BC Cranberry Research Farm

2013 to 2019

Summary of Activities

&

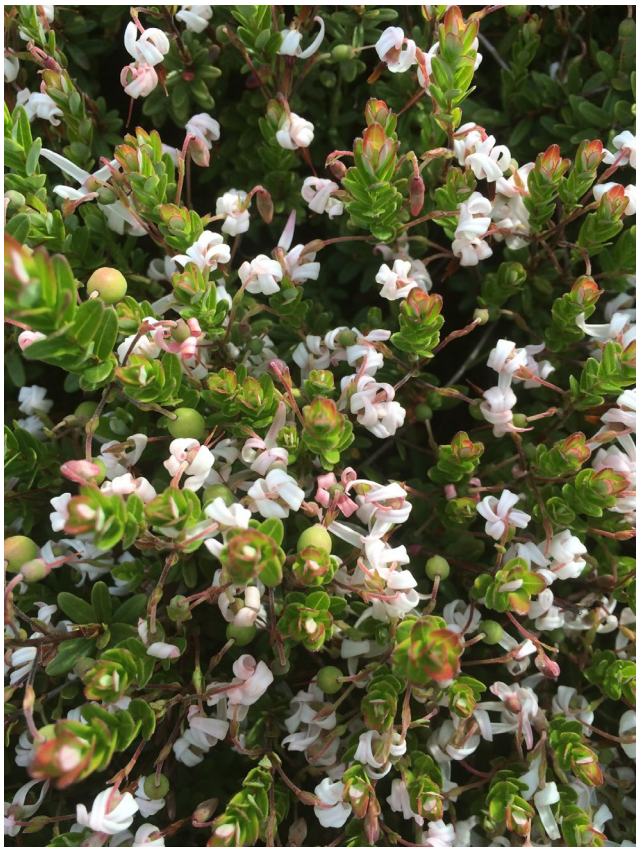
Data on Select Varieties

DELIVERED BY

FUNDING PROVIDED BY

About the BC Cranberry Research Farm

Owned and operated by the non-profit BC Cranberry Research Society, the BC Cranberry Research Farm field trials cranberry cultivars. The overarching goal is to provide BC Cranberry Growers with the information they need to grow effectively and efficiently.



Field 1

Activities

Field 1 has been divided into 10 large (0.25 acre/0.10 ha) plots. Data on berry characteristics, yield and phenology are collected from varieties each year at harvest. Demonstration of various management practices and their impacts across the different varieties are also performed in Field 1. Management demonstrations to date include:

- 2014 to 2015: Slow release fertilizer demonstration along East edge of Field 1 across 5 cultivars
- 2016 to 2018: Fungicide programs for fruit rot
- 2019 to 2021: Mowing and sanding practices for canopy regeneration

Small plot replicated trials are also possible in either single or multiple varieties. Small plot trials to date:

- 2019: Herbicide residue trials in BG

Planting Timeline

- **2013 -** Field 1 plots planted May / June 2013 with plugs on a 12" x 12" (30 cm x 30 cm) spacing, except Willipa Red planted September 2013 with plugs and BG planted April 2014 with mowed vine
- **2018 –** Scarlet Knight removed and RS-11 planted

Overall Management

- **Pest Management:** fields are monitored weekly by ES Cropconsult Ltd. from May to August. Spray recommendations are made as warranted. Pests that have had management recommendations in Field 1: blackheaded fireworm, cranberry fruitworm, and tipworm.

- **Nutrient Management:** Foliar and soil samples are collected mid August (yearly) for nutrient analysis to help guide fertilizer application. In general, the consideration of vine overgrowth due to the BCCRF's rich organic peat soils is a prevailing concern and is factored into the decision making process. Granular fertilizer blends with low nitrogen and balanced P and K Standard Operating Procedures would typically be applied once or twice through the growing season.

Field 2

Activities

Field 2 is currently planted into smaller plots and to date only yield, phenology and berry characteristic data have been collected from these plots. Field 2 also has plots for the CFIA (Canadian Food Inspection Agency) Plant Breeder's Rights plots for the Rutgers varieties.

Planting Timeline

- **2013**
    - Rutgers Selections: June 2013
    - Valley Corp.: September 2013
- **2015**
    - Valley Corp.: April 2015
    - Rutgers Selections: May 2015
- **2016**
    - Rutgers Selections for Fruit Rot Resistance: May 2016

Overall Management

- **Pest Management:** same as Field 1
- **Nutrient Management:** same as Field 1

Field 3

Activities and Planting Timeline

Field 3 is planted into 2 varieties (Demoranville and Mullica Queen, planted June 2014). The primary use of this field is for replicated field trials (small and large plot) and demonstrations. Studies to date include:

- 2015 – Fungicide residue and efficacy trials (Mauza, Ocean Spray)
- 2016 – Fungicide residue and efficacy trials (Mauza, Ocean Spray)
- 2017 and 2018 – Gibberellic Acid Effects (Prasad, UFV)
- 2016 and 2017 – Canopy management trials using sanding and sawdust (Harburt, KPU)
- 2018 and 2019 – Moisture sensors and probes (Elsby, Ocean Spray)
- 2019 – Pollination deficit (coupled with a field site on a Richmond farm) (Gillespie, UFV)
- 2019 – Fungicide residue plots (Elsby, Ocean Spray)

