**PLANT POSSIBILITIES**

**NEW ENGLAND**

**Work in Progress**

**LEAFY**

**Angelica:** Angelica Archangelica. Leaves and young shoots edible raw, cooked, salads, tea, sweeten tart flavors, licorice flavor. Stalks peeled then edible raw, cooked, used to sweeten tart flavors, like celery, simmered in honey, candied, jam. Roots edible cooked, tea, essential oil as flavoring in food. Seeds for tea, used to flavor liqeuers, essential oil as food flavoring. Tea used as aromatic bitter for digestion, prevents constipation, helps cough and nausea, improves immunity.

**Arrowhead:** Wapato, Duck Potato, Sagittaria Latifolia/Cuneata/Rigida. Aquatic, forms colony. Leaves arrowhead shape, 1 large point at end, 2 points backwards, veins fan out from center; S. Rigida leaves are lanceolate or linear; S. Cuneata leaves sometimes floating. Lookalikes Pickerelweed, Pontederia Cordata, hind lobes rounded; Arrow Arum, Peltandra Virginica, central vein with branches. Propagate by seeds, tubers. Tubers delicious peeled then boiled, fried, potato salad, casserole, blanched and frozen; boiled 30 minutes then mashed and dried and ground into cereal. Tender lateral rhizome tips edible raw or cooked. Young curled leaves edible cooked. Leaves and leaf stalks edible boiled, delicious. Young tender unopened flower stalks edible boiled. Tubers harvested in north late summer to fall as plant dies back, 2-8 per plant, at end of spongy unbranching rhizome, up to 1.5 inches, round or oval, sometimes slightly flat, with one curving shoot, mild grapefruit peel scent, purple or reddish or white.

**Asiatic dayflower:** Commelina Communis. Flowers are tiny, 2 blue top petals like mouse ears, 1 clear bottom petal, stamens hanging down. Invasive. Long oval/lance leaves clasping with sheath. Leaves, stems, flowers, seeds, young shoots edible raw, salads, cooked, potherb, sweet and mucilaginous.

**Astralagus:** Huang Qi, Astralagus Membranaceus. Roots edible raw, tea, Tincture. Medicinal. Similar species have toxic glycosides or selenium, can cause neurological problems and paralysis. Avoid if immune system problems.

**Avens:** Geum Urbanum. Bennet Root, St. Benedict’s root, Old Man’s Whiskers. Young leaves edible cooked. Young or old leaves cooked quickly in a pan with some oil into toasted chips. Root edible cooked as spice or boiled to make beverage, clove and cinnamon flavor.

**Bee Balm:** Wild Bergamot, Monarda Didyma, M. Fistulosa. Great for pollinators. M. Didyma common, tastier, like floral oregano, prefers sun, flowers bright red. M. Fistulosa native, pungent, partial shade tolerant, flowers light purple. Leaves edible raw, earthy flavor, garnish, salad, spice, savory dishes, meat, beans, grains, infused vinegar for salad/marinade, poultice for skin issues, tea for stomach, chewed to help headaches, put in warm bath, steamed for colds/lungs. Newly opened flowers edible raw, dried, salad, garnish, cooking, potato salad, meat dishes, pizza, pasta, infused vinegar salad/marinade, drinks. Flowers and leaves used for antibacterial, sore throat, calming, sweat lodges, applied to wounds. Avoid leaves with powdery mildew, but new leaves grow clean.

**Bethroot:** Trillium Erectum. Propagate by root cuttings. Seeds sown in fall, double dormancy.

**Black Nightshade:** Solanum Nigrum. Some people think it may be poisonous. Young leaves edible raw, cooked, soup. Berries edible cooked. Clusters of small black fruit, calyx smaller than fruit, sprawling habit, bug damage. Poisonous lookalike Atropa Belladonna, single fruits, larger fruits, calyx 2x larger than fruit, flowers purplish and bell shaped, more upright, less bug damage.

**Black Cohosh:** Cimicifuga Racemosa. Root can treat menopause and hot flashes, interacts with complex hormonal activity and is contraindicated for men, children, and pregnant or nursing women. Poisonous in large doses. Do not take with iron. Grows in shade, woods. Can grow in full sun.

**Bladder Campion:** Silene Vulgaris, S. Cucubalis, S. Csereii. Young leaves and shoots several inches edible raw, slightly bitter, wonderful cooked, boiled, etc. Great potherb.

**Blood Root:** Sanguinaria Canadensis. Medicinal uses. Many alkaloids poisonous in large amounts. Avoid if pregnant or lactating. Sap can irritate mucous membranes. Shade, under trees, edge of woods. One foot tall. Propagate by root cuttings. Seeds must never dry, double dormancy.

Blue cohosh: Caulophyllum thalictroides. Medicinal. Seed double dormancy, 2-3yrs to germinate, or propagate with root cuttings.

**Blue false indigo:** Baptisia australis. Used by Native Americans and American settlers for dye prior to importing true indigo.

**Blue Vervain:** Verbena hastate. Leaves for tea good for indigestion, cold, cough, brewing. Seed roasted and ground into spice, pleasantly bitter, optional leach flour to remove bitterness. Aggressive.

**Bramble Berries:** Rubus. Species include Blackberry, Cloudberry, Dewberry, Plumboy, Raspberry, Salmonberry, Thimbleberry, Wineberry. Berries edible raw, jelly, jam, sauces, etc. Lookalike Goldenseal, Hydrastis Canadensis, poisonous.

**Canadian Honewort:** Cryptotaenia canadensis. Leaves, stems, flowers edible in small amounts raw, salads, soups. Stems candied. Roots edible cooked, aromatic, good in soups. Seeds edible spice complex flavor.

**Caraway:** Carum Carvi. Biennial. Leaves and seeds edible raw, salad, soup, fermentation. Lookalikes Poison Hemlock Conium Maculatum poisonous, Water Hemlock Cicuta, Fool’s Parsley Aethusa Cynapium poisonous, Giant Hogweed Heracleum Mantegazzianum poisonous and skin rash, Parsley, Parsnip, Celery, Water Parsnip, Wild Carrot, Sweet Cicely, Sweetroot, Yarrow, Lomatium can cause rashes, Perideridia, Anthriscus.

**Cardoon:** Cynara cardunculus. Flowerbuds edible raw, cooked, artichoke substitute. Stems bitter, edible blanched then in cooking or salads. Young leaves bitter, edible raw or cooked.

**Cat’s Ear:** Hypochaeris Radicata. False Dandelion, Flatweed. Leaves, flowers, roots edible raw. Looks like dandelion but leaves hairy with rounded lobes, stem forks into multiple flowers . Good pot herb.

**Cherokee Mountain Mint:** Pycnanthemum Incanum. Hoary Mountain Mint. Leaves lemony bitter mint flavor, makes tea. Pest resistant. Good for beneficial insects.

**Chicory:** Cichorium intybus. Leaves edible blanched, added to cooking, stimulates appetite, diuretic, good for internal parasites, constipation. Root roasted with dandelion root and barley for healthy coffee drink powder, podpiwek. Flowers eaten raw, dried into flour, neutral flavor. Nutrient accumulator. Lasts longer in shade.

**Chickweed:** Stellaria Media. Stichwort. Leaves edible raw, pesto, smoothies, briefly steamed, boiled, or sauteed. Prefers moist soil and shade, rare/small in sun, dies back in hot summers; grows small, low, thin stems; leaves tiny under 1 inch, oval pointed, pairs, opposite; flowers terminal, appear to be 10 flowers but actually 5 with deep cleft into V shapes; Common Chickweed, S. Media, has a single line of hair on stem; Mouse Ear Chickweed has hairy stems and leaves; poison lookalike Scarlett Pimpernel leaves red underneath, red flowers. Very adaptable. Mouse ear chickweed red stem and hairy stem/leaves, hay flavor. Star chickweed red stems, larger flowers, anthems red spots. Lookalike Scarlet pimpernel, anagallis arvensis, poisonous, has red spots on underside of leaves, flowers have color, flowers in each leaf axil, petals ovate. Poison lookalike spotted spurge, Euphorbia Maculata, stems have white latex but chickweed does not.

**Cleaver:** Galium Aparine. Goosegrass. Young shoots bitter, edible raw, cooked, added to soup. Seeds roasted for coffee substitute. Used to filter milk. Clings to clothing and itself. Self sowing annual.

**Common Mallow:** Malva Neglecta. Annual or biennial. Leaves and young shoots edible raw, cooked, dried, tea, mucilaginous, thickens soup or stew. Old leaves cooked. Fruits edible raw, lightly cooked, dessert. Flowers edible raw, salads, etc. Young seeds edible raw, cooked, nutty flavor. Roots brought to boil then simmered then thick liquid used as egg white substitute, meringue, etc. Leaves round, hairy, teethed, alternating, long petioles, fan like pleats.

**Costmary:** Tanacetum Balsamita. Greens edible raw, salad, tea, brewing, in books to deter pests. Plant gets “tired” so divide plants every few years.

**Cow Parsnip:** Heracleum maximum. Edible stems, young leaves, flower clusters, ripe seeds. Strong flavor of celery, fennel, cloves. Seeds ground into spice. Up to 9 ft tall. Juice on the skin in sunshine causes bad burn. Lookalikes Poison Hemlock Conium Maculatum poisonous, Water Hemlock Cicuta, Fool’s Parsley Aethusa Cynapium poisonous, Giant Hogweed Heracleum Mantegazzianum poisonous and skin rash, Caraway, Parsley, Parsnip, Celery, Water Parsnip, Wild Carrot, Sweet Cicely, Sweetroot, Yarrow, Lomatium can cause rashes, Perideridia, Anthriscus.

**Creeping Charlie:** Glechoma Hederacea. Alehoof, ground ivy, run-away robin, field balm. Greens edible raw or cooked. Mint family. Ground cover. Aggressive. Roots along stem. Used by Saxons and English in brewing for flavor, clarification, and preservative. Used as substitute for rennet in cheesemaking. Leaves kidney shaped, round toothed, hairy, stoloniferous.

**Creeping dogwood:** Cornus Canadensis. Groundcover. Loves shade. Fruits small, mild flavor, mealy, high pectin, edible raw, cooked, cereal, etc.

**Crowberry:** Empetrum nigrum. Groundcover. Stems for tea. Berries extremely nutritious, used in jam, smoking fish, etc. Ground cover. Produces batatasin III toxin preventing other plants from growing.

**Cut Leaved Toothwort:** Roots and leaves edible raw, cooked, nice peppery pungent flavor like watercress.

**Dandelion:** Taraxacum officinale, nutrient accumulator. “Pissenlit”. Leaves nutritious raw, blanched, steamed, stir fry, herbal drinks, beer, tea, delicious in early spring, bitter and medicinal in summer, better in shade, mature leaves taste great if you strip the stem out, good blanched and frozen for storage, diuretic, hepatic, digestive stimulant. Flower stems make noodles, boil 6-7 minutes, toss with oil, sprinkle salt. Unopened buds at base of plant infused with juniper berries, garlic, salt, pepper, vinegar, tastes like capers. Flowers high in flavonoids, anti-inflammatory, high antioxidants, high polyphenols preventing cancer, cardiovascular disease, neuro degenerative diseases, edible raw, added to baked goods, pancakes, fritters, dye, preserved in vinegar like capers, fried, fermented for wine that improves after aging a few years, dried and ground into flour, neutral flavor. Roots latex, bitter turnip flavor, eaten raw, tea, cooked, added to soup or stew, herbal drinks, beer, applied to warts; chopped, dried, and ground into powder for coffee substitute, desserts, podpiwek. Crowns cooked like Asian vegetable in stir fry, steamed, boiled, baked, etc. Dandelion can be mildly diuretic, laxative. Whole plant good for digestion, liver, healthy diuretic that does not take potassium. Sap has latex, some people allergic. Low basal rosette, teeth point straight out or backward, single hollow stem per yellow flower, taproot light brown outside white inside. Lookalike false dandelion, goats beard, miner’s lettuce, etc.

**Daylily:** Hemerocallis spp, H.Fulva. Tough, regenerates easily. Each flower opens for 1 day. Young leaf shoots edible cooked, sauteed, steamed, sweet, asparagus or celery substitute, mild onion flavor, best mixed with other veggies. Flower buds edible raw, cooked, relish. Flowers edible raw, cooked, dried for seasoning or thickener for soups, thick, crunchy, sweet, stuffed like bellpeppers, fried. Petals can be separated individual and eaten raw, in salads, as garnish. Tubers edible raw or cooked like potatoes, no need to peel. Small percent of people allergic, especially to raw plant material, vomiting, diarrhea, try cooked first. Poison lookalike Iris, leaves blue-green and flat like a fan at the base whereas Daylily leaves yellowish, cup each other, grow long and thin, and flower stems have few leaves or only a couple small ones; easter lily and tiger lily stems have dense short leaves. Tiger lily flowers point down and have black spots whereas daylily flowers point up with no spots.

**Diddle Dee:** Empetrum Rubum, ground cover, very wind/cold hardy, edible fruits.

**Dock:** Broad Leaf Dock Rumex Obtusifolius, Curly Dock Rumex Crispus. Leaves edible raw, sour/bitter, used to wrap butter, nutritious.: Young leaves mildly sour, edible small amounts raw, used as spice, large amounts boiled. Old leaves lemony sour edible raw, better cooked. Young flower stalk edible raw, mucilaginous, better chopped and used like okra fried, gumbo, curry, also steamed or boiled. Seeds and chaff used in baked goods or ground into flour, no need to winnow. Demulcent. Similar plant Sorel Rumex Acetosa.

**Echinacea:** Echinacea Purperea. Leaves make tea, woody flavor, calming, stimulates immune system in low doses, popular in Germany. Don’t consume in large amounts or long periods.

**Evening Primrose:** Oenothera biennis. Biennial. All parts edible, some people have mild irritation. First year edible leaves and roots, harvest even in winter during thaws. Roots edible raw, spicy radish flavor, some love it some hate it, sweeter after frost, mellow cooked, great in soup or stew. Second year stem leaves edible raw, spicy, tough, pungent, don’t eat basal leaves. Flower stalks edible peeled raw, lightly cooked. Flowers found above seedpods, edible raw, garnish, salad, etc. Seeds edible sprouted and eaten raw, toasted briefly, rich oil good for arthritis, premenstrual breast soreness, menopause. Totally unrelated plant Primrose, Primula Veris.

**False Solomon’s Seal:** Maianthemum Racemosum or Smilacina racemosa. Shoots cooked like asparagus. Fruit edible raw, cooked, jelly, syrup, bittersweet molasses flavor, possibly laxative in large amounts. Young leaves edible raw or cooked. Young shoots edible cooked like asparagus. Lookalike Solomon’s seal, polyognatum, edible shoots and rhizomes. Lookalike False Hellebore, veratrum viride, poisonous, shoots more like leaves than stalk, leaves wider in middle with pointed tip, leaves pleated. Lookalike dogbane, Apocynum Cannabinum, poisonous, red stem, stem branches, opposite leaves, leaves have central vein with branches.

