

# Nepalese buckwheat

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*Maggie Samson*

*Professor Manish N. Raizada*  
*AGR\*2150*

## Product information and benefits to Nepal

### *Product Description*

Buckwheat (*Fagopyrum esculentum*) is an annual fruit and nut plant<sup>[1]</sup> and is thought to have originated in central and western mountain areas of China<sup>[4]</sup>. Buckwheat is not a cereal crop as it is a dicot as opposed to a monocot cereal<sup>[2]</sup>. It is usually assessed among cereals in reports because the seeds serve a similar dietary purpose as cereals<sup>[1]</sup>. In regular growing conditions the plant reaches about 3 feet in height and it has a branching root system with one primary root that reaches deeply into the moist soil<sup>[1]</sup>. Buckwheat has triangular seeds and produces a flower that is usually white, although can also be pink or yellow<sup>[3]</sup>. The seed hull density is less than that of water making the hull easy to remove<sup>[3]</sup>. Buckwheat branches freely as opposed to tillering or producing suckers<sup>[1]</sup> causing a more complete adaption to its environment than other cereal crops<sup>[1]</sup>.

### *Description of where/how the product is grown*

A moist, cool climate is ideal for buckwheat production<sup>[4]</sup> although seed germination is possible in very dry soil<sup>[4]</sup>. Significant heat in the beginning growth stages can be beneficial<sup>[1]</sup>. The buckwheat plant is sensitive to temperature. If exposed to frost the plant can be extremely damaged or killed<sup>[5]</sup> and it is sensitive to hot dry conditions during blooming. It can survive if it is hot during the day and cold in the evenings<sup>[4]</sup>. Because of the sensitivity to frost, seeds should be planted in the vegetable harvest season (after spring-frost period) and harvested before the fall crop (fall-frost period)<sup>[6]</sup>. Buckwheat has a growing period of only 10-12 weeks<sup>[5]</sup> and it can be grown in high latitude or northern areas<sup>[4]</sup> similar to the hillside regions in Nepal. Soils that are well drained and light are best for growth<sup>[1]</sup>. It is able to grow in many different types of soils and can produce a yield in poor soil conditions<sup>[1]</sup>. Buckwheat should not be grown in nutrient rich soils as this can cause lodging<sup>[1]</sup>. The soil does not need to be plowed as it is often grown on poorly prepared land or rocky land that is impossible to prepare<sup>[4]</sup>. Although not necessary, loosening the soil prior to planting provides a greater crop yield<sup>[4]</sup>. Old pasturelands that are no longer producing much grass are an ideal planting area for buckwheat<sup>[4]</sup>. Seeds are able to survive many years in storage<sup>[4]</sup> but yield decreases each year<sup>[4]</sup> so when old seeds are being used their germination should be tested<sup>[4]</sup>.

### *Nutrition Information*

According to the United States Department of Agriculture 100 g of buckwheat contains 343 calories, 3.4 g of fat, 72 g of total carbohydrates with 10 g of this as Dietary Fiber, and 13 g of protein<sup>[7]</sup>. The high protein content is one of the most important features of the crop as buckwheat flour has significantly higher protein

levels than many other types of flour though, for example oat flour is higher four □□h□□h [3]. Buckwheat is rich in the amino acid lysine<sup>[3]</sup>, which is often deficient in other cereal crops<sup>[5]</sup>. Although buckwheat is a good source of nutrients it has been shown to have low digestability<sup>[2]</sup>, which may be improved by malting<sup>[2]</sup>.

### *Agronomic Issues*

Due to buckwheat's very quick growing period it is often unaffected by weeds and disease. The quick growing seedlings are strong and compete with the weeds for the land, usually smothering them<sup>[5]</sup>. This smothering of weeds is one of the major benefits to the production of buckwheat. Buckwheat is able to suppress summer weeds<sup>[6]</sup> as well as reduce perennial weeds<sup>[6]</sup>. This crop is often used for cleaning out weed filled land<sup>[1]</sup>. Buckwheat is also used to revitalize soil as it can grow in poor soil conditions and secretes nutrients through its root system<sup>[6]</sup> as well as when it is plowed under and used as green manure<sup>[4]</sup>. Buckwheat is susceptible to aphids and diseases such as aster yellows and leaf spot disease although these do not cause much loss<sup>[4]</sup>. Many wild bird species enjoy eating the buckwheat seeds<sup>[4]</sup> and this can cause large amounts of loss if not managed.