Field 4

Activities and Planting Timeline

Field 4 is planted with Stevens donated from a Delta, BC farm. In 2015, samples were sent to Rutgers for DNA Fingerprinting and the vine was confirmed to not be "true" Stevens. Field 4 is used for management demonstrations. Activities to date:

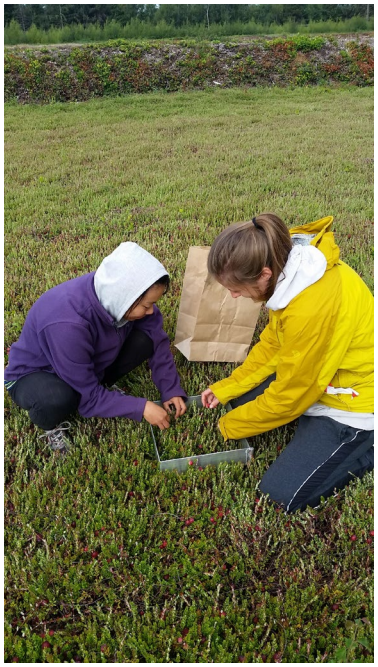
- 2016 to present: Long term impacts of Casaron at varying application rates
- 2016 to present: Girdler control with nematodes

Overall Management (Field 3 and 4)

- **Pest Management:** Same as Field 1
- **Nutrient Management:** Same as Field 1. Foliar samples for nutrient analysis are collected, from Field 3, around August 20 of each year.

Data Summaries

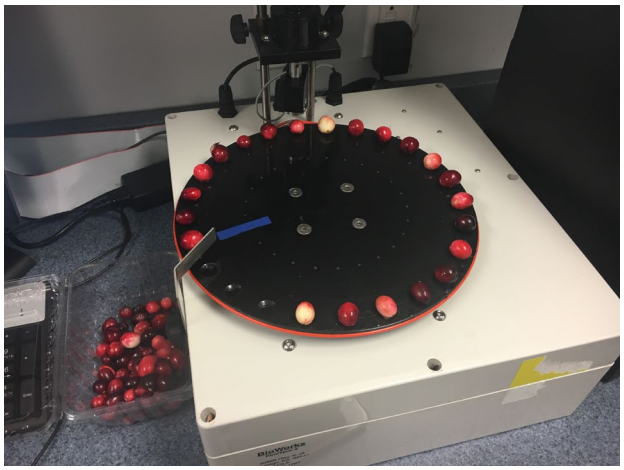
How are yield data collected and presented?



Yield data are collected using square-foot quadrats. The quadrats are placed in 3 random locations in the centre of each plot in Field 1. The centre is defined as the area around the central sprinklers in each varietal plot. In Field 2 quadrats are placed in 2 random locations in the centre of each plot (60-cm away from edges). Plots are hand harvested, placed in brown bags, and refrigerated until they can be assessed – within 4 weeks of collection. Assessment includes total number and weight (g) of berries; total number and weight (g) of berries meeting Ocean Spray minimum size, 9/32", which is assessed using a screen; mechanical, fruit rot, and insect damaged berries (number and weight for each category). In the past we have also collected data on berries meeting the various SDC (sweeten dried cranberry) categories. In the following graphs, yield data are presented as average barrels/acre (estimated) – which is calculated from the weight of berries >9/32" for each square-foot plot. Averages are based on the 3 square-foot plots for each variety in Field 1 and 4 square foot plots for Field 2 varieties (each variety in each planting in Field 2 has 2 replicates).

How are berry characteristics -TAcy and Firmness determined? (Prepared with information supplied by Miranda Elsby, Ocean Spray)

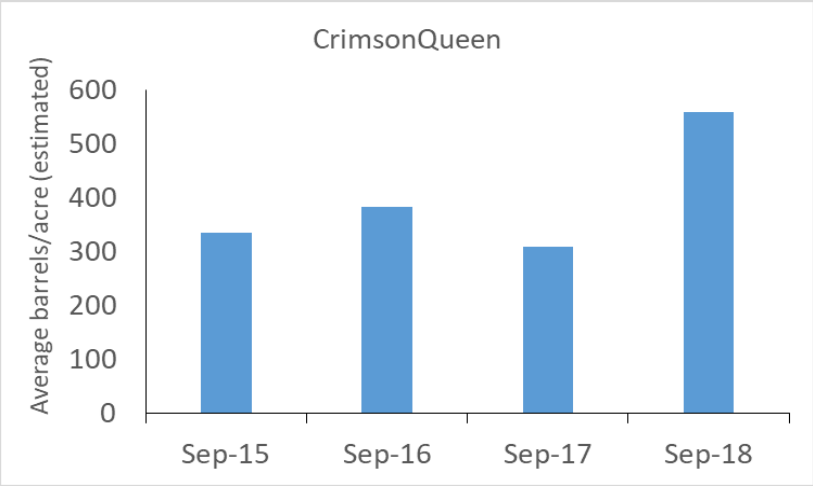
TAcy (anthocyanin content) is determined by the Ocean Spray quality lab. A 500-gram sample of fruit is blended to create a slurry; a sample of slurry is diluted with acid; the anthocyanin content in the slurry sample is measured with a spectrophotometer. Berry firmness is also measured by the Ocean Spray quality lab. Berries are placed on a machine (FirmTech) which compresses individual berries by 1 mm and records the amount of gram force that was necessary to complete that compression; higher values indicate firmer berries.



