

AGRICULTURAL GUIDE

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Buckwheat

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Buckwheat is an "old" crop that periodically receives attention as an emergency short-season summer crop or as a second crop in some specialized crop rotations. This guide provides some background information for those interested in its production or use. Recommendations on production are limited because buckwheat has not been evaluated extensively in Missouri.

Biology

Buckwheat is a grain crop but not a true cereal. It is a member of the Polygonaceae family, which includes common weeds such as smartweed, dock and sorrell. There are several species of buckwheat, the most common is *Fagopyrum sagittatum* (Gilib).

Buckwheat is a herbaceous, erect annual that grows to 2 to 3 feet. The plant has a predominant single main stem that usually has branches. The stem is succulent, becomes hollow and changes from green to reddish-brown near maturity. Buckwheat is an indeterminate species and acts like northern soybeans in response to photoperiod.

The flowers are white and are normally densely clustered at the end of short branches in the axils of triangular leaves (see photo). The flowers are self-incompatible and must be cross-fertilized by bees or wind. The seed is pyramid-shaped, with slight rounding and bulging near the base. Seed has a dark-brown to black, sometimes mottled, hull that surrounds a white endosperm (see photo).

The roots of buckwheat consist of a short tap root with branched lateral roots. The root system is small and represents less than 5 percent of the total dry weight of the plant. With this shallow root system, the plant is susceptible to lodging and drought.

Uses

Buckwheat has a variety of uses. It is used for human consumption, most often as buckwheat flour for pancakes. Some buckwheat is also used to produce cereal. Buckwheat is exported to Far East nations like Japan to make food products.

As a feed for livestock, buckwheat has 90-95 percent



Buckwheat (above) and buckwheat seed (above left).

of the feeding value of oats. It has one of the highest biological values of proteins in the plant kingdom, and in protein quality, similar to nonfat milk solids and dried whole eggs. Buckwheat is high in the amino acid lysine compared to other common grain crops. Because of this characteristic, it makes an excellent component in poultry and other livestock rations. By itself, however, it is considered a low value feed because of the high fiber content of the hulls. Humans and livestock with light-colored skin can develop a rash if exposed to significant periods of sunlight after consuming large amounts of buckwheat.

Buckwheat also makes a good crop for honey production. Buckwheat honey is dark, has a distinct flavor and is sought by connoisseurs of honey. Buckwheat provides good nectar flow following cool, late-summer nights when many other plants are not producing pollen, allowing bees to concentrate on buckwheat areas.

Buckwheat also makes a good green manure crop or smother crop and acts as a soil renovator. Its quick growth often smothers out many weeds. Buckwheat

grows well under poor soil conditions and can loosen soil to make it more friable. Buckwheat is used in Missouri and other states as a feed and cover for wildlife, because it grows throughout the summer producing and shattering seed.

Planting

Buckwheat is best planted in a firm seedbed, like that developed for small grains. Although buckwheat can germinate under dry soil conditions, best stands result from planting in moist, warm seedbeds. Buckwheat is susceptible to frost, both in the early growth stages and the later growth stages, so you should plant it well after any danger of frost has passed in the spring and so that it matures ahead of any potential frost in the fall. In Missouri, the best time for seeding appears to be in mid-to-late July or early August, if adequate moisture is available for germination.

In Missouri, buckwheat matures in eight to 10 weeks and a planting date in July or early August would result in harvest in mid-to-late September or early October, just before any normal killing frost. You can seed buckwheat earlier, but its susceptibility to the drought and the effect of heat and drought stress on flowering makes this practice risky. Buckwheat is normally sown with a grain drill at approximately 40 to 50 pounds of pure live seed per acre. Higher rates cause lodging. Although the flowers are cross-pollinated, you can save seed for planting the following season. Seed more than one year old loses viability rapidly. Seeding depth should be about an inch.

Variety selection

Production and variety testing of buckwheat has not been conducted in Missouri. Most varieties are obtained from Canada or from the eastern United States. The most popular variety in the northern United States and Canada is Mancan. Other varieties are Manor, Windsor Royal, Pennquad and Tokyo. A variety known as "common" is sold mainly for wildlife feed. It is a mixture of varieties and species, and while it is adequate for general cover, it does not serve well for grain production. Avoid the old "tartary" type of buckwheat, as it is not a good grain or honey type.

Fertilization

Buckwheat has an excellent ability to scavenge nutrients from the soil. It needs little nitrogen to produce good yields. In fact, if nitrogen levels are too high, lodging can become a serious problem.

Good levels of phosphate are necessary. The rates recommended for small grains are appropriate for a good buckwheat crop. Buckwheat, however, is a good feeder of phosphate that is bound in the soil, resulting in turnover into the organic form.

When a soil test indicates fertility at maintenance levels or above, it is probably not economical to fertilize with any commercial fertilizers. Use of manures often causes serious lodging. Buckwheat tolerates acidic soils, although it will respond to liming.

Pest control

Buckwheat suffers relatively little from diseases or insects. Because it is fast-growing, it generally outgrows most weeds that may emerge after planting. There are no herbicides labeled in the United States for control of weeds in buckwheat. Buckwheat is sensitive to most common herbicides, so you must consider herbicide use on the prior crop. Planting in a clean seedbed on fields with good drainage should eliminate most of the problems from weeds or other pests. Perhaps the biggest pests are wildlife, which often enjoy roaming through buckwheat fields and feeding before harvest. Avoid small fields surrounded by wooded areas where deer or birds are prevalent, unless you want buckwheat for wildlife feed.

Harvesting

Buckwheat continues to produce seed while the first seed set is drying. Shattering is a common problem. Because of this, it is best to cut and swathe buckwheat when about 80 percent of the seeds on the main stem has turned a mature dark-brown to black. If you want to direct-combine, do so when about 90 to 95 percent of the seeds on the stem have turned the mature color and less than 10 percent have shattered. You must follow direct combining with air or low-temperature drying (never above 110 degrees F) to dry down any high-moisture or green seeds. If you don't dry them, they'll mold and create heat in storage. During combining, take care to keep cracking of the hulls to a minimum because cracking affects quality. Buckwheat can be stored safely up to 16 percent moisture content. Because extensive tests have not been conducted in Missouri, the potential yield of buckwheat is not known. The limited trials conducted near Columbia suggest yields in the range of 500 to 1,300 pounds per acre could be expected.

Marketing

There are no standard markets for buckwheat in Missouri. Some producers sell small amounts to wildlife concerns or to health food stores. Commercial markets do exist in Minnesota and the Dakotas and in the eastern states. You must market buckwheat for the commercial market in the year it is produced, so most buckwheat is sold under contract. Buckwheat is normally sold by the hundredweight and has established market grading factors in some states. Most buckwheat marketed through the commercial channels goes to flour-producing companies or is exported.

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