

ACKNOWLEDGEMENTS

Many talented and dedicated people assisted in these experiments. Invaluable technical support was provided by Doug Gergela and Pam Solano. The variety evaluation team is indebted to Bart Herrington, Larry Miller, and Scott Taylor for their hard work. Without the commitment and effort from these individuals, the variety evaluation program would not be possible.

The continued financial and material support from the members of the North Florida Grower's Exchange, as well as, other industry sponsors is greatly appreciated.

TABLE OF CONTENTS

University of Florida Potato Variety Program Team.....	3
USDA, University, and Industry Cooperators	4
Chapter 1. Introduction.....	5
Figure 1. Potato Variety Program Evaluation Flowchart	7
Table 1. Plant Growth Characteristics	8
Table 2. External and Internal Potato Tuber Characteristics	9
<i>Table Stock Trials</i>	
Chapter 2. Early-line Fresh Market Potato Variety Trial	11
Chapter 3. White-Skinned Fresh Market Potato Variety Trial.....	23
Chapter 4. Red and Purple-Skinned Fresh Market Potato Variety Trial.....	31
Chapter 5. Russet-Skinned Fresh Market Potato Variety Trial.....	43
Chapter 6. Statewide Red-Skinned Potato Variety Trial.....	49
Chapter 7. HZPC Americas Corporation Variety Trial.....	59
<i>Chip Stock Trials</i>	
Chapter 8. Early-line Chip Potato Variety Trial.....	71
Chapter 9. Chipping Potato Variety Trial.....	83
Chapter 10. Snack Food Association Potato Variety Trial.....	91
<i>Regional Trials</i>	
Chapter 11. NE-1014 Regional Project Potato Variety Trial	97
Appendix 1. Potato Season Weather Data for Northeast Florida	109
Appendix 2. Potato Selections Evaluated in 2003	113

UNIVERSITY OF FLORIDA POTATO VARIETY PROGRAM TEAM

University Faculty

Dr. Chad Hutchinson, Program Leader
University of Florida/IFAS
Horticultural Sciences Department
PO Box 110690
1235 Fifield Hall
Gainesville, FL 32611-0690
Telephone: 352-392-1928 Ext. 209
Fax: 352-392-5653
cmhutch@ufl.edu

Dr. Marion White, Co-Leader
University of Florida/IFAS
Mid-Florida REC
2725 Binion Road
Apopka, FL 32703-8503
Telephone: 407-884-2034 Ext. 127
Fax: 407-814-6186
jmwhite@mail.ifas.ufl.edu

County Faculty

Mr. Tom Donovan
St. Johns County Cooperative Extension
3125 Agriculture Center Drive
St. Augustine, FL 32092-0572

Mr. Gene McAvoy
Hendry County Cooperative Extension
P.O. Box 68
Labelle, FL 33975-0068

Mr. Chuck Lippi
Flagler County Extension Director
150 Sawgrass Road
Bunnell, FL 32110-9503

Ms. Teresa Olczyk
Dade County Cooperative Extension
18710 SW 288 St
Homestead, FL 33030-2309

Mr. Edsel Redden
Putnam County Extension Director
111 Yelvington Road Ste 1
East Palatka, FL 32131

Technicians

Mr. Doug Gergela, Biologist
University of Florida /IFAS Horticultural
Sciences Department
P.O. Box 728
9500 Cowpen Branch Road
Hastings, FL 32145
904-692-1792

Ms. Pam Solano, Statistician
University of Florida /IFAS
Horticultural Sciences Department
P.O. Box 728
9500 Cowpen Branch Road
Hastings, FL 32145

Official Potato Variety Information Website

<http://www.potato.ifas.ufl.edu>

USDA, UNIVERSITY, AND INDUSTRY COOPERATORS

USDA

Dr. Kathleen Haynes

USDA Vegetable Laboratory
10300 Baltimore Avenue
Beltsville, MD 20705-2350
Lines marked as USDA

