

NOTES ON ECONOMIC PLANTS

Walnuts among the Shuhi in Shuiluo, eastern Himalayas.—Walnut (*Juglans regia* L.) is an ancient crop plant (1, 2). Its center of diversity is in central Asia (3), whereas its natural distribution stretches from southeastern Europe to western China (4). The species is cultivated throughout its native area and has been introduced worldwide. It is cultivated broadly by different ethnic groups in the Himalayan region (5, 6, 7).

The past ritual significance of walnut is well documented (8, 9); however, the ritual context is lacking. During the course of an ethnobotanical study in the Shuiluo Valley of Sichuan in southwest China, we documented ritual uses of walnuts among the Shuhi, a small Tibeto-Burman ethnic group. The Shuhi live in the subtropical area near the bottom of the Shuiluo Valley (2,000–2,400 meters). They practice subsistence agriculture with crop rotations using wet rice, barley, wheat, and corn as their staple foods. Walnut trees are found mainly around their hamlets and houses (Fig. 1). Each household owns between 10 and 50 walnut trees. To increase yield, the trunks of the walnuts are carved, which is a widely practiced method in Chinese agriculture (10). Since 2003, walnut saplings, together with Sichuan pepper seedlings (*Zanthoxylum bungeanum* Maxim.), have been cultivated outside the villages on steep farmland as a consequence of the government's "Sloping Land Conversion Program" to reduce erosion in the upper reaches of the Yangtze River (11).

Walnut trees often are located around sacred springs where the water god is worshipped (Fig. 2). Such springs belong to one or more households and the trees growing around these water sources are sacred; cutting them would have dire consequences for family members such as illnesses or bad luck. Generally, walnut trees planted around the hamlets are used only for their fruits and leaves, never for timber. The proximity of the trees to the houses in the village not only facilitates their utilization but also moderates microclimates and temperatures, which can exceed 40° C during the summer. Similar cultivation patterns also are found among other ethnic groups in the area.

Traditional use of walnuts. Among the Shuhi, walnut fruits are known as *kara*. The whole tree is called *karabeng* (*beng* means growing) or *karasei* (*sei* means wood or tree). Until recently, walnuts have been the main source for oil. One household in each hamlet runs an oil press that produces walnut oil in September. Presently, however, commercial vegetable oil is used more and more for cooking; walnut oil is mainly produced for the altar lamps.

Walnuts are important for serving guests. They are offered to visitors together with butter tea, tsampa (roasted barley flour), barley wine, or other spirits. In the preparation of butter tea, either walnut mush that has been prepared in a mortar or walnut oil that has been pressed may be used as an additive or substitute for the butter.

In years when the trees have yielded a large crop, walnuts may be sold as a cash crop or bartered in exchange for dairy products or for the ingredients for the preparation of barley wine. Walnuts are often given as gifts, which are valued among other ethnic groups in the area also (12).

Interestingly, the Shuhi use neither the fruits nor other parts of the walnut trees for medicinal purposes, as is the case among other ethnic groups and in Traditional Chinese Medicine (13). Xi and Zhang (9) point out that the health care properties of the walnut are mentioned in ancient Chinese literature, where there is documentation of the use of the kernels against insomnia and duodenitis among other diseases. Beside the dyeing properties of the fruits, there also is mention of the belief that pregnant women who eat walnut kernels will have babies with dark black hair.

