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## The Herbal Dispatch

A monthly publication of the Medicinal Botanical Program

The goal of this newsletter is to inform readers of the Program's educational, research and outreach activities and events; and of results of the latest research on the chemistry, cultivation, processing and preventive and therapeutic use of botanicals.

The views expressed in The Herbal Dispatch are those of the authors and do not necessarily reflect those of MSU or the Medicinal Botanical Program staff. Authors are solely responsible for their articles.

Mario R. Morales  
Editor/Publisher

**The Medicinal Botanicals Program**  
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## Workshop: Improving Small Ruminant Grazing Practices

The USDA-ARS Appalachian Farming Systems Research Center (AFSRC) and the Mountain State University Medicinal Botanicals Program (MSU-MBP) would like to invite you to the Workshop and Research Update: Improving Small Ruminant Grazing Practices to be held on July 11, 2009 at AFSRC facilities, 1224 Airport Road, Beaver, WV. The one-day program will start at 8:00 am and will feature innovations in small ruminant farming practices, including forage plant selection and management, novel pasture systems, and natural health management for small ruminants.

The morning session includes the following presentations:

08:30-08:45—Introduction, Dr. David Belesky, AFSRC Research Leader

08:45-09:15—Finishing Small Ruminants on Pasture, Dr. Ken Turner, AFSRC Research Animal Scientist

09:15-09:45—Silvopasture: A Natural Choice, Dr. Jim Neel, AFSRC Research Animal Scientist

09:45-10:15—Non-traditional Forages for Central Appalachia, Dr. Kim Cassida, AFSRC Research Agronomist

10:15-10:45—Break



10:45-11:15—Plant Constituents: Opportunities to Control *Haemonchus contortus*, Dr. Joyce Foster, AFSRC Research Biochemist

11:15-11:45—Potato Bean: Potential Forage/ Dietary Supplement for Small Ruminants, Dr. Mario Morales, Director, MSU-MBP

11:45-12:15—*Artemisia* for Small Ruminant Production, Dr. Jorge Ferreira, AFSRC Research Horticulturist

After lunch, participants will travel to the AFSRC farms for a tour and demonstrations. This is a unique opportunity to discuss small ruminant production issues with leading USDA scientists.

Participants will receive refreshments, lunch, a copy of the workshop proceedings, and a binder with handouts. Lunch will consist of a sandwich, side dish, cookie, and drink. Sandwich choices include: Ham, Turkey, Beef, or Vegetarian. (Indicate your choice on the registration

form.) Lunch, proceedings and binder will be ensured only to those whose registration is postmarked before July 1, 09.

### How to Register

Fill out the registration form on page 6 and return it with fee (\$10 per person) to the address below. Make check or money order payable to: **Mountain State University.**

AFSRC-MSU Workshop  
c/o Medicinal Botanicals Program  
PO Box 9003  
Beckley, WV 25802-9003

### Directions

AFSRC is located at 1224 Airport Road, Beaver WV. From I-64 East, take exit 125B onto Airport Road. From I-64 West, take exit 125, and then turn right onto Airport Road. The AFSRC entrance is 0.3 miles on the right, marked with a brick sign.

### Information

Dean Myles, Tel: 304-929-1687, email: dmyles@mountainstate.edu.

Websites:  
[www.ars.usda.gov/naa/afsrc](http://www.ars.usda.gov/naa/afsrc)  
[www.mountainstate.edu/usda](http://www.mountainstate.edu/usda)

## The Soil Biology Primer-Part VI

By Elaine R. Ingham  
Oregon State University

### Chapter 2: THE FOOD WEB & SOIL HEALTH

#### MANAGEMENT AND SOIL HEALTH

A healthy soil effectively supports plant growth, protects air and water quality, and ensures human and animal health. The physical structure, chemical make-up, and biological components of the soil together determine how well a soil performs these services.

In every healthy system or watershed, the soil food web is critical to major soil functions including:

- 1) sustaining biological activity, diversity, and productivity;
- 2) regulating the flow of water and dissolved nutrients;
- 3) storing and cycling nutrients and other elements; and
- 4) filtering, buffering, degrading, immobilizing and detoxifying organic and inorganic materials that are potential pollutants.

The interactions among organisms enhance many of these functions.

Successful land management requires approaches that protect all resources, including soil, water, air, plants, animals and humans. Many

management strategies change soil habitats and the food web, and alter soil quality, or the capacity of soil to perform its functions. Examples of some practices that change the complexity and health of the soil community include:

Compared to a field with a 2-year crop rotation, a field with a 4 crops grown in rotation may have a greater variety of food sources (i.e., roots and surface residue), and therefore is likely to have more types of bacteria, fungi, and other organisms.

