Progress Report for 2008
Cranberry Varieties Trials

Project No.: Continuing 13C-4167-1217

Title: Cranberry Varieties Trials

Year initiated: 2003 **Current year:** 2008 **Terminating year:** 2010

Personnel: Kim D. Patten, WSU-Long Beach, Extension Specialist

Title: Evaluation of new cranberry varieties for the Pacific Northwest.

Justification:
As cranberry growers plant new acreage or replant existing beds, they want to select varieties that are 1) adapted to the growing region, and 2) high-yielding. Selecting a variety (or varieties) with pest resistance or some level of tolerance may also reduce the overall requirements for pesticides and hence lower the cost of production and increase return per acre. Besides yield, the suitability of a variety for the fresh fruit market is a very important criterion for many growers in Grayland. The goal of this project is to evaluate genotypes for low levels of field and storage rot with good yield and ease of dry harvesting.

Objectives:

1. Maintain the new replicated planting on the Pacific Coast Cranberry Research Farm in Long Beach with 9 new genotypes and 2 standard varieties.

2. Gather data on vine cover, upright density and initial fruit quality.

Results:

Objective 1) Maintain the new replicated planting on the Pacific Coast Cranberry Research Farm in Long Beach with 9 new genotypes and 2 standard varieties.
A field planting, using a randomized complete block design, was planted in summer 2003. Vines were obtained from Nick Vorsa's breeding program at Rutgers University (njs98-23, njs95-37, cnj96-44-83, cnj97-105-4, cnj95-20-20, cnj93-9-42, cnj93-13-100, njs98-65, njs98-28) and from an old cultivar trial in Wisconsin (BE4, AR2, BAIN FAVORITE #1). Pilgrim and Stevens (DNA-tested) from Rutgers were used for comparisons. Plots have been maintained using standard horticultural practices and have reached maturity.

Objective 2) Gather data on variety performance.
Vines have come into full production. Yield, fruit size, color and rot, and vine disease data were collected (Tables 1 to 4). Based on production and other variables, none of the new selections out-yielded Pilgrim. CNJ 44-83, CNJ95-37 and CNJ93-9-42 appear to be the most promising new selections in the trial. Of the two new releases, Crimson Queen and Mullica Queen, only Crimson Queen has distinguished itself as a superior cultivar for the PNW. None of the

advanced selections distinguished itself in terms of resistance to foliage disease or fruit rot at harvest or after storage, although CNJ95-37 consistently had lower rot than other advanced selections. Grower ratings for ease of dry harvesting and potential for the fresh fruit market consistently gave highest values to Crimson Queen, CNJ 44-83, CNJ95-37 and CNJ93-9-42. BE4, an Aviator x McFarlin cross, also performed well. It had virtually no fruit rot and good early red color and should be easy to dry harvest. Although the fruit are on the small side, it should be ideal for the fresh market. Vines are not patent-protected.

Table 1. Yield from 2003 cultivar/advanced selection trials in Long Beach WA

	Yield bbl/ac				
Selection	2005	2006	2007	2008	2005 to 2008
Crimson Queen	77 cd	179 bc	347 abc	242 abc	846 bcd
NJS95-37	85 c	277 a	322 bcd	246 abc	931 bc
Mullica Queen	23 cde	20 d	252 cd	178 bc	473 fg
CNJ96-44-83	54 cde	204 b	288 bcd	270 ab	816 b-e
CNJ95-20-20	32 cde	181 bc	253 cd	173 bc	639 ef
CNJ93-9-42	61 cde	187 bc	451 a	266 ab	964 ab
CNJ93-13-100	46 cde	136 c	295 bcd	213 bc	690 de
BE4	150 b	217 b	383 ab	229 abc	980 ab
AR	16 cde	223 b	290 bcd	239 abc	768 cde
Bain Favorite	46 cde	178 bc	212 d	200 bc	636 ef
Pilgrim	257 a	202 b	327 a-d	345 a	1132 a
Stevens	3 e	48 d	209 d	138 c	398 g
NJS98-65	11 de	201 b	335 a-d	196 bc	743 de
NJS93-13-100	27 cde	172 bc	352 abc	153 bc	704 de
LSD (P=.05)	61	46	112	104	161
Treatment prob (F)	0.0001	0.0001	0.0088	0.0371	0.0001

Table 2. BRIX and fruit size from 2003 cultivar/advanced selection trials in Long Beach WA

