



WILD PLANT COLLECTION

Although a lot of collected medicinal plants are for subsistence use, the highest volumes are collected for monetary gain. Currently, collection is not organized but driven by middlemen, who are “ordering” certain amounts of plants from the villagers. The collection amount is related negatively to the household income and up to 25% of the household income is generated by the trade of non-timber forest products (NTFPs) in the study site. This is mainly due to the fact that up to now the prices paid to the villagers were low and the price increase along the trading chain was huge without any value addition; e.g. *Asparagus* spp. is worth 117 times more in German pharmacies than in Chinese villages, despite very little additional processing.

TRADE CHAIN

The trade chain was also researched, requesting information on monetary gain from middlemen purchasing from the site, pharmacies in Germany selling TCM products, and other trade chain actors. The plants are sold in pharmacies specialized in Chinese medicinal plants. They are not used in European traditional herbal medicines since none of the species occur in Europe

Sustainable collection of traditional Chinese medicinal plant species in Yunnan Province

BACKGROUND Traditional Chinese Medicine (TCM) is one of the oldest traditional medical systems globally. The majority of plant species used in TCM is still derived from the wild, which has put many species at risk of being overharvested, particularly from destructive collection of roots. This case study aimed to test the sustainability of the wild-collection practices in Xishuangbanna, Dai Autonomous Prefecture in the south of Yunnan Province, P.R. China as well as the impact of collection on local livelihoods. The focus of the study was on five medicinal plant species, which are frequently harvested around five selected villages in Xishuangbanna. The FairWild Standard Principles were used for sustainable wild collection and equitable trade as the framework by which sustainability was assessed. The sustainability was assessed through calculating the amount of plants in the forest and the harvest volumes as well as calculating the time of sustainable harvest. Fieldwork was carried out in 2010.

TARGET SPECIES The selected species were *Asparagus filicinus* Buch-Ham., *Asparagus subscandens* F. T. Wang & S. C. Chen, *Paris polyphylla* Smith, *Stemona tuberosa* Loureiro and *Tacca chantrieri* André.

Both *Asparagus* species are treated as an ethnospices, meaning local people don't discriminate between them. They possess tuberous roots which are peeled, boiled and dried and are used medicinally to treat fever, sore throat and menstrual problems. They are traded as “*Asparagi Radix*”. *A. filicinus* which is distributed in the wider Himalayan region whereas *A. subscandens* is endemic to Yunnan and listed as threatened in the Red List book of China. Both species are abundant in the region. *Paris polyphylla* is one of the most potent plants in Chinese traditional medicine. It possesses rhizomes which are cooked and dried before being traded as “*Rhizoma Paridis*”. It is used to treat pain, bleeding, snake as well as insect bites and tumours. It is listed as vulnerable in the IUCN Red List. *Stemona tuberosa* is known in TCM as “*Stemona Radix*”. It has tuberous roots which are also cooked and dried before being traded. It is used as an insecticide, against cough and against parasitic worms.

Tacca chantrieri possesses tuberous roots which are cut, boiled and dried before being traded on a local scale. It is used to treat stomach ache, high blood pressure, diarrhoea and pneumonia. It is listed as vulnerable in the Red List book of China. Theoretically plants with rhizomes (*Paris polyphylla* and *Tacca chantrieri*) are able to regenerate if only some parts of the rhizomes are excavated, but this has not been tested yet.



Asparagus roots CREDIT: University of Hohenheim/Solveig Franziska Bucher

IMPLEMENTING FAIRWILD

Wild collection and conservation requirements Of the selected species only subterranean parts are being harvested. The method typically used is lethal to the plants and puts the plant species at risk of overexploitation. A lot of work has been done concerning the analysis of the chemical properties of the species, but more knowledge on the ecology of the plants is still urgently needed (such as identifying pollinators and possible regeneration rates), especially since TCM is becoming more popular and the demand is increasing, both in China and overseas such as in Germany. To increase the potential for sustainable harvesting it is necessary to adapt the collection practices: when rhizomes are harvested, some parts must be left in the soil to allow regeneration. Most species are harvested when full flowering occurs – meaning that the reproduction is not completed.

* a barren or desolate area of land, not or no longer used for cultivation or building, Human Geography (<http://www.thefreedictionary.com/wasteland>)



In addition, the restriction of the harvest to certain months or areas (which could also be rotated in defined intervals) to limit the overall volume being collected could be beneficial for the sustainable collection. For the collection of plants from wild stands proper monitoring and knowledge on the plants is essential.

Legal and ethical requirements Since harvest of the selected medicinal plants takes place irregularly and is locally scattered, and only a few collectors are involved in the activities, field control is difficult. In general, there is no proper management of the harvest and the legal framework remains unclear. Harvesting takes place in community-based forests and there is not a specially appointed person who is responsible for harvesting activities. The harvest is mostly carried out by adult farmers on their way to and from the fields which are often distributed in wide areas around the villages. Children are also involved in farming and harvesting activities.

Social and fair trade requirements At present there is no contractual relationship between a company and partner or organization which is taking care of the collection of medicinal plants. There is very little transparency along the chain; the total collected amount is also hard to assess or to estimate since there are a lot of people involved in the whole process. The non-existence of such an organized institution not only makes the control and therefore the sustainable harvest impossible, but also leads to a major increase in prices along the trade chain. If the trade chain could be shortened, the share of their income remaining in the villages could be increased which would be beneficial in this rural area.

CONCLUSION It was found that the current harvest practices are not sustainable and local farmers have already reported declining plant availability. Further tests on the ecology, especially the regeneration of the species, needs to be conducted. For the trading of *Asparagus subscandens* and *Asparagus filicinus* as ethnospecies more chemical analysis of pharmaceutically active compounds should be done since most studies were conducted on *A. filicinus*. More research should be done concerning the possible cultivation of those plants in plantations (which is already done for *Paris polyphylla* in the north of Yunnan and for *Tacca chantrieri* in greenhouses as ornamental plants), since wild collection is bound to be unsustainable as the current collection methods are lethal to plant individuals and populations are reported to be declining. The harvest impacts clearly reflect the inhabitants' economic situation (lower income leads to more collection of NTFPs) and the price differential between the villages and the local and global markets is very high. Therefore the creation of village cooperatives, which can organize – and control – the collection and trade and shorten the trade chains, is advisable and beneficial for the farmers.

In general, FairWild Standard Principles seem to be essential for the sustainable harvest of wild plants in Yunnan province. Regarding the commercial side, there is an interest from German traders in sustainably and fairly sourced materials. Therefore, FairWild certification can also add value to the harvested plant products and thus increase the income generation potential for the villagers involved in sustainable collection practices. The long-term relationship between buyers and collectors is very important for changing collection methods and strengthening people's awareness.

Management and business requirements

In order to set up a species-area management plan, a legal basis for the harvest and for the entity carrying out the harvest is necessary. At present, there is no harvesting regulation at the local and provincial levels. For the monitoring a regular assessment of the species status is required. Until now the villagers collect as much as possible since they are able to sell everything to middlemen. Because prices vary in between years of collection according to relative demand for plants, there is no financial reliability.

An alternative or complementary approach may be the cultivation of medicinal plants in natural forests, which if well managed can help plant populations and ensure sustainable use.



Tacca chantrieri CREDIT: University of Hohenheim/Solveig Franziska Bucher



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