Which varieties are highlighted in this booklet?

- Varieties with the top two estimated yields (for the Field or Planting or breeder) in one of the past four years (2015 to 2018)
- Varieties with interesting berry characteristics - in particular late colouring (lower TAcy in September and higher TAcy in October)
- New varieties that are widely grown in the Fraser Valley

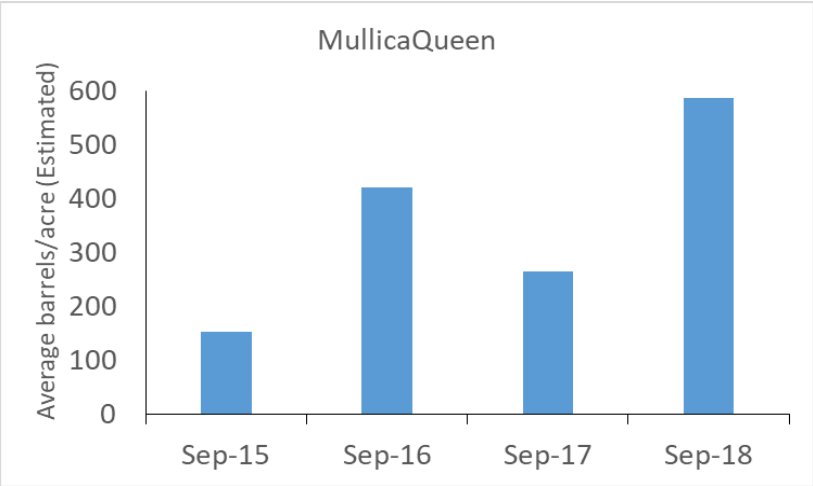
Crimson Queen (Field 1 data)



September 2018

- Firmness: 833.8
- % Poor: 0
- TAcy: 49
- Average berry weight: 1.50 g

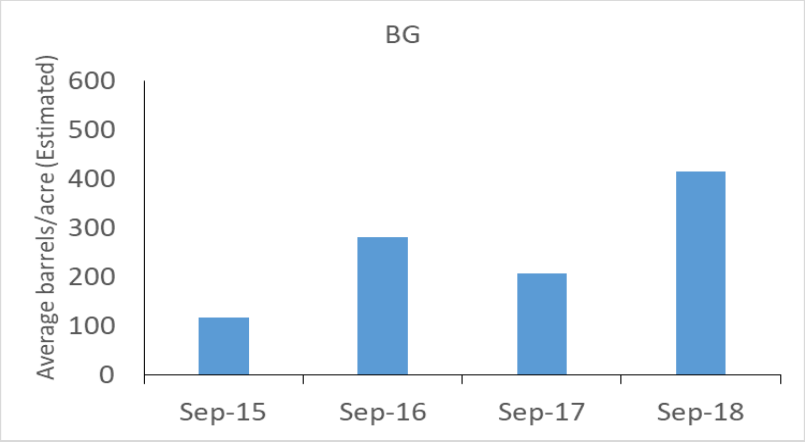
Mullica Queen (Field 1 data)



September 2018

- Firmness: 952.2
- % Poor: 0
- TAcy: 37
- Average berry weight: 1.70 g

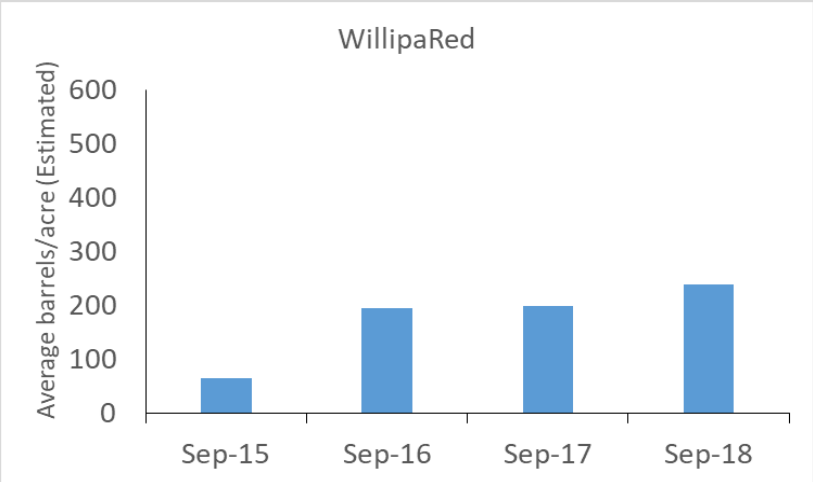
BG (Field 1 data)



