

Appalachian Ginseng Foundation (AGF)

a project of

Appalachia -- Science in the Public Interest (ASPI)
50 Lair St., Mount Vernon, Kentucky 40456
aspi@a-spi.org www.a-spi.org/agf
Phone: (606) 256-0077 Fax: (606) 256-2779

presents

A MANUAL FOR GINSENG GROWERS AND TRAINERS

How to Grow Virtually Wild Ginseng

By

Albert J. Fritsch & Sherman Bamford

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DISCLAIMER: ASPI makes no claims as to the health effects of ginseng. We can only say that many people testify to the good effects of ginseng and that it is renowned for its healing characteristics in Asia and North America alike. We know of no instances of ginseng hurting anyone, and we know that it is used for a wide variety of ailments and for the maintenance of strong general health. We are confident that with continuing, serious research, scientists may support these health claims, but there is no conclusive evidence at this time.

Likewise, the information in this book does not constitute investment advice. The potential grower should consider existing risks, markets, regulatory climate, and local factors before beginning to grow "virtually wild" ginseng (VWG) for sale. The potential grower should decide for himself or herself how large a role VWG should play among a mix of other crops, investments, and income sources.

INTRODUCTION

Do you own or hold a small woodlot? Do you want to retain some land as future forest cover for hunting, fishing stream cover, recreation, or simply to pass onto your children or grandchildren? Do you also want to grow a steady, productive crop in the forest? Many woodlot owners and farmers are planting "virtually wild" ginseng (VWG), a valuable root that generates profits in a shorter time period than typical rotation rates for timber. Ginseng has been a major medicinal herb in Asia for over 5,000 years, and demand for it is likely to remain strong, as long as growers continue to produce high quality roots. Ginseng is the same herb that traditional [sang hunters](#) (ginseng hunters) have harvested from the wild for generations in Appalachia. Although slight fluctuations in the export market can occur, as with any product, high quality wild ginseng has been selling for hundreds of dollars per pound in recent years, and experts expect it to sell for a high price for years to come.

Today, growers working with ASPI and others have developed methods for growing "virtually wild" ginseng plants - plants that are essentially of the same high quality as "wild" roots. This "virtually wild" method of growing allows the land-owner to grow ginseng roots that are far superior to intensively cultivated field or woods-grown ginseng and with less maintenance.

This manual is meant to be a practical guide for those who wish to grow ginseng in a manner which closely resembles the wild condition. In fact, it is called "virtually wild" because it mimics nature in many ways: the seeds are sown far apart; the land is not tilled in any way and only slightly disturbed; soil amendments are not added or added only minimally; surrounding trees are not cut but remain as natural cover; and chemical fungicides are not applied because disease only rarely strikes the widely-spaced VWG. The VWG grower thus produces a plant with a wild look and quality that increases market value. The grower need only sow the seed properly, protect the crop in the course of the growing years, properly harvest and dry the crop, and seek a good market to recover investment and additional funds.

We have selected pertinent information for both beginning and advanced growers who seek to be VWG growers. Most VWG growers are forest landholders who want to grow and sell wild ginseng for supplemental income in the future. When well protected, ginseng can provide needed income, supplemental retirement funds, funds for land-ownership related expenses, or rainy day funds. The VWG grower has much to be optimistic about: highly prized wild and virtually wild ginseng has been in demand in Asia for thousands of years and has nearly always brought a consistently high price in the Asian market; ginseng is not perishable like most fruits and vegetables and, if properly stored, can retain much of its value for a length of time; and ginseng is a healthy medicinal herb with few, if any, known side effects and has a number of claimed uses as a medicine. We do not pass judgment on these health claims, but note that ginseng has been one of the most revered medicinal plants in China and vicinity since the dawn of Chinese civilization. Finally, it is important to note that there are hurdles to overcome if the individual VWG grower (and the larger ginseng-growing community) is to be successful. However, in the discussion that follows, we address the risks involved and show how these challenges may be met.

Personal Testimony (Albert Fritsch) - As an ex-tobacco grower, my primary motivation is to make amends for my part in the cultivation of tobacco. Think what you may, tobacco is a substance that has sapped the life and health from millions of people. I am now determined to assist tobacco growers and other farmers in the conversion to a more healthful, wholesome product - American ginseng. In addition to its purported health benefits, VWG is an agricultural commodity that helps save our region's dwindling mixed mesophytic forests (scientifically, the oldest and most diverse type of hardwood forests in the entire world). I want to make it clear that my goal is not to promote ginseng use. As of this writing, I am not a ginseng user and I take the least amount of medicine possible. This may change with time. Most growers also use ginseng on occasion. But I do see ginseng as a valuable cash crop with many positive benefits to offer. So, read on.

WHAT IS GINSENG?

Connections to the Past -- 'Sang hunters have gathered wild ginseng roots and carefully dried them for centuries in the Appalachians. In some areas, it was probably ginseng - not traditional agricultural crops like corn or tobacco - that were the first plants to be traded by early pioneers. Ginseng was gathered directly from the wild like furs and other backwoods commodities. Over the years, ginseng harvest increased and ginseng became known as a reliable source of cash when cash was not otherwise available in some mountain locales.

⁽¹⁾ None of this could have happened without the lucrative Asian market for ginseng, which drives the American market. Yet few people are aware of the reasons why ginseng is so highly prized in Asia.

An Immense Market -- For thousands of years ginseng has been the primary traditional medicine of choice in the Orient. Ginseng is said to have a large number of very potent health properties, ranging from its ability to stimulate the appetite and circulatory system to its ability to enhance the immune system. Today, the herb is so highly valued that in good economic times the Chinese alone purchase up to \$12 billion worth a year.

Ginseng's popularity has begun spreading in the West, too.⁽²⁾

The focus of attention is on two different species of ginseng, one in Asia (mostly in China and Korea), called Panax Ginseng, and its North American counterpart, called Panax Quinquefolium or American Ginseng. In the wild, the two species closely resemble one another, having glistening red berries, peculiar five pointed leaflets, and gnarled roots that are often shaped like a tiny person. The only major difference between the Asian and American species is a slightly different chemical composition, which is said to give American ginseng a slightly more soothing effect than Asian ginseng. Both species of ginseng are said to produce an overall stimulating effect when consumed, however and both are said to contain "adaptogens," believed to help the body develop all-around resistance to stress and disease. Both species are found in deep forests and are difficult to locate. The wild roots of both bring immensely high prices, especially in the Chinese marketplace.

In the Asian marketplace, buyers sort ginseng roots into numerous grades, based on appearance, origin and other factors - ranging from relatively poor quality cultivated ginseng (generally from Korea, China, as well as Wisconsin and other parts of America) to high-demand wild ginseng and nearly indistinguishable VWG. The dried roots are then sold to people of all walks of life, who purchase different grades of ginseng according to their household's buying ability. Ginseng is an important staple used in daily cooking. It is also prepared as a tonic. North American wild ginseng and VWG roots are among the grades that bring the highest prices, and with rising standards of living in China, Vietnam and other countries, more people can afford to buy the higher grades of roots than ever before.

A Lesson and an Opportunity -- Wild ginseng of Asian origin is being "killed by its own success". After centuries of digging, the plant is becoming virtually impossible to find in its wild state in Asia. In addition, as forests are cut down to make way for a swelling Chinese population, good growing areas are becoming almost non-existent and the plant has been pushed to a few tiny corners in the high mountains of easternmost Asia. Andy Hankins, a cooperative extension agent who has visited China, reports that it is now rare to see trees over 20 feet tall in China and that tracts of deep forest of any size are even more limited.

For centuries, Ginseng has been a powerful economic force and in fact has changed the course of history in China from time to time. For example, in the third century B.C., Cheng, the first emperor to unite all of China, sent his troops out on regular missions to harvest ginseng, because it was such a lucrative crop. All wild ginseng was declared the "property of the emperor." ⁽³⁾ By this time, China's hardwood forests were vanishing. In the seventeenth century A.D., leaders of Manchuria, a ginseng-rich province, used the province's influence in the ginseng trade to overthrow the Ming Dynasty.

