



# Extension Extra

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## Buckwheat A Minor Crop in South Dakota

by Robert Hall, Extension Agronomist-Crops,  
and Clair Stymiest, Extension Agronomist-Crops

Buckwheat is primarily an emergency crop in South Dakota; in some cases it is a catch crop or full season crop in Minnesota, North Dakota, and Manitoba. Buckwheat probably originated in China; it was first introduced to the United States by Dutch colonists in the Hudson River Valley in the early 1600's.

Buckwheat yields less food and feed than other grain crops and, because of its unique flavor, is not readily accepted as a food in the American diet. Consequently, agronomic research in buckwheat has been limited. Present varieties have about the same yield capacity and lodging resistance as those the pioneers planted.

New markets in Japan and an increased use of buckwheat for its grain fiber and protein content in the United States have resulted in better markets in recent times. Potential buckwheat producers are cautioned that not all local elevators handle buckwheat. Have a market outlet lined up before planting.

**Adaption:** Buckwheat is a tap-rooted plant that grows better under a wider range of soil conditions than most other grain crops. It does best in well-drained sandy loam soil but will often grow well on heavier soils when seeding is delayed as a result of wet conditions. It is prone to lodging resulting from high winds or heavy rainfall and does not recover from lodging as well as other crops.

Buckwheat is planted later than other crops because it is very sensitive to frost and it is a very poor weed competitor when planted early. In South Dakota, buckwheat will generally mature within 75 to 80 days after planting.

Buckwheat usually produces more per acre on low fertility soils but less per acre on fertile soils than other small grains. Adequate soil moisture is critical to buckwheat throughout early July and August when the plants are producing both flowers and seed. Low soil moisture and hot winds at this time may cause drastic reductions in yield.

**Varieties:** Buckwheat is cross-pollinated. Therefore, variety designations will vary and may not be valid except for certified seed lots. Buckwheat flowers are self-sterile, bees and other insects help in pollination. Certified seed of the varieties Mancan, Manor and Giant American are available in South Dakota (Table 1).

**Seedbed Preparation:** A well-prepared and firm seedbed, free of weeds, is critical for buckwheat establishment. Late seeding insures against frost-killing and permits cultivation for weed control before seeding. The firm seedbed aids in fast plant emergence, which in turn allows the crop to be competitive with weeds. Presently, there are no herbicides cleared for weed control in buckwheat.

**Seeding Date:** Seeding must be delayed until there is no danger of spring frost, but must be completed at least 12 weeks before danger of the first killing frost in the fall. Buckwheat germinates within a soil temperature range of 45° to 105° with an optimum soil temperature of 80° F. An early seeding date of June 15 and a latest seeding date of July 10 is suggested.

**Seeding Depth and Rate:** Buckwheat is generally sown with a grain drill in rows 6 to 7 inches apart. It can also be broadcast if it is covered with soil by spike-tooth, coil-spring or disk harrowing depending on seedbed firmness. The crop should be seeded at a depth of 1 inch but not deeper than 2 inches. A seeding rate of 40 lbs/acre (small seeded varieties) to 50 lbs/acre (large seeded varieties) is recommended.

**Fertilizer:** Buckwheat is a heavy user of phosphate and a light user of nitrogen. The University of Minnesota Soil Testing Laboratory groups buckwheat with oats and barley in its nitrogen, phosphorus, and potash recommendations. Their recommendations range from 0 to 60 lbs/acre each for N, P<sub>2</sub>O<sub>5</sub> and K<sub>2</sub>O. Avoid using higher N rates or the crop may lodge. Fertilizer should be either broadcast or placed in bands away from the seed. Direct contact between banded fertilizer and seed will often result in a substantial reduction in seedling emergence.

**Harvesting:** Buckwheat exhibits indeterminate growth: flowers will be blooming near the top of the plant when ripe seeds are already present on the lower branches. Timely harvest is critical in buckwheat if pre-

harvest shattering is to be avoided. The optimum harvest time is when the plant has a large number of developed seeds and 75% of them are brown or black.

The crop may be direct combined following a frost or if the crop is sufficiently dry. Otherwise, windrowing is necessary; some ripening of immature seeds will occur in the windrow. Shattering loss may be minimized by windrowing when dew is present in the early morning.

A moisture content of 16% is considered safe for storage. If mechanical drying is necessary a maximum drying temperature of 110° F is recommended.

**Use in Rotation:** Planting buckwheat on summer fallow or legume stubble (like beans) is ideal. Seeding fields following wheat, barley, oat or small seeded legumes may pose contamination problems unless adequate tillage has minimized volunteer establishment of these crops in the buckwheat seedbed. Buckwheat following corn is risky if atrazine was on the corn. Buckwheat is extremely sensitive to residual atrazine.

The easily shattered buckwheat seed may cause volunteer buckwheat problems in subsequent crops. Buckwheat also leaves the soil loose and subject to erosion and is a heavy feeder of phosphorus, which needs to be considered when fertilizing the crop following.

**Yield:** Presently there is no buckwheat yield data available from South Dakota. Yield data from Minnesota and North Dakota are included in Tables 2 and 3.

Table 1. Descriptive characteristics of some buckwheat varieties available in the Dakotas and Minnesota

Variety	Origin-Yr.	Yield Potential	Test Wt. Potential	Seed Size	Market Acceptability
Giant American	--	high	low	large	--
Mancan	Canada-'74	high	low	large	good
Manor	Canada-'80	high	low	large	good
Pennquad*	Penn.-'66	low	low	v. large	--
Royal	Windsor Grain Co. Mpls, MN-'82	high	low	large	good
Tempest**	Canada-'71	low	high	small	--
Tokyo	Canada-'55	high	high	medium	--

\* Good lodging resistance, \*\* Poor lodging resistance

Table 2. Yield and characteristics of four buckwheat varieties grown at five locations in Minnesota

Variety	Seed Yield Lb/A				Average	Test Weight (lbs/bu)	Height (in)	Days to flowers
	Becker 1979-82	Rosemount 1980-82	Grand Rapids 1980-82	Lamberton 1982				
Mancan	1311	1131	478	1224	1027	44.2	43	31
Manor	1363	1188	496	1502	1082	44.9	43	31
Royal <sup>2</sup>	1341	1267	431	1632	1099	44.4	41	30
Tokyo <sup>3</sup>	1292	1160	415	1125	1002	47.4	39	28
LSD 5%	123	104	198	751	97			

<sup>2</sup>= 1982    <sup>3</sup>= 1981-82

Table 3. Yield and characteristics of four buckwheat varieties grown at four locations in North Dakota

Variety	Seed Yield, lb/A				Test weight (lb/bu)	Average Height (in)	Days to flower
	Fargo 1979	Langdon 1978-79	Minot 1979	Williston 1979			
Mancan	701	799	638	694	42	32	37
Tempest	690	763	713	595	43	33	36
Tokyo	879	804	810	728	45	31	36

References

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