**Fennel:** Foeniculum Vulgare. Bonze variety is hardy. Whole plant edible raw, aromatic, nutritious. Best are young leaves, young stalks, or tender offshoots. Optional peel stringy skin. Leaves eaten raw. Stalks like celery. Bulb raw, salad, soup, roasted. Leaves and seeds as spice. Leaves make dye. All aerial parts edible when tender, delicious flavor, eaten raw, salad, soup, etc. Whole umbel flowers edible raw, salad, soup, fried veggies, etc. Green seedpods delicious raw. Pollen as topping for baked goods. Seeds as spice, tea, meat dishes. Prefers rocky sunny slopes.

**Feverfew:** Tanacetum Parthenium, strong flavor, helps migraines, tea, salads, sandwiches, possibly harmful, insect repellant/hedge. Do not use if pregnant or coagulation problems.

**Flax:** Linum ustitatissmum. Stems make fiber for clothing, baskets, rope. Seeds make linseed oil, leftover cake for cattle feed.

**French Scorzonera:** Reichardia picroides. Leaves edible raw or cooked all year even when flowering, cucumber flavor.

**Garlic Cress:** Peltaria alliacea. Brassica family. Leaves spicy garlic mustard flavor, edible raw or cooked, looses leaves during flowering so cut flower stem for more young leaves. Flowers better flavor, edible raw. Seedpods coin shaped.

**Garlic mustard:** Alliaria Petliolata. Leaves alternate, triangular, coarse tooth, like small lily pads, on stalks. Delicious garlic mustard flavor. Leaves, stems, flowers nutritious, trace cyanide not harmful unless massive amounts, edible raw, pesto, salad dressing, cooked veggies, soup, stew, insecticide, wounds, bug bites, gastrointestinal pests. Cooking 5 minutes reduces bitterness. Stem boiled 6-7 minutes similar to asparagus. Young green seed pods eaten raw, lightly crushed as a spice, roasted briefly. Roots horseradish aroma, flavor destroyed in cooking, edible raw, cooked, minced and added to spicy or savory condiments, infused vinegar, mashed potatoes with butter, blended with yogurt or sour cream. Seeds sprouted for salads etc. Horseradish: garlic mustard root, apple cider vinegar, ramps, optional pinch of salt, optional sour cream.  Chimichurri: garlic mustard greens, garlic, sorrel, mild greens, apple cider vinegar, paprika, salt, olive oil. Pesto: garlic mustard greens, mild greens, walnuts or pine nuts, olive oil, garlic, parmesan or nutritional yeast. Roots release allelopathic chemicals to prevent/reduce other plants’ growth. Prefers woody areas. Seeds aggressively.

**Glasswort:** Salicornia. Tips edible raw, cooked, steamed, stir fry, pickles, relish, blanched and frozen. Annual. Grows low, thin scaly fleshy stems, turn red in fall.

**Golden Saxifrage:** Chrysosplenium alternifolium or oppositifolium. Leaves small and bitter, edible raw, salads, cooked, soup. stalks all year.

**Goldenrod:** Solidago. Asteraceae family with daisy, aster, sunflower. Leaves and young flowers small amounts edible raw, salad, spice, tea. Flowers delicious, edible raw, make yellow dye. Harvest top of flower head with softer greens, strip leaves off lower stem. Allelopathic inhibits other plants’ growth. Rhizomes form colonies. Single hairy stems up to 6’, leaves thin lance shaped whorled around stem, loose panicles of tiny yellow flowers on ends of stems. Goldenrod has wonderful aroma and flavor, warming, slightly pungent, slightly bitter, good for stimulating and improving digestion, resin flavor great with vinegar and honey, good with meadowsweet in mead or fermented sparkling drinks. Lots of antioxidants, several times more than green tea. Lots of antihistamine bioflavonoids, but sometimes falsely blamed for allergies because it blooms with ragweed, which causes allergies. Has antimicrobial and anti-inflammatory compounds, tannins, saponins. Thus, makes a strong wash or poultice to help external sores, cleansing mouth wash, flushing kidney issues, bladder or urinary tract infections. Goldenrod tea, syrup, or tincture is a powerful decongestant, relieves respiratory congestion stemming from allergies, sinusitis, flu, and the common cold, great for drying sinuses.

Medicinal tea: equal parts goldenrod, marshmallow root (Althaea officinalis), corn silk (Zea mays), and uva-ursi (Arctostaphylos uva-ursi).

**Goldenroot:** Rhodiola Rosea. Four year old roots. Increases energy, anti anxiety, helps oxygen uptake, exhaustion, sleep deprivation, mental focus. Taken before meals. Sexual stimulant.

**Good King Henry:** Chenopodium Bonus Henricus. Leaves and florets nutritious, oxalic acid, available all year, edible cooked, soup, broth, sautéed, bread.

**Goutweed:** Aegopodium Podagraria. Young stalks and leaves celery flavor, never bitter, edible all year raw, soups, sauces. Low, prefers shade, crushed plant has strong celery smell, flower stalks up to 3ft and grooved like mini celery with umbels of small white flowers with 5 petals.

**Ground Cherries:** Physalis. Berries sweet smoky pineapple flavor, edible raw, smoothies, baking recipes, tea, frozen, dried, fruit leather, fermented chutney, jam. Reseeds but not invasive and easily controlled.

**Henbit:** Lamium Amplexicaule. Greens edible raw, cooked, last into winter, high fiber, iron, antioxidants, vitamins A, C, K. Low growing. Radiates from central taproot, square stems, leaves scalloped. Lookalike purple dead nettle is edible. Lookalike Ground Ivy Glechoma Hederacea, edible, some warnings, bitter leaves, roots along stem.

**Hops:** Humulus lupulus. Young leaves edible raw. Leaves and shoots edible cooked. Leaves and cones fore tea. Flowers for brewing, preservative, medicinal.

**Hosta:** Hosta. Young shoots, flowers, and buds delicious, edible cooked, steamed, blanched, stir fried, roasted, with butter, olive oil, bacon, balsamic, pesto, etc. Old leaves boiled 15-20 minutes then edible cooked sauteed, soup, egg dishes, etc. Toxic for animals. Saponins cooked out.

**Hyssop:** Agastache officinalis etc. Leaves raw, salads, soups, stews, tea. Helps common cold. Avoid if pregnant or epileptic. Very beautiful. Interesting varieties like anise, root beer, citrus/navajo sunset.

**Ice plant:** Sedum Spectabile. Leaves edible all year raw or cooked, mucilaginous.

**Japonese Honewort:** Cryptotaenia japonica. Aggressive. Leaves, stems, roots edible raw or briefly cooked.

**Japanese Parsley:** Cryptotaenia Japonica. Leaves edible raw or cooked briefly. Stems blanched. Seeds as seasoning. Unique celery aroma. Green and purple varieties. Self seeds aggressively.

**Jewelweed:** Impatiens biflora/capensis/pallida. Leaves, stems, root used to prevent and treat poison ivy, poison oak, insect bites, hives. Prevents absorption of poison ivy/oak oils and stops histamine reaction. Leaves, shoots, stems edible cooked, cooking destroys calcium oxalate. Leaves oval, flat, alternating, blue coating beads water. Individual flower stalks from leaf axils. Flowers orange, curled hood, spur on back of flower.

**Kale:** Brassica Oleracea. Leaves, stalks, flowers edible raw, salads, smoothies, baked chips, sweeter after frost.

**Lady’s Thumb:** Polygonum Persicaria. Annual. Leaves edible raw, steamed, stir fried, boiled, cooked. Better harvested attached to stem to reduce wilting.

**Lamb's Ear:** Stachys Byzanta. Leaves soft, used to cover wounds, antimicrobial against staph infections.

**Lamb’s Quarters:** Chenopodium Album, Capitatum, Fremontii, Gigantospermum, Hybridum, Simplex. Goosefoot. Whole young plant, tender tips, leaves edible raw in moderation due to some oxalic acid and saponins, nutty flavor, better cooked like spinach, soup, egg dishes, lasagna, sauce, casserole, spring rolls, dried for spice, blanched and frozen, canned, sauteed with garlic and oil, healthy fats help absorb the minerals. Stems get woody in summer. Seeds edible, nutritious, protein, omegas 3 and 6, no husking or winnowing or processing, edible sprouted and eaten raw or cooked like a grain, baking, hot cereal, bird feed, ground into cereal or flour, cook well to soften. C. Hybridum has largest seeds. Tender stem tips sautéed in water or steamed, served with sesame oil and lemon juice. Annual, very tough, sows itself well. Wild relative of spinach and quinoa. Relatives Mexican Tea C. Ambrosioides and Epazote C. Botrys, pungent, possibly toxic in large amounts.

**Lavender:** Lavandula Angustifolia. Leaves, petals, flowering tips edible raw. Used in tea, drinks, vinegar, house decorations, soap, soup, stew, baking, sachets in dryer, linen closets, storage, drawers.

**Lemon Balm:** Melissa officinalis. Leaves zesty flavor edible raw, tea, dried as herb, soothing, helps high blood pressure, migraines, incense, bug repellant. Add fresh to salads, butters, oils, vinegars, beans, potatoes, sprinkled fresh on grilled fish or chicken. Multiple harvests per year. Essential oil very volatile, easily destroyed, flavor/aroma reduced in cooking and drying, best used fresh.

**Lesser Stichwort:** Stellaria Graminea. Leaves and shoots edible raw, salad, lightly cooked.

**Licorice:** Glycyrrhiza Glabra. Roots sweet flavor used in tea, cooking, tobacco, candy, safe in normal amounts, toxic in large amounts, used in tobacco. Fixes nitrogen. Avoid if pregnant, water retention, heart conditions, high blood pressure.

**Lingonberry:** Vaccinium Vitis Idaea. Berries tiny, tart, edible cooked, Scandinavian dishes.

**Lion’s Ears:** Leonotus Leonurus. Wild Dagga. Amazing flowers used for bites, stings, boils, eczema, skin diseases, itching, cramps, coughs, colds, influenza, bronchitis, high blood pressure, headaches, marrubiin compounds, feeds bees and hummingbirds, possibly toxic/euphoric if smoked. Drought Tolerant.

**Lovage:** Levisticum officinale. Leaves celery flavor, young shoots all season raw, cooked, candied. Stems in stew, soup, cooking. Seeds edible as spice. Roots edible candied, dried and ground as pepper substitute.

**Low Bush Blueberries:** Like high bush blueberries but ground cover. Sometimes require more weeding.

**Mahuen:** Maihuenia poeppigii, low growing cacti, edible fruit, great for rock garden, tolerant of high rainfall.

**Mandrake:** Mandragora officinarum. Taproot reached deep, famous aphrodisiac and poison, dormant in summer grows in fall.

**Marsh Mallow:** Althea Officinalis. Roots sweet, mucilaginous, pectin, edible raw, tea, cooked, boiled and fried with onions, ground into powder and formed into paste then roasted, simmered in honey, candied, syrup, extract for flavoring with flour, nut butter, meringue, rose water, etc. Roots sooth coughing, respiratory infection, gastric ulcers, burns, swelling, wounds. Young leaves edible raw, salads, thicken soups, boiled and fried, steamed for poultice for swelling or dried skin. Flowers edible raw, tea. Plant soothes mouth, stomach, skin bruises, bites, inflammations, etc. Leftover water when working with the plant can be used to make meringue.

**Marsh Marigold:** Caltha Palustris. Cowslip. Leaves bitter, edible boiled up to 3 batches of water.

**Mayapple:** Podophyllum peltatum. Fruit aromatic, sweet and acidic, unique flavor, delicious, edible raw, dessert, jam, pie, etc. Leaves, roots, seeds toxic. Propagate by root cuttings.

**Meadowsweet:** Filipendula Ulmaria. Old name Spirea ulmaria. Leaves and flowers have honey aroma, used in brewing, syrup, used for pain, inflammation, headache, muscular pain, colds, flu. Leaves and flowers make wintergreen flavored tea for inflammation, hearburn, ulcers.

**Melilot:** Melilotus Albus/officinalis. “Sweet Clover”. Tastes sweet like coumarin, tarragon, vanilla. Young leaves raw, dried, on dessert, awesome dried into spice for cooking or baking, desserts, dips, yogurt, cheese, eggs, baking. NEVER eat wilted or fermented because it turns coumarin into dicoumarin, stops blood clotting, kills cattle. Young shoots cooked like asparagus. Flowers eaten raw, cooked, tea. Small oval leaves in threes, look like alfalfa leaves, racemes 6 inches long coming from leaf axils with series of tiny flowers white or yellow. Lookalike Alfalfa, Medicago Sativa, has purple flowers.

**Milkweed:** Asclepias Syriaca. Young shoots edible cooked, steamed, boiled, stir fry, casserole, quiche, harvest 6-8 inches and boil 15-20 minutes.

Young green flower heads edible cooked like asparagus, roasted, sautéed, egg dishes, boiled, stir-fry, steamed, soup, pickled. Firm green pods boiled or stir-fried. Mature flowers edible raw, delicious nectar and pollen, boiled to make syrup. Seedpods harvest until 1.5 inches long, white and moist inside, before strings form inside, edible cooked, soup, stews, stir fry, pickled. Seedpod contents in cooked dishes for cheesy texture. Seeds make oil. Fibers woven into candle wick that burns cleanly. Latex can make chewing gum. Milkweed usually does not need to be boiled in changes of water, that is old incorrect advice, but some people are allergic and get stomach upset, and sometimes other milkweed species need boiling in batches of water to remove bitterness and toxicity. Milkweed is fuzzy with hairs. Leaves oval, smooth, opposite pairs, 4-9 inches long, half as wide. Flowers in top leaf axils, start like broccoli, become round pink or purple heads with many florets. Seedpod looks like freaky okra or sweet pickle shaped, pointed, filled with fluff. Milkweed is crucial food for monarch butterfly caterpillars. Lookalike Dogbane, Apocynum Cannabinum, poisonous, hairless, stems branch, stems have reddish color.

**Mint:** Mentha. Leaves edible, aromatic, anti-pest, cleaner, edible raw, salad, baking, stir fry, sandwiches, sweetener, tea. Sekanjabin syrup: large amount of mint with water, vinegar, honey, lettuce, cucumber, lime, boil several hours and skim off film. Aggressive.

**Mormon Tea:** Ephedra Nevadensis. Seed cooked or ground into bread or meal, twigs make delicious tea. Prefers dry soil. Strange appearance.

**Motherwort:** Leonurus Cardiaca. Leaves and flowers make tea for calming, pain, hormones. Flowers for tea, brewing, soup especially lentil or split pea.

**Mountain Sorrel:** Oxyria digyma. Leaves edible all season raw, cooked, fermented in sauerkraut, oxalic acid so eat in moderation.

**Mugwort:** Artemisia Vulgaris. “Cronewort”. Leaves aromatic, bitter, eaten fresh, dried, cooked, tea, soup, rice balls, good for digestion or breaking down fats, soothes stomach ulcers and irritable bowel syndrome, flavors fatty dishes or glutinous food like rice, flavoring beer, cold infusion, fermenting drinks, smoking, smudge or incense, dream pillow, antifungal, kills candida on skin, inhibits other plant growth, insect repellant, larva killer. Has thujone, camphor, etc. Can be toxic in large doses or prolonged use. Avoid if pregnant due to possible uterus contractions/abortion. May cause contact dermatitis in some people. Can be mildly hallucinogenic or causing lucid dreaming. Ancient cultivated plant, global, used to ward off spirits, worn as crown to dance then thrown into fire for good year. Prefers disturbed soils. Leaves similar to wormwood, green top, silver underside. Lookalike Ragweed, Ambrosia Artemisiifolia, poisonous, similar habit and leaves but no silver undersides, no spicy scent, leaves thinner and more fernlike.

