The Plant Homesteading Guidebook: Food, Medicine, Soaps, and Natural Dyes

Kate Cummings
Independent Study Fall 2009
Adviser: Dr. McGrath

About the project

I started this independent study with the idea of creating a basic guidebook about the wonders of medicinal and culinary herbs, supplemented by a garden I would create in the backyard of the Green House, the special interest dorm currently occupying the old Armentrout House next to the McCrady dorm. It grew to incorporate fermentation, natural dyes, soap making, traditional medicine techniques, and the general idea that there is a very fuzzy line between the food you eat, the medicines you take, and the products you make out of herbs. As I invited speakers to campus and shadowed local artisans, I learned that the respect they had for the plants spanned all these seemingly distinct disciplines to the point that I could no longer isolate just one. You can grow a plant, say like the versatile dandelion (*Taraxacum*) pictured on the front cover, and eat the entire plant in a variety of ways, use the root for a blue natural dye, make the root into an herbal remedy, ferment the flowers into wine[11], or incorporate the flowers in a soap[18]. It would be an insult to the usefulness of the plant to just give it one label when it wears so many hats.

Therefore, this guidebook is meant to introduce the idea that the topics discussed below: food as your medicine, why plants are medicinal, and wildcrafting/herbal remedies. The ideas can be applied to the plants found in the Green House garden, as listed and specified in the next section. These plants can then be used in the appendix section of practical skills for soap making, fermentation, natural dyes, and culinary recipes.

Food as your Medicine

"Man esteems himself happy when
that which is his food is also his medicine"[13]

The best argument I have read about the treatment of food is from Michael Pollan, especially in his book In Defense of Food. He attacks the triumph of food science over food culture and the nutritionism that the Western food industry loves, or the promotion and separation of nutrients over the food itself. This has lead the processed food industry to 'fortify' nutrients into their Wonder Bread or Coke and pass it off as real food while 'educating' the public about what nutrients they need to survive, never mind that nutrients are not the only parts of a food we need. Pollan describes the simplification of food into nutrients as 'reductionist science', which ignores how "the simplest food is a hopelessly complicated thing to analyze, a virtual wilderness of chemical compounds, many of which exist in intricate and dynamic relation to one another, and all of which together are in the process of changing from one state to another"[7] (pg. 62). We eat carrots for their carotene, spinach for its iron, and chocolate for its antioxidants, never mind that nearly every plant has some form of antioxidants and carotenes.

The typical American diet can be described as emphasizing quantity over quality and having your cake and eating it too, for every meal, followed by some vitamin water, pills, or supplements to ease the guilty conscience. In real food, or what I define as what my great-grandmother would have recognize as food (which throws out Pop Tarts and Oreos), the natural sugar is packaged alongside fiber and carbohydrates to slow down the sugar rush normally found in processed sugary goods. Nutrients appear in forms that our bodies easily recognize, instead of synthesized in a laboratory. The low-carbohydrate diets and low-fat fads ignored the balance of macro and micro-nutrients that we need in food and all of the compounds science has not identified[1]. Maybe instead we should focus on how the food makes us feel- alert and full of energy after a local, organic feast or sluggish and tired after a fast food meal. And maybe we

should be focusing more on preventative medicine, or whole food grown in healthy soil to capture nutrients and minerals the way plants do best.

Fermentation

Fermentation, according to Sandor Katz, author of Wild Fermentation: The Flavor, Nutrition, and Craft of Live-Culture Foods and The Revolution Will Not be Microwaved, is the transformative action of microorganisms in anaerobic and aerobic processes. These microscopic organisms in live ferments can actually add to the nutritive properties of food. The microbials predigest the material, augment nutrients, including amino acids and essential vitamins, add a structure of collected microorganism bodies, and while in our bodies, detoxify acids and metals. By manipulating the digestive actions and environment of these organisms and bringing intent into a natural process, you add beneficial bacteria and preserve food without making it nutritionally deficient, like with canning, or being energy intensive, like with freezing[2].

Medicinally speaking, prevention is always better than treating. And if by fermenting food you add nutrients like B vitamins, live bacteria (that add in the digestion of foods like soybeans that are notoriously hard for humans to break down), and a general biodiversity of microorganisms and foods, than fermentation can be considered medicine in itself. Sandor Katz's message in his workshop about fermentation revitalization was: this is easy, this is something everyone can do, and that by doing it, you also bring back traditional food preservation and a connection your food and health, often leading to interest in farmer's markets, community, organic produce, and the farm[8].

Recipes for sauerkraut and mead are in Appendix B.

Why Plants are Medicinal: Secondary Compounds

When we do need medicine to fix aliments or wounds, studying the nutrients and compounds in plants is the most assured way. Plants produce secondary compounds, in addition to their needed supply of carbohydrates, sugars, and enzymes, for various reasons: they can provide reproductive functions, like the aromatic compounds of essential oils, or defense mechanisms, like *alkaloids* used to discourage herbivores, fungi, or insects. Any plant that is gathered from the wild has many more of those important qualities we look for in food and medicine because those compounds are utilized to survive, as opposed to the easy life they have in the cultivated garden. Secondary compounds are often found within botanical families, subfamilies, genera, and species, which indicates they are an evolutionary adaptation. Many insects have co-evolved with species to the point they can now eat the compounds that were originally meant to deter them, as humans have evolved alongside many of the plants[3]. Humans have discovered that some of these secondary compounds are beneficial to them, ranging from being dietary supplements, adding semi-permanent color to fiber, and having medicinal properties[4].

These can be split into three major groups: *terpenes*, *phenols*, and *nitrogen containing compounds*.

Terpene is the largest class of secondary compounds. They are soluble in water and act primarily as insect and mammal herbivore deterrents. Not only do they produce a nasty or bitter taste, like the *limonoids* in citrus fruit or the soapy compounds *saponins*, they also are used by the plant for *allelopathy*, or where a toxic chemical is released into the soil or air to defend

territory[5]. The group includes products distilled from resin such as turpentine, essential oils, psychotropic compounds like tetrahydrocannabinol (THC), and the famous anticancer compound taxol[1]. The chemical pyrethriods, found in the family *Chysanthemum*, is used in 'green' insecticides because they break down easily in the environment and have not been found to be toxic to mammals[3].

