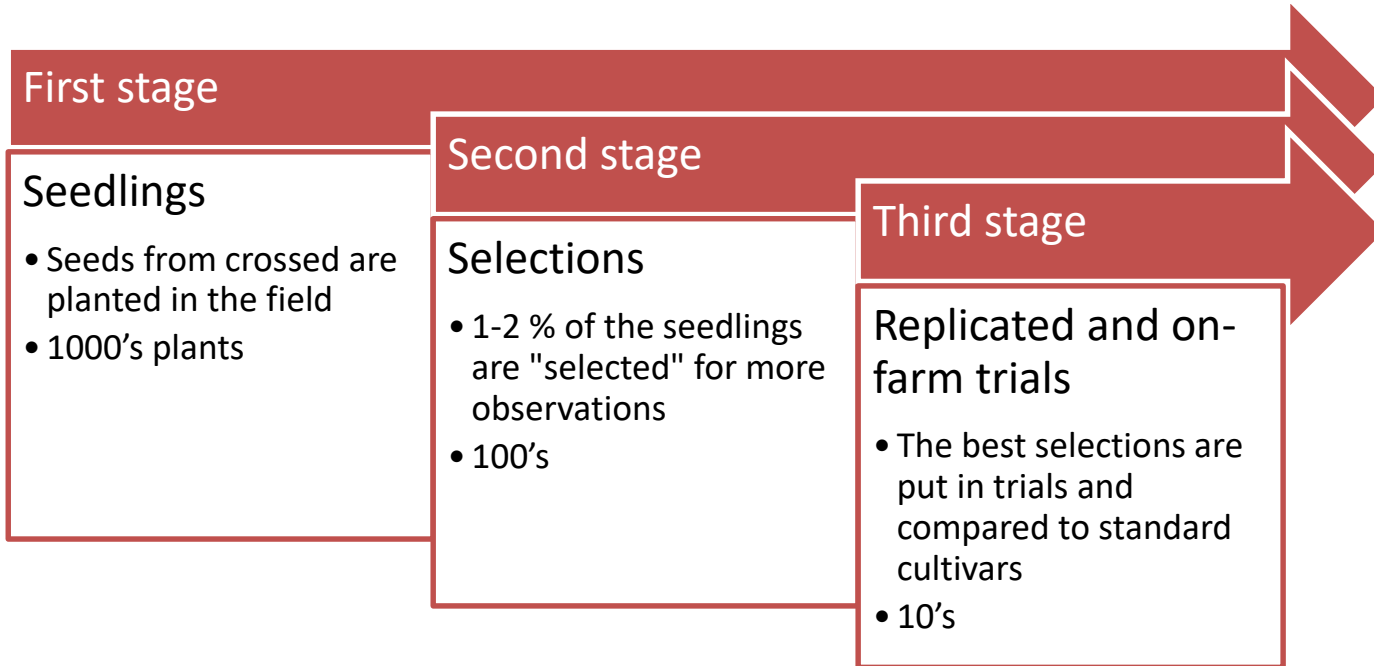


Strawberry Pre-plant 2020

Strawberry Breeding Updates

Gina_Fernandez@NCSU.edu

Breeding process

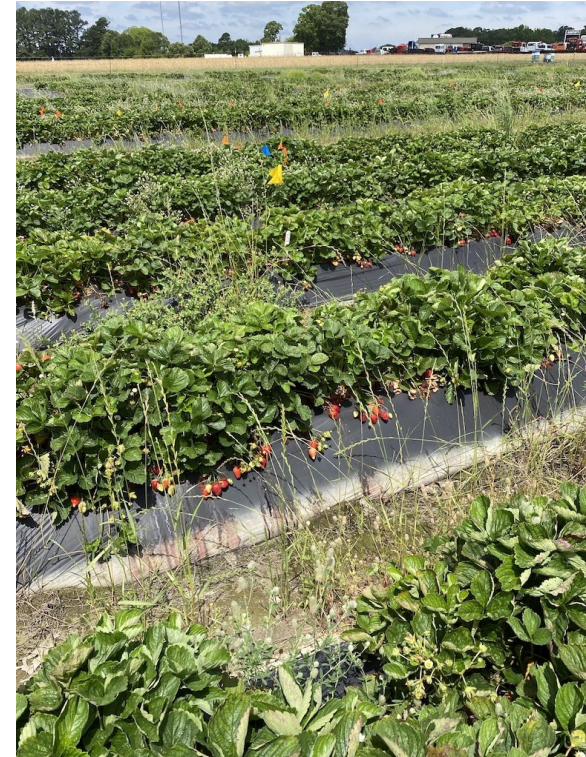


NCSU Strawberry Breeding Stages

- 3 Stages (in the field)
 - Seedlings (CCRS and HCRS)
 - About 5000
 - Selections (CCRS)
 - 29 selections evaluated in 2020
 - 200? in the nursery
 - Cultivar trial (CCRS and PRS)
 - 12 cultivars/advanced lines