**Mullein:** Verbascum Thapsus. Flowers make tea. Leaves for mildly bitter tea but strain out hairs, poultice, toilet paper, skin irritation, diaper rash. Leaves have hairs and chemicals that irritate some people, so test small amount first, wear gloves, or strain out hairs when processing. Stalk dipped in fat, lit as torch. Yellow dye: wear gloves, harvest leaves/flowers peak summer thru fall, chop, simmer 1 hour until water saturated, strain out leaves, insert fabric that is wet and has mordant of potassium aluminum sulfate, leave overnight, remove cloth and wash it in clean water. Dye: Biennial. Second year spring leaves are biggest. Grows in disturbed areas. Self-sows. Leaves fuzzy, elliptical, light green and silvery. Poison lookalike Foxglove.

**Navajo Tea:** Thelesperma Filifolium. Leaves aromatic, used in tea.

**Nettle:** Urtica Dioica. Nutrient accumulator. Irritates skin until cooked so handle with gloves. Nutritious tea, linen, helps allergies. Cooked young shoots and leaves. Use leaves, stems, seeds, green calyx. Very nutritious. Helps with allergies, pollution, mold, pollen. Leaves are anti-inflammatory, dry sinuses, help congestion, antihistamine for prevention and relief of allergies, make green dye, used in brewing. Don’t eat leaves when flowering, silica crystals too large, damage kidneys. Linen: remove leaves, soak stalks 1 week, sun dry, break stalks, pull strong fibers. Blue-green dye: cover leaves with water, gently simmer, remove heat and let sit 1-3 days until dark grey-green, strain out leaves. Nettle Malfatti: nettle leaves blanched and chopped, add sauteed onions, blend into paste, add raw eggs, dry bread crumbs, parmesan cheese, salt, ground spicebush berries/japanese pepper, roll into balls, chill.

**New England Aster:** Symphyotrichum Novae-Angliae, Aster Novae-Angliae. Leaves and flowers edible raw, salads, mild tea. Flowers rayed, yellow center with pale purple petals, stem hairy. Leaves hairy, smooth, pointy tips, clasping stem, three main veins.

**New Jersey Tea:** Ceoanthus Americanus. Leaves decaf black tea, used as astringent and lymphatic, flowers rubbed in water for mildly foaming soap skin softener, roots for red dye, nitrogen fixer, many beneficial insects.

**Orpine:** Sedum Telephium. Leaves raw or cooked. Roots coked, soup, stew.

**Ostrich Fern:** Matteuccia Struthiopteris. Young spring shoots edible cooked, nutritious, steamed, baked, sautéed, stir fry, seafood, pasta, pickled, canned, blanched and frozen. Don’t eat mature fall fronds. Only harvest young curled tight tender fronds not hard fibrous ones. Always confirm brown papery sheaths covering the emerging fiddleheads that easily rubs off AND obvious U shaped stem like celery. Lookalikes cinnamon fern osmunda cinnamomea or interrupted fern osmunda claytonia are woolly, groove not deep U shaped, or paper hangs on.

**Our Lady’s Bedstraw:** Galium Verum. Hardy. Leaves edible raw or cooked. Seeds roasted coffee substitute. Flowers for yellow food coloring, distilled in water for refreshing acidic beverage. Plant used as rennet for cheese, dried for mattress stuffing, coumarin scent repels fleas.

**Oyster Leaf Herb:** Mertensia maritime. Leaves edible leaves all year, earthy seafood flavor, low.

**Oxeye Daisy:** Leucanthemum Vulgare. Rosette leaves mild carrot flavor edible raw. Stem leaves edible but less delicious. Flowers delicious, edible raw, garnish, battered, fried.

**Peppergrass:** Lepidium. “Poor man’s pepper”. Brassica family. Native. Leaves edible raw, mild arugula flavor, best from basal rosette. Seedpods best part, edible raw, used as pepper spice. Hang dry whole plant. Low growing, minute fuzz on stems, lower leaves thin 2 inches lobed, upper leaves thin short, seeds bunches of tiny discs with a notch on one side, peppery flavor.

**Plantain:** Plantago major/lanceolata/psyllium, “Ribwort”, “White man’s footprint”. Nutrient accumulator. Mild, gentle, safe. Can use whole plant. Leaves all season raw, dried, baked into chips, cooked, blanched, tea, skin poultice for bites or inflammation or wound, chew for mouth wounds or sore throat, eat for upset stomach, emollient. Leaves, roots, and seeds very mucilaginous. Leaves astringent to check diarrhea. Seeds high fiber and vitamin B1, ground into flour or used directly in baked goods, used to cleanse intestines, easiest to harvest from P. Major and P. Rugelli, more difficult from P. Lanceolata. New leaves throughout season. Distilled water from plant makes great eye lotion. Basal rosette, sometimes red/purple color at base of leaves, long veins make ridges on back of leaves. Broadleaf - P. Major broad smooth leaves, no teeth, sometimes wavy edges. P. lanceolata longer leaves, some hairs, smooth edges.

**Pokeweed:** Phytolacca Americana. Young green unbranching unflowering shoots edible boiled until not bitter, very delicious! Poisonous uncooked. Poisonous later when branching or reddish.

**Prickly Pear:** opuntia humifusa/compressa/other types, cactus, cold hardy, edible fruits). Pads called “Nopal”. Fruits called “Tuna”. Fruit harvested when deep color, no green, firm, most needles fall off, top flattens, rinse off needles and eat raw, cooked, dried, preserves, jam, syrup. SYRUP: Chop fruits in quarters, put in pan, barely cover with water, bring to a boil, strain through a jelly bag to catch the spines and glochids to get silky juice, warm juice and add sweetener to make syrup, add acidity to improve flavor. Young pads cleaned and edible raw, cooked, pickled. Cooking pads: clean off spikes, peel skin, cut in half, sautée until light brown, served with salt, hot sauce, eggs.SEALER: Soak pads in water one week, drain off solids, use liquid as concrete binder, sealer, paint, optionally add salt for easier application and impermeability, used on Aztec temples lasting centuries.

**Purple Deadnettle:** Lamium Purpurea. Leaves edible raw, salad, smoothie, pesto, cooked veggies, fresh or dried poultice to stop bleeding, high fiber, iron, antioxidants, vitamins A, C, K. Mint family. Low growing. Stem square, leaves triangular toothed mint appearance, musky smell, slightly woolly, upright clusters of leaves with purple color, flowers tiny purple long freaky shaped, lower leaves longer stalks and top leaves short stalked. Lookalike henbit Lamium Amplexicaule edible.

**Purple Prairie Clover:** Dalea purpurea. Sweet roots chew raw like candy. Leaves for tea.

**Purslane:** Portulaca Oleracea. Succulent, tiny, low, spreads. Greens edible raw, succulent texture, wonderful relish chopped with onions, vinegar, honey, spices. Low, thick red stems, jade like leaves. Lookalike Spurge, Euphorbia, poisonous, milky sap, stems thin and wooly, stems radiate from center, leaves less jade like.

**Queen’s Crown:** Rhodiola Rhodantha. Young leaves edible raw or cooked. Caudex with succulent stems.

**Quickweed:** Galinsoga. Leaves edible all year especially when others bitter, mild flavor, eaten raw, cooked, steamed, stir fried. Leaves hairy, ovate, toothed, opposite. Flowers tiny, daisy like, five white petals with three lobes, yellow center.

**Ragweed:** Possible cause of seasonal allergies. Makes greenish yellow dye.

**Red Clover:** Trifolium Pratense. Leaves before flowering edible raw, better cooked, bean flavor, used in salad, soups, tea, stew, lasagna, dried and ground into powder spice for rice etc. Young flowers used in tea, helps menstrual issues, extremely nutritious. Mature flowers for delicate herb tea, rice, quinoa, dried then stripped off hard core then ground into nutritious flour additive in baking. You can add flower, stem, a couple leaves when grinding into flour. Seed sprouted and eaten raw, salads, crisp robust flavor, protein inhibitors destroyed in sprouting. Clover safe to eat but too much causes gas. Don’t eat when pregnant or nursing. Diseased plants can have toxic alkaloids. Nitrogen fixer. Short lived perennial or biennial. Good for woody areas.

**Roman Chamomile:** Chamaemelum nobile. Flowers for flavor, digestion, upset stomach, calming.

**Rue:** Ruta Graveolens. Leavse aromatic, used as spice, poisonous in large amounts, don’t eat if pregnant, furanocoumarins cause skin blisters in sun.

**Saffron:** Crocus Sativus. Stigma and styles delicious, used for spice, dye, stomachache, mood, analgesic, cleanser, expensive.

**Sage:** Salvia Officinalis. Leaves edible small amounts raw, spice, cooking, baking, drinks, brewing, antibacterial tea for sore throat.

**Salad burnet:** Sanguisorba minor smaller, S. officinalis is larger. Leaves edible raw, salad, soup, vinegar, cold drinks, sooth sunburn and eczema, in cooking at last minute, cucumber flavor, mature a little hard and bitter but still good, new young leaves in summer.

**Scots Lovage:** Ligusticum Scoticum. Similar to lovage, used the same ways, hot flavor.

**Sea Beet:** Beta vulgaris maritime. Young leaves raw or cooked, pinch flowers for more leaves, older greens bitter, high oxalic acid.

**Sea Kale:** Crambe Maritima. Leaves succulent, best young, sweeter after fall frosts, eaten raw, salads, smoothies, pesto, marinated in soy sauce sesame oil and lime juice, sauteed with garlic and olive oil, dumplings, stored as gundruk, frozen for soup. Roots edible raw, cooked, boiled, steamed, served with butter, store well. Florets eaten raw, cooked, stir fry, steamed. Flowers honey scented, edible raw. Young shoots shaded until 1ft long to blanche then cooked like asparagus. Stems in soup, stir fry, etc. After three years dig up roots and boil or roast. Old Scottish recipe: sea kale stems sauteed with oil and salt 3-4 minutes then baked 350F for 3 minutes. Productive up to ten years. Seeds need shell removed but roots are tough and easy to propagate.

**Sea Radish:** Raphanus Maritima. Biennial. Young leaves hot pungent taste, edible raw or cooked. Seed ground into mustard paste or sprouted and added to salads.

**Shepherd’s Purse:** Capsella Bursa-Pastoris. Basal rosette dandelion like leaves, edible until flowering, mildly peppery. Young flower shoots edible raw, cooked. Seedpods pepper flavor, edible raw, salad, braised, stir fried, meat dishes, stir fry, pasta.

**Skullcap:**  Scutellaria. Leaves, stems, flowers make tea, medicinal, antihistamine, calming, affecting benzodiazepine receptors, dopamine, gamma aminobutyric acid.

**Silverweed:** Potentilla anserine. Roots harvested when dormant, thin, nutty flavor, edible raw, cooked, dried and ground for soup or cereal, stores well. Young shoots edible raw. Leaves make tea. Aggressive runner.

**Sochans:** Rudbeckia Laciniata. Cut leaf coneflower. Young leaves and shoots edible raw, boiled, cooked, fried with bacon, longer cooking improves flavor, leaves aromatic resin flavor, 3-4 rounds of leaves each year. Stems edible raw, optionally peeled, sweet and aromatic. Toxic lookalike buttercup Ranunculus Hispidus!

**Solomon’s Seal:** Polygonatum. First flush of young shoots before leaves unravel are edible cooked, remove leaves and cook shoots lightly like asparagus. Roots edible chopped and soaked in water to remove bitterness, cooked, boiled, powdered and made into bread. Roots make pain relief poultice, ointment, oil, lotion. Chop fresh roots and soak in oil for several weeks for pain relief oil. Harvest roots in fall and dry for storage. Grows in shade, woods.

**Sorrel:** Rumex Acetosa, Acetosella, Hastatulus. Nutrient accumulator. Leaves edible all season, zesty lemon flavor, very nutritious, eaten raw, salad, sandwiches, wonderful lemon/lime replacement in cooking like tacos or fish, meat, soup, tea with mint, dried as herb, pesto, French sorrel sauce and soup, zest in rice or couscous, replace some vinegar in recipes. Stir fry garlic and onions, add sorrel, thicken with flour, add milk for gravy. Has oxalic acid, cook or eat in moderation. Mature seeds easily stripped, leave sheath no need to winnow, roast 350F for 5 minutes, grind into flour for cereal, granola, crackers, brownies, cake, pancakes, roasted coffee substitute.

**Sow Thistle:** Sow Thistle, Sonchus Arvensis, leaves edible cooked, braised, stir fried. Common Sow Thistle Sonchus Oleraceus and Prickly Sow Thistle Sonchus Asper stalks edible raw, salads, cooked, steamed, stir fried, pickled.

**Spignel:** Meum Athamanticum. Roots edible and sweet like parsnips, dried ground mixed with honey for licking medicine. Coumarin scent.

**Spinach Beet:** Beta Vulgaris Cicla. Biennial. Leaves and stalks all year steamed, stir fried, as lasagna layers.

**Spring Beauty:** Claytonia Virginica, C. Caroliniana. Tiny. Woodlands. Roots edible peeled raw, better cooked, small, delicious. Leaves, stems, flowers edible raw, cooked.

**St. John’s Wort:** Hypericum Perforatum. Harvest flowering tops. Strong mood lifting antidepressant. Very powerful, consume in small amounts. Used for nerve pain from injury, soreness, etc. Woody flavor. Nervine. Edible to humans toxic to animals, hyperforin reuptake inhibitor for serotonin, norepinephrine, dopamine, and gamma aminobutyric acid. Small yellow flowers, 5 petals, opposite leaves, tiny perforated spots on leaves, branches form a cross shape.

**Stinging Nettle:** Urtica Dioica. Leaves prickly, art to picking barehanded, musky hemp scent. Young leaves edible dry or briefly cooked, soup, extremely nutritious. Mature leaves boiled for tea, very nutritious, add salt to make soup broth. Leaves dried and ground into spice.

**Strawberries:** Fruits raw, smoothies, baking, tea, frozen, dried, fruit leather, jam, fermented chutney. Leaves used in tea. Pineberry cultivar fruits have wonderful pineapple flavor. Alpine variety fruits smaller and sweeter. Musk variety wonderful aroma, rare, expensive.

**Swamp Saxifrage:** Saxifraga Pensylvanica. Flower stalk edible raw, crisp, mild flavor, harvest when flower buds tight and unopened, remove top third of stalk.