Phenolic compounds serve as defense against herbivores and pathogens, mechanical support, pollinator attractants, absorb UV radiation, and practice allelopathy[3].

Flavonoids is the largest group of phenolics. They have evolved early on to reflect ultraviolet light and protect the plant from overexposure to the sun, photodamage, and formation of toxic free radicals that can harm the cells. they also provide pigment to plants and can, in large concentrations, make the leaves bitter and bad-tasting to predators.

Tannins, which are used by plants to deter and reduce the growth of herbivores, have been used by human for centuries to tan hides to prevent deterioration of the skin. Scientists have suggested that tannins were the second compound to evolve in response to plants moving onto land, and they also produce a very bitter taste, like tannin in the acorns of black and red oaks. Native Americans soaked the acorns in water, as tannin is water soluble, and pigs, squirrels, and birds have evolved to tolerate the compound. Caterpillars have to search for less tannin concentrated leaves while feeding because they have not developed tolerance. This leaves them more exposed to predators because tannin concentration can varies up to 300 percent on one tree[1].

Nitrogen-Containing Compounds, which are mostly derived from amino acids, are well known for their toxicity to humans and therefore for their medicinal properties. Almost all *alkaloids* are toxic when taken in large quantities, especially compounds found in poison hemlock, but useful at low doses. Many interfere with the chemical transmitters of the nervous system, the creation of proteins, enzymes, and membrane transport[3].

Alkaloids, which is one of the most diverse and medicinally useful groups, are also very common in plants and include any chemical ending in *-ine*, such as caffeine or cocaine. They can range from making animals more alert, like caffeine does, or having hallucinogenic properties like ergometrine, commonly known as LSD, which can make the animals more vulnerable to predation or forget that they were eating the plant. Witches' brew of the Medieval period included trophane alkaloids derived from tomatoes and potatoes in the Solanaceae family, which when applied topically in a salve can induce the sensation of flying[1].

Glycosides are known to affect physiology in animals and humans, and includes the compound cyanide, which is found in the genus *Prunus* that includes plums, peaches, almonds, and cherries. Foxglove and its derivative digitalis have glycosides that affect the heart and in one amazing evolutionary feat, the larvae of monarch butterflies eat glycoside-rich milkweed leaves, concentrate it in their bodies, and pass it on to birds that try to prey on them. Some steroid glycosides also mimic animal hormones that can alter reproductive and developmental processes in predators, which are now being synthesized to make contraceptives and cortisone[1].

The Cherokee Indians use the pungent odor of the plant to determine its potency, as well as the outward appearance, like how the unrolling of the fiddle head of a fern can cure rheumatism, and the plant's connection to the symptoms, such as milkweed is used for milky urine. This is also known as the Doctrine of Signature, which is the practice of using a plant part based on its

resemblance a human body part or action, such as the walnut shells for head injuries or lizard's skin for tumors[6]. It has been largely discredited as 'primitive' by Western scientists, but is found in many indigenous cultures as a mnemonic device for disseminating information, and has influenced the development of homeopathy[7]. These cultures also treasured plants with unusual or disfigured characteristics, like crippled or lightening-struck trees[8].

Wildcrafting and Herbal Remedies

Harvesting

According to James Duke, an American botanist, the best time to harvest plants is on a hot, sunny, dry day so that the plant has a concentrated form of whatever compounds you are seeking. If you harvest in the middle of the night or on a wet day, the plant will be saturated with water, meaning the compounds will be diluted. Though, some preparations call for the plant to be harvested at early morning, which for optimum water capacity of the plant, occurs at three a.m. before the light of the dawn activate the opening of the leaf stomata (the gas-exchanging pores in the leaf), thus allowing water to escape . Also, Duke suggests that harvesting the plant often (but not over-harvesting!) causes the plant to produce more of the secondary, defense compounds that you seek[9].

It is important to think of the ecology of the area and the plant over your own personal use. When gathering, also remember to know all poisonous look-alikes and look for potential polluted areas which can cause the plant and therefore you to be sick; better yet, go on a plant walk with an experienced person before eating anything, especially mushrooms.

Administering

Tea: drunk, either hot or cold. Sometimes the plants steep for a time and the water is reheated. Amounts vary, but the Cherokees say "as much as you can hold"[6] (pg. 16). Cherokee Indians have also applied tea topographically to the wound or the tea was blown directly on the patient through a tube[6].

Vapor bath/ sweat bath: The herbal concoction is pored over heated stones while the patient, wrapped in a blanket or in a special mud-brick sweat chamber, inhales the steam. This was a common practice among the Cherokee Indians who followed the bath with a cold water plunge, but I saw this in the mountains of Chiapas in the spring of 2009, used on a boy with a high fever.

Tincture: herbs steeped in alcohol or vinegar for one to three weeks. There are recipes for the amount of plant part and alcoholic or vinegar medium needed, but the idea is to finely chop the material and subject it to the medium by agitating frequently[6].

Poultices: chopped or heated plant material that is applied directly to a wound or infection and held on by a wet dressing and bandage, used to prevent infection and help healing[6].

Compresses: cloths that have been soaked in an herbal infusion, decoction, tincture, or vinegar and used with a poultices or applied directly to the skin[6].

Salve: herbs in a water, beeswax/animal fat, and vegetable fat mixture to make a spreadable lotion. They can be used like poultices and keep the longest of any of the preserving technique listed[6].

For a more extensive explanation of these methods, see Appendix A.