Ginseng harvesting began to be tightly controlled by Chinese emperors, but there was little ginseng left to save. Then in the early 1700's, the first ginseng was discovered in North America, and enterprising sea captains began to ship the valuable root across the Pacific Ocean, beginning the North American ginseng trade. The market was good. Nevertheless, in America there were occasional boom and bust cycles, especially when the root was seriously over harvested or when poor quality roots were produced, as in Canada in the early years of ginseng digging.

So traditional 'sang hunters soon learned that if they were to return to their old haunts and find ginseng, they needed to develop a "code of conduct." This code of conduct consisted of harvesting only at certain part of the growing season (in late summer to early fall), digging only mature plants, refraining from digging all the mature plants in a given patch in a given year, and burying a crop's seeds in the soil. Thanks to this code, ginseng survives to this day.

But the same pressures that led to the near disappearance of ginseng in Asia are being felt now on this continent, as well. Ginseng has become quite an expensive commodity and, with its higher value, there is evidence of increased ginseng poaching and over harvesting by unscrupulous individuals in many locations. This lack of good ginseng harvesting practices, combined with rapid development and clear-cutting of the forest canopy, has begun turning wild North American ginseng, *Panax Quinquefolium*, into a threatened, and possibly an endangered, species.

In 1975, American ginseng was listed in the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) agreement. CITES is an international agreement designed to prevent plants and animals with economic value from being wiped out, and ginseng's listing indicates that the species is in some jeopardy due to factors related to international trade. The U.S. Fish and Wildlife Service is the agency charged with overseeing CITES in the United States. In 1999 and 2000, this agency began to be aware of dramatically increasing levels of wild ginseng poaching and sharply decreasing legal harvest levels for wild ginseng across much of the eastern U.S. As a result, the agency stopped the international sale of wild and wild-simulated ginseng plants under five years old, including VWG. Five years is the age at which ginseng plants can begin to produce seeds for future plants.

Unless we do something, the history of ginseng depletion in Asia will repeat itself in America and we will lose one of our most important economic crops. Right now, VWG sales are growing. If even more farmers and ginseng diggers switch from wild ginseng to VWG, we can successfully divert harvest away from imperiled wild ginseng and continue the nearly 300 year old American tradition in high quality ginseng roots. Fortunately, growing VWG for sale is not only good plant conservation, it also makes good business sense.

And, fortunately, the unique forests we have in the Appalachians provide excellent growing areas for ginseng. For example, Kentucky mountain-grown ginseng is worth about \$250 to \$300 a pound, according to those following the market. This is due to the climate, the lay of the land, the type of soil, and the mixed hardwood tree cover. The best grades of wild or virtually wild ginseng need good tree cover (maple, poplar, hickories, or

similar species) and will provide a sustainable yield year after year.

Thus having a ginseng crop on the ground below makes retaining the intact forest cover above it worth more than simply cutting it down for chips or logs. If the markets for ginseng remain strong, as has been the case for the better part of three centuries, then the Appalachian landholder stands a good chance of doing well with a ginseng crop.

Some hurdles need to be overcome, however - the grower must successfully guard his or her plants from an increasing numbers of poachers. Growers face a relatively complex overseas market and must also be able to accurately determine the quality of the ginseng crop, so that the crop can be sold at a good price. Likewise, it takes patience to wait out the approximately ten years required for high quality ginseng to mature.

Further Reading -- Ginseng has a rich tradition and literature. We have deliberately limited this text to the issues we consider to be of immediate importance to the VWG grower. You may wish to explore more ginseng-related issues by looking up the references listed at the back of this manual. Syl Yunker is a farmer who has been growing VWG and sharing the secrets to growing good VWG for years, and you may wish to view Syl Yunker's videotape which spells out in detail the crucial steps for becoming a successful ginseng grower. We wish you the best, because growing ginseng is helping the forests, your property value, your future economic base, and the people who will receive and benefit from this medicinal herb. Best wishes.

SITING FOR GINSENG

General Site Characteristics -- Not all land can grow ginseng. The simplest way to determine if any portions of your site will grow ginseng is to seek out areas that are growing ginseng or recall whether any areas on the land grew ginseng in the past. Likewise you may wish to look for so-called companion plants, such as Jack-in-the-pulpit, bloodroot, Solomon's seal, wild ginger, wild yam, ferns, blue cohosh, trillium, sarsaparilla, black cohosh or goldenseal and see whether they can be found. The "Further Reading" section at the back of the book lists a guide which can be used to learn to identify these companion plants. You may be able to find other good pictorial guidebooks to wildflowers to other states and regions in bookstores near you. Companion plants are frequently found living in the same conditions that ginseng grows in, and often grow nearby. If these areas are found you should also note the soil and its moisture content, the extent of the tree canopy, the nutrient levels in the soil and the "lay" of the land (the degree of slope and drainage). In other words it is not a single factor that makes for good ginseng-growing but rather a combination of factors. The better you understand the impact of these factors, the greater the chance that you will have success in growing virtually wild ginseng.

It should be noted that there are exceptions to the rules. Ginseng is a rather hearty plant that can grow where one or more minor factors are missing. Landholders who attempt to grow ginseng in areas where natural conditions will not support the plant often attempt to compensate by creating dense beds of expensive, prepared soil, often with the assistance of heavy doses of fungicides. Not only is this costly, it can often result in a less valuable ginseng root than VWG roots. Some growers have only partial conditions and compensate by growing woods grown or simulated ginseng in rather dense beds of prepared soil and often with the assistance of fungicides. We do not favor these conditions for we seek organic growers of ginseng and preferably those who can grow the crop in the virtual wild condition.

Specific Conditions -- Even when ginseng is not found, your property may still be capable of growing it. A careful examination of topographic maps, water drainage maps and soil maps in a manual overlay fashion is a good gauge of where ginseng is likely to grow. Syl Yunker, a long-term ginseng grower, claims success nine out of ten times using this method. The more one knows about the necessary conditions for ginseng growth (as well as the minor, more subtle requirements for ginseng), the more readily one can locate a place for growing the crop. Modern computer technology can also help you locate a good site. The last part of this section explains an ASPI service that will help growers locate better sites via computer technology.

Soil and Nutrients -- The best kind of soil is well-drained, rich dark soil, with sufficient humus content. Look for loamy soil that is high in wood content ("blocky" soil). Soils with heavy clay composition should be avoided. While most ginseng growing soils are slightly on the acidic side, the pH ranges permissible for ginseng growing are quite wide. It is believed that ginseng does best in soils between pH 5.5 and pH 6.0, although a recent study found ginseng doing well under highly acidic (low pH) conditions when there were very high levels of calcium⁽⁴⁾.

On ideal ginseng growing sites, soil should be slightly on the acidic side but limestone-based with relatively high calcium and a preferred calcium/magnesium ratio of five to one.⁽⁵⁾ Soil maps, topographic maps and companion plants give the ginseng grower a good idea of where ginseng may grow best. You can augment this through a soil analysis done by your local county extension office or by state agricultural laboratories. These services are usually conducted for a nominal fee or free of charge.

Ginseng also grows remarkably well when surrounded by a healthy layer of leaf litter. The VWG grower can build up this leaf litter during the growing process. The litter should be intermixed with twigs to keep it airy, but ginseng will often thrive in heavier litter, too. The VWG grower is advised to reduce the amount that washes or blows away by laying dead fall, twigs and small branches ten to twelve feet apart in a terrace formation running along with the contours of the hill. Leaves accumulate behind these natural barriers and create the "beds" in which the wild ginseng will thrive in a few years.

While one could discover through topographic and soil maps the approximate best locations for ginseng, a more thorough knowledge of the soil nutrient content will (as with most other crops) require a chemical analysis. As mentioned below, it is possible to continue the organic certification which is preferred for virtually wild ginseng and yet add certain natural amendments to the soil such as gypsum (hydrated calcium sulfate) for enhancing the calcium content or Epsom salts (hydrated magnesium sulfate) for raising the magnesium content. While nutrient balance is highly important for growing healthy ginseng, the best approach is to locate the best sites first and carefully target your ginseng planting to those sites, rather than adjusting soil on sub-standard sites.

