

## RESULTS OF THE 1965 POTATO VARIETY TRIAL

R. Kunkel and Norris Holstad

The potato yields in the 1965 variety trial are not as high as might be expected since a frost killed nearly all the foliage about mid September. The premature death of the vines may also have lowered the specific gravity below what it would have been had growth continued until mid October which is normal. Since early frosts do occur occasionally, however, it is good to know what can be expected in an "off" year.

Land History: The land was first planted to irrigated crops in 1961. Corn was planted in 1961 and 1962 and alfalfa was grown in 1963 and 1964. The fall of 1964, the land was irrigated and then rotated to kill the alfalfa. On April 2 and 3, 1965, the land was plowed 9-11 inches deep, disked and rolled. Prior to the potato experiment in 1965, the experimental area had received 10 lbs. of zinc as ZnMnS, 360 lbs./a of nitrogen and 160 lbs./a of  $P_2O_5$ . In the spring of 1965 an additional 10 lbs. of zinc, as ZnMnS, was broadcast and plowed under.

Planting Distances: The rows were 34 inches apart and the plants were spaced 9.2 inches apart in the rows. The press-wheel planter was used to plant the seed 3-1/2 to 4 inches below ground level.

Fertilization: Pelleted triple 16 fertilizer was used to supply nitrogen.  $P_2O_5$  and  $K_2O$  at the rate of 300 lbs./a of each nutrient. The fertilizer was all banded about two inches on each side and two inches below the seed piece at planting time.

Irrigation: The experiment was planted on April 29 and furrowed for irrigation on the same day. A 4 wheel tractor was used for both operations. The furrows between the paired rows were irrigated for 24 hours on May 3. On May 14 the wheel rows were irrigated for 24 hours. June 2 the rows irrigated on May 3 received irrigation water and June 9 the rows irrigated on May 14 received irrigation water. On June 17, half an inch of rain fell and on June 26 the plot was put on a 5 day irrigation rotation with a 24 hour set which was used until September 7 when routine irrigation was stopped for the season. On September 25 and 26, alternate furrows were irrigated for 12 hours until each furrow had received water.

Insect Control: Thiodan dust was applied by airplane on June 21, July 12 and July 27. Thiodan spray was used August 11 and August 21. Kelthane spray was used August 11 and Trithion spray was used August 21.

Disease Control: Dusting sulfur was used on June 21 and July 12 and July 27. Dithane M45 was used on August 11 and August 21.

A spreader-sticker and MH30 were added to the Trithion, Thiodan, Dithane M45 spray mixture applied on August 21.

Harvest: The dead vines were beaten off on October 7 and the potatoes were dug and put into storage on October 8.

The data presented are only part of the story because they are the means of four replications. Sometimes the variations among the replications are of greater importance than the average effect. In many of our studies we not only try to measure what happened but attempt to discover why it happened. For example, why does one variety yield more than another and why does the yield and grade differ in different parts of the same experiment?

Tissue samples have been collected 100 days after planting and analyzed for nitrogen, phosphorus, potassium, magnesium and calcium. It was found that the concentration of these nutrients was no greater in the high yielding varieties than in the low yielding varieties. But it seems reasonable that even though the concentration is the same, the total amount required must be different because the plants of different varieties differ in sizes.

Some varieties have few eyes and therefore larger seed pieces result when the tubers are cut for seed. With the Russet Burbank variety seed pieces 1/2 oz. in size yielded 23 percent less than seed pieces 2 oz. in size. Furthermore, the yield was increased when additional fertilizer was applied to plants from the large size seed pieces but not from the small sized seed pieces.

Adjacent hills of potatoes of the Russet Burbank variety have been found to vary as much as 600 percent. If a perfect stand of plants could be obtained and each plant produced a yield equivalent to that of the higher producing hills total yields over 1200 cwt./a should not be uncommon, especially with some growers already occasionally producing 700 cwt. of potatoes per acre on sizable acreages.

Percentage grade out also is a factor of importance. One plot of Russet Burbank potatoes near the source of water graded 82% No. 1 tubers. The grade out of No. 1's 384 feet down the field was only 45%. In another plot of Russet Burbanks in the variety trial, a plot near the source of water graded 83% No. 1 grade tubers and 384 feet down the field the No. 1 grade out was only 68%. Inadequate water infiltration into the soil at the bottom end of the field appears to have been responsible for the loss in grade.

Variety	Total Yield cwt./A	US No. 1's Pct.	SP GR coded 1.0	Chip <sup>1</sup> Color	Description
A 503-42	923	89	84	5.8	Round, White
Kennebec (Maine)	895	81	87	5.8	Oblong, White
16.55-1	809	92	78	6.0	Round, White
Kennebec (Neb.)	804	81	82	5.0	Oblong, White
A 576-2	798	48	86	7.5	Round, White
Bounty	787	92	83	6.8	Round, Red
W44-3A	775	92	81	7.7	Long, oblong, White
48-1	770	91	81	7.0	Round, oblong, White
B 3876-25	764	92	81	6.8	Round, White
Kennebec (Wash.)	758	87	86	5.5	Oblong, White
White Rose	752	75	87	6.8	Long, White
Ona	741	92	82	7.0	Round, White
A 170-9	730	85	88	6.5	Round, White
77.57-1	718	87	74	7.3	Oblong, White
94.56-2X	713	90	86	5.3	Oval, Red
4.56-9	707	92	74	5.0	Round, White
Russet Burbank(Wash)	701	64	90	6.0	Long, Russet
Russet Burbank(Idaho)	695	76	88	6.5	Long, Russet
B 5023-42	695	85	75	7.3	Round, White
I 5710-10	695	94	76	8.0	Round, Red
B 3620-1	695	91	73	4.5	Round, White
202.57-1	690	90	88	6.8	Round, Red
Penchip	678	90	80	5.5	Round, White
B 4123-10	673	87	76	7.0	Round, White
ND 58991-1	667	80	86	4.5	Round, White
B 5063-3	661	86	88	7.0	Round, Red
247.55-2	661	91	77	6.0	Oblong, White
A 465-11	650	88	92	6.3	Oblong, White
Snowflake	638	90	80	6.8	Round, White
B 3478-45	633	90	77	6.5	Round, White
302.50-5	627	93	82	5.3	Oblong, White
ND 6051-2	621	86	80	6.3	Round, White
Norgold Russet	621	90	76	7.8	Oblong, Russet
Penobscot	621	90	93	6.0	Round, White
99.56-3X	616	91	79	5.8	Oblong, Red
48.57-4	599	88	82	7.0	Oblong, Red
Chinook	598	84	78	6.3	Round, White
Haig	570	87	75	5.3	Oblong, Russet
B 3726-6	553	77	93	6.3	Long, White
93.55-16	547	93	81	6.0	Round, White
156.51-2	547	86	89	5.0	Round, White
96.56-2	467	93	74	6.0	Oblong, Red
24.58-1	359	89	71	7.0	Long, Red
LSD05	131	2.5	7	.4	
LSD01	173	3.3	10	.5	

1. The lower the value, the lighter the chip color. Chip colors of 4, 5 and 6 are acceptable.