	BRIX		Fruit size (g/fruit)		
Selection	2007	2008	2006	2007	2008
Crimson Queen	8.1 c	7.87 bcd	1.87 b	1.56 bc	1.56 a
NJS95-37	8.8 abc	7.87 bcd	1.48 fg	1.18 hi	1.06 fg
Mullica Queen	8.8 abc	8.83 ab	2.09 a	1.52 cd	1.42 ab
CNJ96-44-83	9.1 ab	8.63 abc	1.78 bc	1.39 ef	1.26 cd
CNJ95-20-20	8.2 c	8.13 a-d	1.44 g	1.23 gh	1.17 def
CNJ93-9-42	8.3 bc	8.20 a-d	1.53 efg	1.34 fg	1.23 cde
CNJ93-13-100	8.6 abc	8.93 a	1.52 efg	1.10 i	1.00 g
BE4	8.3 bc	7.27 d	1.23 h	1.11 hi	1.00 g
AR	8.7 abc	8.07 a-d	1.69 cd	1.42 def	1.20 de
Bain Favorite	8.1 c	9.00 a	1.89 b	1.73 a	1.44 ab
Pilgrim	8.9 abc	7.77 cd	1.89 b	1.48 cde	1.31 bcd
Stevens	9.3 a	8.20 a-d	1.62 def	1.09 i	1.10 efg
NJS98-65	8.9 abc	8.20 a-d	1.93 b	1.65 ab	1.37 bc
NJS93-13-100	8.9 abc	8.07 a-d	1.65 cde	1.46 c-f	1.26 cd
LSD (P=.05)	0.7	0.8	0.141	0.112	.13
Treatment prob (F)	0.03	0.01	0.0001	0.0001	0.0001

Table 3. Foliage diseases in 2003 cultivar/advanced cranberry selection trials in Long Beach WA

Selection	Misshapen fruit % by wt harvest 2008	Foliage diseases			
		Red leaf spot rating 0=none 5=100% infested October 2004	Rose bloom # infested uprights/0.25m^2 May 2007	Rose bloom % infested uprights May 2008	Rose bloom # infested uprights/ft^2 Rating 1=0, 5>20 June 2008
Crimson Queen	8.1 ab	3.1 ab	13.3 bcd	15.0 a	4.7 ab
NJS95-37	0.4 ef	3.1 ab	13.5 bcd	8.3 a	3.0 cd
Mullica Queen	3.8 bcd	2.2 cde	11.3 bcd	9.0 a	4.0 abc
CNJ96-44-83	6.4 bc	2.9 abc	57.5 ab	8.7 a	4.0 abc
CNJ95-20-20	14.0 a	2.8 abc	19.6 bcd	8.3 a	3.0 cd
CNJ93-9-42	2.7 b-e	3.2 ab	14.5 bcd	7.7 a	3.7 a-d
CNJ93-13-100	0.6 def	2.6 a-d	30.6 a-d	9.3 a	2.7 cd
BE4	0.7 def	2.7 abc	52.9 abc	20.0 a	5.0 a
AR	0.5 ef	1.8 de	5.6 cd	6.7 a	2.3 d
Bain Favorite	2.0 def	2.8 abc	70.2 a	6.0 a	2.7 cd
Pilgrim	2.8 b-e	2.4 b-e	40.4 a-d	5.0 a	2.7 cd
Stevens	0.1 f	1.8 e	3.6 d	10.0 a	2.3 d
NJS98-65	1.7 c-f	3.3 a	35.3 a-d	10.7 a	3.3 bcd
NJS93-13-100	2.2 def	2.3 b-e	20.0 bcd	11.7 a	4.0 abc
LSD (P=.05)	6.1	0.74	40.74	10.20	1.29
Treatment Prob (F)	0.0001	0.0023	0.0427	0.3267	0.0020

Table 4. Fruit rot in 2003 cultivar/advanced cranberry selection trials in Long Beach WA

Name	% Rotten fruit					
	Harvest rot 2006	Rot at 6 week storage 2006	Harvest rot 2007	Rot at 6 week storage 2007	Harvest rot 2008	Rot at 6 week storage 2008
Crimson Queen	1.9 a	0 a	8 a	14 a	22.1 abc	1.7 a
NJS95-37	0.5 a	0 a	2 a	2 a	7.0 cd	0.2 a
Mullica Queen	2.2 a	0 a	7 a	4 a	21.3 ab	4 a
CNJ96-44-83	1.6 a	0 a	11 a	16 a	19.4 a-d	0.7 a
CNJ95-20-20	1.2 a	0 a	17 a	2 a	7.8 cd	0.7 a
CNJ93-9-42	1.2 a	0 a	10 a	7 a	15.9 a-d	0.5 a
CNJ93-13-100	1.2 a	1 a	35 a	4 a	11.5 bcd	1 a
BE4	0.7 a	0 a	3 a	2 a	6.6 d	0.2 a
AR	1.0 a	1 a	9 a	4 a	11.3 bcd	0 a
Bain Favorite	0.7 a	1 a	15 a	9 a	28.3 a	1.3 a
Pilgrim	0.6 a	0 a	5 a	2 a	16.6 a-d	1.3 a
Stevens	4.2 a	2 a	3 a	2 a	10.7 bcd	0.4 a
NJS98-65	0.7 a	0 a	7 a	2 a	9.8 bcd	0.6 a
NJS93-13-100	3.1 a	2 a	8 a	6 a	9.9 bcd	0.4 a
LSD (P=.05)	3.1	1.7	25	11	10	3
Treatment Prob(F)	0.4	0.3	0.5	0.2	0.02	0.7