

Finding a ‘Real Keeper’ in 2022 Was Extra Challenging!

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At a very well attended field day on May 10th at Cottle Farms, Faison, NC, we discussed our strawberry research program’s objectives and process for selecting cultivars with the potential to be, in the words of one field day attendee, Russ Shlagel, “a real keeper.”

And, as mentioned in our accompanying article in this newsletter (*A Challenging Strawberry Season – Results of the 2021-2022 Advanced Selection and Cultivar Trial at Cottle Farms, Faison NC*), we managed to screen 150 new advanced selections (from two different strawberry breeding programs based in California), as well as evaluate 12 *repeat* selections from the Lassen Canyon Strawberry Breeding Program in this past season. Also, as we explain in this other article, our testing program was significantly expanded and improved in 2021-2021 because of: 1) increased financial assistance from the NC Strawberry Assn. (they contributed \$10,000 in 2022), and 2) the continuing assistance we receive from NC State University’s Dr. Mark Hoffmann, Research Assistant Emma Volk (Fig. 1), as well as Amanda Lewis, Communications Assistant of the Hoffmann group in the Dept. of Horticultural Science.



Fig. 1. Emma Volk from NC State (standing next to strawberry sign and table), explained to the field day participants that we had already removed over 50 plots of advanced selections by the date of the May 10th field day (Fig. 2), because of serious shortcomings we had identified in these selections related to poor flavor, berry shape and/or color. *Some of you may recognize Virginia grower, Tom Baker, in the center left of the photo (tan jacket, arms crossed). And, to Tom’s right is Maryland grower, Russ Shlagel.* Over 75 growers, industry representatives and extension workers (including Roy Flanagan, VA CES), were in attendance.

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Fig. 2. As soon as we identify any serious shortcoming in an advanced selection, it is removed from the test plot area. At the time of the field day (5/10/22), we had already removed over 50 advance selections for reasons related to poor berry shape, color defects (in outer skin color and/or interior flesh), unacceptable flavor, rain damage (e.g. splits), or sunscald (see Figs. 3a. and 3b).



3a



3b

Figs. 3a & 3b. White 'flesh' berries are not considered desirable in our market (3a), nor are berries that do not 'color up' uniformly - these two advanced selections were removed from the study early in the season.

Program objectives: We feel that the five (5) qualities that the industry here in North Carolina, Virginia, and Maryland are looking for in a *keeper strawberry variety* are: 1) excellent flavor, 2) production of at least 2 lbs. marketable fruit/plant); 3) have medium-large berries of 19-20 grams in average berry weight, or greater; 4) have an attractive red color; and 5) can regularly produce berries over 6-8 week picking season, or longer.

Clearly, from reading the accompanying article, *A Challenging Strawberry Season – Results of the 2021-2022 Advanced Selection and Cultivar Trial at Cottle Farms, Faison NC*, you will see that we were unsuccessful in reaching many of our research program objectives this past season.

With Ruby June, for example, we only achieved an average marketable yield of 1.4 lbs./plant in 2022, which is about 6/10ths of a pound less than the 2 lbs. of average marketable fruit/plant that Ruby June achieved in both 2019-2020 and 2020-2021 at this location. However, as we describe in our accompanying article, our 1/4 acre of strawberry varieties and selection block looked more like a battlefield in which the battle to prevent injury to the open blossoms had truly been lost after a devastating windborne freeze that occurred on March 12-13. Our medium weight, 1.25 oz row cover, did not provide adequate open blossom protection against winds in excess of 20 mph and freezing temperatures in the low 20s.

Other important varieties like Camarosa, were just as seriously impacted by this freeze as Ruby June. In the 2020-2021 season, for example, Camarosa had an average yield of 2.03 lbs./plant (30,450 lbs./acre). But in 2022, Camarosa only produced only a marketable yield of 1.53 lbs./acre, or 22,950 lbs./acre.

Freeze hit a full bloom for many varieties and advanced selections: This freeze impacted not only our 230 research plots at Cottles, but many other strawberry farmers in the region also suffered serious losses. Blossom damage was most severe in varieties like Ruby June that had reached nearly full bloom by March 12-13. Freeze losses to early season Ruby June blossoms helps to explain why you see such very low levels of production in the first half of April (Harvests from 4/1 – 4/15), in Figure 4.

