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The Evaluation of Early Yield of Nine Untested Strawberry Genotypes¹ in New Brunswick, New Jersey: 1986-1987

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Abstract

In spring, 1986, 8 early NJUS selections, 1 MDUS selection and 'Earliglow,' 'Raritan' and 'Lester' were established in a cultivar evaluation trial in New Brunswick, New Jersey. Results indicate good yield and adequate to excellent size for MDUS 5122, NJ8256-1, NJ8237-1 and NJ8230-1. Further testing is needed before grower recommendations are made.

The New Jersey commercial strawberry industry has been thriving for at least fifty years, with many of the berries historically sold wholesale through auctions located in Vineland, New Jersey or Philadelphia, Pennsylvania. During the 1970's, the pick-your-own method of marketing became predominant (4). However, the face of the New Jersey industry has undergone further changes, similar to

those throughout the Northeast and Midwest, with strawberries often marketed through retail or specialty markets (2, 4). These markets require genotypes which will span as large a time frame as possible, with early bearing types often demanding higher prices. Strawberry breeding programs at the United States Department of Agriculture, Beltsville, Maryland (USDA) and at Rutgers University, New Brunswick, New Jersey, have produced many promising genotypes which have potential for expanding the industry in New Jersey, and in neighboring states. The objective of this research was to evaluate yield parameters of these new early selections.

'Earliglow' and 'Raritan' were used as named cultivar comparisons in the

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experiment. 'Earliglow' is the standard early yielding strawberry cultivar in the Northeast (4). 'Raritan,' the most widely planted strawberry in New Jersey, was also planted as an early-mid season comparison. 'Lester,' a recently named cultivar which was bred to "overcome a serious fault (red stele root rot susceptibility) of its productive high quality 'Raritan' parent," was included as an additional comparison (5). Unnamed selections evaluated included MDUS5122 and the New Jersey-USDA (NJUS) Cooperative selections 8241-1, 8256-1, 8265-1, 8237-1, 8230-1, 8237-2, 8247-1, 8230-2 (Table 1).

In spring of 1986, dormant strawberry plants were planted 46 cm apart in rows with 1.2 meter centers in a Nixon loam at the Rutgers Vegetable Research Farm in New Brunswick, New Jersey. Plants were de-blossomed and allowed to runner, developing a matted row that was maintained at a 30-46 cm width. Water and pesticides were applied as needed. Manual removal of weeds supplemented herbicide applications. Plants were mulched with approximately 2 metric tons of straw/acre in December for winter protection. Mulch was removed in March of 1987.

Each experimental unit was a 4.6 meter length of matted row, with each

Table 1. Parentage of selections tested in New Brunswick, New Jersey, USA: 1987.

Genotype	Parentage
MDUS5122	MDUS4587 X Earliglow
NJUS8241-1	MDUS4587 X E-144 ^z
NJUS8256-1	NJUS78B12-2 X NJUS7925-1
NJUS8265-1	MDUS4587 X E-90
NJUS8237-1	NJUS87B12-2 X NJUS7518-4
NJUS8230-1	E-183 X DSI-1-1 ^y
NJUS8237-2	NJUS87B12-2 X NJUS7518-4
NJUS8247-1	NJUS78B12-2 X E-49
NJUS8230-2	E-183 X DSI-1-1

^zE series designate progeny obtained by selfing 'Earliglow.'

^yDSI designates desynaptic genotype.

Table 2. Comparison of total yield (3 weeks) and average berry size among 12 strawberry genotypes in New Brunswick, New Jersey, USA: 1987.

