Demand for herbal products is increasing

- Sales of herbal dietary supplements in US increased 7.6% in 2016; the 13th consecutive year of growth.
- Estimated US retail sales totaled $7.5 billion in 2016.
- Making it into the 40 top-selling herbal supplements in mainstream channels were black cohosh (#5) at $36.5 million; elderberry (#19) at $14 million; and ginseng (#31) at $9.7 million.
- Horehound was #1 at $125.5 million.

Wild-harvesting is a long treasured tradition in our region

- This is part of our mountain culture.
- We are not out to destroy that.
- Many wild-harvesters are good stewards and concerned about conservation.

But programs like these threaten to destroy the tradition because of greed.

Over-harvesting, habitat loss, and climate change are all threats to native populations of popular forest herbs.

But these plants can be cultivated, reducing pressure on wild populations and creating an income stream for forest landowners.

Introduction to some of the more popular plants that have a market demand and can be grown in our forests.

- Perennials.
- Usually grow for three or more years before harvest.
- Roots are the primary plant part of interest.
- All of these are native to our region.
Ginseng (*Panax quinquefolius*)

- The most popular of the forest botanicals.
- Wild plants are threatened (not endangered).
- Many traditional uses esp. among Asian consumers.
- Tonic, improve mental activity, fertility, stress tolerance.
- Prices in mid-Sept 2017 were $110-$175/lb green and $350-$500/lb dry (down a little from last year at this time).

Ginseng can and should be cultivated

- Propagated by seeds (mostly) or young rootlets.
- Three methods: artificial shade grown, woods grown, and wild-simulated.
- How it is grown affects its appearance and value.

Cultivated  Wild

Goldenseal (*Hydrastis canadensis*)

- Perennial rhizome.
- Propagate by rhizome cuttings and seed.
- Fairly easy to cultivate.
- Boosts immune system; anti-inflammatory.
- Prices in mid-Sept 2017 were: $6-10/lb wet and $25-30/lb dry for roots and $0.75-1.50 wet and $3-6 dry for tops (up a little).

Bloodroot (*Sanguinaria canadensis*)

- Herbaceous perennial.
- Propagate by seed and rhizome cuttings.
- Almost all wild-crafted.
- Used as a dye, to treat skin lesions, and to prevent tooth decay.
- Appetite stimulant in cattle feed, wormer for livestock, and used in cancer studies.
- Alkaloid: sanguinarine. Anti-microbial.
- Prices in mid-Sept 2017 were: $1.50-1.75/lb wet and $5-10/lb dry (down a little).

Black cohosh (*Actaea racemosa*)

- Herbaceous perennial.
- Propagate by division and seed.
- Woman’s herb; HRT alternative.
- In high demand; some cultivation.
- Prices in mid-Sept 2017 were: $0.75/lb wet and $2.50-3.50/lb dry (down just a little).
Blue cohosh 
(*Caulophyllum thalictroides*)

- Rich, well-drained soil.
- Slow growing, but easy to grow.
- Divisions or seed.
- Another woman’s herb—childbirth.
- Beautiful landscape plant.
- No commercial cultivation that we are aware of.
- Prices in mid-Sept. 2017: $0.75/lb wet and $3.50/lb dry (up quite a bit from last year).

False Unicorn (*Chamaelirium luteum*)

- Also known as fairywand and stargrub root.
- Scarce in many areas and slow growing.
- Little commercial production.
- Woman’s herb, pain, poor appetite.
- Prices in mid-Sept. 2017 were: $18/lb wet and $80-$100/lb dry (same as last year).

Mayapple (*Podophyllum peltatum*)

- Long history of use to treat liver problems, cancer, constipation.
- Propagate by rhizome cuttings.
- Easy to grow.
- Limited demand.
- Prices in mid-Sept. 2017: $0.50/wet and $2/lb dry (down a little from last year).

Wild indigo (*Baptisia tinctoria*)

- Hard to transplant, cuttings work well.
- Attractive nursery plant.
- Prefers drier soil than most others.
- Sore throats, typhus, wound cleaning.
- Prices in mid-Sept. 2017: $2/lb wet and $4.50/lb dry (same as last year).

Spikenard (*Aralia racemosa*)

- Grows 1-10 feet tall.
- Easy to cultivate.
- Treat backaches.
- Rising demand.
- Prices in mid-Sept. 2017: $3/lb dry and $0.75/lb fresh (up from last year).

Pink root (*Spigelia marilandica*)

- Used to treat indigestion.
- Very attractive ornamental.
- Propagate by root division.
- Prices in mid-Sept. 2017: $5-$8/lb dry (same as last year).
Wild ginger (*Asarum canadense*)
- Grows in cool, shaded, moist woods.
- Propagate by division.
- Used as stimulant and to relieve gas, but there are safety concerns.
- Prices in mid-Sept. 2017: $0.15/wet and $1/lb dry (same as last year).

Bethroot (*Trillium erectum*)
- Very attractive and desirable ornamental.
- Roots are used medicinally.
- Low demand.
- Current uses for its astringent properties and to treat internal bleeding.
- Prices in mid-Sept. 2017: $0.80/lb wet and $3/lb dry (up a little).