### *Impacts on Women and Children*

Growing buckwheat in Nepal would have a positive impact on the lives of women in Nepal. Studies have estimated that at least half of all the working farm time is spent weeding<sup>[8]</sup> and that it is the women and children of these farms that are doing this weeding<sup>[8]</sup>. By growing buckwheat the amount of time that must be spent weeding will be dramatically decreased as buckwheat is able to suppress and reduce weeds on its own<sup>[6]</sup>. The amount of time saved by not having to weed will potentially allow for an increase in the quality of life for women and well as increased levels of education for children.

### *Economic Benefits*

Despite being local to Nepal and eaten in staple foods by Nepalese, buckwheat has not been a major export crop, with production of only 10056 tones in 2013<sup>[9]</sup> as compared to the top producers Russia and China which produced 833936 and 733000 tones, respectively<sup>[9]</sup>. The production of buckwheat for export has the potential to bring a new source of income to the hill and mountain regions of Nepal. Buckwheat is also a low cost crop as it does not require large amounts of capital<sup>[1]</sup>; being a relatively low maintenance crop. Buckwheat is also naturally cross-pollinated and the main pollinators are insects<sup>[5]</sup>. Honey bees can be used as pollinators and their honey can be sold on the market<sup>[5]</sup>. This creates another source of income as buckwheat honey is unique and often sought after<sup>[5]</sup>.

### *Practical Information*

In order to avoid erosion of soil after the harvest of buckwheat a fall crop should be planted as to not leave the ground exposed<sup>[4]</sup>. If possible loosening of soil prior to seeding can increase yields<sup>[6]</sup> although only minor amounts of tilling is required because over tilling can be counterproductive<sup>[6]</sup>. The simple process of cleaning the

seeds prior to planting can also increase yields by removing any damaged seeds or other objects such as sticks<sup>[4]</sup>.

## Export Potential

### *Market Demand for Buckwheat in Canada*

The health benefits of buckwheat will result in increased demand by today's health conscious Canadians. According to researchers at the University of Manitoba, buckwheat can be used to help manage diabetes<sup>[10]</sup> creating a possible solution for the 1,964,874 Canadians over the age of 12 living with diabetes<sup>[11]</sup>. Buckwheat is also gluten-free and can be used in many products as a gluten substitute<sup>[10]</sup>. The market for gluten free products is growing exponentially in Canada from consumers wishing to exclude gluten from their diet.

### *Possible Markets for Buckwheat in Canada*

Many Canadian grocery chains are potential importers of buckwheat. The Bulk Barn would be a prime candidate:

Bulk Barn Foods Limited  
Telephone: (905) 726-5000  
Fax: (905) 726-5011

Loblaws, Canada's largest food distributor in another potential importer of buckwheat. :

Loblaws Companies Limited  
Fax: 905-861-2387  
[http://www.loblaws.ca/en\\_CA/community/contact-us.html](http://www.loblaws.ca/en_CA/community/contact-us.html)

### *Business with Canada*

Organizations in Nepal that are registered under The Social Welfare Council Act are able to apply for support from the Canadian Government<sup>[12]</sup>. The Canada Fund for Local Initiatives (CFLI) is a program that offers support to small groups that aid the community through "stimulating sustainable economic growth, increasing food security, creating opportunities for children and youth, advancing democracy and ensuring security and stability" (Government of Canada, 2013)<sup>[12]</sup>. In terms of making trades to Canada it is important to contact the Department of Foreign Affairs for assistance and they can offer a list of Trade Commissioner<sup>[13]</sup>, to contact them call 1 – 800 – 267 – 8376<sup>[13]</sup> as exporting to Canada has many requirements and there may be many costs involved in the process.

## Resources

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