Canopy and Air Flow -- Ginseng grows best in a rich, shady forest with reasonably open lower layers. Thus a forest with a canopy of high trees and a rich ground cover of herbs and wildflowers is ideal, but not one with an under- or mid-story of densely growing plants like cedars and briars, which slow ginseng growth. The over-story should provide 70-80% shade, giving the forest a very obvious dappled effect. Look for the "soft hardwoods," trees that show their fall colors earliest. Another way to identify the "soft hardwoods," is to look for kinds of trees that leaf-out earlier than oaks in the spring and lose their leaves before the oaks in the fall, like maples, tuliptrees, ash and hackberry. A modest number of cedars is also a good sign, because they are indicators of limestone soil. Most pines, except scattered white pines⁽⁶⁾, should be avoided. Remember that the 70-80% shade rule is not a hard and fast rule across the forest. Small gaps in the canopy occur whenever

trees fall, but ginseng survives in most cases: the excess sunlight merely retards ginseng growth for a few years while the canopy is open, then resumes at its normal growth rate as the canopy begins to fill in.

Grade and Aspect -- Grade and aspect also have a bearing on where this cool, rich forest dwelling plant can grow. Wild ginseng is known to grow in a variety of places from extremely steep slopes to near level conditions. Regardless of the grade, it is important that the site be well drained so that excessive moisture does not accumulate. Avoid very dry sites and soggy bottomlands, and try to identify rich, well-drained sites with conditions in between the extremes. For the VWG grower in most parts of the Appalachians, a gentle, forty percent slope is ideal, both for ease of walking and for adequate drainage.

The aspect or geographical orientation of the slope is important, too. Aspect becomes all the more important as one gets into the hotter climes of the southern U.S. In the most of the central and southern Appalachians, growers should plant on north- and northeast-facing slopes and avoid hotter south- and southwest-facing slopes. But in cool regions of Canada, northern New England, and even in the higher elevations of the Appalachians, ginseng can grow on slopes that receive more sun.

Ginseng prefers ample moisture and cool conditions and this, too, depends on where one lives. Experts suggest that areas with 50 below-freezing days a year are at the southernmost ginseng growing zone.

Determining Sites Electronically -- Many of the site conditions needed to grow ginseng can be identified beforehand by creating an overlay of topographical, soil and other maps. In fact, the manual overlay method can quite accurately pinpoint areas where soil type, grade, shady slopes, and identified forest cover indicate that conditions will support ginseng growth. A more convenient method is to use the combination of a Global Positioning System (GPS) and a Geographic Information System (GIS). While both methods have been developed fairly recently, each has found widespread use in other site selection operations.

GIS Mapping -- GIS is a computer mapping system. The major advantage is that it can map areas more conveniently and more precisely than hand overlays. GIS compiles maps with data drawn from existing sources of information like government soil map data. Available data from different sources can already be pulled together to help locate good choices to place a ginseng patch. Some states have now made the data available free for the taking whereas others have not yet prepared it or require a modest to sizeable payment for use in its current format. Data being used includes: topographic maps with proper elevation data, soil data, water flow data and 3-D modeling software to simulate the rising and setting of the sun to help determine the sunny and shady spots on potential ginseng growing areas.

GPS Tracking -- A GPS device is essentially a radio that helps locate 'where you are' and 'how to get' to a preselected place. The United States military services developed this system during the Vietnam War to track themselves on land, sea or in the air and has since declassified the GPS so that now anybody in the world can use this system. The GPS is a handheld device that can be purchased from Radio Shack and most electronics stores for less than a hundred dollars. The GPS radio is a receiver just like an AM or FM radio, except that it picks up timing signals from two dozen NAVSTAR GPS satellites that orbit twelve thousand miles above our planet. These satellites constantly transmit their position and the exact time in orbit. The GPS receivers listen in on the information from three or more of the satellites and through triangulation of the signals sent can determine speed, direction, elevation, and the exact position of the receiver.

Ginseng often grows best in deep woods, an advantage that can be used to help protect the plant and the grower from poaching. This is good for security, but makes plants harder to locate the following year. By using a GPS unit, one can mark a trail that only the grower can follow. Or the GPS device can help a potential VWG grower catalog exactly where ginseng plants, companion plants, or suitable growing areas exist on a large acreage or isolated and unfamiliar areas, so that he or she can return to the precise site to sow seeds. Later one needs only punch in the marker numbers for the trail and the exact patch. A GPS receiver can tell you the direction and the distance to the next marker location. For security, these coordinates need to be recorded in a safe place. Each marker has an accuracy of 30 feet, meaning one is within 30 foot of exact location.

SEEDING GINSENG

Obtaining the Seed -- One of the first things a prospective ginseng grower will want to know is where to purchase seed. Your nearby county or state cooperative extension office can provide you with a list of ginseng seed dealers. Many of these lists provide contact information for seed sources in your state, as well as seed sources from across the country. It is always best to seek out and use locally grown seed because, as with other plants, local strains are often better suited for your particular growing conditions and are may be more environmentally friendly. Local wild ginseng seed is nearly impossible to find on the market, however. Ginseng seed is quite valuable and most growers use it themselves or give it to friends. So, even if you cannot find locally grown seed, try to make sure yours was obtained from a source that is as close to your area as possible.

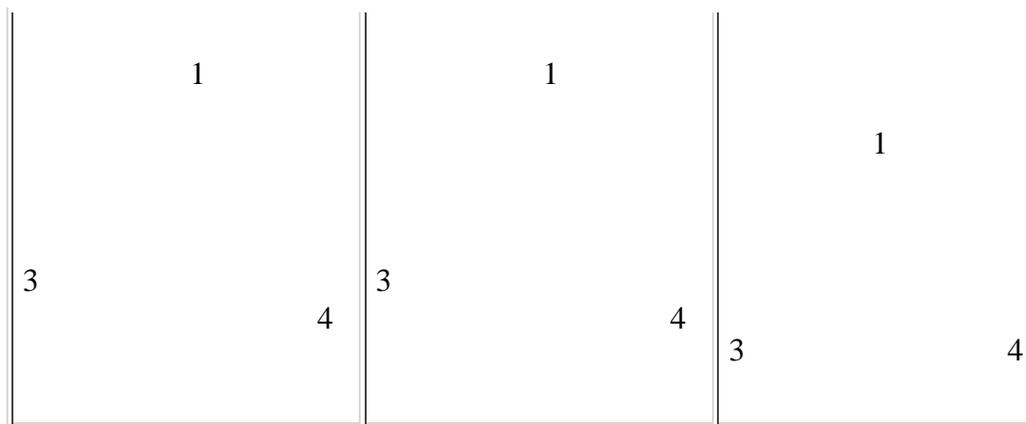
When buying seed, you should be sure to know the difference between so-called "green" seed and "stratified" seed. Green seed is plain, unprocessed seed which will not germinate in the ground for an 18 month or more waiting period.

Stratified seed, on the other hand, is seed that is stored in moist sand until closer to the time for the seeds to germinate. See page 14 for more information on the stratification process. Stratified seed costs twice as much as green seed, but is more readily available to buyers.⁽⁷⁾ Most growers prefer to buy stratified seeds because of the time saving advantages.

The best time to plant ginseng is in the fall well before the ground has frozen, at some time between mid-August and mid-December. By planting your seeds in the fall, you give them all winter to acclimatize themselves with the surrounding soil conditions. Fall can be a dry season, so wait until a couple of rains or wet snows to soak the ground before you plant. It is also possible to plant early in the spring if you have seed that is beginning to sprout at that time, but remember that spring germination rates are roughly about half as good as fall germination rates, according to Syl Yunker.

Spacing -- For VWG growing, seeds should be planted no closer than 14-18 inches apart. In the beginning years, sow one-quarter pound of seed (approximately 2000 seeds) per acre. After this, the seeds will reseed themselves the same way that wild patches do. Each year, plant a single seed at each numbered spot (each seed berry contains two seeds) according to the following pattern:

5	2	5	2	5	2
---	---	---	---	---	---



<----- 3 YARDS ----->

For example, in the first year, plant a seed in spot #1 at the center of each of the squares in the diagram. In year two, plant a seed at every numbered spot #2, which should be located along the diagonal line about 14 or 15 inches away from spot #1. In year three, move to the opposite end of the diagonal and plant a seed at every numbered spot #3, again about 14-15 inches from spot #1, etc. This grid pattern is arranged so that ginseng plants have adequate room to grow and to seed future plants.