Sacred Plants

In many of the books about Native American herbalogy, I encountered the theme of using spirituality in healing the body and learning not just the identifying features of plants, but their voice. This topic delves out of the academia world of rational or measurable, but is no less valid. For people that are intimately familiar with an area, have seen plants for several of their generations in all weather and seasons, and have used them for medicinal and culinary purposes, it makes logical sense that the plants would have a 'personality' to them. Visions, communication, or dreams about or with plants is a step beyond this knowledge, and explains why these native cultures have detailed knowledge that is consistent with modern medicine and research, or why so many different cultures with little contact have identified the same plants for the same purposes[10]. The name for establishing sacred relationships with plants and treating all creatures, including humans, the same, is called deep ecology, and there are many good books about it. The ones I've read that don't specifically put a name to deep ecology, but nonetheless describe it:

The Secret Life of Plants by Tompkins, Peter and Christopher Bird

Sacred Plant Medicine: Explorations in the Practice of Indigenous Herbalism by Stephan H. Buhner

Tales from a Shaman's Apprentice by Mark Plotkin

If anything, plants should be treated and gathered with care and regard for the ecology of a place. Call it what you will, but spirituality and sacred relationships with plants is almost inevitable in order to properly practice sustainable wildcrafting and herbal medicine. Without it is like going to church without having faith or eating fast food because it is easy- that hollow, unfulfilled feeling. Treating plants like pure commodities will work, yes, but this mindset creates a disconnect from the plant and healing.

List of Plants in the Backyard Garden of the Green House
Common name: **Amaranth**
Scientific name: *Amaranthus viridis*
Family: Amaranthaceae
Uses: The plant originates from Central and South America while the name is derived from a Greek word meaning 'unwithering'. It was particularly important with the Aztecs, who "ground half their seeds, roasted the rest until they popped, and mixed the blend with honey. They molded this dough into an enormous replica of their war god, and baked it. During a ritual ceremony, the helpless deity was sacrificed and eaten in effigy by an entire city"[11]. Amaranth seeds are considered a grain because the plant produces so many. The commercial variety, which produces a white seed, can be ground into flour or added to granola, pancakes, baked goods, or seasoning. The wild variety has tiny black seeds that need to be cooked in two parts water, one part seed until the water is absorbed, or roasted and mixed with other grains. The seeds have vitamin E and B-complex and the leaves have vitamin C, beta carotene, niacin, riboflavin, calcium, and more iron than spinach[11]. The leaves can be used in all seasons if they are cooked and the first water poured off[12]. Medicinally, it has been used as an astringent because of its red color, or for excess bleeding during menstruation or diarrhea. It can be used on lesions or as a throat gargle for ulcers[13]

Common name: **Basil**
Scientific name: *Ocimum basilicum*
Family: Lamiaceae
Uses: Basil leaves are a common culinary herbs used in pesto or for flavoring. The plant comes from India, where it is sacred as it hold protective and inspirational properties, but the name is derived from the Greek words 'basilikon pluton', meaning kingly herb. Historically it has been known to charm, hold powers of love and fertility as the leaves are heart shaped, and relieve pain of childbirth[21]. Studies have shown that herbs in the mint family, like basil and oregano, target and block chemical signals that cause inflammation. Normal dietary amounts would be potent enough to help with diseases such as inflammatory bowel or Crohn's disease[19].

Right, basil stalk with emerging seeds between the stem and the branch, or the axil.

Common name: **Black Walnut**

Scientific name: *Juglans nigra*
Family: Juglandaceae - Walnut family
Uses: The husks of the nuts are used for dying, resulting in brown color that will also stain your hands for many days. Black walnut is indigenous to North America and the Cherokee Indians used the dye for their baskets of white oak, river cane, and hickory[14].

Common name: **Borage**
Scientific name: *Borago officinalis*
Family: Boraginaceae
Uses: The flowers are edible and usually put into salads, and the seed oil has been studied and found to lower blood pressure and heart rate due to gamma-linolenic acid. Tea made from leaves can be used for fevers, as a diuretic, and to cool. The leaves can be used as a poultice for wounds, like comfrey, and as an anti-inflammatory.
Caution: The leaves contain alkaloids that may be toxic to the liver or be carcinogenic if taken in a tea form.

Borage flowers, in bloom and bud stages.

Common name: **Chamomile (German)**
Scientific name: *Matricaria recutita*
Family: Compositae / Asteraceae
Uses: Chamomile is widely used as a calming tea, but has been used as a traditional remedy for headaches, insomnia, indigestion, colds, and cramps, or anything that needs soothing. The essential oil has been shown to have antifungal, antibacterial, and anti-inflammatory effects[15].
The name is Greek derived, 'khamaimelon' meaning earth apple, and has been used since ancient times for female conditions, especially child birthing. In Egypt, it was associated with the god Ra because of its resemblance to the sun and used as a cure for a form of malaria[21].

Common name: **Chives (Garlic)**
Scientific name: *Allium tuberosum*
Family: Alliaceae
Uses: Culinary herb that can be trimmed regularly and used in many dishes, raw and cooked. It is milder than garlic and found in many Asian dishes. It is the smallest in the onion family, though it retains the classic onion smell and taste[22].


Edible shoots of the chives.

Common name: **Comfrey**
Scientific name: *Symphytum*
Family: Boraginaceae
Uses: The leaves and roots have been used in teas as tonics, demulcent, astringent, diarrhea, and coughs. The leaves can be steamed slightly and placed on bruises, wounds, and ulcers to promote healing.
Caution: Leaves have a high level of alkaloids, which can be toxic in large quantities, except if they are picked during the blooming season. Roots have been found to have chemicals toxic to the liver (pyrrolizidine alkaloids) if consumed in large amounts. The first leaves can also be confused with foxglove (*Digitalis*), which would be fatal[15].

Early leaves of comfrey.

Common name: **Echinacea (Purple Coneflower)**
Scientific name: *Echinacea purpurea* and *Echinacea tennesseensis* (endangered)
Family: Asteraceae
Uses: Echinacea root is widely used, especially by the Plains Indians, for a variety of ailments and is sold commercially as an immune system stimulant. In a tea or directly chewed, it has been used for toothaches, sores, flues, and colds, and as an insecticide, antibacterial, and analgesic[11]. the antiseptic properties can be used for impurities of the blood and aid in fevers[22].

Common name: **Elecampane**
Scientific name: *Inula helenium*
Family: Asteraceae
Uses: Helen of Troy is said to have had a handful when she snuck away with Paris, hence the species name *helenium*[11]. The root of plants two to three years old has been used since Roman times for ailments of the lungs, particularly coughs, bronchitis, and asthma. It also is used as a diuretic, tonic, antiseptic, expectorant, and gentle stimulant. The antiseptic use found in the active principle Helenin, has been proven by scientific research, where 1 part in 10,000 immediately killed bacteria. The root, when dried and powered can be candied with 2 parts honey[22].