**Sweet Cicely:** Myrrhis Odorata. Leaves all season raw, salad, sandwiches, dried, tea, drinks, cooking, fish, sweet mild licorice flavor, great sweetener, enhances flavors in cooking, reduces acidity, flavor reduced when flowering so chop florets to prevent flowering and keep leaves tasty. Whole plant helps with cough, flatulence, stimulates stomach. Stems simmered with veggies. Juice as a mixer. Young roots raw, boiled, steamed, simmered with veggies, curry, soup, candied, chewed for breath freshener or sore throat, good storage, in baking to reduce sugar, decoction as antiseptic for snake and dog bites. Young seeds eaten raw, spice. Mature seeds have oil to polish fine furniture. Likes shade. Similar plant Sweetroot, Osmorhiza genus, is also called “Sweet Cicely”, 7 species all edible, seedpods split into 2 seeds with ends often still attached to stem. Lookalikes Poison Hemlock Conium Maculatum poisonous, Water Hemlock Cicuta, Fool’s Parsley Aethusa Cynapium poisonous, Giant Hogweed Heracleum Mantegazzianum poisonous and skin rash, Caraway, Parsley, Parsnip, Cow Parsnip, Celery, Water Parsnip, Wild Carrot, Sweetroot, Yarrow, Lomatium can cause rashes, Perideridia, Anthriscus.

**Sweet Fern:** Comptonia Peregrina Asplenifolia. Bush with fern like leaves. Fixes nitrogen. Grows in infertile soil. Leaves sweetly aromatic, edible raw, tea with mint or evergreen leaves, bedding to help preserve fruit, dried spice, rub for meat or fish, poultice or infusion to soothe poison ivy and bug bites. Young spiky nutlets edible raw, strong flavor, seeds inside edible raw. Medium growth rate through roots, forms colonies, can be weedy in abandoned fields or lowbush blueberry farms. Sensitive to root disturbance and transplanting.

Dried leaves make spice, rub for meat or fish, aromatic pillows, fire starter, mosquito repellant when burned. Americans used sweetfern for "liberty tea" after the Boston tea party.

**Sweet Rocket:** Hesperis Matronalis. Dame’s Rocket. Biennial. Leaves before flowering edible raw, salads, high vitamin C, bitter flavor, clove and violet aroma. Seeds edible sprouted and eaten in salads, seed oil in perfumes.

**Sweet Woodruff:** Galium Odoratum. Leaves strong sweet hay coumarin aroma, raw, cooked, tea, refreshing drinks, fruit salad, soaked in white wine for tonic, potpourri, moth deterrent. Flowers edible raw, garnish, salad, tea.

**Sweetgrass:** Heirochloe Odorata. Leaves aromatic for strewing or burning to refresh areas, native medicinal, many related plants toxic.

**Tarragon:** Artemisia Dracunculus. Leaves aromatic, edible raw, tea, desserts, etc. French variety better flavor. Russian variety cold hardy.

**Tartar Bread Plant:** Crambe Tatarica. Young leaves, stems, root edible raw or cooked.

**Thistle:** Cirsium. Leaf stalks edible raw, strip off pointy leaves. Flower stalks peeled and eaten raw, salads, cooked, casserole, omelets, pasta. Roots edible raw or cooked, flavor and texture depends on species and growing conditions. Rosette, leaves like dandelion but wooly, prickly, teeth point outward.

**Thyme:** Thymus. Greens edible raw, salad, spice, soup, gravy, casserole, salad dressing, drinks, soothes sore throat, headache, anxiousness. Orange/lemon varieties are awesome.

**Trout Lily:** Erythronium. Small bulbs edible raw in small quantities or cooked, steamed, braised. Young leaves purple spots, fade later. Single peduncle per flower, flowers droop.

**Turkish Rocket:** Bunias orientalis, leaves all season raw or lightly cooked, flowerheads like small broccoli.

**Valerian:** Valeriana Officinalis. Root sedative.

**Violet:** Viola Sororia. Over 500 species. Hardy, resilient, aggressive, ground cover, curled triangular leaves, long peduncles with pair of tiny leaves and single flower. Easy to identify and reliably edible. Edible leaves, stems, flowers. Leaves have vitamin A and C, rutin antioxidant good for cardiovascular system, mucilage soluble fiber for healthy cholesterol and intestinal flora. Leaves eaten raw, salads, cooked greens, soup, binder/thickener in cooking. Leaves never get bitter but older veins can be stringy. Stems are sweeter than leaves and flowers, great in soup. Flowers as garnish, jelly, candied, color is water soluble for infusions etc. Roots not edible, laxative. Viola Canadensis has soft tasty leaves with faint wintergreen flavor. Don't eat if you have G6PD glucose-6-phosphate dehydrogenase deficiency, make affect hemolytic anemia.

**Virginia Waterleaf:** Hydrophyllum Virginianum. Leaves edible raw, salad, soup, cooked dishes, better when smaller. Tender flower stalks up to 16 inches edible raw, delicious, sometimes astringent aftertaste. Unopened flower clusters edible raw, better cooked., sometimes astringent aftertaste. Lookalike Rudbeckia Laciniata, no watermarks, leaves tough and unpleasant but not dangerous.

**Water Parsnip:** Sium Suave. Roots mild flavor, wash thoroughly, edible raw, cooked, steamed, baked, stir fry, casserole, soup. Shoots and young greens raw, salad, garnish, cooked, spice, only eat greens above water never submerged to avoid liver fluke. Similar to domesticated Skirret, Sium Sisarum. Lookalikes Poison Hemlock Conium Maculatum poisonous, Water Hemlock Cicuta, Fool’s Parsley Aethusa Cynapium poisonous, Giant Hogweed Heracleum Mantegazzianum poisonous and skin rash, Caraway, Parsley, Parsnip, Cow Parsnip, Celery, Wild Carrot, Sweet Cicely, Sweetroot, Yarrow, Lomatium can cause rashes, Perideridia, Anthriscus.

**White Clover:** Trifolium Repens. Leaves harvested before flowering, extremely nutritious, high protein, eaten raw, salad, soup, tea, dried and ground into powder spice for rice dishes, a little difficult to digest raw, boiling makes it easily digestible and releases protein, trace cyanide common in many other domestic vegetables just don’t eat a massive amount. Flowers in tea, rice or quinoa recipes, ground into flour or strip florets from tough core to use as grain. Safe to eat but too much causes gas. Don’t eat when pregnant or nursing. Ground cover. Nitrogen fixer. White flowers. Feeds bees. Good for meadows.

**White Deadnettle:** Lamium album. Young leaves edible raw, salad, dried, cooked. Flowers make tea.

**White Horehound:** Marrubium Vulgare. Leaves pungent and bitter, for seasoning, beer, tea good for coughs.

**Wild Asparagus:** Asparagus spp. Shoots with scales, sometimes purplish, grow to become fern like, male and female make shoots, females make round poisonous berries. A. Officinalis dies to the ground every winter, A. aphyllus is evergreen. Young shoots up to 9 inches edible cooked, dehydrated, pickled. Takes a couple years to establish, leave some shoots for the plant.

**Wild Carrot:** Daucus Carota. Queen Anne’s Lace. Biennial. First year root carrot flavor but fibrous, use for soup stock or chopped finely for carrot bread. Flowers fried and battered into fritters, dried into spice. Leaves aromatic herb, replace dill and fennel. Seeds used as morning after pill, don’t eat if pregnant, used as spice like caraway, in rye bread, sauerkraut, sourdough, aroma like dill and mint. Stems hairy. White umbel, sometimes has central dark floret. Root has carrot aroma. Lookalikes Poison Hemlock Conium Maculatum poisonous, Water Hemlock Cicuta poisonous, Fool’s Parsley Aethusa Cynapium poisonous, Giant Hogweed Heracleum Mantegazzianum poisonous and skin rash, Caraway, Parsley, Parsnip, Celery, Water Parsnip, Sweet Cicely, Sweetroot, Yarrow, Lomatium can cause rashes, Perideridia, Anthriscus.

**Wild Korean Celery:** Dystaenia Takesimana. Seombadi, or sobadi, or dwaejipul, wild celery, ulleung giant celery, korean pig plant. Perennial. Edible greens, very nutritious, available early in season, second flush of growth in fall. Relative of celery. Flowers attractive to beneficial wasps and other insects. Stronger flavor than celery but not as strong as lovage. Lookalikes Poison Hemlock Conium Maculatum poisonous, Water Hemlock Cicuta, Fool’s Parsley Aethusa Cynapium poisonous, Giant Hogweed Heracleum Mantegazzianum poisonous and skin rash, Caraway, Parsley, Parsnip, Celery, Water Parsnip, Wild Carrot, Sweet Cicely, Sweetroot, Lomatium can cause rashes, Perideridia, Anthriscus.

**Wild Chamomile:** Matricaria Discoidea. Wild Chamomile. Leaves, stems, flowers edible raw, tea, etc. Wonderful aroma. Nervine. Self sowing annual.

**Wild Ginger:** Asarum Canadense. Buried stem and flowers harvested in fall, used as ginger substitute, edible in small amounts as spice, can be toxic, flavor complex peppery and earthy, drying increases flavor, used medicinally, baking, desserts, meat rubs, marinades, asian recipes, curry. Leaves are poisonous and may irritate skin. Full shade. Very hardy. Pollinated by flies.

**Wild Lettuce:** Lactuca Serriola, Biennis, Canadensis, Virosa. Leaves edible raw or cooked, only in moderation, bitter flavor, sap high in lactucarium mild opiate and hyoscyamine parasympathetic nervous system depressant. Lactuca Canadensis is the best.

**Wild Parsnip:** Pastinaca Sativa. Same as domestic but grows wild.

**Wild Rocket Arugula:** Diplotaxis tenufolia, strong pepper flavor, leaves and flowers edible raw all season.

**Wild Sage:** Salvia Verbenaca. Leaves and flowers aromatic, edible raw, cooked, spice, candied. Seeds soaked for mucilage.

**Wild Sarsaparilla:** Aralia Nudicaulis. Root spicy sweet flavor for drinks, tea, etc. Forest understory.

**Winter Savory:** ???

**Wintercress:** Barbarea vulgaris. Greens good into winter, strong pungent pepper flavor, edible raw, salad, soup, beans, stir fry with garlic and oil or butter until barely wilted, add to omelet, quiche, or cooked root veggies.

**Wintergreen:** Gaultheria Procumbens. “Checkerberry”. Tiny and hardy. Young red leaves edible raw. Berries edible all winter. Leaves harvest spring through fall, contain methyl salicylate aspirin like chemical, good in low doses, never use internally causes liver and kidney damage, some people are hypersensitive/allergic to salicylates, used externally for aching, pain, rheumatism, sciatica, myalgia, sprains, neuralgia, catarrh, possibly cellulitis. “Oil of wintergreen”: Crush leaves in warm water, steam distill, creating oil to use tiny amounts diluted for flavor, topical pain relief, perfume, cleaning grease and rust. SUN TEA: Fill a jar with leaves and berries, add water, cover jar, leave three to five days, taste test flavor strength on 3rd day, use in cooking or drinks. SYRUP: use sun tea, add heavy cream for ice cream or water for sorbet.

**Woad:** Isatis tinctoria. Traditional blue dye of Scottish Isles. Brassica family, aggressive, short-lived perennial, deep taproot, sometimes invasive/illegal, ok in New England. Dye: wash leaves, chop, steep at 176F for 10 minutes, cool mixture in ice bath, strain out leaves, add 3tsp soda ash, mix to froth for 10 minutes, pour into jars, leave a few hours so pigment settles to bottom, pour off top clear water, repeat until top water is clear, mix pigment with water and pinch of ammonia, simmer, dip your fabric in separate pot of boiling water then add to pigment pot briefly, expose to air, wait 24 hours, oxidizes yellow to green to blue, dip again for darker color, dry pigment for storage.

**Wood Betony:** Stachys officinalis. Leaves for tea, calming, nerve pain, toothache, headache, addiction, panacea, poultice for cuts, bruising, swelling, joint ache.

**Wood Nettle:** Laportea Canadensis. Better than stinging nettle. Young shoots edible raw peeled, cooked like asparagus, soup, casserole, rice dishes, canned, frozen, delicious. Young tips top five inches snap easy, edible cooked, casserole, rice dishes, canned, frozen, too tough to dry. Seeds for cereal, baking, like flax seed.

**Wormwood:** Artemisia Absinthium. Tough. Greens edible as spice, brewing, expelling gastrointestinal parasites, eat in moderate due to thujone which is toxic in high or frequent doses.

**Yarrow:** Achillea Millefolium. Spanish name plumajillo “little feather” describes foliage compared to related plants. Strong unique odor, an old tradition of putting yarrow under pillow and you either dream of your true love or cabbage. Flowers aromatic, makes tea. Young leaves aromatic, sage flavor, edible raw, tea, salads, fresh or dried as spice or seasoning, hop like flavor, preservative in drinks, medicinal tea to sweat out colds/toxins and staunch internal/external bleeding, diuretic, febrifuge. Leaves, stems, flowers for bitter tonic, digestion, internal bleeding, colds, poultice for wounds antiseptic and bleeding. Root pain killer, anti-inflammatory, numbs tongue if chewed. Leaves light green, leaflets tiny, finely divided, complex, like feathers, wooly covers, stem no purple spots. Extended use can cause photosensitivity or skin rash in some people. Natives used for sweat lodges. Yarrow tea or tincture is antimicrobial, anti-inflammatory, fights infections, clears sinus congestion, relieves for seasonal or environmental allergies, cold, flu. Lookalikes Poison Hemlock Conium Maculatum poisonous, Water Hemlock Cicuta, Fool’s Parsley Aethusa Cynapium poisonous, Giant Hogweed Heracleum Mantegazzianum poisonous and skin rash, Caraway, Parsley, Parsnip, Celery, Water Parsnip, Wild Carrot, Sweet Cicely, Sweetroot, Lomatium can cause rashes, Perideridia, Anthriscus. Leaves steeped in warm water for tea creates warm tingling sensation. Stops bleeding very well.

**Yellow Wood Sorrel:** Oxalis stricta, etc. Leaves, flowers, seedpods have zesty lemon flavor, edible raw, drinks, cooked, cooking wilts quicker than other greens, oxalic acid so eat in moderation. Leaves in butter then freeze for winter zesty soup additive. Three leaves heart shaped, small yellow flowers, seedpods tiny okra shaped. Annual. Tiny. Self sows aggressively.

**BUSHES**

**Aronia Berry:** Aronia prunifolia/arbutifolia/melanocarpa. Chokeberry. Understory. 8-10ft. Grows and fruits in shade. Grows well with Walnut. Fruit bitter but some individuals have better fruit. Berries edible, tart, very nutritious, eaten raw but mostly processed. Scratch bark produces strong cough syrup smell. Gets black knot fungus, black canker on stems.

**Bamboo:** bambusoideae. Useful wood, chopsticks, mats, furniture, trellis, veggie stakes, concrete reinforcement, fishing poles, spears, flutes, wind chimes, xylophones, rakes, straws, masonry bee tubes, gutters, blinds, paneling, structures, carbon source, baskets, snorkeling tube, vinegar, fence, hedge. Aggressive grower. Running and clumping types. Wood soft until third year. All have edible cooked seeds flowering irregularly, some have edible raw shoots, cut shoots until three feet high, only top foot is edible, peel outer layers, eat flesh raw or cooked. Harvest shoots wild tender and still underground. Young shoots edible in nor mai dorng. Mature shoots of some species in soidon.Fargesia jiuzhaigou makes great hedge, cold hardy, clumping, non-invasive.