September 2018

- Firmness: 808.1
- % Poor: 0.18
- TAcy: 26
- Average berry weight: 1.80

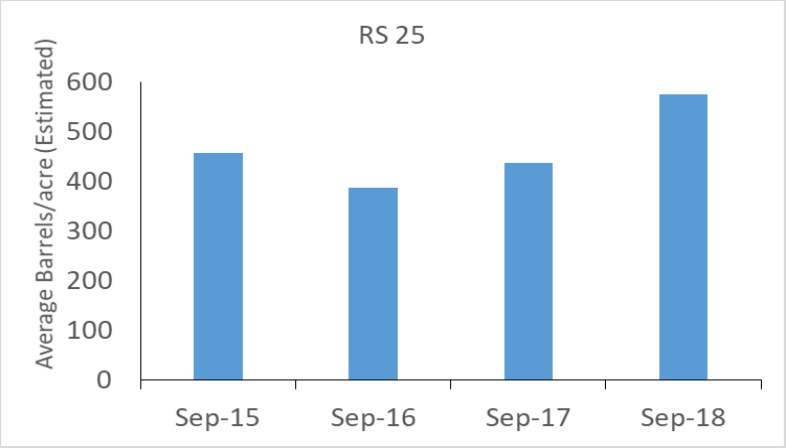
Willipa Red (Field 1 data)



October 2016

- Firmness: 782.9
- % Poor: Not available
- TAcy: 75
- Average berry weight: 1.05g

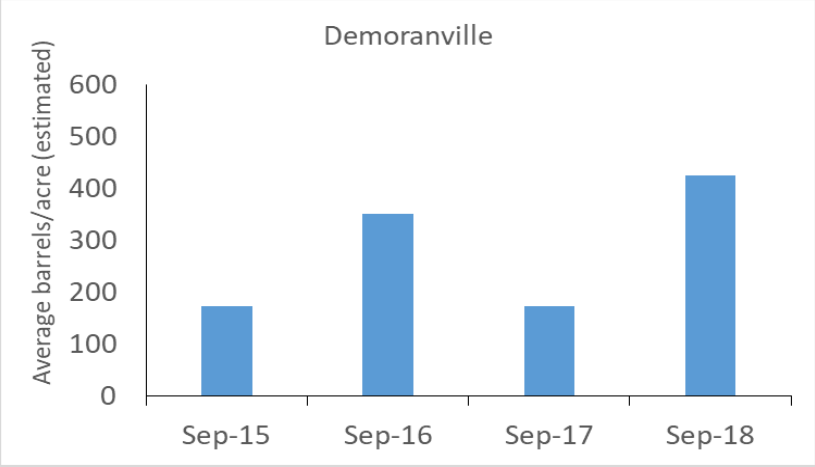
RS-99-25 (Field 1 data)



September 2018

- Firmness: 932.7
- % Poor: 0
- TAcy: 62
- Average berry weight: 1.66 g

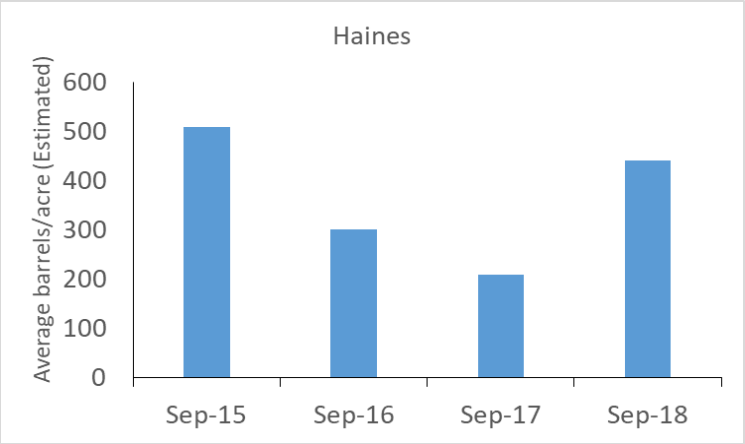
Demoranville (Field 1 data)

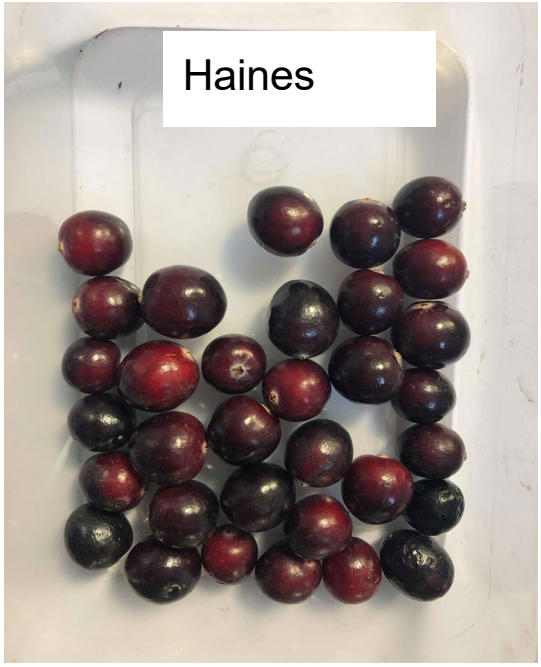


September 2018

- Firmness: 946.5
- % Poor: 0
- TAcy: 72
- Average berry weight: 1.65 g

Haines (Field 1 data)

