Performance of Rutgers cultivars in trials and commercial beds

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RUTGERS
New Jersey Agricultural Experiment Station

Rutgers varieties

2007 Crimson Queen® variety

tested as NJS98-23 - Selected for yield, early season, high Tacy

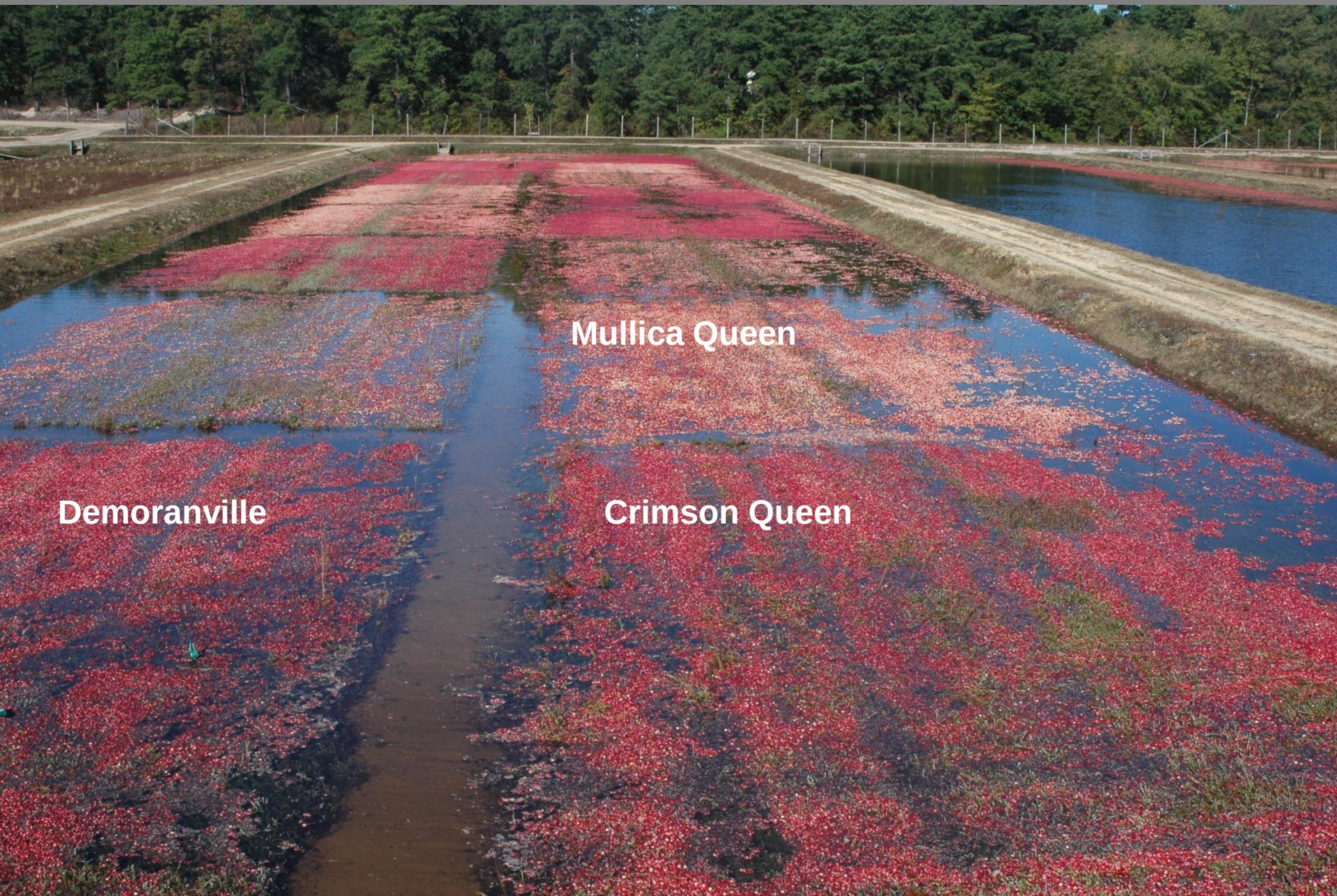
2008 Demoranville® variety

tested as NJS98-35 – Selected for yield, early season, high Tacy

2008 Mullica Queen® variety

tested as CNJ97-105-4 – Selected for yield, Tacy slightly higher than Stevens

Bog 3 Marucci Center Sept 29, 2009



Crimson Queen® variety NJS98-23

McFarlin x Potters

MA WI

1988 Stevens x Ben Lear

NJ WI

2007 Crimson Queen

US Plant Patent PP18,252

Canadian Breeders Rights Application Cert. # 3742, Grant-of-Rights Date January 2010