In the real world of the forest, occasional trees, rocks, and other objects will obstruct the pattern. Try to work around these objects. Don't be tempted to rearrange the forest floor to conform to the grid pattern, because if you do, you may be removing valuable shade or cover for the ginseng patch.

Making a Seeding Device -- Ginseng seeds should be planted to 1/4 inch below the surface of the ground. To assist with the work you'll need a good home-made seeding device consisting of a mop handle 4 feet in length, a PVC half inch pipe 3' 10" in length, a hunting knife with a 6-inch blade (or other sharp metal spike, like a long tent peg), and some duct tape that is 2 inches in width. Tape the knife to the mop handle, allowing the knife blade to extend 3 inches from end of the handle. Next, tape the PVC pipe so its end is a inch short of the mop handle end. When you are planting and you press the knife blade into the ground to test for soil depth, the handle will prevent the soil from clogging the PVC seed pipe. The device is ready for use.

Seeding Procedure -- To begin the seeding, kick aside the leaf litter mulch around your spot. Use the blade of the seeding tool to test the ground until you confirm that there is at least 2 inches of soil below your spot. If you reach a layer of rocks before this, your location may not give the root enough space to grow. You may need to check the immediate area for better locations. Once you have determined that the site is satisfactory, stick the blade into the ground. Next, swing the handle left to right so that blade creates a "v"-shaped slot in the ground about inch deep. With the blade still in ground, drop one seed into the PVC pipe and into your hole in the ground. Now pinch the hole closed, firmly step on the hole, and restore all leaf litter. The entire seeding process should take between 8 and 10 hours for each half acre (2000 seeds).

Other Methods and Why We do Not Recommend Them -- Some similar ginseng growing methods are far more intensive, involving the sowing of ten to hundred times more seed per acre, but have serious disadvantages. Such types of ginseng agriculture include "woods-grown" ginseng (ginseng sowed in prepared

beds under forest cover) and "wild-simulated" ginseng (a method where the litter is raked back with a steel tong and prepared for planting under forest cover). Some of the disadvantages include increased labor, higher fertilizer costs, and increased fungicide use, coupled with lower root value. Under both methods, beds have to be carefully tended and the soil (generally deficient for such intensive cultivation) is brought up to a good calcium/magnesium (5/1) balance through the use of gypsum or hydrated calcium sulfate ($\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$) and Epsom salts or hydrated magnesium sulfate ($\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$). These natural chemicals will not change the designation of VWG as organic. However, the high root densities under these methods makes the ginseng highly susceptible to *Alternaria* and other fungal diseases, for which cultivated ginseng is notorious. These methods also require added nutrients because of the high volume of production per acre, whereas with VWG, adequate amounts of nutrients are provided for free. The key to successful VWG growing is minimal disturbance to the ground and proper spacing, factors which lead to a healthier plant and fewer headaches for the grower!

HARVESTING & PREPARING GINSENG PRODUCTS

Leaves and Stems -- Ginseng may be harvested as leaf, stem, seed, or root. Ginseng leaves and stems contain ginsenosides, the chemical ingredients that give ginseng many of its medicinal effects, and thus can be used as a green tea. The tea market has existed in ginseng growing areas for centuries, but a slow and primitive transport system did not allow it to acquire the popularity of the root. Health food stores and gourmet cooking circles are now discovering this tea, however, and with effort and promotion, you can expect sales to these outlets to increase in the coming decades. VWG is typically grown organically and therefore has an advantage in the health food market, especially when compared to most other classes of ginseng. Since growing ginseng involves a number of years of patient waiting, growers may want to tide themselves over by selling some of the foliage (leaves and stems) as green ginseng tea.

In addition, the foliage can be dried using a solar food dryer. This requires ample air flow, a moderate temperature of about 90 degrees Fahrenheit, no direct sun light, and a few days drying period, depending on the amount of moisture in the air.

Seeds -- The seed is of great value to the VWG grower because it can be collected and processed through "stratification," then sown to expand your growing area or can simply be used to enhance the thickness of the current crop. Wild ginseng seed is also valuable especially if you want to sell or give it to others growing ginseng in your local area. The red berries of the mature ginseng plant are a sure sign that mid- summer has arrived for the grower. Most VWG growers gather and use their own seed for a number of years, or even for several succeeding generations of plants. This is because the first priority of the grower is his or her own growing areas. Harvesting seed in the wild is far more labor intensive than harvesting seed from cultivated patches of ginseng where it is concentrated in a small area, but it should bring premium prices, like all wild ginseng seed. VWG seed is more valuable to many growers because it is comparable to wild seed.

Stratifying Ginseng Seed -- Centuries ago, the Chinese believed that ginseng was a gift sent from the heavens to humankind. According to legend, it could not be cultivated, nor would the seed sprout unless "touched by the divine" or "purified by the divine bird" of Chinese legend. The fact that the seeds take an extraordinarily long time to germinate - some eighteen months or more - was not well understood at the time. It was not until about 700 A.D. when Koreans discovered that moist seeds or berries placed in a given spot in the ground would produce a ginseng plant after the prescribed waiting period. This process has come to be called "stratifying" ginseng.

The word stratifying means taking the red "ripe" berry (there are two seeds to a berry) and placing it in incubation for twelve months while the seed "matures." At the end of the period, the seed should sprout. One of the most popular methods of seed stratifying used by commercial growers involves placing depulped seed in damp sand until it is sown the following summer. Another method that better imitates nature's way is to put the entire raw berry in damp sand until the middle of the next summer then use it to seed the patch. Growers find that the pulp enhances maturation during the incubation process.

To stratify wild ginseng seed, take a five-gallon plastic bucket and drill 1/16-inch holes on the bucket sides and on its bottom. Bury the bucket so that the top is three inches below the surface of the ground in a well-drained place. Put a one-inch layer of damp sand in the bottom of the bucket and place the ripe berries, pulp and all, layer after layer, into the bucket. Arrange them evenly over the moist sand, covering each layer with an additional inch of moist sand. This should be done each time the berries are harvested. You should harvest the last of your berries after the first killing frost. Once your last berries are in the bucket, cover them with two inches of damp sand. Secure an unperforated top onto your bucket. Cover the bucket with three inches of soil, then return leaf litter on top of the area.

If you wait until July of the following summer you will discover that the seeds are completely clean of all pulp and ready for the autumn seeding. You are now ready to replant the seeds you have saved. Because ginseng seeds shouldn't be planted until a few months into the fall before the ground is damp enough to sow seed, you should store the seed in a cool, moist place until ready to plant. Put the seed in a plastic bag with a damp paper towel in the bag and then place the package in the butter section of the refrigerator. Check weekly to see whether the paper towel is still damp. Remember, if the ginseng seed dries, it dies.

You may want to plant at the beginning of the year. By storing the seeds in the above manner you can keep the seed viable through winter. Take care, because with spring planting, you must get it in the ground early enough to sprout in late March or mid-April when ginseng -- an early sprouting plant -- sends its seedling up through the leaf mulch. If weather permits, January and February are the best months to seed to get maximum germination in spring.

Digging Mature Ginseng Root -- The primary focus of most ginseng harvest is the root, the traditional cornerstone of Chinese medicine. Once this root is judged mature enough by the grower it may be "thinned," that is, removed in order to allow surrounding plants to have more room to grow. Thus harvesting may depend in some degree on the ginseng plant ages, as well as plant population in a given area. You can wait as long as you want to dig up your mature roots. In the ginseng market, the value of roots almost always increases with the age of the plant. While ginseng plants live to more than 100 years old, today, even relatively mature ginseng plants nine or ten years old are becoming increasingly rare and roots 15 to 20 years old are rarer still. A good rule of thumb is to wait until after about nine or ten years to dig up the roots, but your situation may dictate otherwise. You should remember that, as your plants mature, you should take care to reevaluate and increase your security measures, too, in order to protect your investment.

Harvest Time and Equipment -- The best time to harvest is usually in the autumn after the seeds have matured, but before the leaves have died off and you can no longer see the plant easily. Because damaged roots will bring far lower prices, take extra care as you dig the roots. The best tool for digging the root is a sharp needle-nosed spade. As you go out into the forest, carry a five-gallon bucket filled one-third of the way to the top with water so that you can soak and rinse the freshly-dug roots.

