Buckwheat in China

Framework for sustainable livelihoods
Buckwheat (*Fagopyrum* spp.) is a crop native of temperate East Asia, and has been cultivated in China for more than 2000 years. There are two cultivated species: *F. esculentum* Moench (common/sweet buckwheat) and *F. tataricum* (Linn) Gaertn (tartary/bitter buckwheat). Sweet and bitter buckwheat are cultivated under low input conditions and adapted to the marginal lands characterized by harsh environments. Buckwheat seeds and leaves are mainly used for human consumption and animal fodder. Buckwheat foods are a popular choice in China, Japan, North Korea, South Korea, Nepal, Bhutan, Russia, Ukraine, Poland, Slovenia, Austria, Italy, the Netherlands and France. Very tasty food can be produced from buckwheat kernels and flour.

In China, Buckwheat is regarded as a functional food due to its high nutritional and medical values. Buckwheat is very well suited to processing and a large array of products is available in the market. Twelve different brands of healthy food made from bitter buckwheat, which help in lowering sugar and lipids have been approved by the Ministry of Health of China.
Market chain of buckwheat

Buckwheat is largely consumed by the farmers themselves in China. However, considerable quantities are also made available to the local and international markets. The buckwheat market chain is made up of farmers, processors, traders and consumers. The market chain has been realized through two models: the Association Model and the Enterprise-farmer Model. The two models aim to promote production, processing, marketing and contribute to income generation for farmers by adding the values to buckwheat products and linking farmers to markets.

Association model

This model played an important role in linking farmers to markets. A buckwheat association was developed in Shanxi province to promote buckwheat production and industrialization, enhance buckwheat research and the extension of technology to improve buckwheat productivity and quality, and help enterprises to develop new products and markets. The members of the association include buckwheat farmers, scientists, extension workers, and community managers. The Buckwheat Association is actively involved in training farmers in buckwheat cultivation; exchanging technologies; providing market information; introducing varieties, technologies and capital as well as coordinating activities between members and enterprises. Through this association farmers can increase buckwheat productivity and have access to markets in order to sell their products (buckwheat or other underutilized crops) not only in small fairs but also to enterprises. In this way, farmers can generate more income from buckwheat production.

Enterprise-farmer model

This model was established in Liangshan Prefecture, the main production area of bitter buckwheat in southwest of China. Each farmer signed a planting contract with an enterprise to ensure that the buckwheat produced on their farm would be sold at the agreed price, and received technical supports from these enterprises (such as supply of better varieties and technical demonstrations for pest and disease control). Through this model, enterprises secured a sustainable and high quality source of buckwheat grain to the processing industry and the scale of buckwheat planting area was expanded. Such a system led ultimately to an increased income from buckwheat in the country.
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Buckwheat processing and trade

Buckwheat processing characteristics are the best among a number of other underutilized crops. Farmers could increase their income from this crop through processing. There are three main types of processed products: traditional foods, healthy foods and hull products.

Traditional foods

Traditional foods are already available in the market. These products include bitter buckwheat flour, dried noodles, cat’s ears, dumplings, chaomian, and flakes. They are easy to produce and are also durable for transportation. Therefore, these products can be produced by community-run factories and sold in local, national and international markets. There are also different kinds of cakes made from buckwheat flour, for example, braised buckwheat cake and buckwheat-blood cake. These products are mainly produced by food companies in nearby cities and supplied to supermarkets.

Healthy foods

Buckwheat is also used to produce wine and vinegar, which are usually produced by local factories and preferred by local people. Some of these products can be found in city supermarkets. Bitter buckwheat can be processed into different kinds of tea, which are used to treat blood hypertension and lower blood sugar and lipids. It can be processed by mixing with other products such as the Chinese wolfberry fruits (Lycium spp.). There are monopoly companies, retail chain stores, and monopoly counters for bitter buckwheat products in Beijing, Shanghai and other highly developed districts.

Hull products

Buckwheat hull is a by-product of buckwheat milling. In China, buckwheat hull is a traditional filling material for pillows. For a number of years, orthopaedic buckwheat hull pillows have been available in the USA as well. Healers around the world have recommended buckwheat hull pillows for optimum neck support and sound sleep.
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Buckwheat potentiality

High values for healthy and medical products
Buckwheat is an extremely rich source of high quality, easily digestible protein and a high level of essential amino acids. It is also a good source of mineral components and is relatively high in potassium and phosphorus. Buckwheat contains a great deal of more vitamin B than wheat. Besides being gluten free, buckwheat’s chemical composition gives it the potential to lower the symptoms of diabetes and blood pressure, and reduce the cholesterol count. Based on these nutritional and medical functions, 12 different brands of healthy food have been produced by food and medical companies and approved by the Ministry of Health of China.

High rate of input to output for generating income
Buckwheat can generate income from poor soil while maize would need rich soil and high inputs. A survey in Shanxi province in western China showed buckwheat planting has very high returns, the ratio of input/net output is 1:1.54 for buckwheat, 1:1.13 for cash crops, 1:0.57 for coarse grain crops, and 1:0.26 for other crops. Total income from buckwheat is US$ 404.25 ha⁻¹, while total income from field crops (maize, sorghum and millet) is US$ 218.4 ha⁻¹; total income from coarse grains (beans and broom corn millet) is US$ 153.25 ha⁻¹.

Stable international market
The biggest international market for buckwheat is Japan. China is Japan's biggest supplier. Over the six years 1995 - 2000, China has been meeting always more than 80% of Japan's demand for buckwheat. Japan imports 80,000 tonnes buckwheat from China every year. In addition to Japan, China sells also sweet buckwheat to the Netherlands, South Korea, Russia and Cuba.
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The current situation

Although the potential is high, there are a number of obstacles for expanding buckwheat market opportunities and better deploying hence its genetic resources:

- Due to its low productivity compared with some major crops, buckwheat has not been regarded as a staple food for a long time. Its high resistance and nutritional value have not been fully recognised by the government and the public. As a result, funding and policy supports have not been sufficient for its sustainable development and the level of research into buckwheat has remained very low;
- Since it is planted under natural conditions, a shortage of good diversified varieties makes it hard to improve buckwheat’s quality and productivity;
- Usually, buckwheat was planted in marginal soil, in which other crops can not grow well due to these conditions of poor irrigation and low fertility. Extensive cultivation resulted in low productivity, about 750kg ha⁻¹, and poor transportation also limited the expansion of markets;
- Most buckwheat products are raw products or initial processing products. A lack of advanced processing technology has limited value-adding opportunities for meeting market demand;
- Since most buckwheat was sparsely planted in mountainous areas, rather than large-scale cultivation, insufficient supply remains a key issue limiting the path to large firms.

Future focus: improving buckwheat marketing opportunities

The following issues should be addressed to increase market potential:

- Breeding must be encouraged to increase buckwheat quality, productivity, and special characteristics such as nutrition and health;
- More efforts should be focused on developing value-adding opportunities for farmers and enterprises such as advanced processing technology applications;
- Analysis of nutrient and medical composition of buckwheat to develop more diversified products;
- More studies on identification of market development obstacles and strategies to overcome these; establish and improve food quality and hygiene system to increase the capacity for buckwheat export;
- Enhance the public awareness of values of buckwheat such as nutritional, medical, its short season and easy processing;
- The Buckwheat Association at a community level plays an important role in linking farmers to enterprises and markets. More efforts should be made for its extension.
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