Walnut as a ritual plant. Important religious days for the Shuhi are the 10th, 15th, and 25th of each month in the Tibetan calendar. On these days, whole walnut fruits should be burned during the morning ritual (*songdong*) in the ritual burner (*songhui*) on the flat roof of the houses as a food offering to the gods. One household member, preferably the oldest, conducts the *songdong* ritual every morning between 7:30 a.m. and 9:00 a.m. Pine (*Pinus yunnanensis*

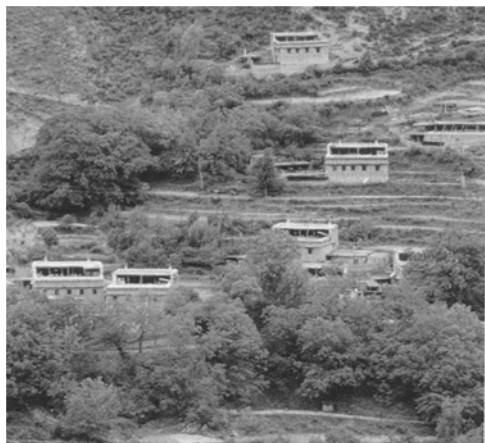


Fig. 1. Walnut grove beside a Shuhi hamlet.

Franch.) or pistachio (*Pistacia weinmannifolia* Poiss. ex Franch.) is burned as incense, tsampa mixed with marigold flowers (*Tagetes erecta* L.) and barley wine is offered, and a conch-shell trumpet is blown three times (Fig. 3). Usually the *songhui* is directed to the most important mountain gods of the region: the three "Gongga Brothers" in the west. Beside the Gongga Mountain gods, up to 12 additional mountain and water gods of the region as well as important lamas are worshiped. The offering is intended to please the deities and to assure their



Fig. 2. Ritual for the water god during Tibetan New Year at the sacred spring in a walnut grove.

support and protection of the village and the house. Burning walnuts on these special days illustrates their cultural importance. These rituals are very old and can be traced back to the foundation of the Bön religion in the Tibetan area (14).

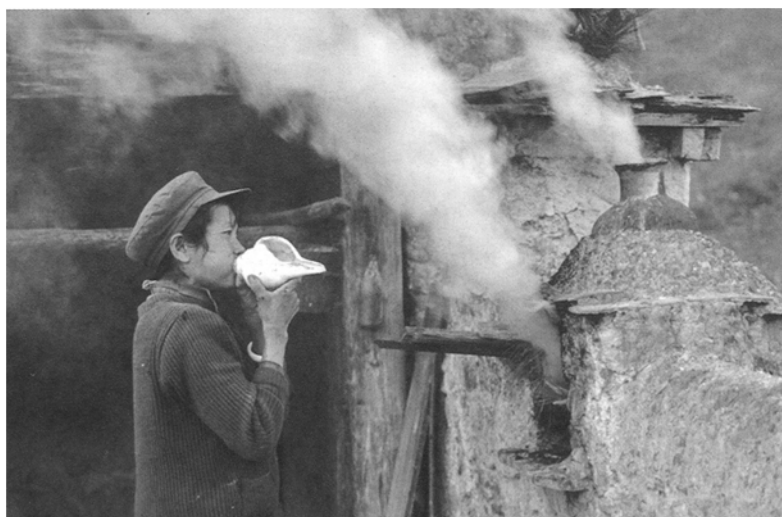


Fig. 3. *Songdong* ritual on the flat roof of the house in the morning. Pine or pistachio are burned for incense purposes, tsampa mixed with marigold flowers and barley wine is offered, and a conch-shell trumpet is blown three times.

Also around the 10th of each Tibetan calendar month, there is a ritual day of prayer that is celebrated in one house in each hamlet. Attended at least by one person from every household, this ritual is conducted by a lamaist lay priest or by a *dumbu*, the traditional ritual specialist of the Shuhi. The ritual might be combined with a fertility ritual for the fields of the household where it takes place. In this case, together with other major crop plants such as rice, barley, and wheat, walnuts are offered to the gods and placed on plates in the storage room.

Instead of conducting the prayer ritual, twice a year the prayer flags near the hamlet gates are replaced. Again, this is combined with a fertility ritual for the whole hamlet, including circumambulation of the hamlet by a procession headed obligatorily by a woman. To facilitate the acceptance of the new prayer flags by the ancestors and the gods, walnut branches together with rhododendron twigs (*Rhododendron trichostomum* Franch.) collected higher up in the mountains, are stuck into the earth around the base of the flagpole.