Genotype ^z	Total yield (t/ha)	Average berry size (g/berry)
Earliglow	19.7 a	7.6 e-h
5122	19.2 a-b	8.0 e-i
Raritan	17.0 a-d	9.8 a-e
8241-1	16.7 a-d	6.5 f-j
8256-1	13.9 b-f	7.7 e-h
Lester	13.8 b-f	8.4 d-g
8265-1	13.8 b-f	5.5 i-j
8237-1	13.1 b-g	7.3 e-j
8230-1	11.1 c-g	7.3 e-j
8237-2	7.3 f-j	4.7 j
8247-1	6.7 g-j	6.3 g-j
8230-2	4.0 h-j	6.0 h-j

^zMeans within a column followed by the same letter are not statistically different at the 5% level using Waller-Duncan's mean separation test.

cultivar replicated 5 times in a randomized complete block design. Guard rows were planted on either side of the plot and only the center 3 meters of each unit were harvested. Overhead irrigation was applied at establishment and as needed throughout the season, and pests controlled using Rutgers Cooperative Extension Service recommendations.

Yield data was collected in spring of 1987 by weighing the number of berries picked from the center 3 meters of each experimental unit. Size was determined by counting the number of berries in 450 gm and mathematically deriving the number of grams per berry. Yield data was collected from 1 June through 12 June, 1987. It should be emphasized that only early yield (the first two weeks of the harvest season) was evaluated, since the objective of the NJUS breeding program is to develop early yielding red stele resistant cultivars (6).

All strawberry genotypes fruited in the spring of 1987. MDUS5122 and

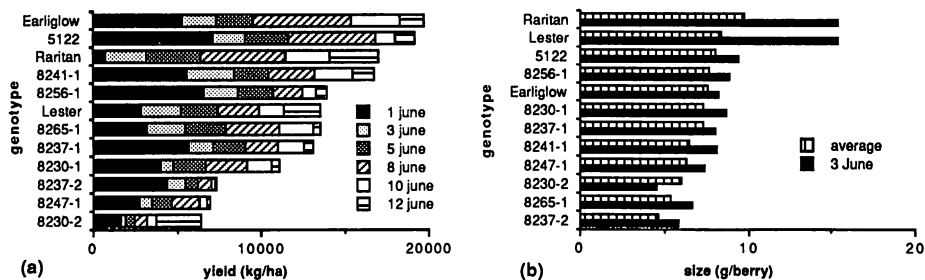


Figure 1. Comparison of seasonal yield distribution and berry size among standard and newly developed strawberry genotypes in New Brunswick, New Jersey, USA: 1987.

(a) yield distribution among genotypes

(b) June 3 (2nd picking) and average berry size among genotypes.

NJUS8241-1 had high yields that were comparable to 'Earliglow' and 'Raritan,' commonly grown cultivars (Table 2). The yields of NJUS8237-2, NJUS8247-1 and NJUS8230-2 were too low to be acceptable for commercial production in this experiment (Table 2). NJUS8256-1, 'Lester,' NJUS8265-1, NJUS8237-1 and NJUS8230-1 were intermediate in productivity.

Yield distribution (Figure 1a) indicates that MDUS5122, NJUS8256-1 and NJUS8237-1 bore a large proportion of their fruit in the earliest portion of the season, with more early fruit than 'Earliglow.' Generally, NJUS8256-1 looks especially promising because of this, combined with its high productivity and acceptable size.

Average berry size was largest on 'Raritan' and 'Lester,' with the early picking (on June 3) much larger than average, indicating that the size distribution is particularly skewed for these two cultivars: early berries are substantially larger than later ones (Figure 1b). Berry size was acceptable (between 8 and 11 grams) on MDUS5122, NJUS8256-1, 'Earliglow,' NJUS8230-1, and NJUS8237-1, with the early fruit slightly larger than the average fruit. Average size was unacceptably small (6.5 g or less) for NJUS8241-1, 8247-1, 8230-2, 8265-1 and 8237-2.

While four selections, MDUS5122, NJUS8256-1, NJUS8237-1, and NJUS8230-1, performed well in this test, a one year evaluation is not meant to produce recommendations for growers, but rather directions for further research. In examining data from other strawberry cultivar trials over many years (1, 2), it appears that while yield can vary considerably over seasons, relative size among genotypes is a fairly stable parameter. MDUS5122 was a larger berry than most of those tested, however though it performed well in this evaluation, its fruit shape has been irregular (3).

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