripens its fall crop 2-3 weeks earlier than

*Department of Pomology and Viticulture, New York State Agricultural Experiment Station, Geneva, New York 14456.