Dr. Richard Novy

USDA/ARS
1693 S 2700 W
ABERDEEN, ID, 83210
Lines marked as USDA-ID

University

Dr. Walter DeYong

Dept. of Plant Breeding
252 Emerson Hall
Cornell University
Ithaca, NY 14853

Dr. David Douches

Dept. of Crop & Soil Sciences
Michigan State University
East Lansing, MI 48824-1325

Dr. Zenaida Ganga

University of Maine
Aroostook Farm
59 Houlton Road
Presque Isle, Maine 04679

Mr. Horia Groza

Rhineland Agric. Research Station
4181 Camp Bryn Afon Road
University of Wisconsin
Rhineland, WI 54501-9562

Dr. Susie Thompson

Department of Plant Sciences
North Dakota State University
Fargo, ND 58105-5051

Industry

HZPC Americas Corporation

Mr. Don Northcott
P.O. Box 905
Cornwall, PEI COA 1HO CAN
902-892-2004

Maine Farmers Exchange

Mr. Todd Bradley
Mr. Bob Sirois
P.O. Box 869
Presque Isle, ME 04769
800-333-1564

North Florida Growers Exchange

Mr. Wayne Smith, President
Hastings, FL 32145

Utz Quality Foods

Mr. Jack Corriere
900 High Street
Hanover, PA 17331

Wise Foods, Incorporated

Mr. Robert Wenrich
228 Raseley Street
Berwick, PA 18603

CHAPTER 1. INTRODUCTION

General Potato Production Information

Potato clones were obtained from university, government, and industry breeding programs. Clones progress through the evaluation program following the track described in the Potato Variety Evaluation Flowchart (Figure 1, page 7).

Potatoes (*Solanum tuberosum* L.) in the Tri-County Agricultural Area (TCAA) around Hastings, Florida are grown in 60-foot wide beds consisting of sixteen rows. Rows are raised with a between row spacing of 40 inches (center to center). A clay layer underlies the topsoil at a depth of three to five feet in the TCAA. The research plots were irrigated with seepage irrigation. In this system, the perched water table depth is managed by water flow into irrigation canals spaced between beds. Potato beds were irrigated continuously over the season except after a rain event.

Variety trials, unless noted, were conducted at the Plant Science Research and Education Center's Hastings Farm in Hastings, FL. The PSREC is part of the University of Florida/IFAS network of research farms located around the state to conduct research on important horticultural crops. The soil at the field site is classified as Ellzey fine sand (sandy, siliceous, hyperthermic Arenic Ochraqualf; sand 90-95%, < 2.5% clay, < 5% silt).

Potatoes were planted following a sorghum/sudan grass summer cover crop (*Sorghum bicolor* (L.) Moench x *S. arundinaceum* (Desv.) Stapf var. SX17, Dekalb). Cover crop was incorporated into the potato beds in September, 2002. Potato beds were fumigated with 1,3-dichloropropene (Telone II, 6 g/A) in mid December 2002. Potato seed pieces were dusted with fungicide (Maxim MZ) prior to planting. Aldicarb (Temik, 20 lb/A) was applied at planting. Metribuzin (Sencor, 20 oz/A) was broadcast at hilling. Fungicides were applied on a schedule based on IPM practices. Variety plots were vine-killed by chemical desiccation with diquat (Reglone, 2 pts/A).

Fertilizer (14-2-12 granular) was incorporated into the beds prior to planting. Two side dress fertilizer (14-0-12, granular) applications were made in all trials except the Snack Food Association, Frito-Lay, and HZPC trials during the season on February 25, 2003 and March 13, 2003 following the protocol listed for each trial. The Snack Food Association and HZPC trials received a single fertilizer (14-0-12) side dress on March 13, 2003.

Potato seed pieces were hand cut (approx. 2.5 oz) and planted with a carousel planter on a 8-inch within row spacing unless otherwise noted. Plant growth characteristics were rated during the season following the descriptions listed in Table 1 (page 9). Plant type was rated at full flower approximately 60 days after planting. No growth enhancers or chemicals to enhance skin color were used in any trial unless otherwise noted.