A cleanly-tilled field with few vegetated edges may have fewer habitats for arthropods than a field broken up by grassed waterways, terraces, or fence rows.

Although the effect of pesticides on soil organisms varies, high levels of pesticide use will generally reduce food web complexity. An extreme example is the repeated use of methyl bromide which has been observed to eliminate most soil organisms except a few bacteria species.

#### THE FOOD WEB AND CARBON SEQUESTRATION

Land management practices can be chosen to increase the amount of carbon sequestered as soil organic matter and reduce the amount of CO<sub>2</sub>, a greenhouse gas, released to the atmosphere.

As the soil food web decomposes organic material, it releases carbon into the

atmosphere as CO<sub>2</sub> or converts it to a variety of forms of soil organic matter. Labile or active fractions of organic matter stay in the soil for a few years. Stable forms reside in the soil for decades or hundreds of years. Physically stabilized organic matter is protected inside soil aggregates that soil organisms help create. Humified organic matter is stable because bacteria and fungi have helped form molecules that are too complex and large for soil organisms to decompose.

#### LOOKING FORWARD

The functions of the food web are essential to plant growth and environmental quality. Good resource management will integrate food web-enhancing strategies into the regular activities of farms, ranches, forests, or in backyard gardens. Needed research will examine food web functions within whole systems, and will support technology development. Technology to assess and maintain the functions of soil food webs will be developed to assist land managers and researchers as they strive towards soil productivity and stewardship. In the coming years, we can expect progress at answering soil biology questions such as the following.

#### **What is a healthy food web?**

What measurements or observations can be used to determine whether a particular biological community is

desirable for the intended land use? What level of complexity is optimal for highly productive and sustainable crop, range or forest lands?

#### **Is it more useful to count species, or types of organisms?**

The Soil Biology Primer divides food web organisms into six groups. Achieving an optimal balance of these groups is one approach to managing the food web. Alternatively, identifying the species and complexity present within a group may provide other useful information about the health and productive potential of a soil.

#### **How should the biology of the soil be managed?**

In the future, land managers may be able to more precisely predict the effect of management decisions such as the timing of tillage, the application of a certain kind of compost, or the use of a particular pesticide. They may choose practices with the intent of making specific changes to the composition of the soil food web.

#### **What are the costs and benefits of managing for soil biological functions?**

The costs to achieve a highly diverse, or complex, soil community need to be identified. These can be compared to the benefits of biological services provided, such as nutrient cycling, disease suppression, and soil structure enhancement.

## High-Fructose Corn Syrup and Diabetes: What the Experts Say

Mike Adams, NaturalNews,  
June 17, 2009

According to the Corn Refiners Association, high-fructose corn syrup (HFCS) is no worse for you than any other dietary carbohydrate. Many health experts, however, disagree, warning consumers that HFCS is strongly correlated with diabetes and obesity. Here are some quotes:

"Roughly \$40 billion in federal subsidies are going to pay corn growers, so that corn syrup is able to replace cane

sugar. Corn syrup has been singled out by many health experts as one of the chief culprits of rising obesity, because corn syrup does not turn off appetite. Since the advent of corn syrup, consumption of all sweeteners has soared, as have people's weights. According to a 2004 study reported in the American journal of Clinical Nutrition, the rise of Type-2 diabetes since 1980 has closely paralleled the increased use of sweeteners, particularly corn syrup" (G. Cousens, 2008).

"Since the fructose in corn syrup does neither stimulate insulin secretion nor reduce the hunger hormone ghrelin, you will continue to feel hungry while the body converts the fructose into fat. The resulting obesity increases the risk of diabetes and other diseases. Since you obviously cannot expect to receive much help from those who only know how to treat the effects of illness and not its causes, you may need to take your health into your own hands" (A. Moritz, 2005).

"More than half of the

carbohydrates being consumed are in the form of sugars (sucrose, corn syrup, etc.) added to foods as sweetening agents. High consumption of refined sugars is linked to many chronic diseases, including obesity, diabetes, heart disease, and cancer. Generally, the term "dietary fiber" refers to the components of plant cell wall and non-nutritive residues. Originally, the definition was restricted to substances that are not digestible by the endogenous secretions of the human digestive tract" (J. Pizzorno & M. Murray, 2005).

