

A Growing Conversation for Domestic Cultivation

By Adam White LAc

HealthCMi (Healthcare Medicine Institute) actively supports the environmentally sound and sustainable production of Chinese medicinal herbs in the United States in an effort to preserve endangered plant species. Recently, I was able to discuss domestic cultivation with one of the pioneers in the field, Peg Schafer.

What was your inspiration for starting the Chinese Medicinal Herb Farm?

The Chinese Medicinal Herb Farm was created for a couple of reasons. As a farmer, I was looking for a niche crop that would be a viable venture on small acreage. I was also looking for something of a right livelihood, something where I could 'be part of the solution' as well as make a living.

My background is in nursery and greenhouse management. Chinese herbs were a natural choice because they were already tools in my personal medicine chest. In 1997, I started with containerized Chinese herb plants. A few years later I moved into field production.

Robert Newman was maintaining an herb garden at the American College of Traditional Chinese Medicine (ACTCM) and later moved to China working as the guest curator of the medicinal herb collection at Nanjing Botanical Garden. Before he left the US, Robert bestowed his collection of rare seed and plant materials to a few US growers. That was a major infusion of known-origin germplasm and was instrumental in the early days of domestic production and the Chinese Medicine Herb Farm.

We have grown out over 270 different Asian medicinal plants and have worked to maintain a diverse collection that continues to be evaluated. Currently, we maintain a mostly unique collection of over 400 Asian medicinal plants. Many currently reside in our demonstration gardens, nursery, medicinal orchard, and in storage as seed stock. The collection requires ongoing stewardship to maintain its level of quality.

What is your main form of outreach concerning Chinese medicinals?

Educating students, practitioners, and

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growers on current issues facing Chinese medicinal herbs and cultivation practices is our primary focus. In an effort to reach more people than our workshops and internship program could accommodate in 2011, I wrote a book called the *Chinese Medicinal Herb Farm: A Cultivator's Guide to Small-Scale Organic Herb Production* published by Chelsea Green Publishing.

What are some of the greatest challenges facing production of traditional herbal medicine plants worldwide and domestically?

Chinese herbs were traditionally wild-collected in China. Now, the carrying capacity in China has been exceeded for many botanicals. In response to modern sustainability pressures, many Chinese medicinals have recently shifted from wild harvesting to cultivation. In a reversal of traditional collection methods, the most commonly used herbs are now almost entirely cultivated varieties.

What are some of the pressures impacting the sustainability of Chinese medicinals?

Climate change, over-harvesting, habitat loss, and a host of other pressures affect the continued availability of Chinese medicinals. Chinese herbal medicines have become very popular not only throughout Asia but also in North America, Europe, and Africa. On a basic level, there is simply not enough of Chinese origin herbal material, farmed or collected from the wild, to fulfill world market demand. Many herbs originating from China will be exported for the foreseeable future, especially those that are not commonly used, require a long time under cultivation, or have complicated life cycles.



What differentiates medicinal herb farming from food cultivation?

Learning to grow undomesticated and largely unselected plants and bring them under cultivation has been surprisingly difficult with some species. The tendency is to grow them as if they were vegetables. That method will often serve when growing superior or food grade herbs—herbs that are food stuffs. Chinese herbal medicine is historically based on the qualities of wild origin herbs that have been subjected to the stressors of nature. Plants that are stressed release chemicals in response to the availability of nutrition, quality of soil, water distribution, the effects of UV, pest pressures, etc. Ignoring that some herbs are regionally specific and to further provide an easy life for them by providing optimal food grade growing conditions impacts the potency of their medicinal actions and does not tend to imbue them with the expected clinical outcomes.

What are some common obstacles to growing Chinese medicinals for farmers?

Chinese medicine is relatively new in the US and has little agricultural precedence and information. The occupation of a non-industrial farmer, although gaining in

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respectability, is physically demanding and requires long hours working in all kinds of weather. Historically, it is a low paying profession and becoming certified organic adds administrative responsibilities to the long row that was already hoed that day. With the average age of farmers at around sixty, the US government is initiating incentives for up and coming farmers.

On another note, quality seed stock, or germplasm, is greatly needed in China and the rest of the world. The seed currently exported from China is of notoriously poor quality. Germination rates tend to be very low. There is no way of ascertaining that the seed stock was maintained with integrity, if it was originally from a good medicinal variety, or if there is sufficient genetic diversity to allay species vulnerability.