Demoranville® variety NJS98-35

Early Black x Howes

MA MA

1988 Franklin x Ben Lear

NJ WI

2008 **Demoranville**

US Plant Patent PP18,911

Canadian Plant Breeder's rights applied for

Mullica Queen® variety
CNJ97-105-4

Howes x Searles

MA WI

1997 No. 35 x Lemunyon

NJ NJ

2008 Mullica Queen

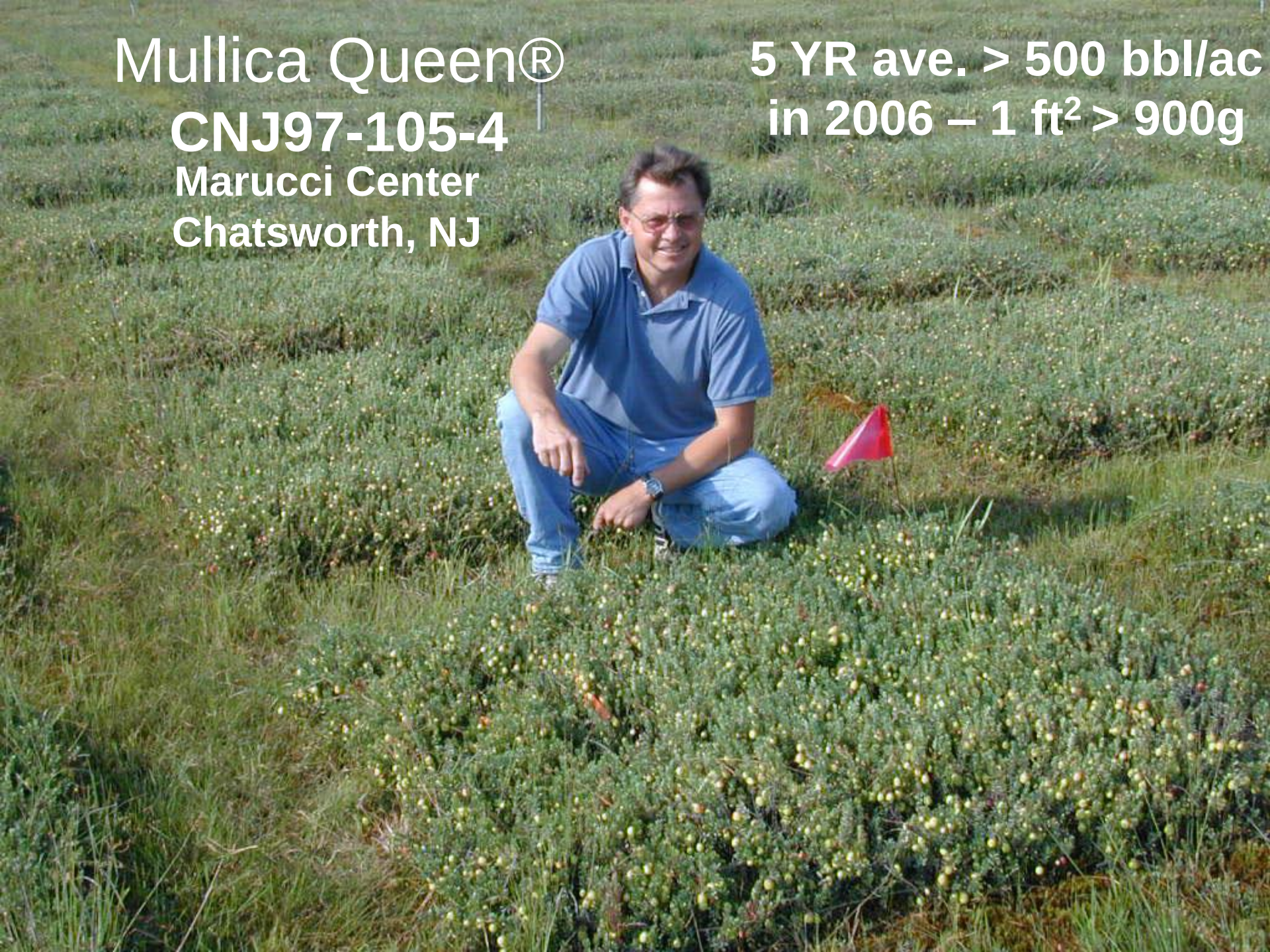
US Plant Patent PP19,434

Canadian Plant Breeder's rights applied for

Chatsworth, NJ
1993

Crimson Queen and Demoranville varieties selected from over 1,400 progeny from 20 crosses
Made in 1988