## Ginger Eases Nausea from Chemotherapy

HealthDay News, May 14,  
2009

Researchers have discovered the nausea-easing powers of ginger that many grandmothers are already familiar with, and report that the spice helped cancer patients who were undergoing chemotherapy.

"Ginger at a daily dose of 0.5- to-1 gram significantly aids in the reduction of chemotherapy-related nausea on the first day of chemotherapy, and reduced nausea will lead to improved quality of life in many cancer patients," said study author Julie Ryan, an assistant professor of dermatology and radiation oncology at the James P. Wilmot Cancer Center at the University of Rochester, said during a Thursday teleconference highlighting research that will be presented later this month during the American Society of Clinical Oncology (ASCO)

annual meeting in Florida.

That dose is the equivalent of 1/4 to 1/2 a teaspoon of ground ginger, she added.

The trial participants, mostly women and mostly breast cancer patients, were also taking conventional drugs to quell vomiting.

"A lot of patients ask us as oncologists, 'Is there anything more I can do to deal with chemotherapy-induced nausea?' ", said Dr. Douglas Blayney, president-elect of ASCO and medical director of the Comprehensive Cancer Center at the University of Michigan, in Ann Arbor.

The majority of patients undergoing chemotherapy do have nausea and vomiting. And nausea can persist even if actual vomiting is stopped. Some 70 percent of patients in chemo still have the symptoms even with common use of antiemetic, or anti-vomiting, drugs.

Ginger is a spice that has been widely used for decades to treat nausea and vomiting, Ryan stated.

These researchers, supported by the U.S. National Cancer Institute, enrolled 644 cancer patients who had already experienced nausea after chemotherapy. All participants had to still be facing at least three rounds of chemo.

The trial is the largest of its kind, according to the researchers.

Participants were randomized to receive either a placebo or one of three doses of ginger supplement: 0.5 grams, 1 gram or 1.5 grams for three days before the start of chemo and three days after for the next two cycles. All also received traditional antiemetic drugs on the first day of treatment.

Most patients report the most severe nausea and vomiting on the first day of chemo,



Ryan said. If nausea can be reduced during this critical time period, subsequent nausea is also less likely.

While all doses of ginger helped with nausea, "The largest reduction in nausea occurred with 0.5 and 1 gram of ginger, which was about a 40 percent reduction in nausea," Ryan reported. The effect tended to wear off over the next 24 hours.

It wasn't clear if the same effects would be seen with ginger products, such as tea, ginger cookies and sushi, the researchers said.

## Appalachian Plant Profile: American Spikenard

**By Dean Myles, Coordinator  
Medicinal Botanicals Program  
Mountain State University**

*Aralia racemosa* is a native herbaceous shrub commonly known as American spikenard, spikenard, and spignet [1]. Spikenard is a long-lived woodland perennial reaching 1 to 6 feet in height. The large pinnately compound leaves have 6 to 21 oval leaflets with a double serrated margin. The flowers occur on numerous elongated stalks that commonly grow from 4 to 8 feet in height. The flowers are yellowish-green and polygamous. The fruit is a reddish-purple berry that ripens in late August. The rhizome is large and thick with large bud scars and numerous thin rootlets [2]. The root is easily identified by its strong spicy aroma. Spikenard habitat is cool, moist, hardwood forests.

Traditionally, spikenard had widespread use among the Native Americans. The Cherokee use spikenard roots and berries for coughs, menstrual problems, as a diaphoretic and expectorant, for wounds and burns, as a spring tonic and for weak back [3]. The Chippewa used spikenard for coughs,

menstrual problems, as a diaphoretic, an expectorant, an analgesic, for wounds and boils, and roots were applied to fractured bone. The Choctaw used spikenard as an analgesic, expectorant, for sore eyes, and as a stimulant. The Iroquois used spikenard as an antidiarrheal, anthelmintic, antirheumatic, cough medicine, for gynecological problems, and for liver and kidney support. Historically many other tribes such as the Malecite, Menominee, Meskwaki, Micmac, Ojibwa, and the Penobscot tribes used spikenard for many of the same ailments including, gonorrhea, tuberculosis, and stomachache. The Algonquin tribe used an infusion of roots and spurge (*Euphorbia spp.*) for diabetes. In folk medicine spikenard was used for coughs, infected wounds, and for rheumatism [4]. Spikenard like other members of the ginseng family may have hypoglycemic action.