How to grow woodland botanicals

Practice Good Agricultural Practices

Three Major Production Methods:
- Artificial shade-grown
  - Very mechanized, capital intensive initially, high input, and very productive-high yields and short production times.
- Woods-cultivated or Woods-grown
  - Less productive and takes longer to get a harvestable root, but less expensive to produce and roots look more natural.
Wild-simulated production

Least expensive, lowest yields, easiest, takes longest time to reach harvest stage, but in the case of ginseng, produces the most valuable root.

In this session, we are going to focus on the woods-grown and wild-simulated methods.

Site selection is the most important factor

- Need a shaded site—about 75% shade.
- Mixed hardwood forest; some pines okay.
- Look for appropriate companion plants.
- Good air flow and water drainage.
- Rich soil, high in organic matter.
- Soil should stay moist year round.

Companion plants

- Look for other forest medicinals that like similar conditions to the plants you want to grow.
- Take note in the wild what plants are often found growing near the plants you want to grow.
Test and prepare the soil

- Do a soil test, including checking for nematodes.
- Correct for any major deficiencies, particularly pH, P, and Ca.
- pH around 5.5 to 6.5.
- Can add compost-homemade or purchased.
- Incorporate any recommended lime and amendments.

Caution about manure

- Some herbicides carryover from hay into manure and compost.
- Ask questions about the hay the horses or cattle ate!

The calcium controversy

Some experts say ginseng soil has to have 2,000 lbs calcium/acre. So it is now common practice to sprinkle gypsum on the soil when sowing seeds.

What is good for one plant is not always good for another!

Some folks thought if ginseng benefits from gypsum than goldenseal will, too! But the response was the opposite.

Clean and clear the site

- Turn soil, with tiller or by hand.
- Add soil amendments.
- Build raised beds if possible.
- The use of organic fungicides and herbicides are acceptable in this method.

For woods-cultivated botanicals

Photos by Tom Konsler
Wild-simulated system

- Rake aside leaf litter.
- If appropriate, spread gypsum or lime.
- Rake it in.
- No other amendments added.
- Most growers don’t use any sprays but will control critters.

Seed and Planting Stock

- Obtain high quality seed and planting stock.
- Positive species ID is critical.
- Know who you are buying from.
- This can be expensive, but usually worth it.
- If you dig your plants from the forest, do it legally and sustainably.

Many of these seeds must be specially handled—ginseng, goldenseal, bloodroot...

We will cover this in great detail in the Propagation 101 session.

Sow seed in fall (best) or early spring

Wild-simulated system

- Just broadcast the seed.
- Weigh out baggies of seed for a specific area to improve uniformity.

In a woods-grown system

- Mechanize if you can.
- Seeding rates will be higher.
- Often more precise and deliberate, using rows and even spacing.

Wild-simulated system

Cover planted area with leaf litter and small branches.
Woods-grown system

Cover beds with several inches of an organic mulch

Seedlings may look very different from mature plants

Ginseng

Goldenseal

Rhizome and Root Cuttings

We will cover this in detail in the Propagation 101 session.

Plant Populations

- Varies depending on plant species and production system used.
- Give plants lots of space in wild-simulated system.
- Woods-grown: goldenseal 6 inch x 6 inch spacing; black cohosh 18 inch x 18 inch spacing.

Maintenance

- Visit sites regularly.
- Look for signs of voles, disease, insects, poaching.
- Fallen trees, erosion.
- Weeds.

Insects and Diseases

- Need good observational skills.
- Prevention is the best approach.
- Healthy soil.
- Good water and air drainage.
- Do not over water or over fertilize.
- Try to plant a diversity of plants.
Slugs

Voles, mice, rats

Deer and turkeys

When necessary, take action to protect plants from diseases, insects, & animals

Poaching and Stealing

• This used to just be a problem with ginseng.
• This is changing, so think security with all your plantings.

Collecting, Saving, and Growing Your Own Seed

We will cover this in detail in the Propagation 101 session

Harvest

In the woods, this is still all hand work (There has got to be a better way!)

Roots have to be washed
Drying Herbs and Roots

- Most herbs and roots are dried.
- Drying them in the sun results in a low-quality product.
- Need a drier with temperature control and good air movement.
- Most herbs should be dried at low temperatures: 95-130 degrees F. Increase temperature under high humidity.

Herb dryers growers can build themselves!
Available at ncherb.org

Focus on quality

- Certified organic.
- Forest grown certification.
- Heavy metal tests.
- Pesticide tests.
- Bioactive analysis.
- GMPs.
- Handling and storage.

The final product must meet buyer specifications

All plant material must be properly identified and a voucher specimen should be prepared

Making vouchers

Clare Schwartz packaging Wounded Warrior Ointment at Blue Ridge Food Ventures

The final product must meet buyer specifications

FDA Good Manufacturing Practices (GMP)

Need to produce high quality, clean material to meet the manufacturers' needs to satisfy the federal GMPs
Keep good records throughout the process, retain samples, and put lot numbers and dates on all package labels.

Marketing is the hardest part!
Growers need to learn as much as they can about the local, national, and international markets for their product, including supply and demand, distribution, opportunities and challenges.

This will be covered in the Marketing 101 session.

Suggested Books:

Ncherb.org