Walnut leaves also are used for decoration during the spring harvest festival, which takes place at the beginning of May as a celebration of the barley and wheat harvest. The living room and the *tala*, the holy place beyond the hearth, are decorated with walnut leaves. No special reason for the exclusive use of walnut leaves was mentioned except for the color green, which is appreciated by the gods. The importance of the color green and its ability to bring luck has also been reported for the Yi people in northern Yunnan (15).

Furthermore, walnuts together with other crops play a role during *dumbu* rituals against illness and in funeral rites as food for gods, demons, and the soul of the deceased. The same rituals are known among the Naxi and Mosuo (16, 17). If the nuts are offered as food, they might be opened in advance to ease consumption by the deities (Fig. 4).

Cultural importance of walnuts. Although the traditionally produced walnut oil is being replaced by commercial vegetable oil, walnut is still one of the most important crop plants among the Shuhi. This is reflected in its wide use as a ritual plant, food, cash crop, barter, and gift. Results from picture grouping analysis reveal different emic categories for plants among

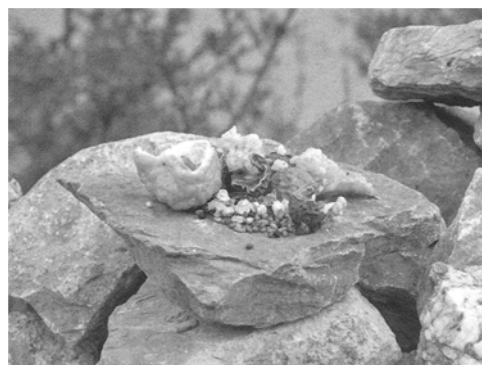


Fig. 4. Food offering to a local mountain god. The walnuts and tangerine are opened to ease consumption by the deity.

the Shuhi, such as “plants that can be eaten” and “plants for worshiping the gods.” These categories do not have distinct Shuhi names but were circumscribed by the informants. Walnut mostly is grouped together with cultivated fruit and crop plants (e.g., barley and wheat), belonging to the “plants that can be eaten” category. It therefore seems that the food use of walnut is predominant. However, as an important food plant, it has to be shared with the gods. Either the fruits are burned together with incense or they are presented together with other crops as food for the gods, demons, and deceased souls. In fertility rituals conducted by ritual specialists, walnut and other crop plants represent the plants whose abundant growth is assured by the ritual, a use also reported for other ethnic groups of the region, such as the Naxi, Mosuo, and Pumi (16, 17). The Yi of the Zixishan region in Yunnan, who consider certain plants as primal ancestors, denominate walnut as one of their benefactors during the development of their society (15). This again points to the cultural importance of walnuts among different Tibeto-Burman ethnic groups.

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“Canastos”: Ethnobotany and the Economic Importance.

The main natural sources for the manufacture of canastos are the stems of four taxa of lianas (woody vines) from the Bignoniaceae family, which grows in the tropical forests of Central America. Pilot studies on the Coto Brus Forest Reserve have demonstrated that if the appropriate resources are properly managed, tropical forests can generate substantial market benefits.

Canasto weaving in Costa Rica became very popular during the 1920s when the coffee industry was at its peak. The basket-weaving tradition is passed down from father to son. Contrary to many other societies, it appears that women have played no role in this process. Young boys accompany their fathers into the forest where they master the identification of lianas.

Ethnobotanical studies in Costa Rica have focused primarily on the medicinal use of forest plants; to date there are few records of other uses of forest vegetation. Among the existing records is the classic work of Pittier (1), which focused entirely on the general uses of plants but does contain the names of common plant species. A few additional ethnobotanical accounts include the works of Ocampo (2, 3, 4), Ocampo and Vargas (5), Williams (6), Camacho-Zamora (7), and Chazdon and Coe (8) among others.

Due to the intricate morphology and anatomy of lianas, our knowledge about them has in-