

Dakchip, A New Potato Variety

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The potato chip industry has become very important for North Dakota and Minnesota, and in particular for the Red River Valley production area of those states. With potatoes contributing practically all the income from the horticultural crops grown in the Red River Valley, the chip industry has become an important segment for generating or boosting farm income. It is estimated that in 1978, 9 million cwt or 24 per cent of the potatoes grown in the Red River Valley were sold as chipping potatoes. Potatoes ranked 5th in value of North Dakota crops in 1977.

Dakchip was tested and grown under the pedigree number ND8888-2. The selection or clone originated from a cross between Cascade and Norchip. The Norchip variety was developed and named by North Dakota State University in 1968, while the Cascade variety originated from the USDA potato breeding program at Prosser, Washington. The cross resulting in Dakchip was made in 1970 and the seedling was grown in the greenhouse the same year. The seedling tuber was grown in the field at the Langdon Agricultural Experiment Station in 1971, at which time Dakchip was selected from among the 27,000 seedlings.

Dakchip is a round to oblong, white-skinned variety. It is medium late in maturity and has an excellent plant type with a broad, smooth, dark green leaf. The plant is slightly spreading. Vine growth is very uniform and plant vigor is excellent.

Dakchip has moderate resistance to late blight but is susceptible to most viruses and some races of common scab. It does not seem to be very susceptible to blackleg and wilts.

Six year tests for U.S. No. 1 yield at Park River (Table 1) indicate Dakchip yields comparable to Kennebec and higher than Norchip. However, five year tests for U. S. No. 1 at Grand Forks showed Dakchip to out-yield both Kennebec and Norchip (Table 1). Compared to Norchip, Dakchip has a higher total and U. S. No. 1 yield and has much better overall plant growth.

Specific gravity or total solids is a measure of the dry matter or overall quality of a potato variety. A potato variety with high total solids has several important advantages over one with low total solids. For example, a high total solids variety makes a better baking and processing variety and for the chipper it means a higher chip yield and less oil absorption for the processed product. Less energy is also used in removing water when processing a high total solids variety. Norchip's very high total solids is one reason for its popularity with most chip manufacturers. In trials at Park River, a six year test (Table 2) showed Dakchip to be higher in total solids than Kennebec but not as high as Norchip. Similar total solids were obtained in trials at Grand Forks (Table 2).

Table 1. U.S. No. 1 Yield of Dakchip and Two Standard Varieties Grown at Park River and Grand Forks. 1974-1979. (CWT/ACRE)

Variety	1974		1975		1976		1977		1978		1979		Average	
	Park River	Grand Forks	Park River	Grand Forks	Park River	Grand Forks	Park River	Grand Forks	Park River	Grand Forks ^{1/}	Park River	Grand Forks	Park River	Grand Forks
Dakchip	250	190	341	275	213	245	392	329	212	—	258	249	278	258
Kennebec	255	191	390	271	178	225	397	287	308	—	219	201	291	235
Norchip	214	213	382	297	182	216	282	283	238	—	180	176	246	237

^{1/}No data - plot flooded out.

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Table 2. Per Cent Total Solids of Dakchip and Two Standard Varieties Grown at Park River and Grand Forks. 1974-1979.

Variety	1974		1975		1976		1977		1978		1979		Average	
	Park River	Grand Forks	Park River	Grand Forks	Park River	Grand Forks	Park River	Grand Forks	Park River	Grand Forks ^{1/}	Park River	Grand Forks	Park River	Grand Forks
Dakchip	20.1	18.4	22.7	22.0	22.0	22.9	20.3	19.7	19.2	—	22.4	21.4	21.1	20.9
Kennebec	18.4	17.3	20.9	20.7	19.0	21.4	17.1	17.7	19.7	—	22.0	20.9	19.5	19.6
Norchip	21.6	20.1	23.5	23.1	22.2	23.3	21.4	21.4	21.2	—	22.7	22.4	22.1	22.1

^{1/}No data - plot flooded out.

Chip color tests and per cent chip yield are found in Table 3. Chipping tests indicate that Dakchip is quite comparable to Kennebec in chip quality but probably not quite as good as Norchip. To date, Norchip is one of the top chipping varieties grown in the U. S.

Dakchip has a very short rest period and emerges quickly after planting, resulting in good plant stands. In addition to the Midwest, Dakchip seems to be quite well-adapted to the Southern and Southwestern part of the United States.

Limited plantings elsewhere in the United States and Canada indicate Dakchip could have fairly wide adaptability.

In 1979, 164 acres were grown as certified seed in North Dakota and 15 acres were grown in Minnesota. A list of seed growers having certified seed of Dakchip may be obtained by writing to the North Dakota Certified Seed Department, NDSU, Fargo, ND 58105, or the Minnesota State Seed Department, 620 State Office Building, St. Paul, MN 55101.

Table 3. Color Chart Readings^{1/} and Per Cent Recoverable Chip Yield of Dakchip and Two Standard Chipping Varieties Grown at Park River and Grand Forks.^{2/}

Variety	Color Chart				% Chip Yield				Ave.		% Chip Yield	
	1977		1978		1977		1978		Color Chart		Chip Yield	
	Park River	Grand Forks	Park River	Grand Forks	Park River	Grand Forks	Park River	Grand Forks	Park River	Grand Forks	Park River	Grand Forks
Dakchip	5.5	6.5	6.5	6.3	36.7	34.2	38.0	35.5	6.0	6.4	37.7	34.9
Kennebec	4.0	6.0	5.0	6.2	34.5	30.5	31.5	31.0	4.5	6.1	33.0	30.8
Norchip	6.0	4.0	5.0	5.0	38.5	32.7	34.5	36.0	5.5	4.5	36.5	34.4

^{1/}PCI Color Chart (1 = very white; 10 = very dark)

^{2/}Grown in replicated variety trials in 1976 and 1977.