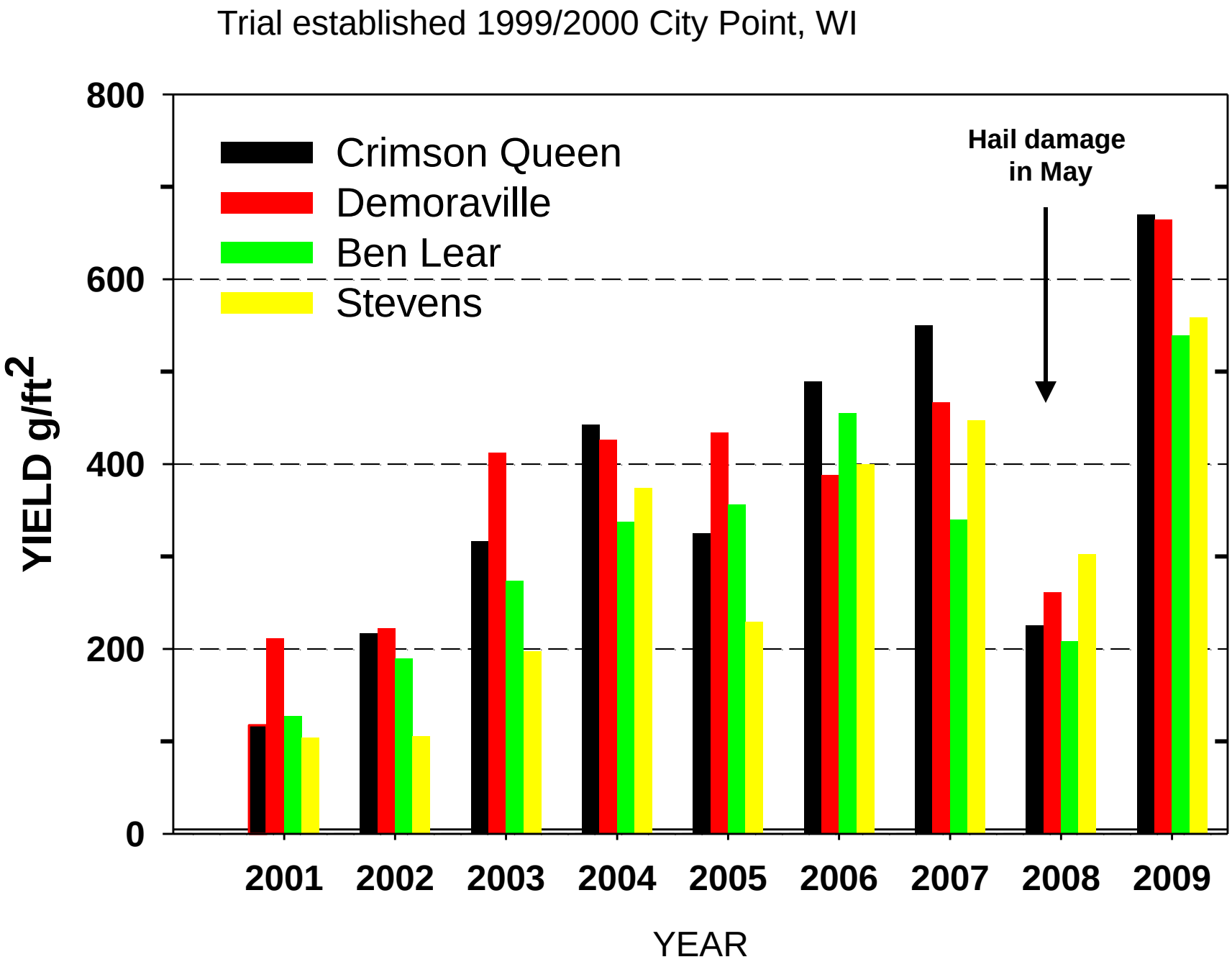
Dubay's WI
1992


Mullica Queen®
CNJ97-105-4
Marucci Center
Chatsworth, NJ
5 YR ave. > 500 bbl/ac
in 2006 – 1 ft² > 900g