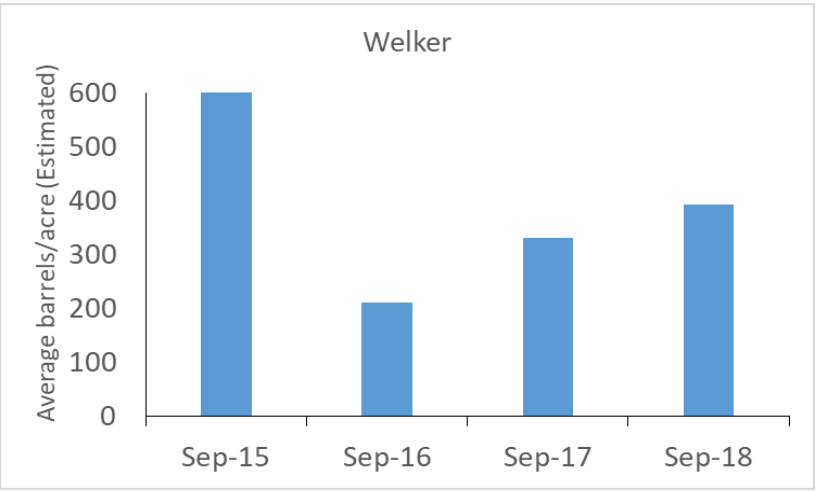


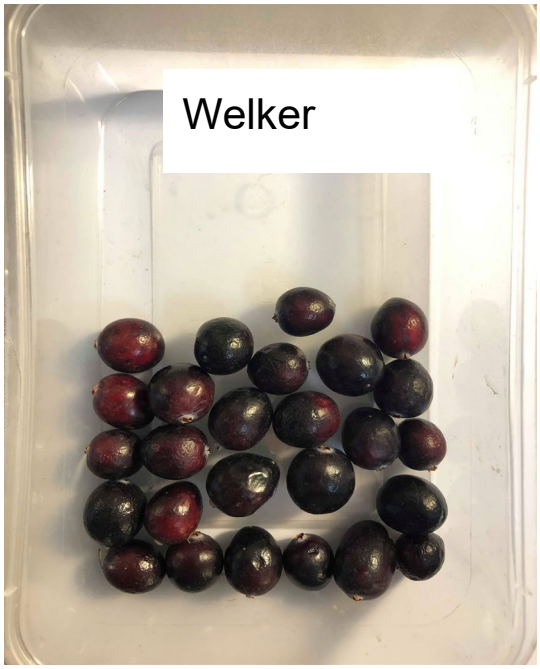


September 2018

- Firmness: 967.9
- % Poor: 0.04
- TAcy: 37
- Average berry weight: 1.63 g

Welker (Field 1 data)

