Strawberry Variety Performance in Southern Illinois*

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Zych and Mowry (1) have discussed the adaptability of strawberry varieties in Illinois based upon preliminary results of only one season. Zych and Powell (2) have summarized strawberry variety characteristics and recommended varieties for commercial planting in Illinois. The state of Illinois covers such a wide range in latitude that some varieties were not equally adapted to all areas of the state. Blakemore, Tennessee Beauty and Tennessee Shipper were considered better adapted to southern Illinois; and Empire, Sparkle and Vermilion were recommended only for northern Illinois. Albritton was not considered well adapted to any region in Illinois.

Strawberry variety trials were established in 1957 and 1958 at the Illinois Horticultural Experiment Station with virus-free plants of ten varieties each year. Blakemore and Tennessee Beauty were included in both trials as standard varieties for comparison. Both trials were planted in a randomized block design, with three replications, on Hosmer silt loam soil type. Rows were planted four feet apart, with mother plants two feet apart in the row. The plants were grown by methods commonly used by commercial growers in Illinois, but no irrigation was used. Data were recorded for total yield, berry size at each picking, time of maturity, foliar disease susceptibility, and descriptions of other plant and fruit characteristics.

The results of three fruiting seasons are summarized in Table I for the 1957 variety trial. Table II summarizes the results for two fruiting seasons for the 1958 variety trial. Data for each characteristic was analyzed by analysis of variance, and varieties were compared with the aid of the Duncan Range Test at the 5 percent level of significance. The rank numbers shown under total yield, commercial yield, berry size, season, runner production, foliar disease susceptibility and frost damage indicate significant differences between varieties based upon analyses of variance, rank 1 being the most favorable rank. The letter ratings shown for the remaining characteristics compare observations not based upon statistical calculations, "A" being the most favorable rating.

Total yield is the average weight of fruit harvested during the entire fruiting season until less than one half pound was obtained from a 25 foot plot. Commercial yield is the weight of fruit picked when the berry size of the picking was 110 berries per pound or larger. The yield in pounds was converted to quarts using 1.5 pounds per quart.

In the 1957 trial, Tennessee Beauty was first in total yield, and shared the top rank for commercial yield with Dixieland, Pocahontas and Surecrop. Pocahontas had the greatest number of pickings eligible for commercial yield. Albritton ranked last in both total and commercial yield. In the 1958 trial, Tennessee Beauty was the leader in total and commercial yield, and the yields of Erie were considered acceptable.

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Table I. Strawberry variety trial, 1957. Averages of data from three seasons (1958, 1959, 1960) at the Illinois Horticultural Experiment Station, Carbondale, Illinois[1].

Variety	Total Yield		Commercial Yield[2]			Berry Size				Season of Maturity[3]		Runner Plants[4]	1959 Frost Escape	1958 Disease[5]	Fruit			
						2nd Picking		5th Picking										
	Rank	Qts./A.	Rank	No. Pickings	Qts./A.	Rank	No./lb.	Rank	No./lb.	Rank	%	Rank	Rank	Rank	Unif.	Attract.	Firm.	Qual
Tennessee Beauty	1	8964	1	6	6290	2	60	2	97	5	11	1	1	1	D	B	B	B
Dixieland	2	7173	1	7	6104	1	53	1	82	3	25	1	1	4	B	A	B	C
Pocahontas	2	6969	1	8	5872	1	47	1	82	4	18	2	2	3	C	B	C	B
Surecrop	2	7125	1	7	5805	1	49	1	83	3	23	1	1	2	B	A	B	C
Tennessee Shipper	2	7115	2	6	5187	2	65	2	103	4	14	1	1	1	C	C	A	D
Earlidawn	3	5673	2	7	5233	2	61	2	98	1	44	3	1	3	B	A	C	C
Vermilion	3	4908	3	6	4097	1	51	2	108	4	17	2	1	2	C	B	C	A
Redglow	3	5033	3	7	4037	2	64	1	78	3	28	1	1	6	C	A	B	B
Blakemore	3	4791	3	6	3592	3	78	3	123	2	38	1	1	5	D	B	B	C
Albritton	4	2933	4	7	2448	1	46	1	81	5	9	3	3	1	A	A	C	B

Table II. Strawberry variety trial, 1958. Averages of data from two seasons (1959 and 1960) at the Illinois Horticultural Experiment Station, Carbondale, Illinois[1].

Tennessee Beauty	1	6041	1	6	3073	2	70	2	137	5	4	2	1	1	D	B	B	B
Erič	2	3717	2	6	2201	3	76	1	116	5	22	1	3	4	E	C	A	C
Blakemore	2	2817	3	6	1249	5	103	2	132	1	55	1	1	3	D	B	B	C
Stelemaster	2	2788	3	6	1516	2	66	2	137	3	24	2	5	2	C	C	C	C
Bellmar	3	2280	4	5	935	5	108	3	152	2	32	2	1	1	C	A	C	B
Eden	3	2265	3	6	1409	3	74	5	178	5	7	1	2	3	E	C	C	C
Empire	3	1495	4	7	1154	2	64	2	125	2	30	1	1	2	E	C	C	C
Sparkle	3	1423	4	6	851	4	90	3	154	4	12	3	3	6	E	C	C	C
Starkrimson	4	1161	4	7	1008	1	51	1	110	4	15	3	4	5	C	A	C	B
Jerseybelle	4	769	4	5	683	3	78	1	112	5	1	2	6	1	E	C	C	C

[1]Numerical ranks indicate significant differences derived from analyses of variance calculations: rank 1 being most favorable. Letter ratings indicate observations not based on statistical calculations: "A" being most favorable.

