

# Walnut Cultivation and Utilization in China

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Walnuts of various species and strains have been widely cultivated in China for more than 2,000 years. Thus, enormous experience in walnut cultivation and utilization has been obtained and a large number of fine varieties rare in the world have been bred.

In China's second general forest survey between 1973 and 1976, a comprehensive investigation of walnut reserves was made throughout the country, and the existence of about a hundred walnut strains was identified. From these more than 20 excellent strains, characterized by early fruiting, high yields, disease resistance and good quality meats, were selected. Another interesting discovery was the location of some perennial trees from 500 to 800 years old which were still growing and bearing luxuriantly.

The northern slope of the Tianshan Mountains in Xinjiang (Sinkiang) is known as the native home of the Chinese walnut. Here a large stretch of primeval wild walnut forests about 1.5 km long and 1.4 km wide was found. This has been of great value to scientific research into the development of the genus. These wild forests have now been designated by the state as a natural preservation zone where scientists can do on-the-spot investigations.

In southern Xinjiang with long growing seasons and abundant heat, several fine fast-growing strains have successfully been bred through artificial selection and propagation. One of them bears fruits within two years after it is sown. The kernels of this walnut are large in size with thin shells and have a high oil content. They are readily released from the shell. This strain has been successfully

introduced in Beijing, Henan, Shandong and many other areas.

In sub-tropical Guangxi, south China, a strain called "paper-like walnut" has been cultivated. Because the shells are only 0.5 mm in thickness, or as thin as a coarse piece of paper, they break easily with a light pinch between the fingers. Meats are sweet and crisp and contain 71% oil.

China had 150 million walnut trees by the end of 1978, and the year's walnut output reached 118,000 tons, surpassing the peak output in 1956.

Beginning in the 1970s, China annually exported about 10,000 tons of walnuts and 5,000 tons of shelled meats to over 20 countries including West Germany, Britain and Canada. Last year, 13,000 tons of walnuts and 5,000 tons of shelled meats were sold abroad. Owing to the growth in domestic consumption, walnut exports have decreased 17% compared with the record year of 1975. In terms of both annual walnut output and export volume, China now ranks second only to the United States of America.

China's per capita walnut output is still rather low, and a far cry from meeting domestic needs. To stimulate walnut production the purchasing price of walnuts has been increased 25% starting this year.

Because of its highly nutritive and medicinal value, the walnut in China is affectionately called a "friend of people's health with every part useful to the body." The medicinal properties of walnuts have been known to the Chinese for over 1,000 years. In his book "on Chinese herbal medicines," Dr. Meng Xi of the Tang Dynasty (618-907) indicated that eating walnuts "helps whet the appetite, pro-

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mote blood circulation and keep the skin delicate."

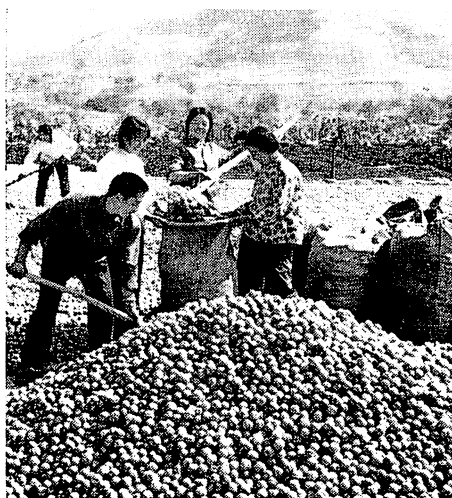
The eminent Chinese pharmacologist Li Shizhen (1518-1593) stressed other medicinal qualities in his "The Compendium of Materia Medica," a well known classic in world pharmacology.

Because of its close texture, hard walnut lumber is great for making railway carriages, furniture and ships. Tannin and dyestuff can be extracted from the bark, roots and exocarps. Active carbon made of walnut shells is used in gas masks.

In most areas of China in the past, walnut trees were propagated from seed with practically no systematic management or over-all planning. This resulted in defective seeds, late fruiting (on the whole a walnut tree doesn't begin to bear fruit until after it is 8-10 years old), poor per-unit yields, unattractive colour, varying size and nuts that were very difficult to separate from the shell. Thus, a lack of scientific research has resulted in slow progress in walnut cultivation. But in recent years, scientists have been working with local peasants to breed and popularize superior varieties.

A highly-prized strain is the "grape walnut" bred on the Yunnan-Guizhou Plateau, a major walnut-growing centre in southwest China. Its name is derived from the fact that it grows in grape-like clusters. Each cluster has about 15 fruits, and each mature tree yields about 100 kg of nuts. Walnuts of this strain have thin shells, plump meats, a fragrant flavour and more than a 60% oil content.

The propagation of saplings by grafting is another method being used in walnut-growing to quicken the harvest yields of the better varieties. Results of experiments started in 1977 at the Shandong Provincial Fruits Research Institute have shown that wal-



Sunning walnuts in a North China village.

nut grafting in hothouses in winter is an effective means of regulating the environment for the control of the excessive flow of sap and for formation of thick bark around the graft.

Tongue grafts were used. Here, two-year-old sapling of a hardy walnut or *pterocarya stenoptera* variety are used as rootstocks while the well-developed twigs of the more specialized walnut strains are used as scions. This method of grafting has enabled bloom and fruit bearing in the same or the following year after being transplanted from the hothouse to the field.

For the most part, Chinese walnuts still are haphazardly planted on mountain slopes, along farm borders or home grounds. However, in recent years, intensive cultivation and the close planting of walnuts have been introduced on selected hillslopes or plains with thick soil and good drainage facilities in such places as Xinjiang, Yunnan, Henan and Hebei. A number of sizeable walnut orchards have been planted to facilitate scientific management, qualitative improvement and quantitative increase.