Common name: **Epazote, Mexican Tea**
Scientific name: *Dyshania ambrosioides*
Family: Amaranthaceae
Uses: Epazte enhances cooked beans and any Mexican dish, as well as aiding in digestion and an anti-parasitic against worms, which speaks of its potential toxicity. It is used traditionally as a cardiac stimulant, diuretic, and for inducing menstruation and reducing cramps[11].
Caution: It is toxic in large quantities. Use about as much as you use parsley in a dish or put in a tea bag and discard after making your soup, beans, or sauces and you will avoid the toxins[11].

Common name: **Fennel**
Scientific name: *Foeniculum vulgare*
Family: Apiaceae (Umbelliferae)
Uses: Fennel is associated with aliments of the stomach, particular as a tea or ingesting the seeds to relieve gas, infant colic, induce mother's milk, as a laxative and expectorant, and a stomach soother[15]. The strong odor of the seeds and leaves make it medicinally used as a purgative and in culinary dishes with anise and dill spices. Traditionally it was used by Early Puritans during long church services to take the edge off hunger, as well as during fasting days in India, Italy, and England[22].

Common name: **Garlic (Commercial)**
Scientific name: *Allium sativum*
Family: Alliaceae
Uses: A number of books have been written solely on the uses of garlic, which range from removing metal toxins from the blood and soil, to being an antibiotic that lowers cholesterol, reduces headaches and blood pressure without depleting minerals, and aids in digestion and lung

infections. With the only side effect bad breath, garlic is used from minor colds to meningitis. The greens and bulb can be used, with the strongest flavor and highest levels of secondary compounds available in mid-summer. For milder flavor, bake garlic in their skins for twenty minutes and squeeze out the pulp[11].

Common name: **Ginseng**
Scientific name: *Panax quinquefolius*
Family: Araliaceae
Uses: A highly profitable plant that has been wildcrafted to rarity, the ginseng root is used as a general tonic and a demulcent. The Chinese consider it a remedy for nearly all diseases and hold both quiquefolia, the North American variety, and *Panax ginseng*, the Asian variety in high regard, as ginseng is said to mean 'the wonder of the world'. Almost all ginseng is exported to China, especially roots in the shape of a person. Folk uses include its use as an adoptagen, which brings the body back to normality, an aid in adjusting to stress and temperatures, and in increasing physical and mental performances[15]. Ginseng is also used in tincture form or a decoction as a stomach tonic and stimulant[22].

Common name: **Horseradish**
Scientific name: *Armoracia rusticana*
Family: Brassicaceae
Uses: Horseradish root is used commonly as a condiment sauce, but the it is used in teas and poultices as for respiratory problems, including as an expectorant for coughs and an antiseptic.
Caution: Large amounts can upset the digestive system and the tops are toxic to livestock[15].

Common name: **Hyssop**
Scientific name: *Hyssopus officinalis*
Family: Lamiaceae
Uses: A tea of the leaf is gargled for sore throats and coughs. It has also been used a digestive aid and a demulcent. The tea or warm infusion is used for stomachaches and as an expectorant, diaphoretic, and stimulant, which is a common use in the mint family. Externally it has been used for relief of muscular rheumatism, bruises, and cuts if a fresh bruised leave is applied directly[22].

Common name: **Lamb's Quarters, Goosefoot**
Scientific name: *Chenopodium album*
Family: Chenopodiaceae
Uses: Leaves can be gathered all year and have more vitamins than spinach, especially vitamin C and calcium. Young greens are good in a salad, seeds are used raw or boiled in cereal or salads[12]. It produces tiny black seeds in large quantities in the late fall, as many as 75,000 that are edible and used by Napoleon in breads for his armies. The seeds contain protein, calcium, phosphorus, potassium, and niacin. The leaves can be dried and powdered or eaten like spinach or beet leaves, which is it closely related[11].
Caution: The edible variety is odorless, as opposed to the species that smell like resin, which is toxic in large quantities.

Common name: **Lemon Grass**

Scientific name: *Cymbopogon citratus*
Family: Poacaea - Grass family
Uses: The essential oil is found to have anti-fungal and antibacterial properties and is used in perfumes[22]. Used like bay leaves for flavoring in soups and seasoning. In tropical Asia, South America, and Africa, it is used for stomachaches, influenza, nervous conditions, fever, and other aliments in teas[15].


Potted lemon grass.

Common name: **Mullein, Mule Tail**
Scientific name: *Verbascum thapsus*
Family: Scrophulariaceae Family
Uses: Dried leaves smoked like tobacco to relieve congestion of the lungs, asthma, coughing, and irritation of mucous membrane. The flowers, when soaked in olive oil (macerated), have been used for earache and inflamed mucous membrane, which can also be healed with a daily tea. The leaves and flowers are used externally for wounds in the form of a poultice[6]. In medieval times, the flowering stalk was dipped in tallow and used as a torch[15]. The plant flowers during its second summer and self-propagates easily.

Fuzzy leaves of Mullein, before flowering stalk appears.

Common name: **Nasturtium**
Scientific name: *Trapaeolum majus*
Family: Tropaeolaceae
Uses: The flowers are commonly eaten in salads, like borage, except they have a stronger taste and you can suck the honey-like nectar out of the spur. The seed pods and tuber are also edible. In the garden they are companion plants and attract useful predatory insects while repelling pests[15].

Common name: **Oregano (Greek)**
Scientific name: *Origanum heracleoticum*
Family: Lamiaceae
Uses: The small, potent leaves are a common culinary herbs used for flavoring. Studies have shown that Mediterranean herbs in the mint family, like basil and oregano, target and block chemical signals that cause inflammation. Normal dietary amounts would be potent enough to help with diseases such as inflammatory bowel or Crohn's disease[19].