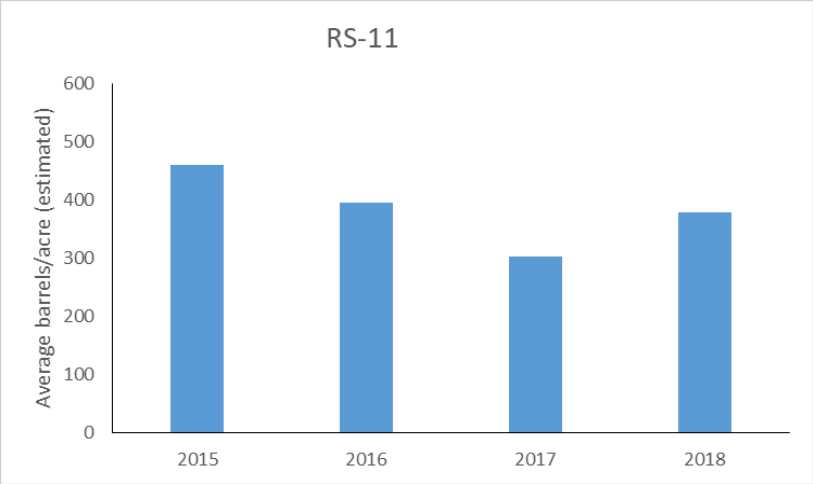




September 2018

- Firmness: 904.6
- % Poor: 0.04
- TAcy: 67
- Average berry weight: 1.60 g

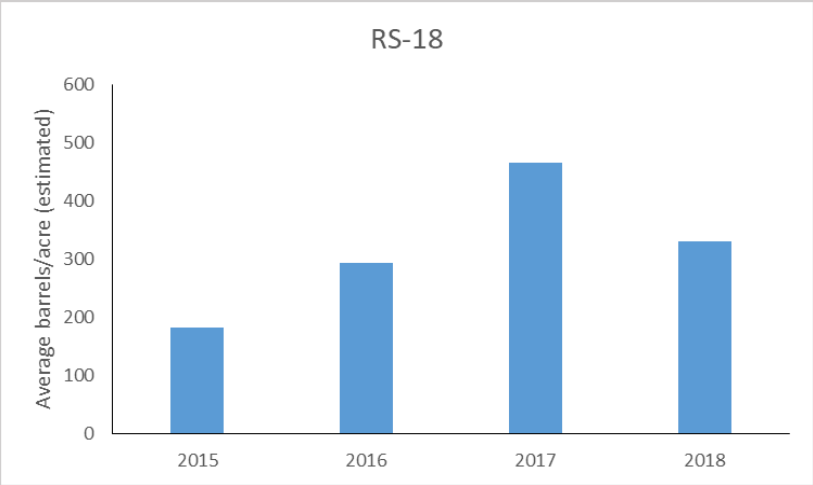
RS 11 (Field 2 data – 2013 Planting)

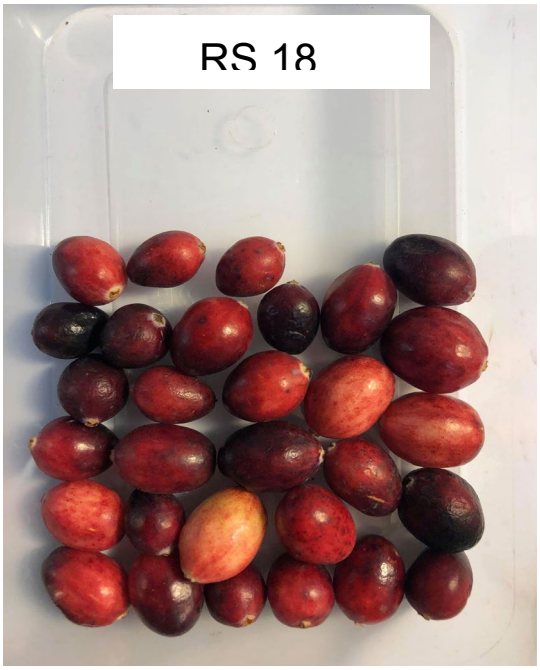


September 2018

- Firmness: 792.6
- % Poor: 0
- TAcy: 25
- Average berry weight: 1.84

RS 18 (Field 2 data– 2013 Planting)

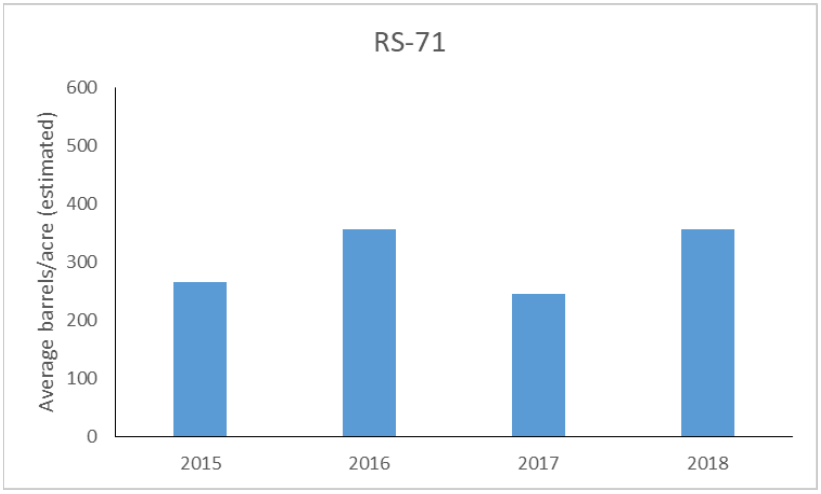


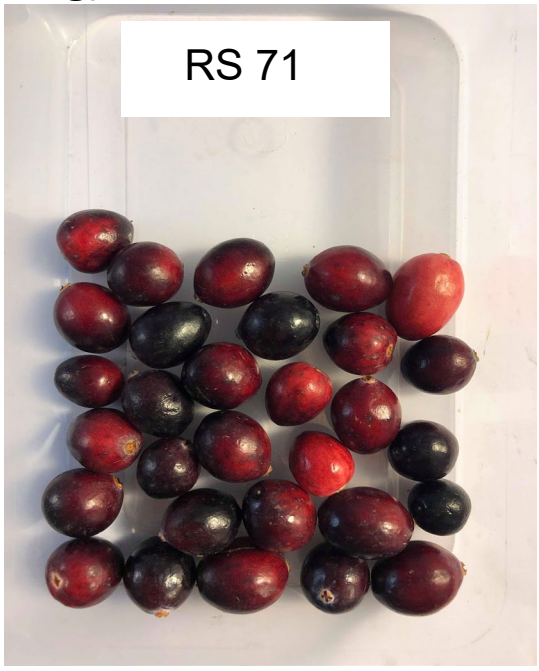


September 2018

- Firmness: 789.4
- % Poor: 0.8
- TAcy: 28
- Average berry weight: 1.47 g

RS 71 (Field 2 data– 2013 Planting)

