Fruit Maturation Times of Strawberry Varieties

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Part of the data recorded during studies of strawberry fruit quality was the interval between flowering and fruit maturity for 36 varieties growing in environment-control chambers. The plants were well-developed runners produced during the previous growing season that were dug in the fall before exposure to frost, potted in soil, and maintained in growth chambers at 70°F. during the ten hour light period and at 60°F. during the fourteen hour dark period. Light intensity was 2000 foot candles from a combination of cool white fluorescent tubes and incandescent bulbs. Fruit maturity was judged subjectively by color.

The varieties represented a broad range in time of fruit maturity, from Earlidawn, the earliest, to Redstar, the latest. Under these environment-controlled conditions, the number of days from anthesis to fruit maturity of the primary flowers was a rather unreliable indicator of earliness of any particular variety. Blakemore and Stelemaster required the shortest time, 27 days, to mature while Armore was at the other extreme with 42 days, a total range for these 36 varieties of 15 days. An interesting comparison is that between Earlidawn and Redstar where the latter variety required only four days more than Earlidawn for fruit maturation. Under field conditions Redstar is ready to harvest about 16-18 days after the first picking of Earlidawn.

A more realistic array of the varieties from earliest to latest was obtained by adding the days the primary flowers required to reach anthesis to the days from anthesis to maturity. These totals are, of course, only relative, since the plants were not completely dormant when they were dug and could have continued flower bud development for a short period under field conditions, depending upon subsequent temperatures. However, since all the plants were treated alike and were close to the dormant period when dug, the total is a fairly good approximation of time required for development of flower primordia to mature fruit. The assumption is made that, by October 30 when the plants were dug, all varieties would have initiated flower buds or primorida, this date being well into the long night-short day floral induction period for Urbana.

The data given in the table indicate that the earliness or lateness of a given variety depends more upon the rate of development prior to anthesis than after. To go back to the example of Earlidawn and Redstar cited previously, these two varieties differ in only four days from bloom to fruit maturity, but 25 days more were required for Redstar to reach the anthesis stage, thus separating the varieties by a total of 29 days. The length of this period obviously does not apply under field conditions, since higher temperatures and light intensity than maintained in the growth chambers would tend to shorten it. Nevertheless, the differences in total days seem to be comparable in that the varieties may be arranged according to relative earliness in general agreement with field observations and published information.

Although the base temperatures for strawberry varieties are not known at present, along with other environmental influences on strawberry flower and

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fruit development, it is interesting to use the data for some speculation involving heat-unit accumulations (1). Went (2) states that 6°C (42.8°F.) was sufficient for opening of flowers but not for fruit maturation of the Marshall variety grown under artificial conditions. Assuming anarbitrary base temperature of 45°F., the heat-unit accumulations may be roughly calculated from mean temperature for the plants in the growth chambers and for the field grown plants from weather summaries for Urbana.

The heat unit summations, based on the assumptions discussed above, have been calculated and recorded in the table for each variety under the condition described for the growth chambers. From weather data summaries for 1964 and 1965, the degree days accumulated from March 1 through May 31 were 1005 and 1004, respectively, reasonably close to the 1060 degree days for Earlidawn which has a first picking date ranging from May 25 to June 3 at Urbana, depending upon the season. Unfortunately, no records were kept of blossom dates or picking dates for either 1964 or

TABLE 1. Comparison of strawberry varieties for time required to develop mature fruit. Data based on 3 primary flowers and fruits, each on a separate plant.

Varities	Days To Anthesis	Days Anthesis To Maturity	Total Days	Degree Day Accumulation
Earlidawn	24	29	53	1060
Bellmar	24	31	55	1100
Midland	27	30	57	1140
Howard 17 (Premier	27	31	58	1160
Blakemore	31	27	58	1160
Redglow	30	30	60	1200
Dixieland	29	32	61	1220
Tennessee Shipper	27	35	62	1240
Aberdeen	24	38	62	1240
Catskill	32	32	64	1280
Fairfax	32	32	64	1280
Fairpeake	29	35	64	1280
Eden	32	33	65	1300
Stelemaster	38	27	65	1300
Vermilion	34	32	66	1320
Surecrop	34	32	66	1320
Suwannee	33	33	66	1320
Fairland	30	36	66	1320
Pocahontas	33	33	66	1320
Robinson	30	39	69	1380
Gandy	34	35	69	1380
Chief Bemidji	35	34	69	1380
Sparkle	35	35	70	1400
Tennessee Beauty	37	33	70	1400
Siletz	40	30	70	1400
Albritton	38	34	72	1440
British Sovereign	40	33	73	1460
Northwest	40	34	74	1480
Trumpeter	44	30	74	1480
Plentiful	41	35	76	1520
Armore	35	42	77	1540
Elgin	46	33	79	1580
Jerseybelle	47	32	79	1580
Ambrosia	42	38	80	1600
Fulton	50	30	80	1600
Redstar	49	33	82	1640
AVERAGES	35	33	68	1356

[1]Calculated with an estimated base temperature of 45°F.

1965 to permit a more direct comparison.

It should be stressed that the heat unit summations are only approximations and thus cannot be applied in any area. However, the use of the heat unit system, based upon more refined experimental results, appears to be a much better method of predicting harvest dates than the use of days from bloom to harvest which have varied from 18 to 40 days for a single strawberry variety in different seasons (3).

Literature Cited

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Turley Apple

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The Turley apple is thought to be a seedling of Winesap, selected by Joe A. Burton, a fruit grower located between Mitchell and Orleans, Indiana. The fruit of Turley more nearly resembles Stayman Winesap than any other variety, although it is similar to Winesap in skin and flesh color. The tree is more vigorous and spreading than Stayman, and more susceptible to winter injury. Trees bear as early, or earlier than Stayman. Fruit yield is about the same. However, there is a greater tendency for the fruit to be borne on short spurs; and weak trees tend to become almost exclusively spur-bearing.

While Turley is a triploid, it acts more like a diploid with regard to pollination and fruit set. Why this is so has never been determined. It blooms mid- to late-mid-season.

The fruit is dark red in skin color with some overstriping, but remains green when not exposed to light. The color develops early, and is very subject to bronzing. Skin is more resistant to russet and cracking than Stayman. The wax coating is soft, and can become very abundant in hot weather, with overmaturity, and during storage (like Baldwin).

The flesh is yellowish, coarse, and soft. It's flavor is inferior to that of Stayman and Winesap. Turley is harvested about a week ahead of Stayman, and just after the peak of Delicious. Storage life is very short, not over two to three months. It is also subject to scald.

According to W. D. Armstrong, of the University of Kentucky, it was planted in place of Winesap because of its better fruit size and yield, and as a better colored, smoother-skinned, non-cracking Stayman. However, because of lack of hardiness, it is not grown to any extent north of the southern apple belt. The interest once seen in Turley in Winesap country has diminished.

Turley makes up about 6% of the apple trees in Indiana, but only about 1000 trees of this variety have been planted in that state in the last ten years. While attempts have been made to grow Turley on dwarfing rootstocks and interstocks, this has now stopped. Turley does best on seedling or the larger sized dwarfing stocks.

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