Common name: **Parsley**
Scientific name: *Petroselinum crispum*
Family: Apiacaea
Uses: The parsley leaf treats diuretic (water-retention), painful menstruation, flatulence, and lower urinary tract infections. The fresh leaf applied to skin helps with itchiness, cracked, and chapped skin. Dried, powdered leaf or ointment used to kill head lice[15]. Parsley tea is made with two-year old roots and dried leaves for diuresis and painful menstruation, or the fresh leaves should be eaten regularly[22].

Common name: **Passionflower, Maypop, Wild Cucumber**
Scientific name: *Passiflora incarnata*
Family: Passifloraceae
Uses: Passionflower is originally from Peru, but brought to Europe and then to North America by

colonists. Spanish missionaries named the plant passionflower because the exotic looking flowers resemble the crown of thorn worn by Christ, while it is called maypop, mostly in the Southeastern United States, because of the history of southern children jumping on the fruits to hear them pop[11].The leaves and flowers contain a non-addictive tranquilizer that can be released in teas and infusions of the dried parts that can be used for a sleep-aid, calming nerves, and high blood pressure. The showy flowers and round yellow (when ripe) raw, peeled fruit are edible[11].


Left, Flower. Right, fruit and leaf
For passionflower recipes, see Appendix E

Common name: **Rosemary**
Scientific name: *Rosmarinus officinalis*
Family: Lamiaceae
Uses: This Mediterranean herb in the mint family is used extensively in cooking, especially with meats, and has been found to have carnosic acid, an antioxidant that may help fight Alzheimer's and inflammation[20]. The name rosemary comes from the Latin word 'rosmaris' or dew of the sea, referring to the refreshing effects of the herb as a memory booster[21]. Rosemary is often used as a tonic to soothe headaches and colds through a tea of the young tops, leaves, and flowers[22].

Common name: **Sage (Broad Leaf)**
Scientific name: *Salvia officinalis*
Family: Lamiaceae
Uses: Salvia comes from the Latin word 'salvus' or to heal or save, and has been a sacred herb from the Greek and Roman periods, who used it to enhance memory. The Chinese traded tea for it as they used it for insomnia, depression, and stomach and mental illnesses[21]. It, like other hardy Mediterranean plants in the mint family, is a stimulant and astringent. Sage is mostly now used for a gargle in the throat and mouth, using vinegar and water equally. It is cooling in fevers, nervousness, and headaches when taken as a tea and used in toothpastes as it is good for the gums[22].


The edible sage leaves.

Common name: **Spearmint**
Scientific name: *Mentha spicata*
Family: Lamiacaea
Uses: Spearmint is a European variety, but mint in general has been used for centuries, especially in the Mediterranean. In ancient Greece, mint was placed around the dead to cover the smell and dispel the god of the underworld, Hades[11]. It was used by the Greeks and Romans in milk to prevent it from spoiling, as a tonic and a cooler for fevers and colds, and in baths and wines as a stimulant. Some use it as an insect repellent, rubbing the leaves directly on their skin[21]. All mints are used for aiding in digestion, stopping diarrhea, being diaphoretic or good for colds, and has been used externally for cooling burns[15].


Spearmint in bloom.

Common name: **St. John's Wort**
Scientific name: *Hypericum perforatum*

Family: Hypericaceae
Uses: Today St. John's Wort is best known as an anti-depressant for mild to moderate depression through regulation of compounds in the brain, including dopamine, melatonin, and serotonin. The fresh flowers are used in tea and tinctures for treatment of wounds, especially related to nerve damage, sores, and cuts[15]. It is very aromatic and used as an astringent, expectorant, and nervine and in all pulmonary problems[22].

Common name: **Thyme**
Scientific name: *Thymus vulgaris*
Family: Lamiaceae
Uses: Another Mediterranean herb in the mint family, thyme either comes from the Greek word 'thymos', or to fumigate, or from 'thumus', meaning courage. The Greeks used the herb as incense, the Romans used it to preserve meat and flavoring for cheese, and has been used as a cough remedy, digestive aid, and for internal parasites[21]. It is a powerful antiseptic for internal and external use, but it not irritating to the skin while being more potent than carbolic acid, therefore it can be used to expel parasites or for dressing wounds. It has also been used as a deoderant[22].


Close-up of the edible thyme leaves.

Common name: **Yarrow**
Scientific name: *Achillea millefolium*
Family: Compositae
Uses: Yarrow has a long history of folklore, including being a love charm and its genus name, *Achillea*, refers to the Greek warrior Achilles who reportedly used it to treat his wounded soldiers and thus earning its symbol of war[11]. The presence of the compound achilleine stops the flow of blood, so it has been traditionally used for suppressing or lessening menstruation and for wounds. In tea form, it is a diaphoretic, or aids in sweating out fevers, is a tonic for the circulatory system by lowering blood pressure and slowing the heartbeat, as well as being an anti-inflammatory[11]. The young leaves can be used sparingly in salads or mixed into mayonnaise, leaves used in tea along with mint or wild strawberry leaves.
Caution: Large doses of yarrow or if used over a long period of time can be toxic[12].

Close-ups of the leaves and flowers of yarrow.

Common name: **Yucca, Adam's Needle**
Scientific name: *Yucca filamentosa*
Family: Agavaceae
Uses: The root contains saporins, which are toxic to humans, but is useful for making soap and shampoo. The leaves can be beaten and washed to make fibers for thread or paintbrushes and the spines can be used as needles[16].
For yarrow recipes, see Appendix E.

Appendix A: Terminology
Allelopathy: a form of competition chemicals released by plants into the environment that harms neighboring plants[3].

Tea: herbs or plant parts steeped in boiling water. There are two types of teas: infusions and decoctions. Herbal infusions are steeped for 10 to 20 minutes to allow the phytochemicals to yield from the leaves or stems. A handful of fresh herbs or a tablespoon of dried herbs are used for one or two cups of tea, and in some cases, dried leaves are more desirable because the cracking of the cell walls during drying releases compounds. Decoctions are boiled for 10 to 20 minutes and usually are for roots and twigs, which can be more difficult to extract the medicinal properties. Decoctions and infusions are two of the four ways the Cherokee Indians of the southern Appalachian region processed plants. They also steeped pounded plant material in cold water[6].