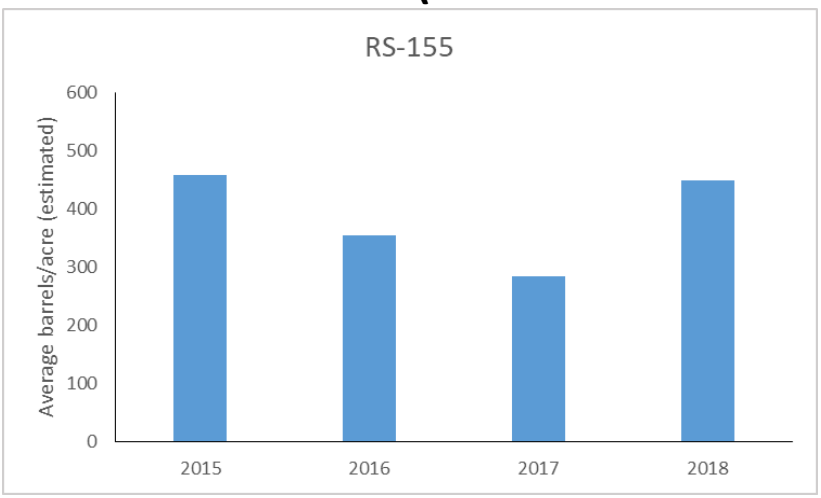




September 2018

- Firmness: 874.1
- % Poor: 0
- TAcy: 35
- Average berry weight: 1.46 g

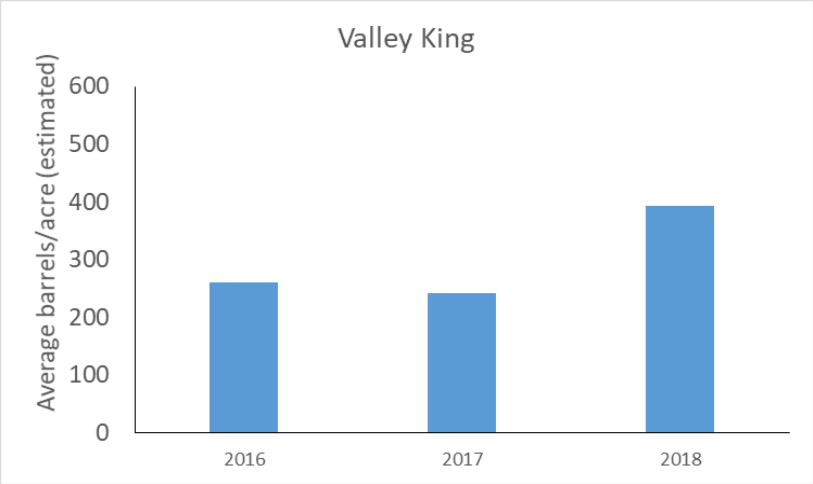
RS 155 (Field 2 data– 2013 Planting)



September 2018

- Firmness: 802.8
- % Poor: 0.2
- TAcy: 23
- Average berry weight: 1.45

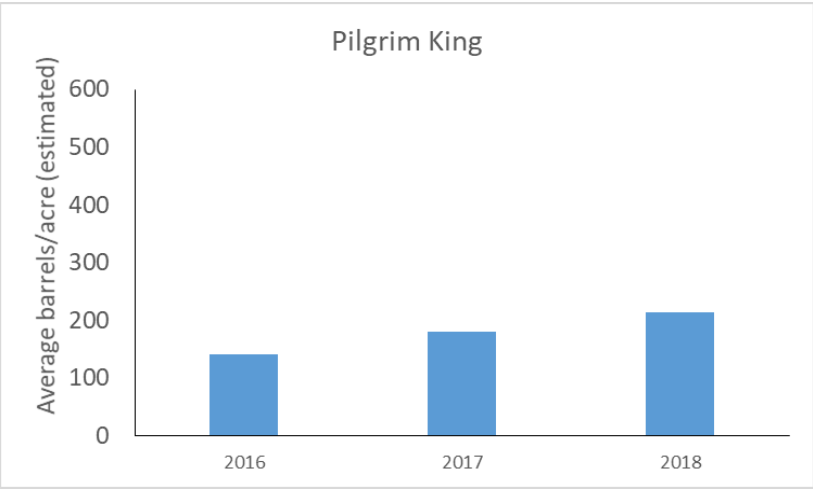
Valley King (Field 2 data– 2013 Planting)

