AGRICULTURAL EXTENSION SERVICE
UNIVERSITY OF MINNESOTA

HORTICULTURE FACT SHEET
No. 4—Revised 1978

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Potato Variety Demonstration Plots, Minnesota, 1977

Growing potato varieties in demonstration plantings in the important producing areas of Minnesota has been custom the past several years. The purpose is to familiarize the grower with new varieties and to assist in evaluating the varieties to grow.

Due to a shortage of healthy seed stocks only one demonstration was conducted in 1977. This plot was located in the irrigated sandland area of Sherburne County on the Edling Brothers farm at Clear Lake. The plot consisted of 23 varieties and numbered selections planted in 20 hill rows and replicated twice. Seed pieces were approximately 2 ounces in size and were spaced 12 inches apart in the row. The plot was planted April 27, 1977. An application of 200 pounds per acre of Sul-po-mag and 200 pounds per acre of 0-0-60 was broadcast to the plot area the fall of 1976. An application of 800 pounds per acre of 8-16-16 Potato Special was banded with the planter. A side dressing of 100 pounds per acre of 41-0-0 was made at the first cultivation.

The plot was harvested September 21, 1977. Potatoes from the entire planting were weighed and graded for size with a 2-inch screen. Specific gravity was determined immediately by the hydrometer method. Table 1 reports the performance of the varieties and numbered selections. Table 2 gives the 2-year average (1976-77) of the cultivars observed at Clear Lake.

The fourth column specific gravity designation in the table is a measure of the total dry matter content of the potato. It refers chiefly to the texture of mealiness that can be expected when the potatoes are cooked. Potatoes for chipping and baking should have a specific gravity over 1.080 or a dry matter over 20 percent. Dry matter as determined by specific gravity is only one measure of cooking quality, but it is used universally by both growers and processors of potatoes to indicate internal quality. Dry matter will vary with variety, soil type, season moisture, fertilization, pest control, and maturity. The chart below presents a classification of dry matter in relationship to cooking quality and processing.

Chart 1. Classification of dry matter in relationship to cooking quality and processing

Specific gravity	Percent dry matter	Texture	Best use
Below 1.060	Less than 16	Very soggy	Good pan friers and salads, fair boilers
1.061-1.070	16 to 18	Soggy	Good pan friers and salads, fair boilers
1.071-1.080	18 to 20	Waxy	Good boilers and mashers
1.081-1.090	20 to 22	Mealy	Good bakers, mashers, chippers, French friers
Above 1.090	22 to 24	Very mealy	Good bakers, chippers, French friers

SELECTIONS OBSERVED IN 1977

In addition to the varieties mentioned in Horticulture Fact Sheet 7, "Descriptions of Potato Varieties," these numbered selections were observed in 1977.

Id. 6334-20—a very promising sister seedling to Targhee from Idaho. Tubers have high scab resistance and some resistance to Verticillium wilt. It appears to have better uniform type than Targhee and Russet Burbank. It has rated high as a long attractive russet potato with excellent quality in Minnesota plots.

W 230-14—a russet selection with long, but somewhat rounded shape. Netting is excellent, but tuber type is not as uniform.

W 245-2—a russet selection with a lighter netting and very attractive appearance. A definite improvement over Russet Burbank. Very uniform in size and shape.

W 284-1—an excellent russet selection with resistance to scab, leaf roll, late blight and Verticillium wilt. Tubers are long and thick with a heavy netted skin. Specific gravity is generally high. No hollow heart observed. Tubers are not as uniform in type in Minnesota trials.

W 284-5—a round to oval selection with a heavy russeted skin, but irregular in shape and size.

W 285-3—a russet selection with variable netting and shape. It appears to be rounder and flatter, but still attractive.

W 285-18—a very attractive russet skin selection. Tubers are flat, oblong, and very uniform in type.

W 285-83—a new russet selection with oblong and blocky tubers. Not as uniform and attractive as other selections.

WC 316-1—a russet selection that is fairly uniform in tuber type and good netted skin. Tubers appear to be somewhat wider than Russet Burbank.

WC 330-1—another new selection with a good russeted skin and more uniform than Russet Burbank.

WC 420-1—a new selection with excellent tuber type and uniformity.

WC 541-2—a new russet selection with good yield, but poor uniformity of type.