Method -- Dig a circle one-foot in diameter around the base of the stem of the plant. The spade should therefore be placed six inches from the main stem, as you go around the plant. Shove the spade deeply into the ground and use the handle end as a lever to lift the soil, root, and plant out of the ground. Then carefully remove the soil from the root by hand. If the ground is dry, soak the root in the bucket of water to soften the remaining soil. The object is to remove the clinging soil while saving all the root hairs to the greatest degree possible, because some active ingredients are concentrated at these extremities. Saving these root hairs can increase the value of the ginseng root. Take your collection of roots and flush them with clean water until the rinse water is relatively clear. Don't brush or scrub the root! Drain the water and place each root on a paper towel.

Drying roots -- Dry your roots at a temperature between 70 and 110 degrees Fahrenheit (90 degrees is an ideal temperature). At the recommended temperature range, roots do not take long to dry - only about three weeks. Select a place where there is an ample flow of air and no direct sunlight or other light, like an attic. Place each root on a wooden lath tray, rather than a metal or plastic screen because the roots should never be allowed to come in contact with anything but a cellulose fiber material -- which is what the ginseng root is composed of.

Wooden Rack Drying-- One drying procedure uses a tray rack that holds three trays stacked one above the other in a good, hot place. Place the root which has been dug up most recently on the bottom tray. At the end of the week turn each root and place the tray on the second level of the rack. At the end of that week turn each root and place the root tray on the third and highest place on the rack. The ginseng root will be ready for storage after a period of three weeks of drying with fairly good air circulation and an adequate temperature. Once dried, ginseng should be stored in a dark place in paper sacks or cedar boxes immersed in cedar chips.

Solar Dryer Method -- A second procedure is the same used for drying the leaves and stems, mentioned above. With this method, use a solar food dryer big enough to incorporate at least three trays of cellulose surface (not metal or plastic) The solar dryer should also have ample air flow, moderate (90 degree Fahrenheit) temperature and no direct sunlight. These can be purchased or built using directions found in the ASPI Technical Paper No.6, "Solar Food Dryer."

Preparing Ginseng as a Houseplant -- An emerging market exists in specialty flower shops and health food stores for ginseng sold as a houseplant. Ginseng, whether wild or cultivated, is an attractive plant with several hues throughout the year - bearing deep green leaves in the growing season, red berries in late summer, and bright gold leaves at the end of the growing season. The houseplant market may be valuable as supplemental income for the ginseng grower. Since some cultivated varieties have much the same appearance as the wild, it would be possible to substitute non-organic cultivated varieties as houseplants.

When you are transferring plants from the forest floor to the pot, be sure to take extra care in the digging operation. The procedure is as follows: Use a sharp needle-nosed spade, the same tool as that used for digging ginseng roots, mentioned above. First determine how the root is positioned. Some roots grown over shallow soil and underlying stones may be positioned almost horizontally. Others may grow in the crevices between two stones and may need special care when they are being extracted. Be sure to dig the whole plant along with over one-half a square foot of the dirt surrounding it. Try not to let roots become at all exposed during the digging process. Place the plant in a pot before allowing the root to dry out. Immediately surround the plant with mulch and insert an ice cube into the top layer of soil to keep the plant fresh and cool while

carrying it to its destination.

CROP PROTECTION

Remember that each VWG root is a valuable object. The ginseng grower must be prepared to think like the neighborhood car-dealer or jeweler, who install locks, alarms and other security devices to guard valuable property from thieves. Hungry animals and poachers will always be a threat to the ginseng farmer - large or small. Accordingly, vigilance is simply one of the costs of doing business.

Protecting Foliage -- Any farmer knows that being on guard is a natural part of agriculture. However we are not focusing here on intense cultivation with its many headaches. Instead, we are allowing nature to largely take its course so that ginseng can grow in near wild conditions. In the woods, you can expect an occasional deer to enter the patch and nip on the plant. Ginseng is highly adaptive, and a few deer will not typically kill the plant.

In many parts of the country, however, the problem is far bigger than a few deer wandering through the forest. Deer populations have exploded in recent decades (in part because of a lack of predators to control them) and these deer, in turn, often feed heavily on woodland plants. Excessive deer browsing could affect many ginseng areas. It may be necessary to keep watchdogs on your property or "harvest" some of the deer, so that in due time you will have some ginseng left to harvest yourself.

Protecting Seeds -- Seeds are some of your most important assets. When the bright red seeds appear in the summer they can be gobbled up by the native birds, small rodents, squirrels and other animals that flock to the forests. This is nature's way of propagating seeds. The seeds pass through the animals' bodies and are deposited elsewhere, allowing the ginseng plant to reproduce and thrive. Unfortunately for the VWG grower, these seeds can be carried large distances and are impossible to track. The VWG grower should diligently watch his or her patch at seed harvest time (usually a span of about six weeks to two months in late summer). Seeds should be gathered and stored before they are eaten by animals. Syl Yunker has found that placing wads of Juicy Fruit ^(R) Gum in the patch can distract some of the worst berry eating creatures. Place the gum at locations where the animal has recently been.

Protecting Roots -- The ginseng roots themselves are also vulnerable to animal depredation. Ginseng roots are a preferred food for voles and other digging mammals during times of drought and food shortage. Generally this is not a major problem for VWG growers, because of the wide spacing involved in VWG plantings. As stated above, wide spacing also helps eliminate fungal diseases. If the grower has encountered serious damage from root-eating mammals, he or she might consider placing traps or other deterrents.

The Threat of Poaching-- Poaching is probably the single most serious threat the VWG grower will encounter. By all indications, the problem is getting worse. Poaching is a broadly used term that can cover everything from traditional 'sang hunters, to local "Saturday nite" poachers, to well organized gangs of poachers that may come from many miles away.

Many people in Appalachia perceive of 'sanging as a legitimate form of making pocket money. This is because ginseng, like water and wildlife, is regarded as free for the taking, and it is not unusual for 'sang hunters to

ignore property boundaries to gather the prized root. The situation is similar to the conflicts among North Carolina's long-term and new residents over blockage of commonly used trails and old roadways. Similarly, VWG growing is a relatively new method of obtaining commercial ginseng that many do not yet understand. Conflicts result when ginseng gatherers do not realize that the wild-appearing ginseng patch they come across may have been deliberately planted as a VWG patch. For other less legitimate ginseng gatherers, the removal of a person's ginseng is not the result of a simple misunderstanding; it is outright theft. In Kentucky, the theft of \$100 or more in ginseng roots is a felony. Other states may have similar felony provisions in their state codes.

There are modest efforts to control ginseng poaching underway. Resource managers have developed ginseng digging seasons and other harvest restrictions which are very similar to bag limits and game management restrictions for fish and wildlife. Unfortunately, there are far fewer game wardens and law enforcement officers protecting ginseng than those for deer or rabbits.

In recent years poaching has become a more widespread problem as the reputation of the high price of wild ginseng has spread. If poaching is left unregulated and uncontrolled it could mean the early death of the ginseng industry and, perhaps, the wild plant itself.

SINGLE LANDHOLDER APPROACHES TO GINSENG POACHING

Secrecy -- Most people regard the best defense for their ginseng is not telling others that their property contains ginseng plants. However, this secrecy has a spotty record and does not guarantee that the ginseng will not be poached, only that the odds are greater that it will escape detection throughout the maturing process. Poachers may be local enough to know the lay of the land as well as do the legitimate growers. They know where there are shady slopes and well drained soils and where they can find more ginseng.

Poachers can even learn to use the GIS (Geographical Information System) data in somewhat the same manner that Dan Bond is doing at ASPI. The basic GIS data, especially in states like Kentucky, is available to the public. The computer world is becoming increasingly sophisticated and some who could be associated with poachers could pinpoint ideal ginseng growing areas -- provided they acquire the skills and have a top of the line computer. These types could refine their poaching operation to choice areas. This may not happen because there are better ways for computer whizzes to make money, but at least the thought drives ginseng growers to deeper secrecy. Nevertheless, growers should realize that technology is often a double edged sword. Accordingly, all VWG growers should (1) be aware of the arsenal of technological tools that poachers can use to locate and steal ginseng and (2) learn to use technological tools that can counteract such threats (such as trackless GPS trails, advanced monitors and alarms, etc.).