**Willow:** Salix spp. Many varieties can be trees, bushes, or even low growing. Pussy willow is native, used in decorative arrangements. Weeping willow ornamental tree with hanging branches. Leaves make pretty brown dye. Wood flexible, baskets, mats, hats, furniture, firewood, wood chips, charcoal sticks, small thin structures, carbon source, nutrient accumulator, soil purifier, chew bark for pain killer, soak stems to extract rooting compound, preferred by deer to shed antlers over other trees, good for pollarding. Salicylic Acid acts as pain killer, also used as very effective pest spray, higher levels in violet willow and corkscrew willow, lower levels in white willow. Cuttings easily rooted in moist soil. Can absorb toxins from soil, used for fodder, artists charcoal; when dried and dead, it can support soil health and great for mulch, compost, hügelkultur, etc. Wood for firewood dries well split or unsplit but burns quickly. Endophytic fungi in the leaves fix nitrogen for rapid growth, good for chop and drop nitrogen. Seed has no endosperm, usually not long lasting and must contact moist soil in a few days. Some species riparian, alluvial, alpine. Strong root growth and reserve buds allow it to tolerate flooding, burial, root exposure, heat, etc. Can get microbial and insect diseases. In sheep, willow has increased reproduction and dewormed. Bark is medicinal, harvested young and green in spring, strip off thin cambium layer, stores long time, pain killer, thins blood, antiviral, bitter aspirin flavor, use short term, chewed, makes several batches of tea, sometimes mixed with other herbs, pack in a bandage to help sanitize a wound, or make tincture pack in a jar then fill with 40% alcohol and let it sit for 2 weeks. Whistle: harvest green thumb-sized branch, cut one end slanted for mouth piece; 1” from the slanted end cut a notch for whistle opening; 3” from the slanted end cut a circle around the branch and slip off the bark tube and set it aside, may have to tap it a lot to loosen it; slice off a thin strip of wood to allow air to flow from slanted mouth piece to the notch; extend the notch 1 inch farther from mouthpiece to catch more air; replace bark tube.

**Bayberry:** myrica/morella pensylvanica, nitrogen fixer, grows in poor or salty soil, leaves crushed aromatic and used as a spice like bay leaves, berries boiled to produce wax for clean burning candles.

**Beautyberry:** callicarpa americana, beautiful edible berries; roots bark and berries make tea for illness.

**Beach plum:** Prunus Maritima. Fruits nutritious, tart and complex flavor, eaten fresh, dried, fermented, fruit leather, jams, chutney etc. Seed raw or cooked but never eat bitter ones, they have hydrogen cyanide. Flowers edible raw, salad, garnish, baking, dessert, cream/icing, drink infusions. Leaves and seed have hydrogen cyanide, beneficial in small amounts but toxic in large amounts. Store fruits in cellar box with lid, single layer deep to avoid bruising and spoilage. Leaves make dye. Prunus species sap makes very useful “cherry gum” or “plum gum”. Stone fruit seeds sprout next spring if planted immediately from fruit, take 2 years if dried and stored before planting. Prunus best pruned in July to avoid Silverleaf fungus, Chondrostereum purpureum, usually saprophytic but can infect living tissue through cuts, turns leaves silver, spreads fact, foliage dies back/drops, some trees can recover. Different strains of Plum Pox infect different prunus species, causes yellow spots on leaves, round spots on fruit, dark rot on pits.

**Bilberry:** Vaccinium myrtillus, “European blueberry”.

**Bitter Orange:** Poncirus Trifoliata, 6ft, slow growing, hardy to -10F. Large strong thorns, good hedge. Fruits bitter lemon flavor, used for marmalade, aromatic drink, dried and powdered as spice, peel used for flavoring, rind oil for laundry, rind oil and beeswax for tree wounds. Fresh fruit has little juice but after two weeks storage yields about 20 percent juice. Young leaves edible cooked.

**Blackberry:** Rubus. Delicious berries raw, baking, desserts, juice, wine, jelly, fermented, etc. Leaves make tea. Young small shoots peeled and eaten raw. Aggressive. Easily propagated by layering/stooling. Grows well with Walnut.

**Black haw:** Viburnum Prunifolium. Fruits edible, some people allergic. Root and bark for nerves or spasms. Suckers into hedge. Viburnums known for fallen leaves smelling like sweaty socks in fall wetland areas.

**Black huckleberry:** Gaylussacia Baccata.

**Bog myrtle:** Myrica Gale. Sweetgale. Fixes nitrogen. Leaves/fruit aromatic for strewing, brewing, cooking, edible, medicinal, insect repellant, dye, candles. Stem tips, seeds, and fall bark make yellow brown dye. Fruits and leaves boiled a few minutes, waxes skimmed off, used for aromatic candles. Leaf decoction kills external parasitse.

**Buffaloberry:** Shepherdia Canadensis, nitrogen fixer, berries bittersweet, eat raw in moderation due to saponins or cook to remove saponins, eat dried, smoked, baked, add water and beat into foam then add to desserts.

**Carolina allspice:** Calycanthus Floridus. The whole plant may be poisonous, contains calycanthine, similar to strychnine. Fruits poisonous! Bark used like cinnamon in cooking, baking, dessert. Flowers have fruity aroma that traps beetles for pollination, no nectar. Leaves have spicy aroma. Seedpods can stay on plant through the next year.

**Chokecherries:** Prunus virginiana. Leaves and seeds poisonous hydrogen cyanide. Suckering and weedy. Hosts many butterflies and moths, some attacking other fruit trees. Fruits ripen to black color, high antioxidants, edible raw but harsh flavor, flavor improves after drying, spit out seeds or let cracked seeds dry in the sun several days to release hydrogen cyanide. Berries edible raw small amounts, mostly fruit leather, jelly, jam, syrup, wine, etc. Prunus species sap makes very useful “cherry gum” or “plum gum”. Stone fruit seeds sprout next spring if planted immediately from fruit, take 2 years if dried and stored before planting. Prunus best pruned in July to avoid Silverleaf fungus, Chondrostereum purpureum, usually saprophytic but can infect living tissue through cuts, turns leaves silver, spreads fact, foliage dies back/drops, some trees can recover. Different strains of Plum Pox infect different prunus species, causes yellow spots on leaves, round spots on fruit, dark rot on pits.

**Cranberry:** Vaccinium Macrocarpon. Baked, sauce, dried/smoked, fruit leather, jam, jelly. Must be blanched or sliced to break waxy coating before dehydrating or they’ll swell, take longer, spoil.

**Currants:** Ribes spp. Shade tolerant. Berries taste varies between plants, sweet pungent flavor, edible raw, smoothies, baking recipes, tea, frozen, dried, fruit leather, desserts, yogurt, chutney, fermented chutney, jam, high in pectin good for preserving. Black currants: Ribes nigrum, European, leaves edible raw or tea, fruits make dye, easily propagated by layering, stooling, live staking cuttings in moist soil, cuttings can root in water.

**Dogbane:** Apocynum Cannabinum, Poisonous. Sap for latex rubber and gum, roots for cordage, bark flax substitute for bag, clothing, linen, twine, paper, edible seeds as raw powder, poisonous cardiac arrest to mammals.

**Elderberry**: Sambucus canadensis, nigra, caerulea, ssp. S. Canadensis native to northeast. S. Caerulea has blue berries. Used for millennia. Can grow eight feet in one season, forms a thicket, tough, extremely easy to propagate, shade tolerant, allelopathic inhibits other plants’ growth, second year canes more wood so more productive, coppice every 2-3yrs to regenerate for longer life. Grows well with Walnut. Cuttings easily rooted in moist soil. Considered sacred, watching over children. Wood and leaves poisonous fresh due to cyanogenic glycosides, safe when dried. Wood remove pith for hollow tube, used for flutes, spile for tapping trees, straws, furniture, toys. Chemicals in plant used for dye, insect repellant. Flowers great for pollinators, medicinal, tea, easily made into syrup, fritters, fried and sugared, fermented into champagne faster than other fruits, tinctures. Flowers and berries have tannins and volatile oils, antiviral, heal upper respiratory system, dry up excessive mucus and help it flow more freely from the sinuses, relieves stuffy nose, headache, earache. They have flavonoid compounds, anti-inflammatory, antioxidant, immune-stimulating. Elderflower infusion helps congestion, head colds, sinus infections, and allergic rhinitis. Fruits strong wine flavor, immune boosting, antiviral, baked goods, jam, wine, syrup, smoothies, oatmeal, drinks, dye. To harvest, freeze cluster 20 min then tap to release fruits. American elderberry S. canadensis is best, cold hardy. European S. nigra less cold hardy. S. caerulea native out west, large blue berries. S. racemosa poisonous red berries.

**Gooseberry:** pink and white varieties shade tolerant. Raw, smoothies, baking recipes, tea, frozen, dried, fruit leather, fermented chutney, jam. Easily propagated by layering/stooling.

**Goji Berry:** Lycium Barbarum. Berries nutritious, edible raw, smoothies, baking recipes, tea, frozen, dried, fruit leather, fermented chutney, jam. Leaves edible raw but some species in this genus make toxins.

**Goumi Berry:** elaeagnus multiflora, 6x4, nitrogen fixer, sweet berries. Raw, smoothies, baking recipes, tea, frozen, dried, fruit leather, fermented chutney, jam. Berries have lots of lycopene and vitamins A, C, E. Seed edible, chewy, some people like them.

**High bush Blueberry:** berries, need acidic soil. Cut old canes every few years. Raw, smoothies, baking recipes, tea, frozen, dried, fruit leather, fermented chutney, jam. Must be blanched or sliced to break waxy coating before dehydrating or they’ll swell, take longer, spoil. Leaves edible raw bitter but very nutritious.

**High Bush Cranberry:** Viburnum Trilobum, V. Edule. Berries single bitter seed, harvest when fully ripe before going bad, some varieties unpleasant, edible frozen then gently mashed then strain out seeds, leaves flesh for juice, jam, jelly, sauce, diluted for drink, etc. Bark smooth pale gray white. European High bush Cranberry, Guelder Rose, V. Opulus, fruit unpleasant, smaller leaves, thinner twigs. Viburnums known for fallen leaves smelling like sweaty socks in fall wetland areas.

**Honeyberries:** Lonicera Caerulea. Multiples for pollination. Berries edible raw, smoothies, baking recipes, tea, frozen, dried, fruit leather, fermented chutney, jam.

**Japanese knotweed:** Polygonum Japonicum, Fallopia Japonica, Reynoutria Japonica. Buckwheat family. Invasive, rhizomatic, fast growing, up to 7ft tall stalks. Young tender shoots and tips edible, harvest when they snap off easy even when several feet tall, sour green earthy flavor, taste better peeled, lightly simmered to reduce oxalic acid, eaten raw, cooked, blanched, lightly simmered, used like asparagus, used like rhubarb, stir fry, pureed, soup, sauce, sorbet dipped in honey, pickles, pie, sorbet with fruit or sweet herbs, steamed and blended with fruit into fruit leather, boiled for syrup, frozen directly without blanching, stored in salt then soaked in water before use. Old brown stems as mason bee tubes. Roots high in resveratrol great for health, may help with lyme disease.

**Kirilow’s indigo/Chinese Indigo:** indigofera kirilowii, nitrogen fixer, shade, nothing edible.

**Labrador tea:** Several species/names: Ledum/Rhododendron groenlandicum, neoglandulosum, palustre, tomentosum. Called Wish-a-capucca, weesukapuka, wesukipukosu, meaning “bitter herbs”. Usually Ledum Groenlandicum. Sold by famous Hudson’s Bay Company from Canada to England. Grows in peat bogs around northern hemisphere. Used medicinally by Native Americans, Germans, Scandinavians, Alaska, Scotland. Leaves resinous flavor, make citrusy spicy tea, insect repellant and moth repellent. Mixed with other herbs like wild mint, rose hips, sweetened, also used to augment black tea. Small amount of ledol terpenoid toxin, released when boiled, so make tea with warm water not boiling. High vitamin C. Essential oil analgesic, anti-inflammatory, anti-microbial, antiviral, antifungal and insecticidal. decoction to treat colds, sore throats, chest problems or fevers. Contain narcotic compounds and toxins in varying amounts: Grayanotoxins, Ledol. Some Native Americans considered it poisonous. Some poison livestock. Avoid long brew times and strong brews. R Groenlandicum may have least toxins. Leaves look like rhododendron with orange fuzz on bottom. Poison lookalikes Kalma latifolia, Kalma angustifolia, Andromeda Polifolia.

**Mulberry:** Morus spp. 70’, some species native to middle and east US. Many variations. Red mulberry, M. Rubra, is native. White mulberry, M. Alba, asian, naturalized for centuries, berries of all colors; good for coppicing, pollarding, leaves for feeding silk worms. Grows fast in many conditions, rocks, flood, drought, can germinate and fruit in shade. Can convert marginal sandy, rocky, gullied, hilly land into flourishing sylvopasture. Grows well with Walnut. Attracts many songbirds like orioles. Continually produces large amounts of fruits. Good for silvopasture pigs and chickens. Easily propagated by seed; no stratification; can be dried, stored, replanted like a vegetable seed; just make sure multiple bushes present to pollinate for fertile seed, lone bush makes sterile seeds. Dark fruits stain fingers, sidewalks, cars. Fruits dried, ground into flour for sweetmeat. Young tender leaves and shoots not tasty, high protein, a bit of tannin, edible raw, tea, cooked, added to stir fry, high in carotene and calcium. Berries edible raw, dried, baking, wine, desserts, cereal, oatmeal, trail mix. Inner bark roasted and ground into a meal then used as a thickener in soups etc or mixed with cereals when making bread. Wood hard and heavy, very rot resistant even on soil, sapwood thick and light, heartwood brown, used in fine woodworking, lustrous grain, favorite of Japanese Edo period sashimono fine woodworkers, wood turning, furniture, fence posts, barrels, firewood. No poison lookalikes. Lookalike Paper Mulberry, Broussonetia Papyrifera, different fruit, hairy twigs, berries have less edible flesh, leaves edible cooked.

**Nannyberry:** Viburnum Lentago, wild raisin, black haw. Berries edible raw, cooked, dried, processed. Simmer, strain out seeds to leave thick puree, no need for pectin or sugar, use for spread, jelly, pudding, fruit leather, desserts, canned, frozen. Berries ripen late. Plucked unripe berries will ripen in a couple days to mild flavor. Bark and leaves in herbal medicines.

Grows in shade and wet. Few pest problems. Viburnums known for fallen leaves smelling like sweaty socks in fall wetland areas.

**Northern Bayberry:** Myrica Pensylvanica. Nitrogen fixer. Fruits make candles and soap. Leaves as spice, more intense dried, soup, stew. Can grow in poor and sandy soil. Leaves alternating, waxy, long oval, a few shallow teeth at the end.