Data Collection: Seedlings

- Each plant looked at 1-2 week
- Plants with “good” traits are flagged with colored flags blue early, orange watch. Wooden stakes with notes are placed in ground next to plants that have “good” traits.
- Good traits include fruit/plants that have:
 - Commercial potential
 - May be useful in the breeding program, such as disease resistance
- Less than 2% make it to the next stage – given Selection number (NC 20-001)
- 120 new selections in 2020

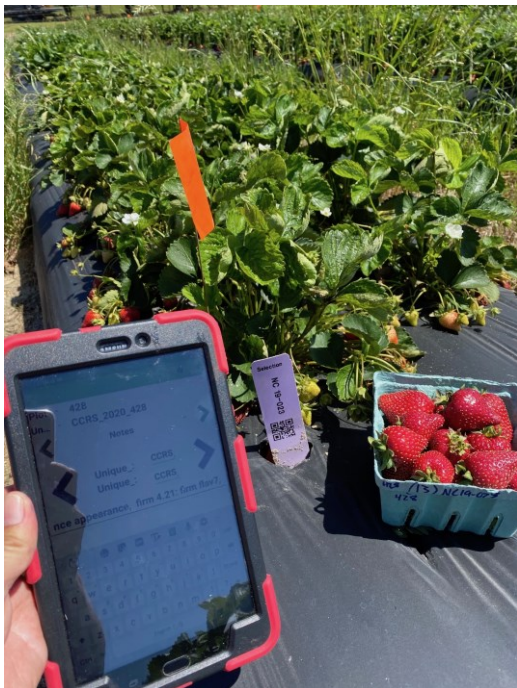


Data collection: Selections

- Field
 - Horticultural traits such as plant vigor, appearance, cap size, firmness etc
 - Diseases (which ones and how bad are they?)
 - Pictures
- Lab (garage)
 - 25 berry weight (3-4 times a season)
 - Brix (sugar levels)
 - More horticultural traits (color, seed location, internal color, shape etc)
 - 5 berries frozen for pH, TA, Brix, anthocyanins etc (PHHI/Kannapolis)



Evaluation in field



- Tablet used to phenotype (evaluate fruit and plant traits), usually on a scale of 1-9
- Diseases (Botrytis, Phytophthora, Antracnose)
- Season
- Number of plants/runners
- Vigor
- Location of flowers
- Truss size
- Yield estimate
- Etc

Data collection in Corona era lab (garage)



- 25 berry weight (3 separate times)
- Brix (pH, TTA later with frozen berries)
- Appearance
- Firmness
- Skin toughness
- Flavor
- Achene (seed) position
- Comments

Next season



- Seedlings
- 120 Selections will be in 10 plant plots 2021
- Replicated selection/cultivar trials
- Crossing in spring
- Anthracnose screening/markers