Tincture: herbs steeped in alcohol or vinegar for one to three weeks. These have more precise measurements than teas, both for preparation and dosage, and differ depending on the herb. The herb is diced up to increase surface area, then added to the alcohol and shaken daily to increase contact of the alcohol and herb. Typically, two ounces of dried herb or a handful of fresh herb is used for a pint of alcohol, which can range from 40-proof to 200-proof (or 20 percent to 100 percent alcohol). Dosage ranges from a few drops to a tablespoon. Vinegar can also be used in the same ratios as alcohol tinctures, and can be used as salad dressings or added to soups and vegetables.

Poultices: chopped plant material that is applied directly to a wound or infection and held on by a wet dressing and bandage, used to prevent infection and help healing. Usually the herb is softened first or re-hydrated if it was dried and added to three parts alcohol, water, or vinegar. This is one of the four ways the Cherokee Indians of the southern Appalachian region processed plants[6].

Compresses: cloths that have been soaked in an herbal infusion, decoction, tincture, or vinegar and used with a poultices or applied directly to the skin.

Salve: herbs in a water, beeswax/animal fat, and vegetable fat mixture to make a spreadable lotion. Herbs are typically chopped, boiled for 15 to 30 minutes, cooled, and the oil added and heated to evaporate the water. Beeswax or animal fat is added for consistency. They can be used like poultices and keep the longest of any of the preserving technique listed.

Appendix B: Fermentation
Recipes, which can also be found in Sandor Katz's book Wild Fermentation or on his website: wildfermentation.com.

Making sauerkraut:
Chop vegetable, which can include anything from bell peppers to Jerusalem artichokes. Veggies with a high water content get soggy faster, so avoid squash and cucumber.

Add salt to taste, or until it is somewhat like pickle brine or sea water. Salt is not essential and it

reduces the biodiversity of microorganisms, but it adds greatly to the taste, makes the veggies crunchier, and helps to pull out the juices. The juice of sauerkraut is considered to be a tonic and to help fight and prevent cancer.

Work the vegetables with your hands, squeezing and breaking down cell walls to release the juices. The point is to get the juice to cover the vegetables when put into a crock, glass jar, or plastic bucket (anything but metal), which can also be achieved by adding water, but the juices give the sauerkraut the taste and damaging it gives it the texture.

Add to container and place a plate on top of veggies to hold them under the juice. A jar filled with water might need to be added to weigh down the plate. Cover with another lid or a towel to keep the flies out. If mold or maggots appear, just scoop out the first inch or so of veggies. It is still edible! Cooler is better for sauerkraut: around 60 degrees is ideal, but it is flexible.

Making mead: Mead is considered to be one of the first fermented foods cultivated by humans and the "original act of culture". Honey is sterile, so it is a blank slate to add beneficial bacteria and cultures.

Mix one part honey and four parts water, or your own preference-don't be afraid to experiment! Stir several times a day for at least three or four days, release the pressure if kept in an air-tight container, and keep it out of direct sun. Stirring the yeast that settles on the surface of the water will incorporate it into the mixture. Will be slightly alcoholic. To make more alcoholic, you need to purchase an airlock, which allows the carbon dioxide to escape and prevents vinegar to establish after the peak of fermentation.

Country wine is along the same lines of mead, except you can add any fruit or vegetables to sugar water and let sit. Sourdough, again is the same, except flour and water are stirred daily to make a dough that will start to bubble after a few days. The wild yeast needs to be fed with more flour every once in a while to keep it alive.

Appendix C: Natural Dyes

Natural materials, such as wool, cotton, silk, and linen, are best when working with natural dyes because they will accept and hold the dyes better than synthetic material. Wool is the easiest to use and best to start with for beginners.

All equipment used in the dying process should be enamel, stainless steel, glass, or wood. Avoid plastic as it might leach chemicals. It is best to not use the same dishes that you cook with as some of the plants may be toxic when ingested.

The water used should be soft water, or without many hard metals, or the color of the dye will be affected. You can generally taste the metals in the water, but you can either call your water provider or get it tested. There are commercial softeners you can add.

The dye can vary depending on moisture, time of year gathered, maturity, kind of color fixture used, and the material used. No two dying batches will be the same.

Prepare the material by washing thoroughly to remove finishes and oils.

Color fixers, also called mordants, are typically applied to the material before the dye. Alum, or potassium aluminum sulfate, is the cheapest and easiest to use, but tin, copper, chrome, and blue vitroil are also available. They are toxic, so don't use these chemicals with your cooking utensils.

Dissolve four ounces of alum in a little hot water, then add to four gallons of soft water along one pound of your material. Soak for an hour.

Fresh plants picked at their prime are better than dried or frozen, but if the plants are gathered over time, drying and freezing might be necessary. Berries are typically frozen while leaves, twigs, and roots are dried. You will need one pint of leaves, stalks, or flowers, or a half to full ounce of roots for each ounce of material dyed. The flowers and leaves need to be chopped finely, roots and woody parts of the plants should be chopped into pieces and soaked overnight, and bark should be soaked for several days.

The plant bits should be cooked for a half hour if they are fresh, or an hour if they are dried or woody. Strain the plant material, then add more water until the four gallon per pound of material mark. The material should be wet before submerging into the dye, then agitated in the pot and the mixture brought to a simmer for a half hour to hour. Rinse in slightly cooler water, and continue washing in gradually cooler water until no more color comes out. Or, let cool in dye and rinse[2] (pgs. 426-7).

Shadowing: Sarah Bellos of ASK Apparel, Nashville, TN
Materials used for natural dyes: They are best fresh, but some can be frozen or dried and work just as well.
Indigo, which is kept in a large, often heated vat to keep the bacteria alive, bacteria that come from the indigo plant and must be feed bran every few days. The vat is kept all year and must be kept at around 80 degrees F in order to dye the fabric properly. There is thin layer of slime on the top, which Sarah pushed away by putting in a drop of detergent so it wouldn't get on the cloth. She is careful to not let any oxygen get in with the fabric, which must be soaking wet when it goes in, or the indigo will oxidize inside the vat, which is what the cloth does as it turns from a sea green to a rich blue when it comes out of the vat.