While the domestic Chinese medicinal plant market is garnering a large amount of interest, the market has no history and requires significant development. It is different from the current import market and a new system needs to be created. This is not a quick and easy task. Support from all stakeholders is crucial to make a comprehensive and effective domestic industry.

How do people get involved to help protect, preserve, and strengthen the availability of Chinese medicinals?

All herb using people, from herb companies and herbalists as well as growers and patients, are stakeholders and ought to be interested in where the products they consume come from. Ultimately, we all need to foster the well-being of not only the herbs but endeavor to sustain the world that nurtures the environment so that the herbs can naturally and effortlessly flourish. Ah, such lofty goals!

The most obvious way to protect beleaguered resources is to not engage in trade of wild-origin materials. There are a plethora of policies, however, the Convention on Trade of Endangered Species of Wild Fauna and Flora (CITES) treaty is the most effective and important tool for regulating international trade. The wildlife trade monitoring network, TRAFFIC, has an active East Asian presence and an informative email newsletter. There are a few nascent sustainable MAP (medicinal and aromatic plant) projects in China supported by wild plant collectors, pharmaceutical companies, government organizations, and international support groups.

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Lonicera hypoglauca, Jin Yin Hua, Honeysuckle

We can also support in-situ and ex-situ conservation in ecological preserves, parks, and botanical gardens. Important plant areas (Chinese IPAs) will serve an increasingly important function as genetic reservoirs. For conservation purposes, it is always easier to preserve what already exists rather than to recreate intact viable biodiverse populations. However, protection is difficult unless we know the range of the different herbal materials. Conservation and legal protective strategies are based on research. Data is limited, fragmented, and incomplete due, in part, to the vastness of the project and extensive rural geography. A comprehensive list of endangered wild medicinal herb plants does not exist. An attempt was made, specific to Chinese medicinal plants, and there is a table in chapter 5 in the *Chinese Medicinal Herb Farm A Cultivator's Guide to Small-Scale Organic Herb Production*. In cases where more than one species represents any one given herb, consideration of which herbal material to use might make a difference and lessen the pressure on a species experiencing survivability stress. *Mending the Web* by Elizabeth Call et al. offers some assistance to herbal practitioners.

The cultivation of medicinal plants is underway in China and domestically. As wild medicinal crops become scarcer, the efforts expended to collect them will start to fall more in line with the increased efforts and costs of farm land, labor and inputs. Increased awareness through media exposure also supports action. Exposure of Chinese agricultural practices utilizing excessive inputs of fertilizer and pesticides and farming in soils that carry the burden of heavy industrialization reveals that these activities threaten the integrity of Chinese cultivated medicinal plants. Domestically speaking, cultivating to conserve and grow for local markets facilitates a shorter supply chain. A supply chain that has fewer

changes of hands experiences fewer quality failures. Shorter travel distances and smaller businesses combined with a culture of openness and accountability usually results in fresher products.

Domestic products have lower travel miles from field and farm to customer, which benefits the environment and brings the botanicals to the end user in an expeditious manner. Supporting domestic medicinal plant production also defends access to herbs by avoiding import and export bans thereby ensuring practitioners access to the herbs. For a favorable situation where growers and consumers support each other and the environment, the cultivated herbs need to be clean, efficacious and available in sufficient quantities. Naturally, the buyers must afford the cost of producing them.

Large industrial monotypic agricultural systems do not support ecological diversity and have a history of producing lower quality products. These types of operations are increasingly common for food and medicinal plants and are more about the bottom line than they are about healthful food and medicine. The same business model is used for genetically modified and engineered crops (GMO and GE). While I am not opposed to the concepts per se, it is the realities that concern me. Specifically addressing Chinese herbal medicine, if we change the biological foundations of an herb we may change its function. Once altered genes work their way into the genetics of non-GMO cultivated and wild plants there is no way to get back to the original genetics. This goes against one of the most lauded of scientific codes - the precautionary principle. However, GMO and GE crops are patentable and are therefore attractive to companies beholden to their stockholders for the creation of wealth.

Dao-di herbs refers to Chinese herbs that are grown by traditional methods. This includes everything from seed stock, planting

and harvesting time, geographic location, cultivation practices, and processing. Given the shift from mainland China to the USA, how do you view cultivation in relation to dao-di herbs?