Plots were harvested with a single-row commercial potato harvester. Potatoes were graded using commercial grading equipment. Culls were removed and remaining potatoes were

separated into six size classes and weighed. Specific gravity was measured on a random 20-tuber sample from each plot using the weight-in-air/weight-in-water method. A random sample was rated for external appearance characteristics and cut into eighths to rate for internal quality. Tuber quality characteristics were rated following the descriptions in Table 2 (page 10).

A sub-sample of potatoes from each plot was shipped to Wise Foods, Inc. and Utz Quality Foods and chipped within 48 hr of harvest. Chips were prepared and rated following procedures outlined in the Snack Food Association Chipping Potato Handbook (1995). Wise chip scores are presented. Chip reference values are as follows: 1 = outstanding, no blemishes or color variations; 2 = very good, minimal blemishes and color variations; 3 = good, acceptable blemishes and color variations; 4 = marginal acceptance, high levels of blemishes and color variation; 5 = not acceptable, high blemish and/or color variation levels.

Seasonal Weather and Growing Conditions

Weather conditions were less than ideal during the 2003 potato season (Appendix 1; Tables 38 and 39). March was extremely wet in the TCAA. The research station was spared the majority of the rainfall. However, the amount of rainfall early in the season qualified the station to apply 30 lb N/acre above the 200 lb N/acre BMP rate to make-up for potential leaching.

Late April, May, and early June were hot. The early season stress from heavy rain and no nitrogen (leaching) combined with the high temperatures late in the season impaired crop quality. Internal heat necrosis (IHN) was a severe problem for area farmers. The incidence of IHN was higher than normal on the research farm. The problem was especially a problem for local growers if potatoes were held over 95 to 100 days.

Overall, weather conditions were poor (2), fertilization practices were good (4), irrigation practices were good (4), and pest incidence was light (4) for all trials at the PSREU, Hastings Farm. Therefore, overall growing conditions for the trial were good (4) following the published growing season rating scale (Simonne, 1999; Osborne and Simonne, 2002).

Production

Two production practices were changed for the 2003 season that influenced reported production numbers at the Hastings Farm. In past seasons, seed pieces in all potato variety trials were spaced at a 12-inch in-row spacing. In 2003, the spacing was changed to an 8-inch in-row spacing to more closely match production practices of regional growers.

In addition, at harvest, an extra size class was collected that has not been collected in the past. A new “C” class has been added for potatoes 0.5 to 1.5 inches. “B” potatoes are now sized between 1.5 to 1 7/8 inches.