Publicity -- On the opposite end of the spectrum, openly publishing "no poaching" notices in the local newspaper could be one part of the program but some shun away from such publicity, falling back on the wall of secrecy so well known among ginseng growers. Others admit that poachers already know the local growing areas and that the public notice is a legal method of protection in civilized society. Your ginseng crop is intentional and tended. With little additional effort the woodlands can be certified as "organic" and thus made known to state officials. This takes paperwork but has many benefits. Notice of certification can be both posted and published. Whether you choose greater secrecy or greater openness depends on how comfortable you feel with local law enforcement, general respect for private property, your community's sense of cohesiveness, and other factors.

Watchdogs -- The use of watchdogs is the major deterrent to trespassers in the security arena today. Some prefer to allow their own dogs to run loose, but that is now seen as unlawful and involves risks both for dog owners and wanderers on the property. Some prefer to work with neighbors in a community ginseng watch program with dogs allowed to roam over the various properties. Others have found that smaller more compact ginseng patches near residences can be protected by surrounding the patrol boundaries with a buried wire that is activated to restrain collared watchdogs. The method can prove expensive depending on length of wire needed.

Alarms -- Some find the noise alarms work for giving the owner an alert as well as telling the poacher that the foray is being detected. It reduces the time allowed in the poaching operation. Other more sophisticated alarms could be installed which are quite costly and beyond the economic capabilities of average ginseng growers.

Legal Action -- Determined legal actions can be taken by landholders on property which is posted as a "no trespassing" zone. This presumes cooperation with local enforcement authorities (who can be reported for failure in doing their duties). Beth and Gary Anderson, two foresters and non-timber forest product experts, have familiarity with this issue. Unfortunately, the Andersons find that it is often difficult to prove that poached roots were derived from specific properties in question.

Marking Roots. Tagging wild ginseng has proved to be an effective means of catching poachers on public lands, and the publicity has served as a deterrent for other possible poachers. A number of parks and national forests allowed some regulated ginseng digging in the past, but are now prohibiting ginseng digging outright, because of the increasing rarity of the plant. Sophisticated tagging techniques are often used to protect the plant. For example, Jim Corbin of the North Carolina state park system has developed methods of marking "sentinel" ginseng plants with dye (some of which is detected by ultraviolet lamps) or by use of microchips (with the specific GPS location recorded on the chip). Computer models help the agencies select which plants are most likely to be poached in a patch. There have been over 80 arrests in the Southeastern states as a result of this crime detection technique. Ginseng root marking could prove effective on private lands, but there is a question as to whether growers would want to be burdened by time-consuming enforcement procedures.

SOCIETY-WIDE APPROACHES TO GINSENG POACHING

Conservation -- Ultimately, stronger conservation and law enforcement measures are necessary to protect the VWG grower from poachers. There are many benefits to more high-profile conservation laws - including increased public awareness, increased activity among state or federal fish and game agencies and law enforcement agencies, and surveys and scientific research that may identify priorities for the plant.

Once these measures are in place, VWG growers could face less competition from poachers, and could benefit from a bigger share of the market. To truly benefit VWG growers, these conservation measures would need to take a dual approach: (1) stronger protection for all ginseng taken from the "wild" and (2) a corresponding certification system that documents the authenticity of VWG and other ginseng by certifying where the ginseng was grown. In the long run, the best way to protect the private ginseng grower would be through a marketing card system, not so much for controlling the amount grown, as with tobacco and other commodities, but to verify where the virtually wild ginseng is grown. We will discuss a promising VWG

certification and marketing system below.

Education Efforts -- The ginseng growing community needs to improve public awareness about ginseng. Such a long-term effort requires patient encouragement on the part of ginseng advocates, but, if successful, could change attitudes about VWG and ultimately get a system in place that can protect the VWG grower and boost regional economies in ginseng growing regions.

MARKETING GINSENG

The absence of a fair and equitable marketing system is a persistent problem for all VWG growers, at almost equal par with poaching. Let us remember that virtually wild ginseng could be as big an American crop as tobacco -- some estimating sales of billions of dollars to China alone in ten to twenty years. It could, in fact, far out-distance tobacco in the 21st century, provided poaching can be halted and growers protected in marketing their product. The best way to protect the ginseng grower would be through a marketing card system to certify that the ginseng came from a legitimate grower instead of from a poacher or other questionable source.

Verification, the Answer to the Poaching Problem -- Similar to the marketing card used for tobacco, the ginseng marketing card would establish the location of a ginseng patch on a person's own property. Traditional 'sang hunters may also harvest wild ginseng with the permission of the property owner or other legal delegate noted on the card. An estimated allotment, measured in pounds, is also listed on the card. This is based on what the observed plot can yield, along with past harvesting data, if the patch is already in production.

The primary purpose of such a marketing card is to verify the place of origin, not to serve as a control system -- unless over-production becomes an issue in the future. An argument can be made that ALL ginseng should have a marketing card. The reasoning for this is that a dual-system approach would allow poachers to dump unsold wild ginseng on the uncontrolled market, if other sales could not be negotiated on the certified market. One approach for verification would be to use existing certification programs or their equivalent. Use of observation, map inspection, photography and other techniques may be required for verifying scattered ginseng plots. Legitimate wild crafters would follow the same procedures along with written permission from the landowner that the practice has been and will continued to be allowed for an agreed upon period of time.

As mentioned above, the Federal government recently restricted the ginseng root exports to roots five years or older as part of its CITES agreement obligations. If a given species is declared at high risk and is found in a certain region, it is not allowed to be traded on the world market. Ginseng has not reached that point, but receives partial protection under CITES under a lesser category. With ginseng's increased rarity, actions are needed to assure that ginseng does not reach the point at which it can no longer be harvested or traded on the world market. Federal regulations should be the prime mechanism for this, since sellers can easily skirt state regulations and take poached medicinal herbs across state boundaries. The Interstate Commerce Clause of the Constitution demands free trade and regulated improper trade whether domestic or foreign. A federally recognized marketing card, grading system and regulation of overseas trading would be able to curb poaching and allow the grower a fair market price.

Currently, it is necessary for the buyer (but not the seller) to keep a record of all transactions, so that the ginseng's route to its ultimate origin can be traced. This is a practice performed today for many commercial items from dynamite (for safety) to certified wood products (for protecting tropical forests). It is a restraint of

trade to expect the buyer to conform to rules beyond reason. However, under a future system, if the buyer says he is buying "wild" or virtually wild ginseng, the Federal government can legally insist that this be proven through a certified grading process. Under such a system, the ginseng buyer would give a receipt to the grower/seller which leaves a "paper trail" of both the ginseng's origin and its route in transit. The grower's copy could be matched against the buyer's copy, should point of origin need to be confirmed.

Market Card Procedure -- Under the system to be set up under AMHC, an approved certifier would need to be physically present to record the estimated number of pounds to be harvested in a given year. The certifier would view the size and condition of the crop, prior to harvest. Label stickers, like those traditionally provided for certified organic produce, could be substituted by a card listing the name of the property holder and the allotment amount for the current year. Should harvest exceed the estimate, the grower would need to be prepared to show that more of the commodity was harvested on the certified land area than had been originally planned. This may require reappraisal of the land. No penalty would be required, except when poaching has occurred, since the card system is not a mechanism for curbing overproduction. It is only a verification that the crop was grown in a legitimate manner. If the poundage is extremely excessive, the certifier would have to make a return visit to ascertain how such a large amount could have been taken from the inspected area and/or renegotiate the allotment for the coming year.

Organic Ginseng -- In order to cut administrative costs and excess bureaucracy, the current organic certification systems in each state or the incoming Federal system could suffice as an outlet for issuing the marketing card for wild, virtually wild, or other organically grown ginseng. Already this organic ginseng is being certified on certain farms under the present certification system. "Organic" produce typically sells for a higher price than non-organic produce, and it is expected that ginseng would benefit from the coupling of organic labels and a corresponding marketing card. Together, the organic label and marketing card will prove to the consumer that the ginseng is pesticide-free AND was sustainably grown or harvested, a "plus" for many consumers.