[2]Weight of fruit for pickings when berry size was 110 berries per pound or larger.

[3]Percentage of total yield harvested in the first 3 pickings of the season.

[4]Number of runner plants per mother plant at the end of the first growing season.

[5]Escape from infection by strawberry leaf spot, leaf scorch and leaf blight combined.

Dixieland, Surecrop, Pocahontas, Albritton and Vermilion produced the largest berries at the second picking. Excepting Vermilion, these varieties also produced the largest berries at the fifth picking, indicating an ability to produce large-size berries in later pickings. Redglow showed an unusual ability for maintaining berry size in later pickings, although it was only in the medium class at the second picking. In the 1958 trial, Starkrimson produced the largest berries at both the second and fifth picking. Fruit size dropped off rapidly for most varieties in the 1958 trial.

The ranks for season of maturity are based upon the percentage of total yield harvested in the first three pickings of the season. Earlidawn was the earliest maturing variety in the 1957 trial, and Blakemore was earliest in the 1958 trial. Tennessee Beauty was one of the latest maturing varieties in both trials. The rank numbers in Tables I and II indicate significant differences in season of maturity for this limited number of varieties.

Runner production was rated on the number of runner plants produced per mother plant by the end of the first growing season. Earlidawn and Albritton in the 1957 trial, and Sparkle and Starkrimson in the 1958 trial, produced the smallest number of runner plants. A visual rating of the stand of plants in the row showed only general similarities to the ratings for runner plant production.

Minimum temperatures of 31° F. were experienced on April 11 and 13, and 32° F. on April 14, 1959, when strawberries were in bloom. Damage became apparent in flowers that were not open on those dates as well as in flowers which were open. Time of bloom, as determined by the date when approximately 25 percent of the flowers were open, was not entirely responsible for the variety response. Albritton bloomed late, but was seriously damaged. Blakemore, Dixieland, Redglow and Earlidawn bloomed early, but were only slightly damaged. Varieties least damaged by the low temperatures during bloom were: Redglow, Blakemore, Surecrop, Earlidawn, Vermilion, Tennessee Beauty, Bellmar and Empire.

The foliage disease ratings reflect the susceptibility of the varieties to strawberry leaf spot, leaf scorch and leaf blight combined. The leaves were examined for foliar disease infection on November 30, 1958. The number of infected leaflets per 100 leaflets collected from a plot 25 feet long was analyzed for foliar disease susceptibility. A leaflet with only one lesion was considered to be infected. Some varieties did not conform to disease susceptibility noted in earlier observations. These variety trials were established in a location isolated from other strawberry plantings, and natural inoculum of some diseases was probably inadequate for optimum infection. Differences in infection by leaf scorch *(Diplocarbon earliana)* were not significant. Redglow and Blakemore showed the greatest infection with strawberry leaf spot *(Mycosphaerella fragariae)*, and Bellmar and Starkrimson were least infected. Blakemore, Tennessee Beauty, Surecrop, Albritton, Earlidawn, Stelemaster, Empire, Vermilion and Tennessee Shipper were least infected with leaf blight *(Dendrophoma obscurans)*. For all three diseases combined, Albritton, Tennessee Beauty, Tennessee Shipper, Sparkle and Bellmar were least infected.

Albritton had the most desirable berries, considering uniformity of appearance, attractiveness, firmness and quality. However, Dixieland, Surecrop and Redglow berries were also very desirable. Tennessee Beauty,

Pocahontas, Vermilion, Bellmar and Starkrimson were rated better than average. Blakemore, Earlidawn, Tennessee Shipper, Erie and Stelemaster fruit were rated acceptable.

Recommendations

Considering season of maturity, commercial yield, fruit uniformity, attractiveness, firmness and quality, the following varieties are recommended for general planting by commercial growers in southern Illinois: Tennessee Beauty, Dixieland, Surecrop, Pocahontas and Earlidawn. Dixieland should replace Blakemore because of superior commercial yield and fruit size. Earlidawn should be used if an earlier season of maturity is desired.

Dixieland or Surecrop are varieties with ratings above average for most of the characteristics considered. Dixieland was more heavily infected by the foliage diseases. Pocahontas is a midseason variety with above average ratings except for cold damage during bloom and for foliage disease infection. Tennessee Beauty is a late variety with above average ratings except for fruit uniformity. Tennessee Beauty was tops in total yield and shared the leadership in commercial yield.

Blakemore is not recommended for planting in southern Illinois. Although Blakemore is widely planted, it ranked second from the bottom in total and commercial yield, and the berries were very small. Vermilion, Redglow and Albritton are not recommended for southern Illinois because of low total and commercial yield. Tennessee Shipper is not recommended because of poor fruit quality, although it is satisfactory in most other characteristics.

In the 1958 trial, only Tennessee Beauty and Erie had acceptable total and commercial yield. The other varieties yielded less than Blakemore, which also had an unsatisfactory yield. However, Erie is not recommended for southern Illinois until additional information becomes available.

Literature Cited

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Differences in Susceptibility to the Virus Disease, Leaf Pucker, Among Clones of McIntosh Apple

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Morphological variation within a variety of apple is a common phenomenon. Color sports and spur-type sports are familiar examples. However, there have been few records of variability in susceptibility to disease among bud sport clones of an apple variety. An interesting example of such varying reaction has been found during investigations of the virus disease, leaf pucker, in McIntosh apple.

The leaf symptoms of this disease include puckering, distortion, dwarf-

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