FIGURE 1. POTATO VARIETY PROGRAM EVALUATION FLOWCHART

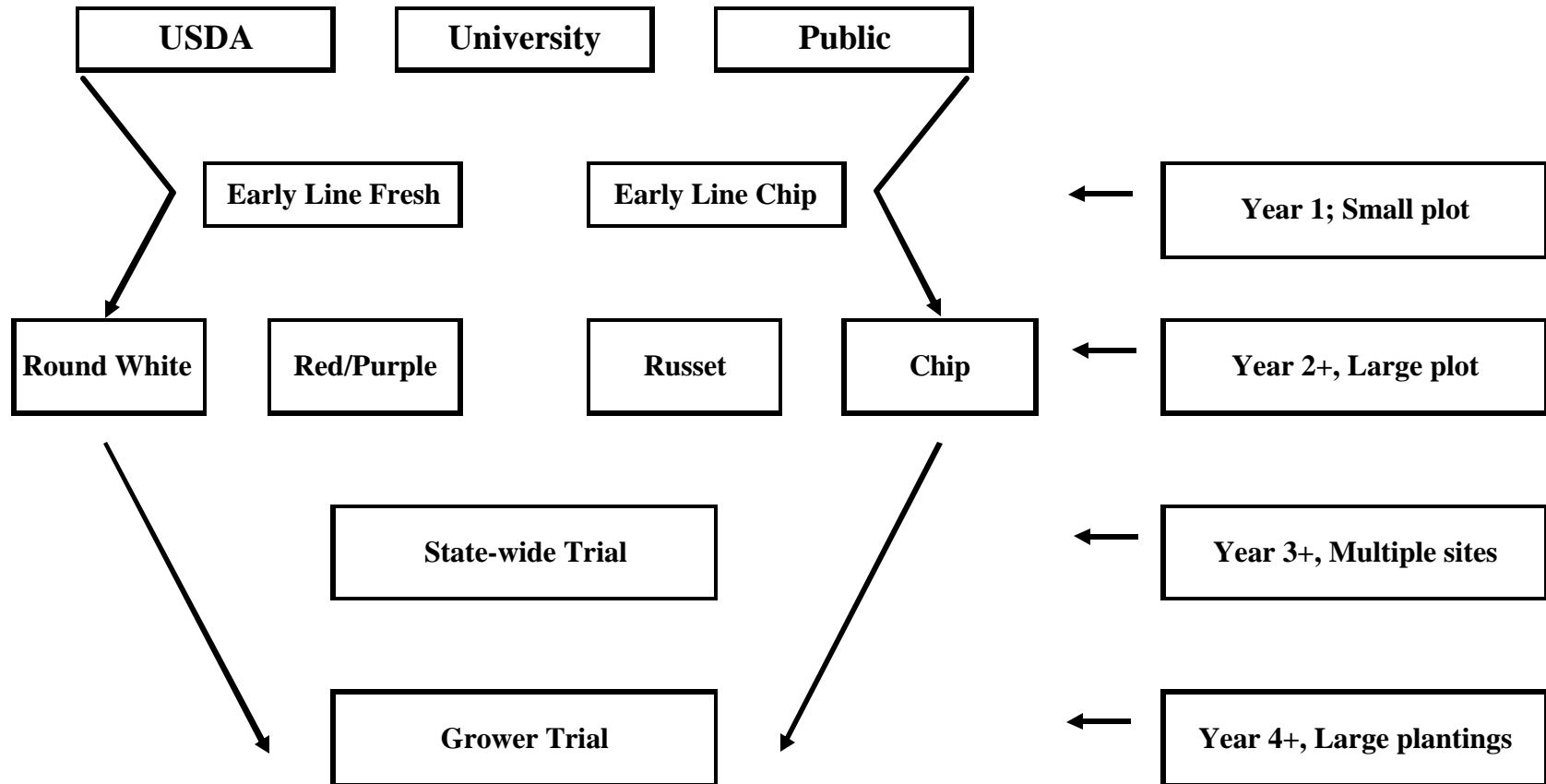


TABLE 1. PLANT GROWTH CHARACTERISTICS

Rating	Early Vigor (plant height)	Vine Type	Vine Maturity at Harvest/Vine Kill
1	no emergence	decumbent – poor	dead
2	leaves in rosette	decumbent – fair	+–
3	plants < 2 in	decumbent – good	yellow and dying
4	plants 2 to 4 in	spreading – poor	+–
5	plants 4 to 6 in	spreading – fair	moderately senesced
6	plants 6 to 8 in	spreading – good	+–
7	plants 8 to 10 in	upright – poor	starting to senesce
8	plants 10 to 12 in	upright – fair	+–
9	plants > 12 in	upright – good	green and vigorous

Adapted from Sisson and Porter, 2002.

TABLE 2. INTERNAL AND EXTERNAL POTATO TUBER CHARACTERISTICS

	Internal	Skin	Skin	Tuber	Eye	Overall
Rating	Flesh Color	Color	Texture	Shape	Depth	Appearance
1	White	Purple	Partial Russet	Round	Very Deep	Very Poor
2	Cream	Red	Heavy Russet	Mostly Round	+-	+-
3	Light Yellow	Pink	Mod. Russet	Round to Oblong	Deep	Poor
4	Medium Yellow	Dark Brown	Light Russet	Mostly Oblong	+-	+-
5	Dark Yellow	Brown	Netted	Oblong	Intermediate	Fair
6	Pink	Tan	Slightly Netted	Oblong to Long	+-	+-
7	Red	Buff	Mod. Smooth	Mostly Long	Shallow	Good
8	Blue	White	Smooth	Long	+-	+-
9	Purple	Cream	Very Smooth	Cylindrical	Very Shallow	Excellent

Adapted from Sisson and Porter, 2002.

