University of Florida Potato Variety Trials Spotlight: 'Snowden'[1]

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There are several potato varieties available in the market today. Most of them have been bred or developed in production regions other than Florida. The University of Florida Potato Variety Evaluation Program screens new germplasm from public and private breeding programs and identifies the most promising cultivars for commercial potential considering broad adaptability to Florida climate and conditions and market purpose: processing, fresh-market and specialty-type varieties. Over the years, the UF/IFAS Potato Variety Program has become an important reference to vegetable growers, seed producers, processors, crop insurance agencies, and brokers looking for alternative potato varieties to explore different markets, improved characteristics, and yield. This UF/Potato Variety Trials Spotlight presents a summary of the field evaluation of tuber yield and quality performance of the potato variety 'Snowden' cultivated in Florida.

General Comments

'Snowden' is a potato variety that is commonly grown for the potato chip market. It was selected from a cross of 'Lenape' and 'Wischip' by Dr. Stan Peloquin and Mr. Donald Kichefski at the University of Wisconsin. It was named and released in 1990 from the University of Wisconsin's Lelah Starks Potato Breeding Farm in Rhinelander, WI. Tuber production and quality results provided in this spotlight are summarized from various variety trials conducted by the UF/IFAS Hastings Agricultural Extension Center from 1998 to 2019.

General Characteristics

'Snowden' stems have an upright growth habit that gives this variety a competitive advantage over many weed species. Both stems and leaves have a slight pubescence. Tubers have light-tan and slightly netted skin with a white flesh (Figure 1) according to Florida's rating codes for potato tuber characteristics (Table 1). The tubers are uniform with a round to slightly flat shape. The eyes are of medium size and are uniformly distributed around the tuber. The variety has a medium tuber dormancy (e.g., time required for sprout emergence) with a high specific gravity adapted for Florida growing conditions (Tables 2 and 3). The variety has a high specific gravity of 1.075, making it suitable for the chip market. In most trials conducted in Florida, the variety demonstrated similar marketable yields and good tuber characteristics as compared to its commercial standard 'Atlantic' (Table 2). On average, 85% of the tubers produced were from tuber size distribution classes A1 to A3.

Diseases

'Snowden' is susceptible to early blight (*Alternaria solani*), late blight (*Phytophthora infestans*), and common scab (*Streptomyces scabies*). In most trials, this variety showed slight susceptibility, less than 1%, to internal heat necrosis, corky ring spot, and hollow heart (Table 3). The UF/IFAS Extension recommendation for a disease and weed control program is described under *Potato Production* (Chapter 14

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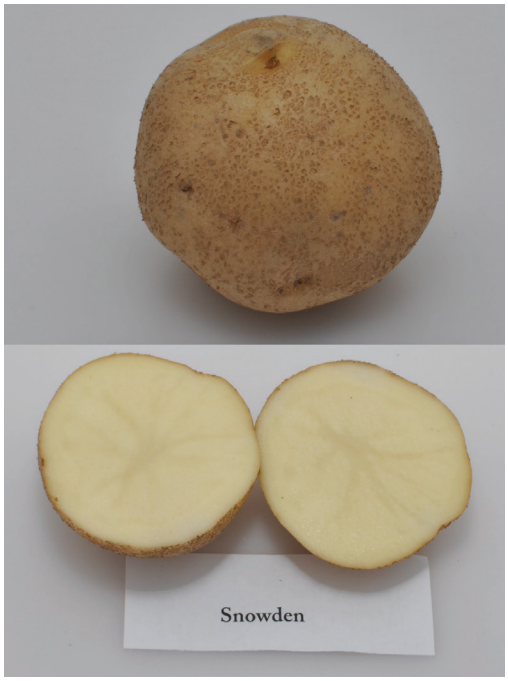

Figure 1. Typical tuber and internal flesh color of 'Snowden' potato variety.
Credits: Lincoln Zotarelli, UF/IFAS

Season Length and Growth

'Snowden' performs as a midseason-maturity variety under Florida growing conditions. Season lengths range from 82 to 119 days from planting to harvesting, depending on growing conditions during the season; on average the season length was 100 days. Late in the season, tuber size should be checked regularly in order to harvest tubers with marketable size.

Fertilization

University of Florida trial plots are normally fertilized with 200 to 230 lb/acre N. The first application of 100 lb/acre of N (granular) is typically incorporated in the bed prior to planting, followed by one or two side-dress fertilizer applications at emergence and/or tuber initiation. Phosphorus and potassium applications follow the UF/IFAS guidelines described in Liu et al. (2020) and normally range between 45 to 100 lb/ac of P_2O_5 and 170 to 235 lb/ac of K_2O.

Planting

A seed piece of 2½ to 3 oz is recommended for planting. This variety should be planted with 40 inches between rows and 8 inches between plants, at 3 to 4 inches deep. A seed rate of 2,000 to 3,000 lb/acre seed is expected.

Other Information

For additional information on cultivation and weed and disease management, see the *Potato Production* chapter of the *Vegetable Production Handbook,* available at http://edis.ifas.ufl.edu/cv131.

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Table 1. Florida's rating codes for potato vine maturity at harvest and tuber characteristics.