Cutler Cranberry
Jackson Co., WI

Planted

1st rep – 1999
2nd rep – 2000

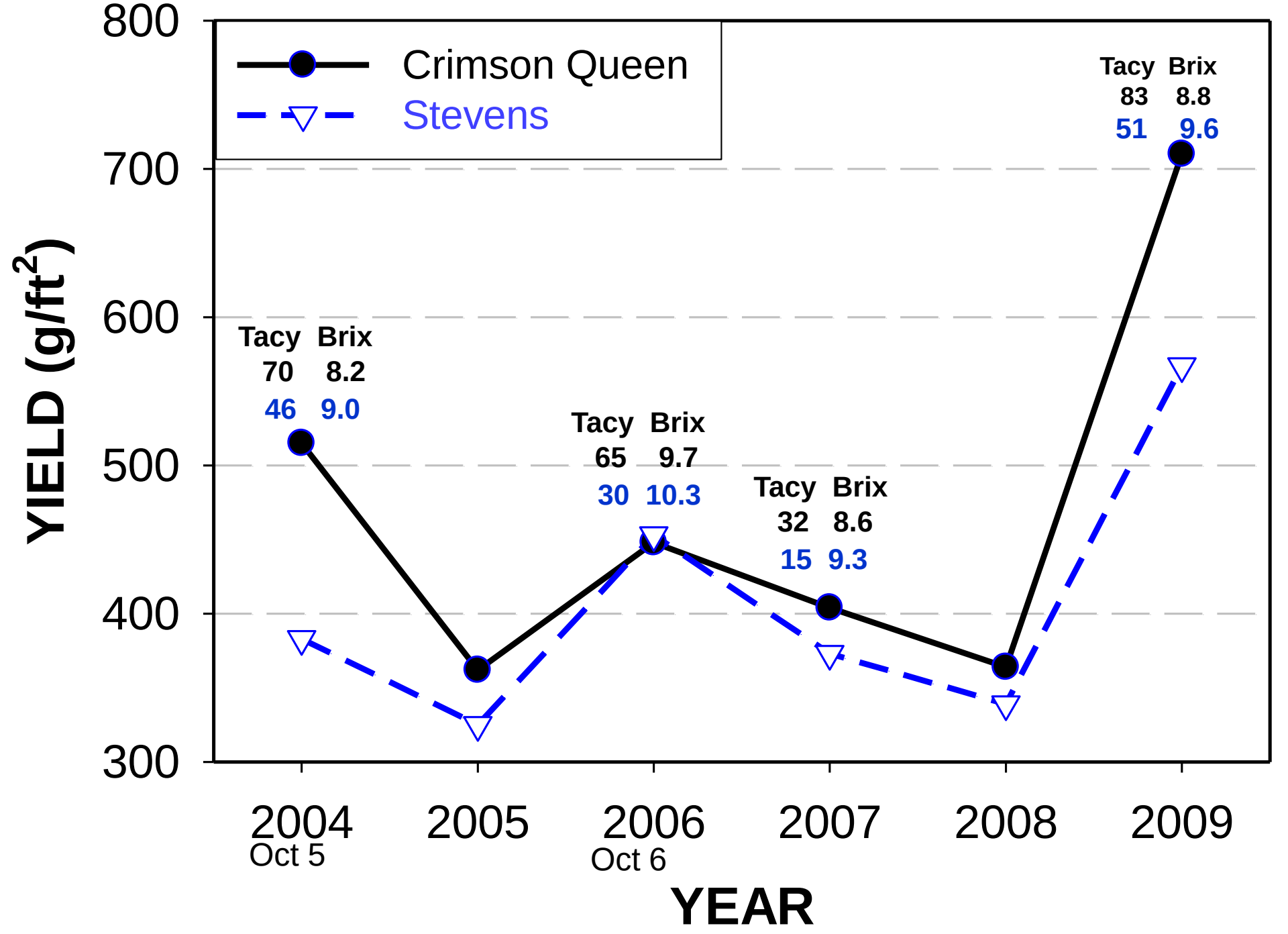

Trial established 1999/2000 City Point, WI
Crimson Queen
Demoraville
Ben Lear
Stevens
Hail damage in May
YIELD g/ft2
800
600
400
200
0
2001
2002
2003
2004
2005
2006
2007
2008
2009
YEAR

OSC, Inc. Regional Trial in Canada

Burnaby, British Columbia Site

Planted 2000

July 2010


Crimson Queen
Stevens
YIELD (g/ft2)
800
700
600
500
400
300
Tacy Brix
70 8.2
46 9.0
Tacy Brix
65 9.7
30 10.3
Tacy Brix
32 8.6
15 9.3
Tacy Brix
83 8.8
51 9.6
2004
Oct 5
2005
2006
Oct 6
2007
2008
2009
YEAR

First commercial full bed plantings

- Jackson Co., WI 2006
  - Crimson Queen, Demoranville
- Monroe Co., WI 2006, 2007
  - Crimson Queen, Demoranville, Mullica Queen
- Burlington Co., NJ 2006, 2007
  - Crimson Queen, Demoranville, Mullica Queen
- Plymouth Co., MA 2006, 2007
  - Crimson Queen, Mullica Queen

Wisconsin, Jackson Co.,

Planted June 2006

		2009 harvest			2010 harvest		
Variety	**Date planted**	**Yield** bbl/ac	**tacy** mg/100g	**brix** % ss	**Yield** bbl/ac	**tacy** mg/100g	**brix** % ss
Crimson Q E7	**June 06**	**420**	--------	------	**592**	**55**	**7.8**
Demoranville E6	**June 06**	**474**	--------	------	**440**	**57**	**8.4**