Grading System -- Proper ginseng grading will be an essential part of selling the product, no matter whether it is to be sold for export or sold on the domestic market. Otherwise the growers --especially the very small ones - find themselves at the mercy of the buyer. Buyers often mislead sellers by declaring the ginseng in question to be a deficient product, when in reality, the product is of quite high quality. Just as the marketing card is essential for verification of origin, so is the grading system essential for fair price.

A preliminary grading operation can be modeled on tobacco grading systems from the recent past. In such grading systems, farming folk sort the tobacco into flines, trash, lugs, bright, red and green or tips. These "grades" are then tied into hands, put on sticks, pressed, and then taken to market and placed on baskets for sale. At the warehouse, the preliminary graded commodity is graded into one of many hundreds of sub-grades determined by the professional grader. Certified government tobacco graders come to a public warehouse and move from basket to basket assigning grades to each crop.

There are differences between tobacco and ginseng. The volume of ginseng or other medicinal herbs is far lower and thus does not require the vast warehousing that was required in tobacco growing country. Instead, the professional grader would come to the central county-designated location or to the place of growth and drying (for an extra fee), and determine a grade and then seal the weighed amount which is then ready for sale.

A preliminary grading system for ginseng has been proposed by Syl Yunker, based on the experience and

comments of a number of herb buyers and other people familiar with ginseng. This grading method considers a number of observational principles for judging the major grades of ginseng and other herbs, as to age, color, texture, dryness level, and storage features.

Selling Procedure -- The marketing process will consist of inspecting packages of medicinal herbs and assigning code numbers and letters to each shipment, after determining that the grower has a certified organic material or a marketing card. The material will be weighed, graded, and sealed, and a standard description will be offered on the Internet sales area, at which time bids will be accepted from buyers. The transaction may be made directly with a fee routed to the transactor or it may be collected from the buyer and passed on to the seller at the time of delivery

The Internet Approach -- After conversation with medicinal herb experts and persons in the computer field, we have concluded that the best approach to marketing medicinal herbs is to follow the efficient selling process now occurring through the Internet. We are convinced that for small medicinal herb growers, the Internet is the best and lowest priced outlet for trade.

For the grower, we estimate that only two small fees - one for ginseng grading and one for Internet transactions - would be required. Because a secure Internet sales system would be used, growers would not risk losing their up-front payments. All parties would be protected until funds are received via the EDI banking system. A wide range of products could be sold, including roots or leaves (both dried or green). Using modern shipping methods, green material could likely be transported with as little waste as historically used dried materials.

The cooperative structure eliminates the need for extensive promotion by unconnected small growers and eliminates the need for wholesalers and other middle persons in the traditional ginseng sales route. Start-up operations for the cooperative would not require elaborate warehousing networks and could occur in a short time, if ASPI's goals for establishing this important marketing cooperative are met.

CONCLUSION

We at ASPI encourage you in all your VWG growing efforts and hope you will work with us and others to get a successful ginseng marketing system underway. Ginseng growing is a promising enterprise, and with your efforts, it can be even better - for farmers and for our region.

GINSENG TERMINOLOGY

* **GINSENG** -- any of several perennial herbs (genus *Panax*) of the ginseng family, with thick forked aromatic roots or the preparation made from these roots and used primarily in the Orient as a medicinal treatment (anti-toxic effects, anti-cancer effects, stimulate RNA syntheses, etc.). Several species of ginseng exist within the Araliaceae family (allied to the parsley family) and the genus *Panax*.

* **American Ginseng** -- (*Panax Quinquefolium*) an indigenous wild plant found in Canada and the eastern area of the United States.

* Korean or Japanese Ginseng -- Panax Ginseng which is used widely in the Orient and Russia as folk medicine. The Chinese words jen (man) and shen (root) are the roots of "Ginseng" derived from the shape of the root. There are a number of other perennial herbs in the ginseng grouping including Panax Pseudoginseng.

* Ginseng Companions and Relatives:

** Siberian Ginseng -- (Eleutherococcus senticosus) not really a ginseng but a cousin within the Araliaceae family but also used widely in Asia as an adaptogen.

** Dwarf Ginseng -- (Panax trifolium) is a close relative found in the eastern United States but has no medicinal value.

** Fool's sang or wild sarsaparilla -- (Aralia nudicaulis) closely resembles and is mistaken by novice harvesters for American ginseng.

** Companion plants to ginseng -- Indian turnip, (jack-in-the-pulpit), black cohosh, blue cohosh, goldenseal, and bloodroot. Their presence indicates good ginseng soil.

* Ginseng Components:

** Adaptogen -- ginseng is one of the few plants which are classified as such. An adaptogen is any substance which is non-toxic and creates the minimum amount of disorder in the physiological functions of the organism; the action should be considered non-local or non-specific; and it must be a regulator, possessing a normalizing effect (e.g., regulating mild high and low blood pressure).

** Ginsenoside -- a family of steroid-like compounds known as saponins which are the active ingredients in the ginseng plant. There are more than 25 saponin triterpenoid glycosides called ginsenosides, the 7 major ones of which are R_{g1}, R_e, R_f, R_{b1}, R_c, R_{b2} and R_d with the subscript letters referring to the distance the compound moves on the chromatograph.

Analysis -- six glycosides called panoxosides and six sapogenins which can be cleaved from them are active substances:

** panaquilon -- mildly increases endocrine activity;

** panaxapogenol -- mildly increases metabolic activity;

** panaxin -- mildly stimulates the circulation;

** Panacene -- mildly stimulates the digestive process;

** Panaxadiol (root extract) & Panaxatriol (root).

* Ginseng Grades or Qualities:

** Chinese Wild Imperial (or Manchurian) wild root found now quite rarely in China and bringing extremely high prices (thousands of dollars per pound) depending on age and shape of the root.

** Korean and Chinese Red -- wild or cultivated Chinese and Korean root depends on color imparted by curing process.

** Korean White -- slightly lower price than the red grade.

** American Wild -- defined above.

** Japanese and American Cultivated

* Ginseng Growing/harvesting:

** Wild-crafting ('sanging) -- harvesting wild ginseng which is growing in the natural state in forested areas of native habitat.

** Field Cultivated Ginseng -- plants grown under artificial shade but requiring a large investment of time, money and equipment. Labor may run at \$30,000 plus an acre and gross returns of \$100,000 after four years -- but this figure is subject to fluctuating market prices of this lowest grade of ginseng. These cultivated fields are subject to mold and other plant diseases and so commercial chemical pesticide treatment is the ordinary practice. The product is not organic.

** Woods-grown Ginseng -- raised under natural tree canopy in forest lands. Some maintenance is required and intensive cultivation methods may maximize yield in minimal time. Investment costs are less than field cultivated Ginseng and applications of pesticides and fertilizers are sometimes less but the product is not organic. The market price is higher than field-grown ginseng but not near that of wild ginseng.

** Wild-Simulated Ginseng -- a type of cultivated ginseng which uses the natural tree canopy as shade. Some maintenance is required and intensive cultivation methods may be used to maximize yields in minimal time. The general process involves removing part of the forest under-story from a certain plot, raking away leaf litter, sowing ginseng seed on the scratched surface, and raking back leaf litter. This method uses, at most, little pesticides, and the product may or may not be organic ginseng. However, the harvesting is on a single basis and land must be left unplanted for a number of years after harvesting. Prices could approach those of wild ginseng.

** Virtually Wild Ginseng -- a type of wild ginseng which is sown in a natural fashion in a suitable ginseng-

growing woodlands with natural tree canopy and with no disturbance of the leaf litter, except to insert the seed. This method does not use pesticides and the product is organic ginseng, but the crop can be harvested selectively over an indefinite period of time with no major cessation of the total ginseng growing area.

* Ginseng-Related Persons --

** Cultivator -- a person who cultivates ginseng using an artificial canopy or other methods associated with tillage.

** Grower -- a person who grows ginseng to sell (cultivator, wild simulated or virtually wild grower).

** Wild crafter or 'Sanger -- a person who harvests wild ginseng; these include two varieties: more traditional harvesters who dug from given areas after seeds had matured in late summer and who put seed into the nearby ground; and opportunists who being aware of the immense value of ginseng hunt it in or out of season and who are not sensitive to the maturity of the plant.