**Northern Wild Raisin:** Viburnum Nudum var. Cassinoides, witherod, possumhaw. Fruit ripe in fall when dark and wrinkled on the branch, sometimes ripen in summer but not as good as fall ones. Berries edible raw or cooked, delicious like prunes, best to gather a bunch of them and cook all at once, flavor enhanced by cooking, seeds are soft and okay to leave in. Bark and leaves in tea. Wood is tough, flexible, useful. Fragrant flowers. Likes shade/wet. Berries feed birds. Viburnums known for fallen leaves smelling like sweaty socks in fall wetland areas. Propagation: Seed 68-86 degrees 2 months then fridge 3 months. Cuttings June-July 3000-5000 ppm IBA quick dip then place under mist.

**Notro andino:** Embothrium coccineum fma Andina, copious flower nectar as sweetener.

**Oregon grape**: mahonia aquifolium, 5ft, deep shade, edible fruits mostly seed, edible flowers, dye from fruit, shoots, roots.

**Raspberry:** Cold hardy. Shade. Grows well with Walnut. Fruits raw, smoothies, baking, tea, frozen, dried, fruit leather, fermented chutney, jam, infused vinegar. Leaves used in tea. Easily propagated by layering/stooling.

**Rose:** Rosa spp. (rugosa/palustris/virginiana/carolina). Cuttings easily rooted in soil live staking. Leaves make tea, tannins with mild black tea flavor, good combined with other flavors. Flowers sweet and aromatic, edible raw, sun tea, desserts, cold beverages like rose cucumber water, infused syrup, infused honey wonderful in tea, brewing, finishing salt, garnish, infused in warm cream for desserts. Petals and honey make delicious spread, petals or rose water used in Moroccan recipes. If buds have no smell, hips have no flavor. Fruits harvest after frost when softened. Fruits high vitamin C for late winter or illness. Seeds edible, high Vitamin E and omega 3. RAW: rinse, remove blossom, stem, seed, internal needles then eat. DRIED: rinse, remove blossom and stem, spread out in warm area, when wrinkled remove seeds and hairs, then leave to dry fully, stores for long time, use for snack, cooking, tea, jam, fruit leather, frozen, fermented, etc. PUREE: rinse, remove stems and blossoms, barely cover in water, bring to boil, simmer 15 minutes, leave 24 hours, strain out seeds/needles, bring to boil, add 2 tbsp lemon juice per pint, store in sterilized jars, brown with earthy flavor, use for cooking, soup, baking, syrup, jam, fruit leather. Soup: rosehips blended or puree with optional water, vanilla, lemon juice, sweetener, etc. JAM: rosehips dried and blended or use puree, add sweetener. DIP: rosehip puree, cream or yogurt, mint, sweetener. FRUIT LEATHER: rosehips dried and blended or puree, spread thinly, dry in sun all day, cut into strips, roll up, store in airtight container one year. SWEET SAVORY SAUCE: rose hip syrup, vinegar, water, pepper, salt, onion or garlic.

**Rhubarb:** Rheum Rhabarbarum. Hardy, very tough, grows back easily. Leaves very poisonous, inedible, good source of tannin mordants for cloth dyes, harvest in spring, boil 1 hour then soak material 1-2 hours. Shoots cooked, jam, pies, sauces, insect repellant, tart flavor. Leaves have oxalic acid, used as mordant for dying animal fibers, chop leaves, simmer 1 hour, pull out solids, soak fibers in liquid 30-40 minutes, rinse fibers, mildly stains fibers light brown.

**Salmonberry:** Rubus Spectabilis. Shade tolerant. Berries raw, smoothies, baking recipes, tea, frozen, dried, fruit leather, fermented chutney, jam.

**Thimbleberry:** rubus parviflorus, 10, fruit like raspberry, very good in shade. Raw, smoothies, baking recipes, tea, frozen, dried, fruit leather, fermented chutney, jam.

**Yucca:** Yucca spp. Y. Glauca, Flaccida, Gloriosa Etc. Hardy. Flowers edible after cold water soak or blanching to remove saponins then cooked, slow-cooked, roasted, savory or sweet dishes, sauteed with protein and onions, egg dishes, stir fry, fried, pesto. Easy to cut whole flower stalk and remove flowers at home. Some have more bitter saponins, need to be soaked in cold water longer or blanched longer. Flowers sauteed with veggies in spanish recipes like tacos or asian recipes like stir fry.

**SHRUBS 15FT**

**Almonds:** 12x10, prunus dulcis, partial shade, some hardy varieties. Green fruity hulls split open and shells turn brown and dry. Shake them off tree. Optional: freeze for one or two weeks to kill any worms. Spread them out in a sunny, ventilated, rodent free area for several days until nuts rattle in shells and nuts snap rather than bend. Almonds eaten raw, roasted, pressed for oil, vegan cheese, vegan milk, trail mix, bread, desserts, horchata. Shells for animal bedding, moisture absorption, biochar, anaerobic biogas, biofuel. Hulls for dairy animal feed, nutritious fermented syrup. Storage: Remove the husk and the shells. Roast at 350 for fifteen minutes then stir and roast another fifteen minutes. Store in airtight container in basement, fridge, or freezer. Raw snack, roasted, in granola, used in baking, roasted and ground into butter, strained into almond milk, boiled one minute then dried then ground into flour, pressed into oil. Young green almonds before shell formation removed from fruit and pickled, goes well with cheese! Prunus species sap makes very useful “cherry gum” or “plum gum”. Stone fruit seeds sprout next spring if planted immediately from fruit, take 2 years if dried and stored before planting. Prunus best pruned in July to avoid Silverleaf fungus, Chondrostereum purpureum, usually saprophytic but can infect living tissue through cuts, turns leaves silver, spreads fact, foliage dies back/drops, some trees can recover. Different strains of Plum Pox infect different prunus species, causes yellow spots on leaves, round spots on fruit, dark rot on pits.

**Autumn Olive:** Eleagnus Umbellata,. Fruit edible raw or jams, chickens eat berries, pigs eat leaves, sometimes invasive. See Goumi.

**Bladder Senna:** colutea arborescens, 15ft, nitrogen fixing, medicinal leaves, wood furniture or fuel.

**Chaste Tree:** vitex agnus castus, 10-20ft, edible peppercorns, medicinal.

**Che berry:** cudrania tricuspidata, 15, berries like fig and watermelon, suckering habit but grafted to osage orange forms tree.

**Chinkapin/chinquapin:** Castanea Pumila, 9x15 chestnut bush, small sweet nuts pecan honey flavor, blight resistant, nuts eaten raw, ground into flour for bread, boiled into a broth, dried and stored.

**Cornelian cherry:** cornus mas, 10-15 feet. Edible fruits. Long pit adheres to flesh. Fruits ripen over long period, multiple harvests. Very dense wood sinks in water and durable for tools. Fruits eaten for 7,000 years in Greece. Shrubs can live 100 years.

**Damson:** 10-15, slow growing, edible fruit.

**Dogwood:** Cornus spp. Wood very hard. Opposite leaves with branch veins breaking off main vein and curve toward tip. Sapwood 30-40 outer rings. C. Kousa produces thousands of sweet edible berries with custard texture. Gray dogwood makes berries, not edible to humans, white with black dot like doll’s eyes, high calcium and fat, feed tons of migrating birds, hide in dogwood and you can spot many birds. Red Osier Dogwood, Cornus Sericea, fruits can be medicinal, roots easily in soil.

**Hazelnut:** Corylus spp. In Birch Family. 10 species grow all over northern hemisphere. Easy to grow, extremely tough, cold hardy, grows in heavy clay, sand, infertile soil, acidic, alkaline, extreme competition from weeds/trees, heavy snow loads, being mowed, minimal care. Grows well with Walnut. Easily propagated by layering/stooling. First crop year three, large crops starting year seven, puts out a crop every year. Nuts ripe when you can pop them out of their husk regardless of color even if greenish or whitish and they will ripen off the bush. Harvest in fall, before animals get them. Nuts edible raw, roasted, used in baking, roasted and ground into spread, granola, trail mix, desserts, chutney, candied, pie crust, sprinkled on baked fruit crumbles, ground into flour, pressed into oil for meat or salad dressing or baking or flash frying, used in vegan cheese, blended and strained for nut milk. Roast at 250F for 5min for crunchy hazel flavor, or Toast at 350F for 5min for toasted nut flavor, less hazel flavor. When using hazelnuts in wet recipes, rub a light oil on them 1st to reduce soggy feeling. After pressing for oil, the leftover cake is high protein and tasty, easily ground into flour, used as animal feed. Nut milk: soak nuts overnight, rinse, add equal part water, blend, strain out solids; or take nuts in the shells, smash nuts and shells together, add 3x water, bring to boil, simmer 20-30 minutes, strain, optional add fresh water again to extract more; leftover pulp can be used in baking, dried for storage. Shells very dense, as many BTUs as coal, ash from burned shells high in minerals and good fertilizer. Pioneer species, moved in after retreating glaciers. Leaves for tea, high phytochemicals, usually mixed with black tea. Native americans in california used hazel switches in fall for fish traps and surf fish baskets. Hazel for firewood dries well no splitting, burns well, makes great wood on coppice of 12-20 years. When coppicing with chainsaw, make 1st cut on rods a few feet up, then use chainsaw to cut off top of stool to remove the mess at the base of the rods, otherwise if you cut rods right at base the chainsaw can hit the mess of rods and kick back. Woven hazel fishing screens were found dating to 5,000 BCE. Monoecious, wind pollinated, catkins and flowers very cold hardy, not self fertile, catkins survive all winter and open in spring, hybridizes easily, flowers/catkins eaten by deer and grouse but that’s ok they easily put out new ones. Usually multi-stemmed shrub but you can prune to tree and remove suckers. Great hedge, trims well, dense screen, still produce some nuts. Great windbreak, usually 2 or 3 rows with alternate rows coppiced every 7 years. Coppiced pieces of wood called “wands” or “rods”, strong and flexible, used for wattle and daub walls, water divining rods, walking sticks, fishing rods, basketry, plant stakes for legumes or tomatoes, thatching spars, wattle fencing, burns very hot. Rods for small hunting spears for rabbits, bent in U shape for thatch roofs, barrel hoops, shepherds crooks (shaped while growing), walking sticks, spits for grilling, divining rod to find water or thieves, druid wands, St. Patrick used hazel rod to banish snakes from Ireland. Hazel was tree of knowledge for celts in Europe, rods were symbol of authority. Used in wattle and daub as early as 6,000 BCE. Nuts pressed for oil, edible, 65% non-drying oil that can be used in paints, cosmetics, etc. Twigs feed rabbits and goats all year around. Leaves are very palatable to cattle. Scottish used hazelnuts to divine love by throwing two hazelnuts in fire so see if they burn at equal brightness, unequal, or pop away from each other. Leaves contain 2.2% nitrogen, 0.7% potassium, 0.12% phosphorus, great mulch fertilizer. Great early pollen for bees February through to March. Leaves used in allopathy, stimulate circulation and bile production, used for liver and gall disorders. Nuts rich in protein, monounsaturated fat, vitamin E, manganese, other essential nutrients. Lives 70 years normally, much longer when coppiced, even centuries. There is a 900 yr old hazel coppice in Blehnheim palace, England. Coppicing for wood: plant 2.2-2.6 meters apart, cut on 7-10 year rotation, the 7-10 year shoots are 4-5 meters long, usually cut in winter, can cut any time except summer, if cut in summer then soft new growth feeds animals, if not coppiced for 40 years it will start to die back. Hazels usually combined with taller trees like chestnut or oak for 2 story forest. Great understory plant, not nutrient demanding or competitive, compact and easy to manage, in partial shade produce good amount of nuts, in deep shade produces fewer nuts but good wood and mulch. Can be used as chop and drop plant between fruit trees, in hedgerows. Good silvopasture system lets sheep graze, controls suckering growth. In Kent, England, young hazels usually planted with vines, gooseberries, currants. Cobnut variety delicious raw, grown in Kent. European hazel, C. Avellana smaller, less cold hardy, gets filbert blight, resistant to big bud mites, commercially harvested in turkey. American hazel, C. Americana, native, very cold hardy, catkins cold hardy, forms large thickets, large husk with sap deters rodents, husk used in cosmetics, nuts a bit smaller but sweet high quality, seeds softer and sweeter before fully ripe milk stage, vulnerable to big bud mites. Beaked hazel, C. Cornuta, native, smaller bush, great in understory, struggles in hot sunny dry areas, pointy irritating husk, easier to rot the husk off, strongly regenerates from fire, natives used fire to regenerate it. Turkish tree hazel C. Colurna 80 ft, irregular crops, mostly landscaping. Get Jeff Zarnowski’s p-I and nitka. Brutting: At the end of growing season, snap but don’t break off tips of new year’s shoots 6-7 leaf groups from the joint with the trunk, prompting more energy to flower bud production for more nuts next year. Pest: nut weevils, balaninus nucum, prevent by cleaning up fallen nuts to prevent grubs from getting into soil, or run chickens under hazelnuts in fall to get grubs and disturb soil. Pest: eastern filbert blight, anisogramma anomola, not a major problem. Pest Bacterial Blight, Xanthomonas Campestris pv. Corylina, causes leaf spotting, branch dieback, death, stressed plants most susceptible.

**Jujube:** ziziphus mauritiania, 10, cold hardy, tolerates salt and wet and alkaline soil, fruit eaten fresh like apples or dried on the tree like dates, invasive runners.

**Lilac:** Syringa Vulgaris. Flowers sweet and aromatic, edible raw, sun tea, salad, refreshing beverages like infused water or lemonade, cold desserts, baked goods, infused syrup, infused honey which is wonderful in tea, brewing, finishing salt, garnish, infused in warm cream for desserts.

**Medlar:** mespilus germanica, usually short shrub, can be 25’ tree, self-fertile, winter food. Must be bletted. Bark makes dye.

**Pawpaws:** asimina triloba, 15-20, extremely nutritious fruit, prefers shade, can grow in moist soil, get Peterson varieties, few pest problems because of acetogenin sap, sometimes difficult pollination, eat in moderate due to annonacin which causes nerve damage.

**Peach:** prunus persica, sometimes buds killed by late frost. Leaves make dye. Prunus species sap makes very useful “cherry gum” or “plum gum”. Stone fruit seeds sprout next spring if planted immediately from fruit, take 2 years if dried and stored before planting. Prunus best pruned in July to avoid Silverleaf fungus, Chondrostereum purpureum, usually saprophytic but can infect living tissue through cuts, turns leaves silver, spreads fact, foliage dies back/drops, some trees can recover. Different strains of Plum Pox infect different prunus species, causes yellow spots on leaves, round spots on fruit, dark rot on pits.

**Chinese Szechuan Pepper:** Zanthoxylum simulans, 8-15ft, need male and female to pollinate, edible zesty peppercorns dried/ground

**Japanese Sansho Pepper:** Zanthoxylum Piperitum. Seeds edible cooked, zesty peppercorns, dried and ground as spice. Young leaves raw, salad, cooked, spice, tea. Bark as spice.

**Prickly Ash:** Zanthoxylum americanum, berries and bark medicinal and used in bitters, possibly toxic.

**Aromatnaya Quince:** 10-15, partial shade, lemony fruit for cooking or jam, can grow on moist shoreline.

**River Locust:** Amorpha fruticosa, nitrogen fixer, woody bush up to 12' tall, grows well even in very wet and shady areas, no suckering or spreading, many beautiful flowers, supports succession of taller trees, easy to coppice or prune, wood strong and dense and possibly good small gauge firewood.

