

HIGHLIGHTS OF THE 2022 STRAWBERRY VARIETY AND ADVANCED SELECTION SHOWCASE AT COTTLE FARMS ON MAY 10, 2022

Barclay Poling¹, Mark Hoffmann², Amanda Lewis³, Whit Jones⁴ and Emma Volk⁵

With some very important financial assistance provided by the NC Strawberry Association, Inc., we have been able to continue our research work in the 2021-2022 strawberry season at Cottle Farms in Faison, NC, to evaluate new strawberry varieties and advanced selections from leading public and private breeding programs. This is now our 7th year of conducting these trials at Cottle Farms. And, on May 10, 2022, we held a very well attended field day. This was the first time we've been able to have a live, in-person field day in three years!

Specific details about our current trial. Our current trial includes 10 named cultivars (Albion, Ashley Jay, Camarosa, Camino Real, Chandler, Fronteras, Miss Jo, Monterey, Royal Royce, and Ruby June); 110 advanced selections from the Lassen Canyon Strawberry Breeding Program, and 40 advanced selections from the breeding program of California Berry Cultivars (CBC). We are also re-testing several advanced selections from the Lassen breeding program that did well last season. One of the most promising LCN selections from last year is 122X08. The photo of 122X08 shown in Fig. 1a was taken on May 18th, which was our 10th harvest of the season. One of the highlights of the Field Day on May 10th was to give participants an opportunity to see 122X08 in both our smaller research plots (Fig. 1a), as well in a larger commercial field (Fig. 1b).



Fig. 1a. Photo of LCN Adv. Sel. 122X08.



Fig. 1b. Photo of Field Day attendees in Semi-commercial trial at Cottle Farms, May 10, 2022. The row on the left is 122X08, and the row on right is Fronteras.

Flavor is very important. For local marketing, it does seem appropriate that our research program gives considerably greater emphasis to selecting varieties and advanced selections with desirable flavor characteristics.

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However, while flavor is very important, it is also critical for a new variety, or advanced selection, to also have attractive berries with good production characteristics.

More details about our selection process. As Emma Volk, Res. Assistant., Dept. of Hort. Sci, NC State, explained to the Field Day attendees, we systematically remove any advanced selection plots during the picking season that do not have “good strawberry flavor” or exhibit other shortcomings such as poor berry shape or color (Fig. 2).



Fig. 2. 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 field day (May 10th), because of serious shortcomings we had identified in these particular selections related to poor flavor, berry shape and/or color.

Flavor ratings. It was explained to the field day participants that we routinely ‘taste test’ all of the selections, as well as take sugar measurements (Brix). In our flavor scoring system, a score of 4 indicates excellent flavor, 3 indicates good flavor, 2 indicates fair flavor, and 1 indicates poor flavor. Selections that score below 2.5 are eliminated, and that’s because we know “flavor matters” a great deal to your berry customers! As far as flavor goes, Ruby June, consistently scores in the range of 3.0 – 3.5 on flavor, and Ashley Jay will often register 4’s (excellent flavor). In the process of recording sugars, or Brix, we also examine interior flesh color, and selections with completely white flesh (Fig. 3a) are also rejected. Consumers generally prefer berries with at least some ‘red flesh’ color in our market.

Berry color and shape. In terms of berry color, we reject all orange colored or orangish-red berries. We also reject very dark berries and berries that are not uniformly red in color (Fig. 3b).

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Some selections simply do not 'color up' uniformly, and that's a definite 'red flag' for us. Occasionally, we also encounter 'splotchy' looking berries, as well as berries with a 'white ring' just below the calyx.

We also look very critically at berry shape, and we reject selections with irregular shapes, creases, ridges or splits. We also evaluate tolerance to rain damage. Some varieties, like Albion, are very rain susceptible, and in seasons when we experience a significant number of rains, like the spring of 2020 (we had 14 rain events that season), we can do some excellent screening for rain tolerance – something that our California breeding partners cannot do very well in California!



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 (see Fig. 4).



Fig. 4. 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.

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5a



5b

Figs. 5a & 5b. The appearance of our research plots on April 10, 2022 - at this early stage in the season we were evaluating over 230 plots (5a). However, on the day of the Field Day (May 10th), we had already removed 50 advanced selection plots (5b), and by our 11th harvest (May 24th), there were only four remaining CBC plots (out of 40), and 12 Lassen plots (out of 110). At the end of the season, we will likely only recommend bringing back two of the CBC selections, and three or four of the LCN selections, for testing again in 2022-2023.

Taste testing opportunity at field day. As an added “highlight” of the Field Day, participants were invited to do their own taste testing of several varieties, including Ruby June (6a), Albion, Ashley Jay (a new variety from Lassen), Merced and Miss Jo (another new variety from Lassen that was named in 2021). Some fruit were provided by Rudd Farms in Greensboro. Kerri Quigley, Operations and Relations Manager, Flavorfirst, learned from her discussions with field day attendees that the ‘taste testing’ portion of the field day was the favorite part of the whole field experience for many of the participants (6b). Several growers registered their amazement with the incredible flavor of ‘Ashley Jay’ (not shown).



6a



6b

Figs. 6a & 6b. Field day participants had an opportunity to taste test several named varieties like Ruby June (6a), Albion and Merced, and compare them to the 2 new releases from Lassen Strawberry Nursery, Ashley Jay and Miss Jo.

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Pest management updates.

During the lunch we had some important pest management updates provided by Whit Jones, Farm Manager, Cottle Farms, and Dr. Lorena Lopez (Fig. 7), VA Tech, who focused on spider mite and cyclamen mite management. Cyclamen mites may be a rare pest in CA and FL, but in VA, NC, and areas of Canada, growers are often challenged by cyclamen mite infestations. Nurseries are usually the source of infestations and most rely only on miticides that suppress but do not eradicate the pest, perpetuating infestations to growers. Steam or hot-water treatments have demonstrated to kill ~99% of cyclamen mites on seedlings; however, this technology is not yet adopted by most nurseries. Growers are recommended to check the developing folded leaves in the crown of the plants for cyclamen mites early in spring when temperatures start to warm up. The only miticides registered for control of this pest, are Portal, Agri-Mek, and Magister. These products are effective at maintaining the mites under the economic thresholds, but most be applied using high volume (>200 gals/acre) and high pressure (>200 psi if possible) sprays to reach the crown of the plants where the mites are found.

An industry representative from Syngenta also provided a very useful update on Orondis Gold (oxathiapiprolin + mefenoxam), which has been labeled material for Phytophthora Crown Rot and Root Rot control in strawberries.

Fig. 7. Dr. Lorena Lopez is a post-doctoral associate at Virginia Tech's, Eastern Shore Agricultural Research and Extension Center (Painter, VA), and she discussed the use of various registered materials for mite management.



Conclusion. It was wonderful to see so many members of the NCSA in attendance at the field day, as well as a number of growers from Maryland and Virginia. NCSA Board Members in attendance included David Dycus, Sue Leggett, JR Odom, Kenneth Rudd Jr. (Vice Pres.), Jim Warena and Austin Wrenn (President). In addition, we were very honored that two of the former presidents of the NCSA, Kenneth Rudd Sr., and James Kennan, also came to the field day.

As of this writing (Memorial Day weekend), we have harvested our plots 11 times (since April 1st), and we anticipate having at least one or two more harvests this season. For the **NCSA's July newsletter**, we plan to provide a full report on the marketable yields, berry size, Brix (sugars) and flavor ratings of all the named varieties tested in our trial, as well provide similar data for the most promising advanced selections in our study.