Black walnut (*Juglans nigra*) rinds, which must have the seeds removed (they will stain your hands for several days), soaked overnight and boiled for two hours. The next day you must add hot water and an acid like vinegar or oranges. The scoured fabric is added to the dye bath for one to two hours.

Iron nails, rusted. Create a dye bath with hot water. Sarah uses these as a short dip to smooth out colors that might not match perfectly.

Sumac (*Rhus*), also used as a mordant (see Appendix B). Prepared dye bath same as mordant. Creates a reddish brown color.

Marigolds (*Tagetes*), which can be kept frozen until they need to be used.

There are four basic steps to any dying process:
1). Pre-wash, with regular detergent and hot water, especially for re-used fabrics from thrift stores.
2). Scour, an essential step for natural dyes that are not as adhesive as synthetic dyes, so this removes any oils and also thoroughly soaks the fabric. Boil the cloth for three to four hours with

23g of detergent.
3). Mordant, or what greatly helps the dye adhere to the fabric, either with a synthetic mordant or natural, tannin-containing plants like sumac. Synthetic mordants, such as the most popular alum (short for aluminum sulfate), do not have to be included on a natural dye label because technically they are washed out and not present in the final product, but they still contain harmful chemicals. Their advantage is that they don't leave a color like tannin-containing plants do. Sumac leaves, stems, and berries leave a rose color that is difficult to cover if you want a light color, but does not contain the chemicals.

Some sources for synthetic mordants: thedyeworks.com and maiya.com
For alum, the ratios are for one pound (456 g) of dry fabric: (mix each slowly together one by one and wear eye and skin protection)
1 pound of alum
2 quarts of hot water
42.5g soda ash
14g of calcium carbonate (can be found in health food stores)
10oz of 5% vinegar

For sumac, boil for a half hour to hour, strain out plant material, and let the fabric soak in the warm liquid for at least 15 minutes or until desired color is achieved.

4). Dying, which must be done with presoaked and still wet fabric for indigo.

Screenprinting involves a very fine mesh screen with your design cut of a dye blocker material, like wax paper, contact paper or special Japanese bamboo material that can be ordered online. While screenprinting, you must never let the screen dry out and wash it immediately afterwards or it is very hard to clean and use again.

Paste resist is another Japanese technique that uses rice bran and rice flour to make a paste, which is applied to the fabric after it has been scoured, the paste let dry, and the shirt dyed.

Books recommended by Sarah Bellos:
The Art and Craft of Natural Dying by J.N. Liles
Japanese Stencil Dyeing by Eisha Nakano

Summary of common plants used as dyes: Marigolds (*Tagetes*), Sumac (*Rhus*), Hazelnuts (*Corylus*), Black walnut shells (*Juglans nigra*), Yellow root (*Xanthorhiza simplicissima*), Goldenseal (*Hyrdrastis canadensis*),

Appendix D: Soap Making: Amy Rae in Coalmont, Tennessee
For making a shampoo bar:
On a digital gram scale, tare the bowl and add each of the following, tareing after each ingredient:
210g of (Philipo Beno) olive oil
75g of castor oil, good for the scalp
75g of coconut oil, makes the soap foamy

Amy used a separate bowl for solid because her scale didn't go past five pounds, but continuing adding:
45g of cocoa butter, a good moisturizer
1 tbsp beeswax pellets
Melt everything in a non-aluminum pot (the lye added later reacts with aluminum) to 90-110 degrees Fahrenheit, measured with a thermometer.

With 450ml of water in another non-aluminum pot and 64.5g of lye in a bowl, turn on the hooded fume or go outside to mix together. CAUTION: Always add lye to water, not water to lye, because it will EXPLODE if you do it improperly. Add a little lye at a time, stirring with a non-aluminum spoon. It will heat up and steam, but don't inhale the steam. Don't spill it on yourself, because your skin will blister- gloves might be best.

Cool the lye mixture down to the 90-110 degree range, measured with a thermometer

The lye can be bought in stores as Roebic Crystal Drain Opener- look for "contains sodium hydroxide", or "potassium hydroxide" (wood ash) can also be used.
Most of these ingredients not usually found in your local grocery store, can be ordered at www.wholesalesuppliesplus.com.

Appendix E: Recipes for Backyard Herbs

Basil Mint Lemonade
2-3 handfuls of chopped, slightly crushed basil leaves and mint leaves
2 cups of lemon juice (or about 20 lemons)
1 cup of sugar
Start with one gallon of water, add more to taste

Dandelion Flower Tea
1 cup dandelion petals
Juice of 1/2 lemon
1 tbsp honey

Pour boiling water over petals, cover and steep until cool. Add lemon and honey and serve over ice. (Highlands Biological Station)

Dandelion Greens Sauté
1 lb. dandelion greens
3 tablespoons olive oil
5 cloves garlic
1/4 cup sesame seeds, toasted
1 tablespoon toasted sesame oil

Wash and slice greens. Blanch in enough water to cover about 1 minute. Drain and sauté in the olive oil for 3-4 minutes, then add the sesame and garlic and sauté for couple minutes more. Add the sesame oil and serve.

Horseradish sauce: Mix the following ingredients and serve:
1 horseradish root (8-10 inches), minced and mixed with 2 tbsp of water, 1 tbsp of vinegar
Pinch salt
1/4 cup sour cream
1 tsp Dijon mustard
1 tbsp mayonnaise
1 tbsp chives

Maypop/Passionfruit drink
Slice fruit and simmer for five minutes, strain. Add lemon juice, sugar, ice, lemon slices, mint, or white wine[12].

Maypop drink: slice fruit and simmer for five minutes, strain. Add lemon juice, sugar, ice, lemon slices, mint, or white wine[12].

Fried **Yarrow**
Dip washed yarrow sprigs in orange juice or pancake batter, and fry. Sprinkle with sugar[12]

Recommended Books

Agriculture

Berry, Wendell. The Gift of Good Land: further essays, cultural and agricultural. San Francisco : North Point Press, 1981.

Kingsolver, Barbara. Animal, Vegetable, Miracle: A Year of Food Life. New York: HarperCollins Publishers, 2007.

Pollan, Michael. In Defense of Food: An Eater's Manifesto. New York: Penguin Books, 2008.