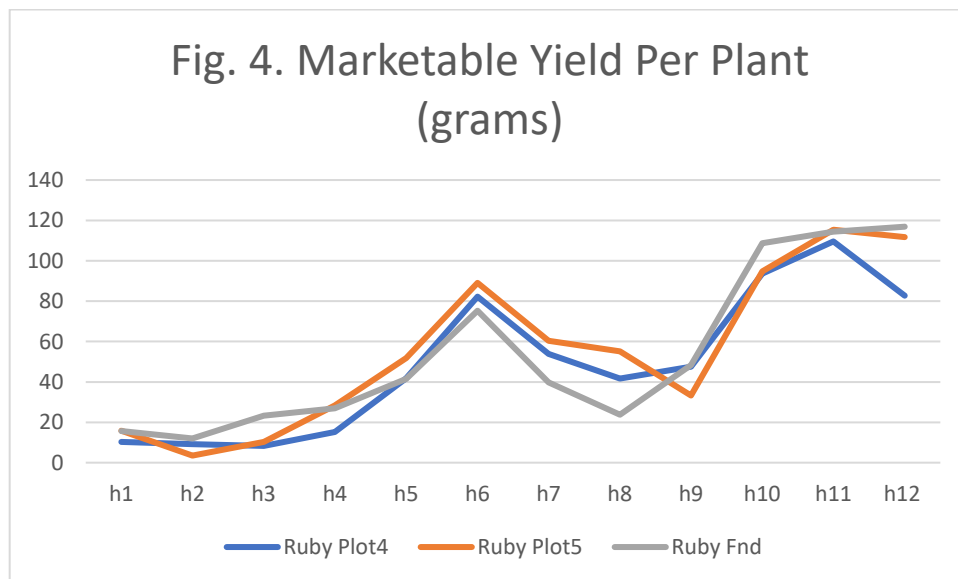


Table 1. Marketable yield per plant (grams) by harvest date

	4/1	4/5	4/11	4/15	4/21	4/26	5/2	5/6	5/11	5/18	5/24	6/1	Tot
RubyPlot4	10. 2	9.2	8.3	15.2	41.9	82.3	53. 8	41. 7	47.5	93.6	109. 6	82.8	59 6
RubyPlot5	15. 8	3.5	10.5	28.3	51.8	89.1	60. 3	55. 2	33.3	94.8	115. 4	111. 7	66 9

Ruby Fnd^z	15.	12	23.3	26.9	41.5	75.3	39.	23.	48.3	108.	114.	116.	64
	6						7	8		8	4	9	7

^z “Ruby Fnd” indicates foundation plant material

Summary:

Well, we unsuccessful in identifying any new *Real Keepers* in our strawberry selection program at Cottle Farms in the 2021-2022 strawberry season. Relatively few varieties or advanced selections “were spared” extensive blossom injury from a severe windborne freeze on March 12-13, 2022. However, as we have noted in previous articles and reports, the search for better strawberry varieties is a continuous quest, and we are already making plans now (in July) for our new selection trial at Cottle Farms that will be established in mid-October 2022 . It was very interesting for us to look at the relative performance of 150 advanced selections from two important breeding programs in California this past year (Lassen Canyon Strawberry Breeding program and California Berry Cultivars). And, as discussed in our accompanying article, we are already making plans to incorporate in our fall planting at Cottle Farms several new selections from the Lassen program, including the advanced selection designated 062z34, which had flavor that was very comparable to Ruby June as well as marketable yields that were slightly higher yield than Ruby June. We are also now deciding to incorporate in our 2022-2023 trials several selections from the breeding program of California Berry Cultivars (CBC) that performed relatively well this past season.



Fig. 1. Ruby June is still a relative newcomer to the *strawberry plasticulture scene* in our region. Approximately 8 million plants of Ruby June were propagated for growers in the Midwest, Southeast and Mid-Atlantic region in 2021. Ruby June was originally selected in 2008 from a seedling field in California, and as an advanced selection it was designated 33K46, and patented in 2016 by Lassen Canyon Strawberry Nursery, Inc., and Jim Bagdasarian, strawberry breeder. This variety began to show us real promise back in the 2016-2017 season in our trial work at Cottle Farms. In the spring of 2017, Ruby June plugs produced 1.85 lbs./plant or 27,630 lbs/acre, compared to Camarosa plugs, which had a similar yield (1.88 lbs./plant, or 28,078 lbs/acre. In more recent years, Ruby June plugs and cut-offs have averaged about 2.0 lbs/plant, but in 2021-2022, its yields were off by about 30% due to one of the most severe windborne freezes we’ve seen in about 15 years.