NC 19-017

NC 19-018

NC 19-021

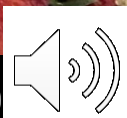
NC 19-022

NC 19-016

NC 19-019

NC 19-020

NC 19-0

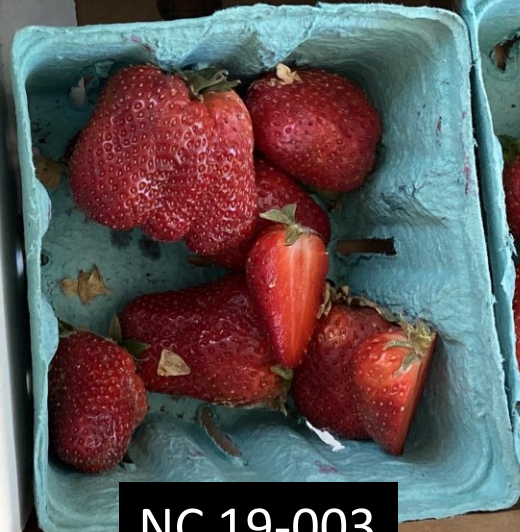


NC 19-006

NC 19-008

NC 19-002

NC 19-001

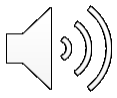


NC 19-007

NC 19-

NC 19-003

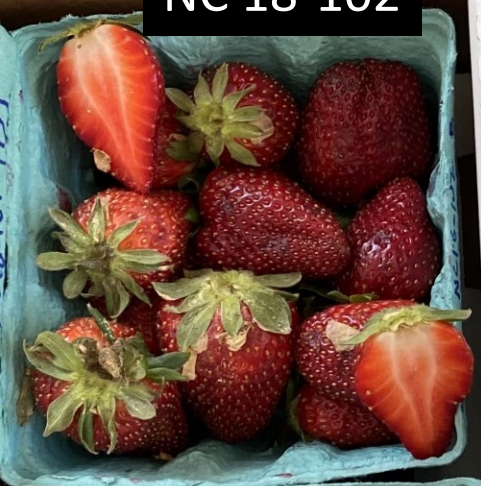
NC 19-004



NC 18-101



NC 18-102



NC 19-011



NC 17-004



NC 17-002



NI 15-1-24



NC 19-009



Chandler

Brilliance

Rocco

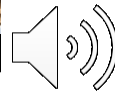
Ruby June

Camarosa

Sweet Charlie

Liz

Calinda







Cultivar/selection trial

Piedmont Research Station (PRS), Salisbury, NC 2019-20 Total yield, marketable yield , percent marketable yield , marketable percent of Chandle and average berry weight.

Genotype	Total Yield (lbs/A)	Marketable Yield (lbs/A)	Percentage Marketable Yield (% of total)	Marketable Percent of Chandler	Average berry weight (g)
Rocco	22,234	18,016	81	114%	13.9
Chandler	22,337	15,822	71	100%	11.1
Sensation	21,353	14,677	69	93%	22.6
CaminoReal	17,838	14,384	81	91%	18.2
Liz	17,218	13,588	79	86%	15.0
Brilliance	16,109	10,561	66	67%	16.0
Camarosa	15,886	10,893	69	69%	13.1
Merced	14,610	11,278	76	71%	19.4
SweetCharlie	14,175	11,474	79	73%	11.7
Calinda	12,128	8,089	67	51%	14.4
Rocco late	12,070	10,611	88	67%	18.2
RubyJune	11,080	9,693	89	61%	21.5
NJ15-1-2	9,028	5,673	62	36%	12.1
NJ9-2-1	6,737	4,275	61	27%	12.1
Liz late	6,370	4,885	76	31%	19.1

small fruit

small fruit, water

Lots water damage

Lots water damage

Lots water damage

some water damage

low yield, nice appearance

ugly but nice flavor

Breeding program overview (team effort)

- Since 2016...
- On farm trials of NCS 10-038 and NCS 10-156 in 6 states including 7 NC sites
- Increased number of seedlings evaluated from a couple hundred to 5000/year
- Selections 2 to 100
- Released 'Rocco' and 'Liz' (plant patents pending)
- Screened core selections for AFR and ACR
- Developed and screened mapping population, identified QTL's for AFR and ACR
- Established an in vitro system for germplasm (MPRU)
- Fingerprint NCSU germplasm
- PhD student now Post Doc
- 5 undergrad/interns trained

Thank you

- CCRS
- PRS
- NCSA
- Rocco, Memo, Maria, Katie, Keegan, Kylie, Brianna and others



Gina_Fernandez@ncsu.edu

Strawberry Growers Information

Search

COVID-19 Resources

Meet Our Staff

Events

The NC State Strawberry Team

Strawberry YouTube Channel

The NC State Strawberry Breeding Program
Breeding Lessons Cultivars Replicated
Cultivar and Selection Breeding Trials ...

Resources
Compiled Resource List Advisories Pest
Management...
NC Agricultural Chemical Manual
-- Fruits, NC State Plant Disease &
Insect Clinic, Strawberry Fruit
Infection Risk Tool --
Weather-Based Forecasting
Tool to Manage Gray Mold
and Anthracnose

Links

Departmental Extension
Programs
Crop Science Entomology Horticulture ...

Publications & Factsheets



Now on Twitter

ExtensionVoices ¹

A Twitter list by
@ExtensionVoices
Tweets from NC Cooperative



2020 Breeding Trial Data Now Online

June 9, 2020

— Written By [Gina Fernandez](#) (3 months ago)



The NC State University Strawberry Breeding program has put all the yield data from our cultivar trials from 2015-2020 in one site. Here is a link to that data and an excel spreadsheet to download. Updated to include 2020 yield data

[Replicated Cultivar and Selection Breeding Trials](#)

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