**Saskatoon:** Amelanchier spp. Serviceberry. Juneberry. 12ft. Berries mild sweet apple flavor, a few small chewy seeds with almond flavor, edible raw, cooked, dry really well, used in pemmican, canned and used for spread or on hot cereal, not acidic enough for pie so add something sour. Leaves used in tea. Disease resistant. Native. Self-fertile. Needs less acidity than blueberry. Can grow in poor soil, drought, salt. Fruits in shade. Berries ripe when red and best when purple. Sometimes get apple diseases. Easily propagated by layering/stooling. Amelanchier canadensis better in understory. Almelanchier alnifolia wants more sun and adapted for fruit production.

**Sour cherry:** Prunus Cerasus. 5-10’, very hardy, some varieties sweet. Wait longer for them to sweeten. Eat raw, roasted, smoothies, soup, baking recipes, dried, fruit leather, fermented recipes. Bark wounds produce aromatic resin, used to make gum. Inner bark for tincture and syrup for coughing and congestion. Cherry family seeds and leaves have hydrogen cyanide, toxic, ok in extremely small amounts, bad animal for fodder. Prunus species sap makes very useful “cherry gum” or “plum gum”. Stone fruit seeds sprout next spring if planted immediately from fruit, take 2 years if dried and stored before planting. Prunus best pruned in July to avoid Silverleaf fungus, Chondrostereum purpureum, usually saprophytic but can infect living tissue through cuts, turns leaves silver, spreads fact, foliage dies back/drops, some trees can recover. Different strains of Plum Pox infect different prunus species, causes yellow spots on leaves, round spots on fruit, dark rot on pits.

**Spicebush:** Lindera Benzoin, Benjamin Bush, Wild Allspice. Laurel family with sassafras, cinnamon, avocado. 10’, native, understory, partial shade, wet areas, male and female plants. Edible berries, leaves, bark, stems, flowers. Crush leaves and rub on skin for mosquito repellant. Berries called “spiceberries”, edible raw, wonderful spicy complex flavor, ground into spice, oils make liniment for sore muscles and joints, last one week fresh, drying increases flavor and longevity, dried and frozen lasts long time. Young green berries have hot peppery citrus flavor, used for capers, pickles, fermented, dried, ground into pepper. Ripe red berries have sweeter lemon resin allspice cinnamon clove flavor, better than green berries, used in desserts, ground into coffee. All berries good for marinades, dry rubs, spicey powder mix with chilis and aromatic spices, curry mixes, playing on sweet/spicy/savory flavors, combined with fruits in recipes, combined with citrus zest, desserts and baked goods, cookies, cobbler, pie, ice cream, capers, veggie dip, cocktails, seasoning meat and poultry. The fruit pulp and skin make sweeter spice, seed makes hotter peppery spice, but sometimes labor intensive to separate them. Leaves, bark, and stems for tea mild chai flavor. Twigs best harvested with flowers as nectar adds lots of flavor. New bark is enjoyable to chew. Leaves have some camphor, good for insect repellent. Wild game seasoning: blend ripe spicebush berries, dried onion powder, dried garlic powder, paprika, sweetener. Flavored milk: add milk and spice to a pan, bring to simmer then let cool, don’t boil or scorch. Custard: in a warm pan blend acorn starch, ripe spicebush berries, water, sweetener, serve with nuts or fruit or dessert. Base for tea or broth: blend dried matsutake mushroom, dried spicebush leaves and twigs, sassafras leaves, sweet birch twigs. Young leaves are citrusy and floral, use in cold infusions or iced tea blends, hot water makes it bitter, sauteed as side dish or added to cream or butter sauce for fish or pasta, dried but it goes slowly and some of them go bad. Flowers infused in vinegar, warm sweet interesting flavor. Twigs harvest all year, best in winter, make delicious winter tea with hot water but not boiling or simmering or it turns bitter, add tea to baked recipes or oatmeal for cinnamon flavor, use twigs for infused syrup, scorched and added to drinks for woody flavor. Pioneers called spicebush “fever bush” because leaf/root decoction induced sweat, leaf tincture good for fevers. Hosts rare spicebush swallowtail caterpillar and eastern tiger swallowtail, they do minimal damage, so leave all larvae! Berries very high in fat to feed migrating songbirds. Propagate: Gather fruits, remove seeds, do not let seeds dry out, store moist and cool 40F for 3-4 months, sow, mulch, water. Spicebush leaves alternate; berries small, red, oblong, very aromatic, oily. Lookalike bush honeysuckle, Lonicera Tatarica, leaves opposite, thinner, more tapered point, no aroma; berries round, upright.

**Sumac:** Lemonade Tree, Rhus spp. Wood pith is a very pronounced layer. Young green shoots and tips harvest when they snap easily and solid green inside with no white pith, peeled and eaten raw, salad, cooked, candied, delicious flavor! Leaves good source of tannin mordants for cloth dyes, harvest summer and fall, boil 1 hour then soak material 1-2 hours. Fruit cones have wonderful sour powdery coating, harvest before rain washes it off, soak in cold water (hot water pulls bitter tannins), soak 4 clusters 30 minutes each in same batch of water for concentrate, strain liquid through cloth to catch hairs and grubs, makes tangy liquid, optionally add sweetener, liquid used for cold drinks, sweet or savory cooking, as lemon juice, in vinegar, jelly, wine, on desserts, frozen into popsicles, etc. Dried spice: dry flower clusters, remove fuzzy fruits, blend and strain out seeds, use for tangy flavor, red color, za'atar, north African recipes. Related to cashews and mangoes. 1 year old sumac wood easy to hollow pith, makes spiles for tapping trees. Leaves and shoots have tannins, mordant for dying cotton or treating leather, use 40 percent dry leaves or 80 percent fresh leaves per amount of cotton. Propagation: soak seed cones in hot water 24 hours then sow. Fragrant sumac, R. Aromatica, is short bush 2-6 ft, leaves in threes, leaf ends rounded teeth, small clusters of red berries. Related to cashews and mangoes. Lookalike Poison Ivy, poisonous, touch causes skin irritation, similar leaves but it is a vine. Smooth sumac Rhus Glabra, Staghorn Sumac Rhus Typhina, and three leaved sumac Rhus Trilobata, 12-25ft, compound leaves long, alternating, upright reddish fuzzy flower cones. Lookalike poison sumac, Toxicodendron Vernix, poisonous, loose clusters of white waxy berries hanging below glossy leaves.

**Witch Hazel:** hamamelis virginiana. “Wiche” means pliable. "Hazel" because leaves look similar to hazelnut leaves. Astringent used to soothe poison ivy rash, burns, acne, eczema rash, gum inflammation/beeding, sunburn, tired and achy muscles, bruises, sprains, insect bites, small wounds, aftershave. Forked branches used as dowsing rods to find water. Bark, twigs, and leaves harvested all year but most potent in spring when sap is running up. Used fresh or dried. Tannins over time can be carcinogenic. Only 1 percent of flowers end up pollinated. The seedpod explodes two seeds. **Witch hazel extract:** Used for poison ivy rash, burns, acne, eczema, gum inflammation, sunburn, tired and achy muscles, eye strain, bruises, sprains, insect bites. Iroquois in upstate New York used infusion of dried witch hazel leaves for sore throats, colds, and diarrhea; pour hot water over fresh leaves to make poultice for sprains and swelling, eases pain, promotes healing; the leaves are then crushed to place on bruises. Potawatomi in Michigan used witch hazel in sweat lodges, placing young branches on hot rocks to help sore muscles and invigorate. **Compress:** For varicose veins, hemorrhoids, bruises, sunburns: 1 cup plant material in 1 quart water, bring to boil then cover and simmer 20 minutes, remove heat, steep 1 hour, strain, warm liquid again, soak cloth in liquid, ring out, apply to body part, let sit 5 minutes, do this 3 times. **Sitz bath:** shallow bath to help genital/anus areas, pregnancies, postpartum, hemorrhoids, soreness, rash, etc.; helps blood vessels, tightens membranes, helps inflamed and sore skin; put 1 quart of aerial plant material in 1-2 gallons of water in bath, bring to boil then cover and simmer 20 minutes, remove heat, steep 1 hour, strain out solids, add liquid to shallow bath, sit in bath 20 minutes. **Sore muscle liniment:** witch hazel tincture with optional additional herbal essential oils, added to cloth or directly to body part. Leaves and twigs for refreshing tea. **Soak:** For poison ivy or eczema: Add plant material to water, bring to boil then cover and simmer briefly if mostly leafy material or up to 20 minutes if only bark, remove heat, steep for 30 minutes to 1 hour, strain out solids, soak affected skin in the liquid for relief. **Hemorrhoid remedy:** Mix dried calendula flowers, dried lavender flowers, dried rose petals, and fresh plantain leaves in 2 cups witch hazel tincture with 1 cup distilled water, let sit 6 weeks shaking occasionally, strain out solids, add a few drops to toilet paper and gently dab affected area after wiping.

**Siberian Pea Shrub:** Caragana Arborescens, 15-20, nitrogen fixer, fixes nitrogen even at cooler temperatures. Edible young peas raw in moderation due to saponins, young pods edible raw, mature pods cooked, old peas soaked overnight and cooked like beans, peas have 36 percent protein. Edible flowers. Very hardy, wind tolerant. Peas good for chicken fodder. Leaves make blue dye. Bark makes cordage. Seeds make oil possibly useful for soap, paint, lubricant. Peas very small; harvest by waiting until pods dry and exploding, wear container to free both hands, strip handfuls at a time, put in container covered by cloth, put in the sun, wait a few days until they all burst, screen peas.

**Figs:** Ficus. Pest resistant due to ficin acid attacks mammal proteins. Fast growing and recovery. Easy to grow in pots. Raw snack, chopped into salad, sliced onto sandwich, trail mix, dried, fruit leather, ice cream. Dehydrated to use in recipes later. Caramelized in many dishes. Pizza with ricotta, thyme, honey. Wrapped in prosciutto/bacon with cheese and nuts. Wrapped in basil with balsamic. Served with yogurt and honey. Leaves lay on top of cooking soup or grain to infuse flavors, wrap fish or veggies when cooking, dried or smoked and ground into spice. Many species/varieties.

**Yellowhorn:** Xanthoceras sorbifolia, nitrogen fixer, edible cooked leaves, flowers, nuts roasted or ground into flour then boiled. Slow growth max 20ft.

**Japanese Plum Yew:** cephalotaxus harringtonia v. drupacea, 10-15ft, some varieties very poisonous, sweet butterscotch pine nut fruits, edible oily seeds, shade, dioecious.

**SMALL TREES 30-50’**

**Arborvitae:** Thuja occidentalis, northern white cedar, natives called it feather leaf tree “oo so ha ta”. Not a cedar. Grows in northeast. Shrub to 60’. Scales like cedar, spicy odor, distillation makes “oil of cedar”. Cones tiny, upright, at end of twigs. Bark thin, reddish, fibrous, fissures. Wood fine, even, straight, tiny rays, no pores, pleasant fragrance, weak but extremely light and rot resistant thus great for fish lures, fishnet floats, canoes, shingles, fence posts, cabins, outdoor construction and furniture, slack cooperage, drawer bottoms, dividers.

**Apple:** Malus Domestica. 30’. Many varieties. Mostly from Europe but crabapple is native. Issues with pests and pruning. Leaves like others in rosacea family, oval, curled, pointed, fine serrations. Powerful healing and regrowing, propagates easily, goof for layering, stooling, coppicing. Wood very hard, dense, fine texture, warm rich color and soft sweet smell, somewhat rot resistant, sapwood cream colored outer 12-30 rings, heartwood light brown, fine grain perfect for lathe or carving, easily polishes to high luster, famously used for hand planes in England, good for small furniture items, turnings, toys, fruit presses, wood screws, tool handles, shuttles, golf club heads, instruments, firewood burns hot and long, wonderful for smoking food. Flowers delicious, edible raw. Fruit eaten raw, juice, vinegar, ethanol, sauce, hard cider, butter, chips, salads, smoothies, slaw, baked, sliced and dried, fruit leather, vinegar, fermented chutney, jam, sauerkraut, applesauce, cider, kapusta kiszona duszona, dried peels in nukazuke. Applesauce don’t peel, cook low heat with layer of water on bottom until mashable, filter seeds and skins. Drying slice thin, lay on screens on wood stove. Dry applesauce or apple butter for fruit leather, spread thin on tray on wood stove. Young spring flower buds dried and used in tea, petals edible raw, mild apple flavor, but only pedals, remove anther, pollen, etc. Prunings for smoking meat or cheese, use green or aged and then soaked in water. Prunings as rabbit feed to strip bark then leftover pieces as chips for smoking meat. Wood can support soil health, great for mulch, compost, hügelkultur, etc. Hard to split but burns well as firewood. Fruit stores better cold almost freezing. Harvest mature in fall for storage. Leave stems attached to avoid pulling skin. Large central king apple in each bunch has shorter shelf life. Cold and moist. Isolated from veggies. Box with lid and moist sand, leaves, or wood shavings to keep moisture. Or open shelf. Or individually wrapped in moist paper. Or mesh bags. They ripen twice as fast every ten degree increase in temperature. When they soften use them in baking.

**Butternut:** Juglans Cinerea, white walnut, lemon walnut, oilnut. Related to black walnut. 50’, middle and eastern north america. Short lived 75 years. Wood weak and light, cream heartwood, brown lustrous heartwood, dark brown pith, sapwood outer 5-6 rings, wood easy to work, keeps its color a long time, used for cabinets, panels, toys, veneer, trim, doors, sashes. Husks oval like pecans. Nuts edible raw, cooked, high oil content, creamy flavor, lightly toasted in dry skillet, hot cereal, uncooked on rice with maple syrup, ice cream, soup, ground for falafel, veggie burgers, etc. Produces juglone. Good cabinet wood, called “white walnut”. Husk fuzzy and sticky, very messy/difficult to remove when fresh, better to quickly sun dry husks and smash off when brittle later. Shell has sharp ridges and deep fissures. Pinnate leaves like walnut but leaves are opposite and basically no petioles. Trees under severe decline from Butternut Canker, Sirococcus clavigignenti juglandacearum, invasive fungus, has killed 70-90 percent of trees in US, the rest slowly dying. Tree tapped for syrup. Susceptible to butternut canker. Minor pest Anthracnose, many related fungi each attack one tree species, attacks young leaves or wounded mature leaves, needs cool wet conditions, causes leaf curling and brown leaf dots or patches, killed by warm sunny weather; try to reduce weeds that weaken younger trees.

**Eastern red cedar:** juniperus virginiana, 50’, 100 yrs. Juniper family. Not a cedar. Eastern and middle US. Berries as spice, distilling alcohol drinks. Heartwood bright reddish purple! Wood soft, many knots, wonderful aroma, moth repellent, cloth storage, fence posts, pencils. Navajos burned green juniper needles then used ashes with water to make lye as a mordant instead of alum. Juniper is very slow in first 5-10 years, must grow where other herbaceous plants won't overgrow it - rocks, ledges, pasture, pesticide, etc.