Table 1. Potato variety demonstration planting, Clear Lake, Minnesota, 1977

Variety	Total yield per acre	U.S. No. 1 size	Specific gravity	Dry matter	Rating*
	cwt	%		%	
Anoka	597	92	1.064	16.2	2.0
Chieftain	588	99	1.061	15.6	1.5
Atlantic	562	95	1.081	19.9	3.0
W 541-2	534	97	1.056	14.5	3.0
Norland	522	95	1.055	14.3	2.0
Bison	507	94	1.060	15.4	1.5
Russet Burbank	477	89	1.072	18.0	2.5
W 284-1	467	90	1.064	16.2	2.8
W 285-83	447	91	1.059	15.2	3.0
W 230-14	446	92	1.065	16.5	3.0
Nampa	432	91	1.082	20.1	2.0
Norgold	409	88	1.062	15.8	2.0
I 6334-20	406	93	1.071	17.7	2.0
W 330-1	396	94	1.055	14.3	2.5
Targhee	393	89	1.065	16.5	2.0
WC 420-1	383	87	1.060	15.4	2.0
W 245-2	369	78	1.074	18.4	2.0
Bake King	339	95	1.075	18.6	2.0
W 285-3	335	91	1.071	17.7	3.0
W 284-5	324	81	1.061	15.6	3.0
Centennial	304	93	1.064	16.2	2.5
WC 316-1	289	93	1.059	15.2	2.0
W 285-18	231	78	1.064	16.2	2.0
Average	424	91	1.065	16.5	2.3

*The ratings of the varieties were made at harvest and based on the following scale: 1 = excellent; 2 = good; 3 = fair; 4 = poor; and 5 = very poor.

Cooperator: Edling Bros., Rt. 1, Clear Lake, grower; Glen Ertel, Sherburne County, Elk River, county extension agent; Curtis Klint, Anoka, area extension agent, Soils.
Planted: April 27, 1977.
Harvested: September 21, 1977.
Spacing: 12 inch hills, 36 inch rows.
Fertilizer: 200 lbs. Sul-po-mag broadcast fall of 1976; 200 lbs. 0-0-60 broadcast fall of 1976; 1,000 lbs. 8-16-16 Potato Spec. banded with planter; and 100 lbs. 41-0-0 side-dressed at first cultivation.
Spraying: Manzate + Thiodan — 5 applications by helicopter.
Irrigations: Every 4 days — 7 applications.
Vines killed: August 19, natural death.

Table 2. Two-year average of potato variety demonstration planting, Clear Lake, Minnesota, 1976-1977

Variety	Total yield per acre	U.S. No. 1 size	Specific gravity	Dry matter	Rating*
	cwt	%		%	
Chieftain	636	98	1.064	16.2	1.8
Anoka	606	92	1.066	16.7	1.8
W 541-2	588	96	1.058	15.0	3.0
**Atlantic	562	95	1.081	19.9	3.0
W 284-1	537	92	1.068	17.1	2.6
Norland	534	88	1.052	13.7	2.2
Bison	530	94	1.062	15.8	1.8
Russet Burbank	512	90	1.074	18.4	2.2
Nampa	499	90	1.082	20.1	2.0
WC 230-14	476	93	1.064	16.2	2.5
Norgold	474	90	1.063	16.0	2.2
***ND 8947-2	458	93	1.058	15.0	3.0
Id 6334-20	450	94	1.072	18.0	2.0
W 285-3	446	92	1.066	16.7	2.5
W 330-1	442	88	1.059	15.2	1.8
Targhee	432	90	1.070	17.5	2.0
WC 420-1	429	88	1.064	16.2	1.5
W 245-2	426	82	1.072	18.0	1.5
***Nooksack	422	94	1.084	20.5	3.0
W 285-83	412	92	1.072	18.0	2.5
W 284-5	376	86	1.060	15.4	2.8
WC 316-1	370	94	1.061	15.6	1.5
Centennial	360	94	1.068	17.1	2.5
W 285-18	344	86	1.072	18.0	2.8
*Bake King	339	95	1.075	18.6	2.0
Average	466	91	1.067	16.9	2.3

*The ratings of the varieties were made at harvest and based on the following scale: 1 = excellent; 2 = good; 3 = fair; 4 = poor; and 5 = very poor.
**1977 only.
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