Propagation of spikenard is easy from seeds and root cuttings [2]. Spikenard prefers a rich well drained soil high in organic matter. The pH range is 5.8 to 6.5. Seeds should be sown in nursery beds in late fall

to provide natural stratification. Seeds for spring plantings should be kept moist in the refrigerator for 2 months. Seeds should be covered with ½ to 1 inch of soil and a light mulching. It will take up 6 to 8 years before seedlings will reach harvesting size. Propagation from root cuttings is conducted by cutting the rhizome insuring each cutting has a bud and feeder roots. Place cuttings in nursery beds.

Spikenard can be found growing in rich woodlands throughout West Virginia [1]. Spikenard is considered to be secure within its natural range with the exception of Rhode Island where it is listed as "Special Concern" [5]. There are no harvesting regulations concerning spikenard in WV. Please contact your state's agency concerning harvesting of wild plants or contact your local native plant program or the National Plants Database at <http://plants.usda.gov/> for species status. Seeds and plants for cultivation can be purchased through reputable dealers and collected from the wild.



### References

1. Strausbaugh, P. D., Core E., 1978, **Flora of West Virginia**, Seneca Books, Inc. Morgantown, WV.
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4. Foster, S., Duke, J., 2000, **Medicinal Plants and Herbs Eastern/Central Ed.** Houghton Mifflin Co. NY.
5. USDA Plants Database, *Aralia racemosa*. Accessed 3/10/09 at <http://plants.usda.gov>.

## Juice Slows Prostate Cancer - And May Even Be an Effective Preventative

Healthy News, June 06, 2009

A simple juice can slow the progress of prostate cancer – and it could even work as an effective preventative, new research has revealed this week.

Pomegranate juice slows the progress of the cancer in men who've already received treatment, and it could also be a preventative, experts have heard.

A clinical trial involving 48 men who had been treated for prostate cancer discovered that the juice reduced the level of the protein PSA – an indicator of prostate cancer – by 60 per cent. Researchers

believe the juice would especially help men whose cancer treatment had been unsuccessful.

Source: Journal of Urology, 2009; 181: 295.

## Growers Try to Prevent Medicinal Herbs from Going Extinct

The native herb yerba mansa, translated from Spanish as the “calming herb,” has been used for centuries throughout the Southwest by American Indians and Hispanics for ailments ranging from toothaches to sinus infections.

Though the herb is relatively unknown outside the region, those in the folk herb industry say yerba mansa could become as popular as goldenseal and echinacea.

But before the ancient herb can get its day in the sun, researchers must find a way to protect the ecologically threatened plant from depletion by habitat loss and urban development.

Charles Martin, a researcher at New Mexico State University’s Sustainable Agriculture Science Center, has found a solution. He has made yerba mansa a viable agricultural crop for New Mexico’s small farmers.

“As far as I know, our center is the only place in the U.S. conducting production research (on yerba mansa),” Martin said. “We targeted native herbs in an effort to find alternative crops for small farmers that are drought-tolerant and have a built-in pest resistance, and yerba mansa is an ideal plant that meets that criterion.”

Also called yerba del manso, lizard tail or swamp root, the small plant with large white flower spikes is a perennial

native to riverbanks and wetlands in the Southwest and northern Mexico.

The effort to grow yerba mansa for commercial cultivation benefits farmers, but it is also an attempt to protect the plant’s future.

The herb is on the “to-watch” list by United Plant Savers, a Vermont-based organization dedicated to protecting native plants used as folk remedies.

Many herbal products that have been scientifically studied have not lived up to their claims. And many, like yerba mansa, have not been rigorously studied at all. Herbal supplements do not require government proof of safety and effectiveness to be sold.

Martin said it’s hard to quantify how much yerba mansa, or *Anemopsis californica*, remains in the wild. Researchers look to the plant’s shrinking habitat as an indicator of its well-being.

In New Mexico, riverside acreage along the Rio Grande continues to be swallowed by homes and development. Irrigated agricultural land once dominated, but now it has been reduced to less than 1 percent of the state’s entire land base.

Martin and his staff established a small demonstration plot that has grown because of the plant’s prolific spreading abilities.



This feature could help farmers in keeping an established stand growing indefinitely, he said.

The only limiting factor in growing yerba mansa is water, Martin said.

“It will grow in a wide variety of conditions and soils, including alkaline-encrusted soil and in all degrees of sunlight,” he said. “Once established, it doesn’t need any more water than a typical crop, than say alfalfa.”

As commercial demand for so-called herbal treatments increases, some plants run the risk of being over-harvested.

In 2007, U.S. sales of herb and botanical dietary supplements totaled \$4.8 billion, a 4.3 percent increase over 2006 sales, according to the Nutrition Business Journal.