Stevens E5	**June 07**	**310**	——	—	**320**	**35**	**7.7**

Warrens, WI 2006 planting in sand

Crimson Queen®
Mullica Queen®

Wisconsin, Monroe Co.

Variety	Date Planted	2009 harvest Yield bbl/ac	2009 tacy mg/100g	2009 brix % ss	2010 harvest Yield bbl/ac	2010 tacy mg/100g	2010 brix % ss
Crimson Q	June 06	628 Sept 29	43	7.7	170 Sept 29	43	8.2
Mullica Q	June 06	637 Oct 1	42	8.3	434 Sept 29	28	8.2
Stevens	June 07	395 Oct 8	33	8.7	178 O c t 19	35	8.5

Variety	Date Planted	2009 harvest Yield bbl/ac	2009 harvest tacy mg/100g	2009 harvest brix % ss	2010 harvest Yield bbl/ac	2010 harvest tacy mg/100g	2010 harvest brix % ss
Demoranville	June 07	380 Oct 1	38	8.1	559 Sept 22	53	7.7
Stevens	Estab.	350	—	—	350	—	—

Plymouth Co., MA – 2006 planting, 2009 - 277 bbl/ac

Plymouth Co., MA

Variety	Date planted	2009 harvest			2010 harvest		
		Yield bbl/ac	tacy mg/100g	brix % ss	Yield bbl/ac	tacy mg/100g	brix % ss
Crimson Q EH	**June 06**	**277** Sept 14	**19**	**7.7**	**163**[1] Sept 11	**17**	**8.1**
Crimson Q SC	**June 07**	---------	------	----	**226** Sept 11	**21**	**7.7**
Crimson Q TB	**June 07**	---------	------	----	**132** Sept 11	**21**	**8.2**
Mullica Q TR	**June 07**	**116** Sept 24	**22**	**7.9**	**322** Sept 24	**28**	**8.1**