Botany

Buhner, Stephan H. Sacred Plant Medicine: Explorations in the Practice of Indigenous Herbalism. Boulder, CO: Roberts Rinehart Publishers, 1996.

Huxley, Anthony. Plant and Planet. New York: Penguin Books, 1987.

Pollan, Michael. The Botany of Desire : A Plant's Eye View of the World. New York: Random House, 2001.

Pollan, Michael. The Omnivore's Dilemma : A Natural History of Four Meals. New York: Penguin Press, 2006.

Plotkin, Mark. Tales of a Shaman's Apprentice : An Ethnobotanist Searches for New Medicines in the Amazon Rain Forest. New York : Viking, 1993.

Sumner, Judith. The Natural History of Medicinal Plants. Oregon: Timber Press, 2000.

Taiz, Lincoln, and Eduardo Zeiger. Plant Physiology. Sunderland, MA: Sinauer Associates, Inc, 2006. 4th ed.

Tompkins, Peter and Christopher Bird. The Secret Life of Plants. New York, Harper & Row, 1973.

Reference Books

Banks, William H. Plants of the Cherokee. Gatlinburg, Tennessee: Great Smokey Mountains Association, 2004.

Brill, Steve and Evelyn Dean. Identifying and Harvesting Edible and Medicinal Plants in Wild (and Not So Wild) Places. New York: Quill William Morrow, 1994.

Cech, Richo. Making Plant Medicine. Williams, Oregon: Horizon Herbs. 2000.

Duke, James A. The Green Pharmacy. New York: Rodale, 1997.

East West School of Herbalogy. http://www.planetherbs.com/specific-herbs/mullein-verbascum-thapsus-scrophulariaceae-family.html. Accessed September 19, 2009.

Fara, Heather. "Yucca". The Floral Genome Project. http://www.flmnh.ufl.edu/flowerpower/yucca.html. Accessed October 27, 2009.

Foster, Steven. 101 Medicinal Herbs. Colorado: Interweave Press. 1998.

Foster, Steven, and James A. Duke. Eastern/Central Medicinal Plants and Herbs. Peterson Field Guide. New York: Houghton Mifflin Company, 2000.

Hatter, Ila. Roadside Rambles: A Collection of Wild Food Recipes. Georgia: J&M Printing, 2001.

Highlands Biological Station: "Plants of the Cherokee" pamphlet. 2001.

Hutchens, A. R. Indian Herbalogy of North America. Boston: Shambhala, 1991.

Katz, Sandor. Conversation and Workshop. November 4, 2009. Additional infomation can be found in his books (Wild Fermenation and The Revolution Will Not be Microwaved) and his website (wildfermentation.com)

The Reader's Digest Association. Magic and Medicine of Plants. Pleasantville, NY, 1986.

Additional Sources

Bennett, Bradley C. "Doctrine of Signatures: An explanation of medicinal plant discovery or Dissemination of knowledge?". September 2007, Vol. 61, No.3: 246-255.

Cohen, Henry**.** "The Evolution of the Concept of Disease**".** Proceedings of the Royal Society of Medicine. 1955 March, Vol. 48, No. 3: 155–160.

---

[1] Pollan, Michael. In Defense of Food: An Eater's Manifesto. New York: Penguin Books, 2008.
[2] Katz, Sandor. Conversation and Workshop. November 4, 2009. Additional infomation can be found in his books (Wild Fermenation and The Revolution Will Not be Microwaved) and his website (wildfermentation.com)
[3] Sumner , Judith. The Natural History of Medicinal Plants. Oregon: Timber Press, 2000.
[4] The Reader's Digest Association. Magic and Medicine of Plants. Pleasantville, NY, 1986.
[5] Taiz, Lincoln, and Eduardo Zeiger. Plant Physiology. Sunderland, MA: Sinauer Associates, Inc, 2006. 4th ed.
[6] Cohen, Henry**.** "The Evolution of the Concept of Disease**".** Proceedings of the Royal Society of Medicine. 1955 March, Vol. 48, No. 3: 155–160.
[7] Bennett, Bradley C. "Doctrine of Signatures: An explanation of medicinal plant discovery or Dissemination of knowledge?". September 2007, Vol. 61, No.3: 246-255.
[8] Banks, William H. Plants of the Cherokee. Gatlinburg, Tennessee: Great Smokey Mountains Association, 2004.
[9] Duke, James A. The Green Pharmacy. New York: Rodale, 1997.
[10] Buhner, Stephan H. Sacred Plant Medicine: Explorations in the Practice of Indigenous Herbalism. Boulder, CO: Roberts Rinehart Publishers, 1996.
[11] Brill, Steve and Evelyn Dean. Identifying and Harvesting Edible and Medicinal Plants in Wild (and Not So Wild) Places. New York: Quill William Morrow, 1994.
[12] Hatter, Ila. Roadside Rambles: A Collection of Wild Food Recipes. Georgia: J&M Printing, 2001.

[13] Hutchens, A. R. Indian Herbalogy of North America. Boston: Shambhala, 1991.
[14] Highlands Biological Station: "Plants of the Cherokee" pamphlet. 2001.
[15] East West School of Herbalogy. http://www.planetherbs.com/specific-herbs/mullein-verbascum-thapsus-scrophulariaceae-family.html. Accessed September 19, 2009.
[16] Fara, Heather. "Yucca". The Floral Genome Project. http://www.flmnh.ufl.edu/flowerpower/yucca.html. Accessed October 27, 2009.
18 Dandelion Soap: http://www.thebotanicalsoapshop.com/soap/dandelion.php
19 Birch, Hayley. "Anti-inflammatory compound from cannabis found in herbs". RCS: Chemistry World. http://www.rsc.org/chemistryworld/News/2008/June/24060801.asp. Accessed April 4, 2010.
20 "Alzheimer's - Rosemary, Carnosic Acid To The Rescue With A Gentle "PAT" On The Brain" Medspice. http://www.medspice.com/content/view/119/69/. Accessed April 8, 2010.
21 Thompson, Kylie. May 2006. "History, Myths and Legends of Aromatherapy". Plant Light worker magazine.
22 Grieve, M. "A Modern Herbal". Botanical.com