The concept of *dao-di*, or geo-authentic, herbs comes up from time to time. Many herbs have regionally specific affinities that we should adhere to as best we can but we should also explore and assay all herbs as Chinese herbal medicine is not a static system. Soils and climates vary but it is interesting to note that most of China and the USA share the same latitudes. The majority of new Chinese herb farms are in Western China and for some herbs outside their indigenous extent. There is also the interesting case for the preference in China for American grown herbal material of Xi Yang Shen (American Ginseng). Indeed, roughly 20% of the herbs included in the Chinese materia medica are plants from other regions of the world. To the best of my knowledge, domestically cultivated herbs that have been tested either organoleptically by trained Chinese herbal professionals or biochemically via HPTLC or HPLC have demonstrated comparable flavors or bioactive compounds commonly accepted to represent herb quality. How fresh are the aromatic herbs in the pharmacy? For example, does Bò Hé (*Mentha haplocalyx* Briq. or *M. arvensis* L.) have a strong mint smell?

Transparency and accountability are of utmost importance. We, as consumers, are motivation factors in commerce. Worldwide the herbal medicine industry is working to come into compliance with the mandated Current Good Manufacturing Practices (cGMP) and the recommended Good Agricultural Practices (GAP). Specifically, in reference to labeling, many questions arise. Is the genus and species of an herb stated on the label or does it only state the pinyin medicinal name? The pinyin

name is the name of the medicine not the name of the herb. Is the specific origin listed and not merely the generic “made in China” label? There are several things to look for. A unique lot number is most often listed; traceability is key. Ask suppliers and pharmacists for the Certificate of Analysis (COA) or herb specification sheet, which will give more detailed information such as what form the herb is in like a powder or whole root, etc. Date of harvest is not listed unless the product is domestic; this may be very important. Requesting accompanying documents helps to catch fraudulent herbs and sends a message that you care about quality.

Recently the American Botanical Council, an herbal industry watchdog, identified adulteration as the most significant problem in the herbal supplement industry. This may be due to ignorance, deception for financial gain, or for other reasons. It is an especially pervasive problem with Chinese originated botanicals. This is due, in part, to the sheer vastness of China including language barriers and regional herb preferences utilizing identical pinyin names for differing medicinals. This leads to a lack of compliance with cGMP and GAP. As a result, it is common to have more than one species present for any given herb lot.

Traceability is complicated by long-standing wild collection practices, middlemen, and herb transportation carriers to regional herb market hubs. Scarcity leads to increased prices and is also a trigger for adulterations due to economic motivators. In the USA, we must also be vigilant to make sure that herbs are true to species.

Species confusion leads to many types of complications. Well intentioned individuals often import seeds based upon the pinyin name but later find that the seed is not what they expected. For one example, my farm encountered unexpected obstacles

after receiving seeds some years ago for Bǎn Lǎn Gēn. I grew the seed out and it turned out to be southern Bǎn Lǎn Gēn (*Baphicacanthis cusia* (Nees) Bremek). I was looking for the standard species for Bǎn Lǎn Gēn (*Isatis indigotica* Fortune ex Lindl. or Woad). It turned out that I did not have the proper growing conditions for *Baphicacanthis*.

Chinese botanical medicine is on the rise worldwide. It is clear that a combination of cultivation as well as collection of wild medicinal plants will be necessary to satisfy global market needs. We can engage in conservation and meet the demand for Asian medicinal plants with applied agro-ecological cultivation, sustainable wild collection practices, and responsible trade. The future of Asian botanical medicine and consequently the health of the people who utilize it are depending on it.

Thank you Peg. I enjoyed our discussion and greatly appreciate your strident efforts to foster sustainable and ecological solutions. Look forward to our support from the Healthcare Medicine Institute, including our grant program for the development of domestically sustainable organic Chinese medicinal herb cultivation.

Adam White LAc is the CEO of the Healthcare Medicine Institute (HealthCMi) and is a licensed acupuncturist in California. HealthCMi (Healthcare Medicine Institute) is best known for acupuncturist news and research publications along with our continuing education courses.

Peg Schafer's main endeavor is the 18 year old Chinese Medicinal Herb Farm (www.chinesemedicinalherbfarm.com) near Petaluma, California currently operating as an educational and research farm. Peg is the author of The Chinese Medicinal Herb Farm A Cultivator's Guide to Small-Scale Organic Herb Production published by Chelsea Green. She often addresses herb quality, ecological cultivation practices, conservation and other issues affecting herbs at Oriental Medicine colleges, conferences, and community events. Consultations are available for farm operations, grower/practitioner enterprises, herbal companies, research institutions and other stakeholder industries.



Salvia miltiorrhiza, Dan Shen, Red Sage root

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