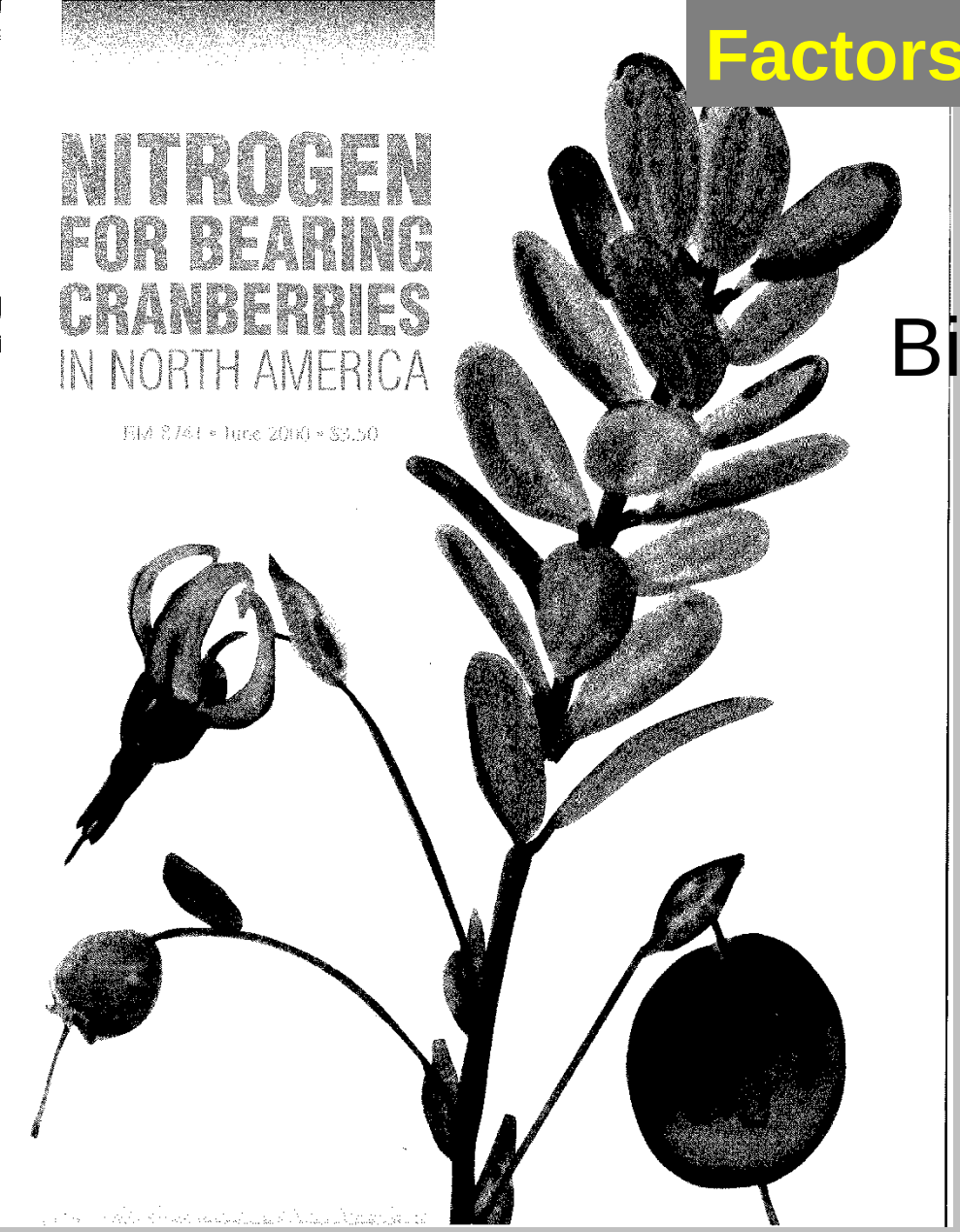
[1] **heavily pruned and frost damage**

Lee's Bros **2007** Crimson Queen Planting

Variety	Date Planted	2010 harvest Yield bbl/ac	tacy mg/100g
Crimson Queen	June 07	422 Oct 18	42
Demoranville	June 08	368 Sept 21	29
Mullica Queen	June 08	326 Oct 21	38
Stevens	Estab.	310 Oct 18	24

September 23, 2010
Demoranville

Factors in achieving higher yield



Biomass – upright density

Nutrition (Nitrogen) ?