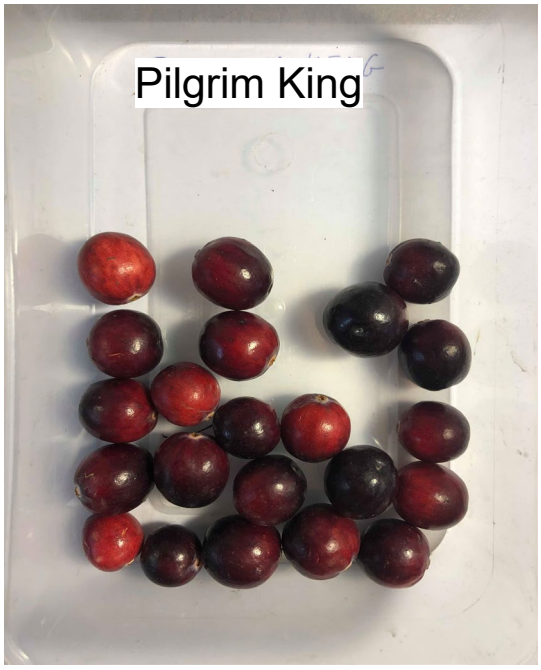


September 2018

- Firmness: 783.6
- % Poor: 1.16
- TAcy: 35
- Average berry weight: 2.28 g

Pilgrim King (Field 2 data– 2013 Planting)

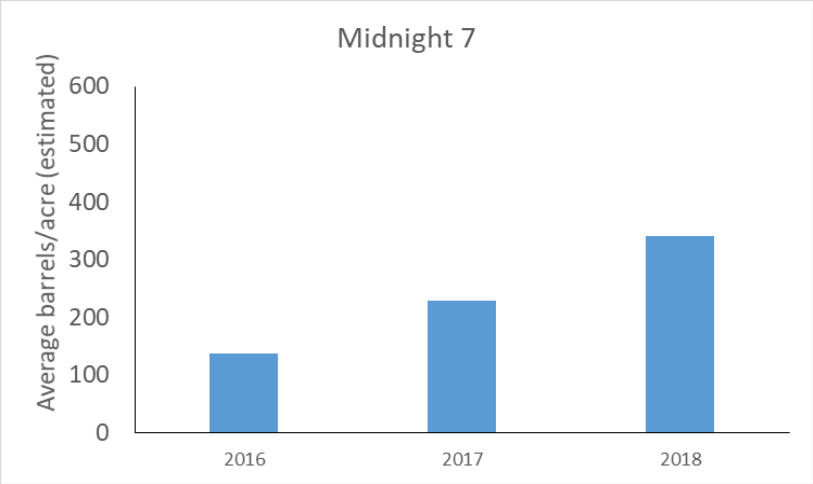




September 2018

- Firmness: 807.7
- % Poor: 0.04
- TAcy: 45
- Average berry weight: 1.92 g

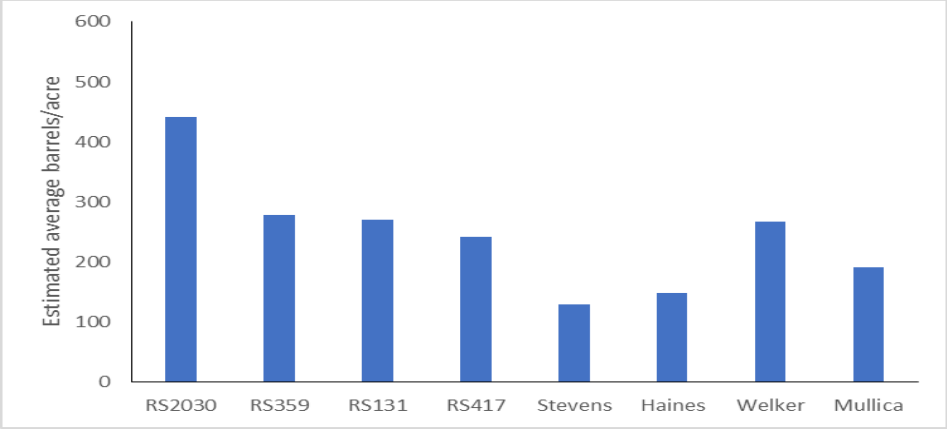
Midnight 7 (Field 2 data– 2013 Planting)



September 2018

- Firmness: 761.3
- % Poor: 0.24
- TAcy: 58
- Average berry weight: 1.70 g

(Field 2 data– 2015 Planting)



- 2018 was our first year of yield data collection for the Rutgers 2015 planting
- In 2019 we will collect Berry characteristics, pictures, and yield data on the top performing varieties (based on 2018 data and NACREW/Grower feedback)
- **Please tear out the map on the next page and highlight which 2015 plots you "like" (you can provide as much or as little rationale for your selections on the sheet)**

2015	A22	B22	C22	Stevens	E22
	A21	Welker	C21	Scarlet Knight	E21
	Haines	B20	Mullica Queen	D20	E20
	A19	B19	C19	D19	E19
	Scarlet Knight	Stevens	C18	D18	E18
	A17	B17	C17	D17	Mullica Queen
	A16	B16	C16	Haines	Welker
	A15	B15	C15	D15	E15
	A14	B14	C14	D14	E14
	A13 (Empty)	B13 (Empty)	C13 (Empty)	D13	E13
	A12 (Empty)	B12	C12	D12	E12
	A11	B11			