	Tuber Characteristics[1]						
Rating Code	**Vine Maturity**	**Internal Flesh Color**	**Skin Color**	**Skin Texture**	**Tuber Shape**	**Eye Depth**	**Overall Tuber Appearance**
1	dead	white	purple	partial russet	round	very deep	very poor
2	+-	cream	red	heavy russet	mostly round	+-	+-
3	yellow and dying	light yellow	pink	moderate russet	round to oblong	deep	poor
4	+-	medium yellow	dark brown	light russet	mostly oblong	+-	+-
5	moderately senesced	dark yellow	brown	netted	oblong	intermediate	fair
6	+-	pink	tan	slightly netted	oblong to long	+-	+-
7	starting to senesce	red	buff	moderately smooth	mostly long	shallow	good
8	+-	blue	white	smooth	long	+-	+-
9	green and vigorous	purple	cream	very smooth	cylindrical	very shallow	excellent

[1]Adapted from Hutchinson et al. (2003) and Sisson and Porter (2002).

Table 2. Summary of production statistics and specific gravity of 'Snowden' potato variety grown at the UF/IFAS Hastings Agricultural Extension Center, Hastings, FL.

Year	**Total Yield**	**Marketable Yield[1]**	**% Standard**	**Size Class (Distribution by class %)[2]**						**Range %**		**Specific Gravity**
			Atlantic	**C**	**B**	**A1**	**A2**	**A3**	**A4**	**A1 to A3**	**Culls**	
1998	400	354	108	n.a.	8	63	24	2	0	89	4	1.075
1999	391	356	101	n.a.	5	76	15	0	0	91	4	1.064
2000	370	340	99	n.a.	3	25	37	29	0	92	6	1.079
2001	407	378	114	n.a.	2	32	41	24	0	97	5	1.079
2002	370	336	105	n.a.	6	58	30	6	0	94	4	1.076
2003	471	417	105	n.a.	4	48	35	9	0	92	4	1.079
2004	347	263	83	12	13	64	9	1	0	74	1	1.081
2005	243	169	59	2	27	66	4	0	0	71	3	1.076
2006	326	274	82	1	13	75	11	0	0	86	3	1.080
2007	370	330	103	1	9	74	13	3	0	91	2	1.075
2008	382	320	120	2	12	73	11	4	0	86	3	1.082
2009	280	224	99	1	11	73	12	3	0	88	10	1.069
2010	398	267	97	2	23	71	3	0	0	75	12	1.071
2011	325	259	91	2	13	71	11	3	0	84	7	1.076
2012	354	307	95	1	8	67	16	7	0	91	5	1.076
2013	276	231	95	2	10	71	11	7	0	89	10	1.069
2014	344	277	118	1	15	71	8	5	0	84	4	1.070
2015	354	289	119	2	13	76	6	3	0	85	5	1.069
2016	269	195	88	4	21	68	5	2	0	75	4	1.072
2017	249	186	81	5	18	71	3	3	0	77	4	1.074
2018	261	181	82	4	23	66	5	1	0	73	6	1.074
2019	330	267	88	4	13	48	33	1	0	83	4	1.080
Average	**342**	**283**	**97**	**3**	**12**	**64**	**16**	**5**	**0**	**85**	**5**	**1.075**

Table 3. Yield, vine maturity, tuber characteristics, and internal tuber defects of 'Snowden' potato variety grown at the UF/IFAS Hastings Agricultural Extension Center, Hastings, FL.

Year	Vine Maturity	Tuber Characteristics[1]						Internal Defects			
		Internal Flesh Color	Skin Color	Skin Texture	Tuber Shape	Eye Depth	Overall Appearance	Hollow Heart	Brown Rot	Corky Ring Spot	Internal Heat Necrosis
1998	n.a.	n.a.	7	5	2	4	7	n.a.	n.a.	n.a.	n.a.
1999	n.a.	n.a.	8	5	2	4	4	1	0	0	0
2000	n.a.	n.a.	6	5	4	4	4	1	0	0	0
2001	3	1	6	6	3	5	5	1	0	0	0
2002	3	1	6	5	2	6	6	1	0	3	2
2003	4	1	6	5	2	6	6	0	0	0	1
2004	3	2	6	5	2	5	6	0	0	0	0
2005	4	1	6	5	2	5	6	0	0	0	0
2006	5	1	6	5	2	5	6	1	0	0	0
2007	5	2	6	5	2	6	7	0	0	0	3
2008	6	2	6	5	2	6	6	0	0	0	1
2009	3	1	6	5	3	3	6	2	0	0	0
2010	6	2	6	5	3	4	6	0	0	2	1
2011	4	1	6	5	3	4	6	1	0	3	1
2012	4	2	6	5	3	3	6	0	0	0	3
2013	6	1	6	5	3	5	6	0	0	0	1
2014	3	1	6	5	3	4	6	0	0	0	0
2015	6	1	7	6	2	7	6	0	0	0	0
2016	6	2	6	5	2	6	7	0	0	0	0
2017	8	1	6	5	2	6	7	0	0	0	0
2018	7	1	6	6	2	6	7	0	0	0	0
2019	6	1	6	6	2	6	6	0	0	0	0
Average	**5**	**1**	**6**	**5**	**2**	**5**	**6**	**0**	**0**	**0**	**1**

[1] See rating system outlined in Florida Rating Code Table (Table 1).