Pollination/fertilization of ovules

Water relations

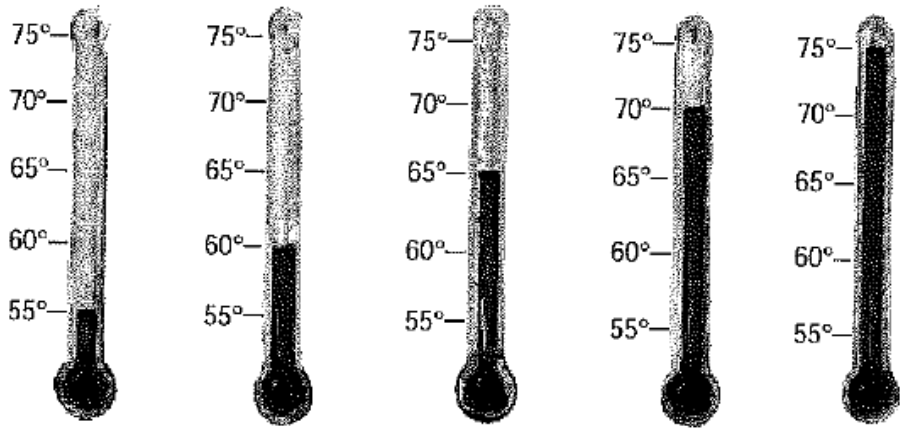
Temp. stress

Soil

- Sand – low N environment
- Sand w/ organic matter – mod. N env.
- Peat – mod-high N env.
- Muck – high N env.

Soil O.M. and temperature play a role in N release

Figure 9.—The influence of soil organic matter content and temperature on production of available N in cranberry beds.



Soil temperature	55°F	60°F	65°F	70°F	75°F
Soil type	% organic matter	N lb/a/day	N lb/a/day	N lb/a/day	N lb/a/day	N lb/a/day
Sand	0.5	0.2	0.2	0.2	0.2	0.3
Sanded peat	5.0	3.0	3.0	3.0	4.0	5.0
Peat	25.0	2.0	2.0	4.0	20.0	50.0
Muck	35.0	10.0	12.0	12.0	14.0	20.0

7.5 to 10 lbs N removed for every 100 bb/ac crop

Cranberry Nitrogen Balance Sheet

Item	Credit	Debit	Balance
1. Beginning balance			185
2. Removal of fruit / leaves		25-30	155
3. New root growth		50	105
4. N from soil for root growth	45		150
5. New shoot growth		50	100
6. N moving from old growth	45		145
7. Ending balance			145
8. Fertilizer N need			-40

Crop bbl/ac	lbs N removed
200	15 – 20
400	30 – 40
600	46 - 60

N Inputs

Demoranville

N Fert. in 2010

Date	N lb
5/26	10
6/3	15
6/17	14
6/22	13
6/30	10
8/20	2

64 total N

Anticipated N for heavy fruit crop

Crimson Queen
Mullica Queen

- **6/10** **10** - 5% open blossoms
- **6/17** **18** - mid-bloom
- **6/24** **14** - full-bloom
- **7/1** **10**
- **7/8** **8**
- **7/15** **8**

Rate adjusted to maintain a healthy leaf color until bud set

68 lbs total N

Sand 0% O.M.

Acknowledgements

- Rod Serres
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- Brian Mauza

RUTGERS
New Jersey Agricultural Experiment Station

- Mayberry Cranberry Co.
- Lee Bros.
- Beltz Cranberry Co.
- Haines & Haines
- Cutler Cranberry
- Integrity Propagation

- Ocean Spray Cranberries, Inc.
- NJAES
- USDA-CSREES