* Ginseng Preparation --

** Dried or Cured Ginseng -- ginseng root that has been dried by natural sun or shade -- never by artificial heat.

** Green Ginseng -- ginseng root from which the moisture has not been removed by drying.

** Stratified Seed -- ginseng seed that the grower has begun to mature in an easily accessible holding container, submerged in soil, so that the earth will furnish the required moisture for germination.

* Ginseng Regulatory Agency -- the governmental office that handles a part of the growing, marketing, and use of ginseng.

** KY State Department of Agriculture -- KY state regulations

** Fish and Wildlife Service (Department of Interior) -- ginseng may only be exported from states which have ginseng management programs

** U.S. Forest Service (Department of Agriculture) harvesting on federal lands

** Food and Drug Administration -- regulation of ginseng sold as a medicinal.

* Ginseng Regulatory Marketing Devices --

** Grower license -- an annual permit issued by the Department of Agriculture, which enables a person to grow ginseng for sale.

** Crafter license -- an annual permit issued by the Department of Agriculture, which enables a certified crafter to harvest wild ginseng in permitted areas.

** Dealer license -- an annual permit issued by the Department of Agriculture, which enables a person to buy wild ginseng for resale.

** Buyer -- indefinite term which may refer to wholesale or retail purchasers as well as ultimate consumers.

** Value added-- the concept of processing a commodity or raw material so that the producer and local community receive a higher return than they would for the raw material alone. Proper harvesting, drying and grading are examples of using "value added" services that increase the value of ginseng. We can also emphasize the words "value added" ginseng as a way of showing the worth of each root. A good marketing system differentiates between higher and lower levels of quality among the "cultivated," "woods-grown," "wild-simulated" and "virtually wild" methods of ginseng growing. The concept of "organic ginseng" and "sustainable practices" are also examples of "value added" marketing and need to be emphasized.

AVAILABLE RESOURCES

Papers (add \$1.00 for postage and handling per order)

ASPI Technical Paper 38 Ginseng in Appalachia

by David Cole \$2.00

Maine Regulations on Ginseng Growing \$2.00

Ginseng Marketing Survey by Syl Yunker \$2.00

Videotapes \$25.00 (this includes postage and handling)

(1) Syl Yunker - Growing Virtually Wild Ginseng

(2) Ginseng and the Environment - (June, 2000) Wild ginseng has lived in moist cool understory of the forests for millennia and this symbiosis enhanced it as a plant species and enhanced the environment by its presence. We want to talk about that relationship in different ways today.

(a) Preserving Wild Ginseng in the Forest (Greg Williams)- This is a greater problem than one would expect

because ginseng grew in the Eastern American forests plus those in the Orient for thousands of years. But it was almost wiped out in China when the forests disappeared and also in North America even in the 18th century when its international commercial value became known. So the threat to ginseng is not something new but very old. That threat is very real today. Greg Williams is editor of Hort Ideas and has attended a conference on Ginseng.

(b) Preserving the Forest by Growing Wild Ginseng (Paul Gallimore)

Not only must we preserve ginseng as a wild species *Panax quinquefolium*, but we must present the forest in which it grows. Furthermore, the deliberate growing of virtually wild ginseng is a way to enlist woodland owners in caring for and preserving the forest for this potentially lucrative crop. This becomes a win-win situation with the forest gaining as well as ginseng being retained in larger quantities. Thus it is a non-timber forest product which has value in commerce and the forested property actually becomes more commercially valued because it is growing a profitable crop which has high demand.

Paul Gallimore tells how chip mills and timbering operations gain very small returns compared to ginseng and can destroy the forest floor which will then not allow the ginseng to be grow.

(3.) Growing and Protecting Virtually Wild Ginseng (Summer, 2000)

This is a second in the series of videotapes on Ginseng that were produced by the AGF. It tells of the growing of this highly prized medicinal herb in the Appalachian region. We will first hear about the history of Ginseng and then about the 'sanging operations in Appalachia. We will consider Kentucky as a focal place for wild ginseng gathering. But more than gathering of materials in the wild, we are more concerned with replacement and actual growth in forested area -- an assisted program which allows for propagation of materials of equal worth and thus not woods-grown or cultivated by artificial means. We would not prefer simulated wild and thus want as close to nature as possible and still have an organic product.

The program is divided into two parts:

(a.) The tour of the Syl Yunker Farm includes the following:

- * selecting of sites for ginseng;
- * sowing of ginseng seeds;
- * spacing and interplanting of seeds;
- * stacking of brush;
- * protecting from rodents, deer, etc.;
- * protecting from poachers (by use of dogs, etc.);
- * protecting from crop diseases;
- * knowing the age and time of harvest;

- * harvesting roots and drying operations; and
- * gathering and redistributing the matured seeds.

BIOGRAPHICAL INFORMATION

Al Fritsch is the founding executive director of the Mount Vernon, Kentucky-based ASPI, an appropriate technology and environmental demonstration center. Al has worked in public interest areas for thirty years, first in Washington, DC for Ralph Nader's Center for the Study of Responsive Law and then in 1971 he helped found the Center for Science in the Public Interest. Al returned to his native Kentucky in 1977 and has worked on a number of issues related to renewable energy, intensive organic gardening and sustainable forestry. He is a Jesuit Priest and thus continues a long history of interest in medicinal herb ginseng. He is the author of a number of books and reports and is the narrator of a weekly environmental show on WOBZ-TV at London, Kentucky.

APPENDICES

ASPI Technical Paper Number 38: "Ginseng in Appalachia", 1996, by David Cole

"Growing Virtually Wild Ginseng," by Al Fritsch & Amanda Allen

FURTHER READING

Persons, Scott, "Ginseng: Green Gold," Mother Earth News, Jul/Aug 1983, pp. 24-7.

Persons, Scott, "Growing Organic Ginseng," Mother Earth News, Sept/Oct 1984, pp. 66-68.

Pritts, Kim, Ginseng: How to Find, Grow, and Use America's Forest Gold, 1995, Stackpole Books, Mechanicsburg, PA.

Veninga, Louise, The Ginseng Book, 1973, Ruka Publications, Santa Cruz, CA.

Wharton, Mary E. and Roger W. Barbour, A Guide to the Wildflowers and Ferns of Kentucky, 1971, University Press of Ky., Lexington, KY.

Williams, Greg, ASPI Technical Series Paper No. 57, "Moratorium on Wild American Ginseng Exports," 2000

ENDNOTES

1. Folklife Center News, Vol. XIX-No. 1&2

2. In the West, serious research is now being launched in academic and industrial laboratories on various ginseng components to determine their health effects. Only time will tell whether future scientific evidence will support these health claims, but some preliminary studies indicate some possible benefits.

3. Contemporary Atlas of China, Houghton Mifflin, 1988

4. ASPI Technical Paper Number 38; Pritts, 1995, p. 49; Andy Hankins, Virginia State University, "Producing and Marketing Wild Simulated Ginseng in Forest and Agroforestry Systems."

5. One study by ginseng researcher Bob Beyfuss found a consistent relationship between Calcium and Magnesium at a higher 10:1 ratio. The study examined 44 samples of healthy-appearing ginseng from the northeastern region of the U.S. (Greg Williams' notes from Kentucky Ginseng Conference, May 9-11, 2000, sponsored by U.S. Fish and Wildlife Service).

6. Pritts, p.41

7. "Woods Grown Ginseng, 1995, WVU Cooperative Extension Service.

8. Ginger Shelby, a herb grower and broker writes to ASPI that she believes the establishment of an official grading and marketing system will benefit the whole ginseng industry, including buyers. She has spoken to a large buyer on the issue who says that he believes that ginseng produced by responsible landowners is often of a higher quality than ginseng from more questionable sources, because it is more carefully harvested and dried. Unlike the poacher, the responsible home-grower usually also seeks to have a long term business relationship with trusted buyers. Having a reliable grading and marketing system in place would therefore benefit both. Ginger Shelby can be reached at P.O. Box 41, Shauck, OH 43349.