Yerba mansa is gaining attention as a goldenseal substitute, said Michael Moore, director of the Southwest School of Botanical Medicine in Bisbee, Ariz. If



yerba mansa becomes widely used, cultivation is the only way to ensure a steady supply.

“There are a lot of plants that have almost been picked to extinction,” including goldenseal and American ginseng, Moore said. “A hundred years ago, American ginseng could be found in 22 states and now it’s only found in a few.”

Bill Quiroga, president of Native American Botanics and Yaquis tribe member in Tucson, Ariz., has tested different growing techniques for yerba mansa using aeroponics. Aeroponics is a form of hydroponics that uses a water-and-fertilizer solution to grow root crops instead of soil.

Though the research has been halted because of lack of funding, Quiroga said his goal is to get American Indian farmers to grow the herb using aeroponic technology to supply his wholesale company.

<http://www.caller.com/news>

### Mountain State University

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[www.mountainstate.edu/usda](http://www.mountainstate.edu/usda)

#### About the Medicinal Botanical Program

This Program was created as result of a Specific Cooperative Agreement between Mountain State University and the USDA/ARS-Appalachian Farming Systems Research Center in Beaver, WV. The establishment of this agreement came through the efforts of Senator Robert C. Byrd and a Congressional Appropriation.

The mission of the Program is to promote the medicinal plant industry in WV through research, education and outreach. The Program conducts research aimed at the identification and development of native plants as specialty vegetable/forage crops. Educational offerings include symposia, workshops and farm visits.

### Subscriptions

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Or a letter request to:

Mountain State University  
Medicinal Botanicals Program  
P.O. Box 9003  
Beckley, WV 25801-9003

### Why You Need More Sun When You're Over 50

Healthy News, May 17, 2009

We're finally realizing that we actually do need some sun on our skins – and a new study has found that we need even more of it as we get older.

Sunshine is the very best source of vitamin D, and it seems our natural levels fall as we get older, possibly because of the ageing process and also because we perhaps don't go outside quite so often.

Low levels of vitamin D can cause a condition known as metabolic syndrome, a combination of disorders that increases the risk for heart disease and diabetes.

A study of 3,262 people aged between 50 and 70 years found that 94 per cent had low vitamin D levels, and 42 per cent had metabolic syndrome.

Study team leader Dr. Oscar Franco from Warwick Medical School says vitamin D deficiency could be a global health problem.

Source: Diabetes Care, April 14, 2009

### Contributions

Dear reader:

Would you like to share your knowledge, skills and experience with us? Do you know how to produce, process, market and/or use herbs and medicinal plants?

Would you like to share this knowledge with our readers? It is quite simple. Just write your ideas on a piece of paper and mail it to us. We will type it and make sure that it gets published in our newsletter.

Please send contributions to the addresses indicated above.

### Mediterranean Diet Keeps You Sharp into Old Age

Healthy News, April 10, 2009

If you want to stay mentally sharp into old age, always eat the Mediterranean diet of fresh fruits, vegetables and olive oil.

The diet can help reduce your risk of developing Alzheimer's disease, and now a new study has found that it also protects against general cognitive decline often associated with aging.

In a study of 1,393 healthy participants who were tracked for more than four years, those who stayed close to the Mediterranean diet almost halved their chances of suffering mild cognitive impairment (MCI) compared with those whose diets included very little fresh fruits, vegetables, and olive oil.

Source: Archives of Neurology, 2009; 65: 216-25.

### Workshop Registration Form

#### Registration Form

Workshop and Research Update:  
Improving Small Ruminant Grazing Practices  
Appalachian Farming Systems Research Center and  
MSU Medicinal Botanicals Program  
Beaver, WV, July 11, 2009

Registration fee: \$10 per person (includes lunch). Indicate lunch preference below. Mail completed registration form and a check or money order to:

**AFSRC-MSU Workshop**  
**c/o Medicinal Botanicals Program**  
**PO Box 9003**  
**Beckley, WV 25802-9003**

Make check or money order payable to: **Mountain State University**

Pre-registration deadline: Postmarked before July 1, 2009

Name: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_

State: \_\_\_\_\_ Zip Code: \_\_\_\_\_

Telephone: \_\_\_\_\_

E-Mail: \_\_\_\_\_

Affiliation: \_\_\_\_\_

Lunch Preference:

Ham \_\_\_\_\_ Turkey \_\_\_\_\_ Beef \_\_\_\_\_ Vegetarian \_\_\_\_\_