**Flowering Dogwood:** Cornus florida, 40’, 1’ diameter, northeast and Midwest US. Wood too small for furniture, sapwood creamy, heartwood brown and variegated, pores microscopic and diffuse, great for small items under high wear and friction, great for lathe, holds intricate detail, polished looks like ivory, used for weaving shuttles, bobbins, golf club heads, hinge pins, mallets, knobs.

**Hawthorn:** Crataegus spp. Shrub to small tree 10-30ft. Many variations, hybridize easily. Teeth very toothed. Leaves alternating, toothed. Blossoms like apple or cherry, white or pinkish, fruit clusters, small and red like crabapples or cherries, but long straight thorns. Berries vary from delicious to bad flavor, sometimes hang on all winter, sometimes gone in summer. Fruits good for heart, edible raw, bitter, little flesh, more delicious cooked, can be dried and finely ground into poor man’s flour additive, lots of pectin good for jellies/fermentation. Native Americans used hawthorne berries with oily foods such as salmon roe, marmot fat, or bear fat, and mashed dried hawthorne berries into thin cakes to dip in soup or boil with deer fat and bone marrow. Berries make good wine, fresh, floral, rich. Young tender leaves edible raw, succulent, mild pleasant flavor, dried for tea. Young shoots edible raw, nutty flavor. Young leaves edible raw. Leaves nutty flavor, used in salad, sandwich, tea, greens and potatoes. Lamb sauce: Hawthorne leaves with garlic mustard, sorrel, vinegar, and brown sugar. Hawthorne tea; young leaves rinsed steamed, dry toasted in sauce pan stirring continuously until dry, used later as black tea. Hawthorn and birch leaves available at the same time in spring, make great salad. Seeds roasted for coffee substitute. Flowers edible raw, unique floral musty smell due to trimethylamine found in decaying animal tissue, smell of death, but also sweet smell, added to puddings, dessert, sweeten wines, potato salad, syrup. Hawthorne food is not cardiotoxic, does not have cumulative effects, but may interact with cardiac or blood medications. Hawthorne frequently grown as a thick tangled thorny hedge. Wood is tough, used for handles, crafts, Celts used wood for fuel, roots were used for boxes and combs. Leaves yield dark blue dye for fabrics. Branches burned for ashes for bleaching cotton. Berries and pits used in pea shooters and pop guns. English folklore had a strong tradition against felling Hawthorns, rerouted roads around them as late as 1968 and the 1990’s. Flowers used for bridal wreaths in Black Forest of Germany.

**Holly:** Ilex Opaca, 50’, 2’ diameter, Midwest, east coast. Broad leaved but not deciduous. Leaves leathery, dark green, pointy margins, last 3 years. Bark starts smooth grey but becomes blistered/warty. Branches with berries used for Christmas decorations. Wood hard, heavy, polishes well, pure white, ages to light brown, extremely tiny rings and pores, used for carving, engraving, beads, moulding, veneer, inlay, white colors, scientific and musical instruments.

**American Hornbeam:** Carpinus caroliniana, musclewood, water beech, ironwood. In Birch family. Related to hop hornbeam. 10-40’ tall, wet areas, middle and eastern north america. Trunk smooth, grey, rippled, looks like flexing muscle (“musclewood”). Bark bluish grey (“Blue beech”). Thrives in flood plain (“water beech”). Multicolored fall leaves red, orange bluish green. Wood strong, fine grain, great for turning, knobs, handles, levers, wedges, shafts, mallets. Tree is small and ornamental.

**Juniper:** Juniperus Communis, edible berries (technically cones) with sharp turpentine flavor for sauerkraut, drinks, winter game, soup, stew, beef, pork, lamb, corn beef, juniper sugar, vinegar, pickles, preserved onions and chilis, or even custard-based desserts with juniper's sweet resin. Navajos burned green juniper needles then used ashes with water to make lye as a mordant instead of alum. Juniper is very slow in first 5-10 years, must grow where other herbaceous plants won't overgrow it - rocks, ledges, pasture, pesticide, etc. Related to Eastern red cedar, Juniperus Virginiana. Avoid other species, toxic.

**Magnolia:** Magnolia Grandiflora. Prefers mild winter, does not grow well in north. Flower buds edible as seasoning grated into cooking. Flowers edible raw, pickled, spice, condiment.

**Mulberry:** Morus spp. 6ft to 70ft. Edible fruits, leaves, and shoots, all year. Many varieties, short, tall, weeping. Dioecious. Females always make fruits, but they have seed if pollinated by male. Mulberries germinate and spread easily by seed, good genetic diversity, seed could be male/female and sugary/less good fruit. Some varieties fruit falls freely, some you pick. Fruits edible raw, dried, cereal, trail mix, jam. Extremely good for coppicing. Milky sap. Heartwood rot resistant, yellow, turns orange over time. Wood hard, dense, beautiful, good for many things, fence posts, cutting boards. Bark strips easily, makes strong fiber, strips all year, can make bow drill to make fire, can make emergency dog leash. White Mulberry, Morus Alba, domesticated china thousands of years ago, hybridizes with natives, takes many forms, berries all colors not just white, there is a fruitless male form, leaves feed silkworms. Red Mulberry, Morus Rubra, is native, frequently misidentified.

**Osage Orange:** Maclura Pomifera, French “Boid d’arc” for archery. 50’, Fruits green, warty, bitter, astringent. Sap can cause dermatitis in some people. Wood extremely strong, harder than hickory, very rot resistant even on soil, sapwood bright yellow only 5-10 rings, heartwood yellow but turns red brown, ring porous, pores closed, flexible, great for archery bows, pulleys, tool handles, pegs for timber frame construction, insulating pins on utility poles. Leaves glossy, simple, pointed. Extract is great insect repellant. Fruit, heartwood, and root contain antioxidant that may serve as preservative.

**Pear:** Pyrus spp. 30’, sweet fruit, less pests, hardy, good storage, european hardier, asian juicier. Flowers edible raw, delicious. Fruit edible raw, roasted for dessert, vinegar, fermented chutney, jam. Harvest before maturity, when skin begins to yellow and fruit separates easily, start on sunny side of tree. Leave stems. Slice thin and bake with cinnamon as chips. Peel and cut in half, wrap in pie crust, bake, and top with maple syrup and ice cream. Prunings for smoking meat or cheese, use green or aged and then soaked in water. Prunings as rabbit feed to strip bark then leftover pieces as chips for smoking meat. Fruit storage: Cold and moist 32-40 degrees 80-90 humidity. Isolated from veggies. Wrapped in paper in open boxes, one layer deep, away from vegetables. Bring to cool room to ripen a few days then eat!

**Persimmon:** Diospyros spp., Greek for “food of gods”. Hardwood, extremely hard. Sapwood over 100 rings, starts brown turns greyish. Heartwood blackish brown. Delicious fruit late fall and winter. Goof for sylvopasture, loved by cows, pigs, horses, etc. Americans used to climb persimmon trees to catch and eat possums. Captain John Smith wrote about persimmons, put them in plum family, “delicious as an apricock”. Eat fruit fresh, wrap sushi top of leaf facing inwards, fermented chutney, skinned and dried one month, fruit leather, jam, in bread recipes, mashed and boiled with brown sugar into butter, dried peels in nukazuke, when soft freeze and eat with spoon, storage in cellar. Wood extremely hard, tough, great for items under high wear and friction, used for golf club heads, axe handles, spool shuttles, shoe lasts. Persimmon champagne: delicious, leave a covered crock of persimmon pulp and water for two weeks in the refrigerator or cool place, fermentation makes clear sparkling drink, tannins change during fermentation, binding the pulp and clarifying the brew. American Persimmon: Diospyros Virginiana, 1st found by europeans in virginia, Appalachian names “possum wood” or “date palm”. Only native member of ebony family. 50’, branches grow at funny angles, native to midwest and east coast. Bigger, hardier, longer leaves than asian types. Asian Persimmon: Many species. 15-30’. Smaller, less hardy, rounder leaves. Hardwood, extremely hard. Delicious fruit late fall and winter, eaten since prehistory. Astringent varieties wait until soft to eat. Sweet varieties eat anytime.

**Seaberries:** hippophae, 20, nutritious, nitrogen fixer, some invasive runners, need male and female.

**Snowbell tree:** halesia carolina, edible young seeds raw, cooked, or pickled.

**Korean Cherry:** Prunus Maximowiczii, 20ft, edible fruits, good dense wood, leaves make dye, flowers edible in brine. Cherry family seeds and leaves have hydrogen cyanide, toxic, ok in extremely small amounts, bad animal for fodder. Prunus species sap makes very useful “cherry gum” or “plum gum”. Stone fruit seeds sprout next spring if planted immediately from fruit, take 2 years if dried and stored before planting. Prunus best pruned in July to avoid Silverleaf fungus, Chondrostereum purpureum, usually saprophytic but can infect living tissue through cuts, turns leaves silver, spreads fact, foliage dies back/drops, some trees can recover. Different strains of Plum Pox infect different prunus species, causes yellow spots on leaves, round spots on fruit, dark rot on pits.

**LARGE TREES 60-100’**

**Alder:** Alnus spp. In birch family Betulaceae. Monoecious, makes long bushy catkins, tiny cones called strobiles. Round disc shaped leaves with tiny fine serrations. Loves wet areas, fixes nitrogen with massive root nodules of Frankia Alni bacteria, can improve soil. Wood is great for mulch, compost, soil building, hügelkultur, etc. Great for coppicing; fixes nitrogen, grows fast, many dormant buds, tolerates wet soils, spacing matters for size, 8’ spacing recommended. Makes great charcoal. May work in silvopasture system. Black Alder, Alnus Glutinosa, 60’, dark grey mature bark, sticky resin on new leaves and buds. Hazel Alder, Alnus Serrulate, prefers wet areas, suckers into a thicket, catkins look like hazelnut catkins

**American Mountain Ash:** sorbus americana - 80ft, wildlife eat red berries, fragrant inner bark.

**American Smoketree:** Cotins obovatus. 20-30’, multi-stemmed or prune to 1 trunk. 25 million years old. Almost extinct in 1800s from overharvesting. Wood good for fence posts, tool handles, orange fabric dye. Multicolored leaves. Scaly bark. Flowers become fuzzy pink wisps.

**Ash:** Fraxinus spp. Grows in many conditions and soils, tough aggressive roots, straight grain, pioneer species. Seed can be sown immediately. Hardwood. Samaras 1 long blade. Twigs thick, stubby, opposite buds. Ash silvopasture: Ash leafs out late, allowing undergrowth for pasturing animals, then remove branches and leaves for high protein pasture, cut wood for firewood etc. Wood sometimes has wavy grain or circular “bird’s eye” grain. Large pores. Ring porous: rings have larger pores in early spring wood and smaller pores in later wood. Best firewood of all, burns hot, easiest to process, when newly felled has low moisture already, dries even without being split first, sometimes stringy makes it a little fussy to split. Lumber 1st thinning 16-25yrs, 1st felling 70yrs. Ash splints: Cut ash into a long board, smash the top with blows of a hammer to crush the rings so they separate into strips. Use a blade/awl to score a line across one end of a strip, about halfway deep into the thickness, then bend it and pull it into 2 pieces, each with a silky smooth side. Threatened by emerald ash borer: 1 female can lay 200 eggs, shiny green long bug, eats cambium, bark splits, bark falls off as it grows, woodpeckers indicate infestation removing bark looking for bugs, epicormic branches sprout on middle of trunk, parasitoid wasps can attack ash borer. Minor pest Anthracnose, many related fungi each attack one tree species, attacks young leaves or wounded mature leaves, needs cool wet conditions, causes leaf curling and brown leaf dots or patches, killed by warm sunny weather; try to reduce weeds that weaken younger trees. Black Ash, Fraxinus Nigra, leaves 12-16” long with 9 leaflets with no petioles, grows in swamps, feels soft and corky, makes very strong baskets. White Ash, Fraxinus Americana, named from ash-colored rough bark; leaves 8-12” long, pinnate, 7 leaflets, long slender petioles; 80’, open areas; wood strong, light, stable, straight, flexible, shock resistant, good for bows with draw-weight over 50 lbs, stains well, open grain like oak, ring porous, unique odor when cut, lustrous color, works well, can tear out under dull tools, used for tools, handles, bent furniture parts, paddles, oars, baseball bats, hockey sticks, tennis rackets, snow shoes, cabinetry, flooring, baskets, veneers, truck bodies and wagons, decent firewood even when unseasoned; bark and seed support wildlife; good for coppicing.

**Aspen Family:** Includes Poplar, Populus Tremuloides. Bigtooth Aspen: Populus Grandidentata, leaf margins have larger teeth, benefits of quaking aspen without forming aggressive stands. White Poplar: Populus Alba: non-native, seen as aggressive weed, doesn’t feed wildlife as well. Avoid genetically modified anti insect hybrid poplar used in pulp industry.

**Beech:** Fagus spp. Fagaceae family with oak and chestnut. American Beech, F. Grandifolia. Grows in old forests, ridges, hills, 100’ with massive trunk. Grows persistently even in shade, drought, bad soil, spreads by runners with connected roots, extremely long lived, naturally bears nuts at 40yrs, grafted can bear earlier. Sprout from root buds, lots of thin trunks in understory, good for pollarding, useful but lumber industry frequently poisons and destroys them. Good for shiitake, oyster, and lion’s mane mushrooms. Seed can be sown immediately. Good quality timber in 80-150 years depending on soil. 1st thinning at 27-39yrs, 1st felling 120yrs. Nuts are important food reserve for birds and rodents. Start producing nuts at 30 to 80 years old. When summer is cold and cloudy, most or all nuts are empty. Farther north less nut production. In Europe, beechnuts fed wild and semi-wild boars, oil used to replace butter and meal fed animals. Wood great for school desks, excellent finishing, hardness, resistance to compression and splitting. Beech makes great hedge especially due to marcescence, keeping leaves through winter until spring leaf out. Worlds tallest hedge is a beech hedge in Scotland 100' tall 1700' long. Bark smooth liquid gray, silver, rippled, bumpy, does not fissure, stays smooth even when mature, people often carve their names in it. Alternating buds, small burred husks with tiny triangular nut, usually surrounded by leaves and sticks all year. Not much deer browsing. Young leaves edible raw. Leaves used in wine making. Aged beech leaves picked in fall or winter to make tea, complex flavors like Japanese teas. Leaves made mattresses, French called “lits de parlement” for rustling sound. Pliny recommended beech leaves for mouth infections and blisters. Leaves and bark can be diuretic, recommended for kidney and liver problems. Young leaves, nuts, and bark were used as mush to make bread. Old English and French made “noyau”, beech leaves infused in gin, mixed with honey, water, other ingredients. Scandinavians boiled beech sawdust, baked it, and mixed it with flour during famine. Balkans mixed beech material with cold water and added to milk as starter culture for yogurt. Wood is great for smoking foods. Wood chips used to age beer. Germans made beech smoked beer "Bamberger Rauchbier". Spanish made beech smoked sheep cheese “Idiazabal”. NUTS: tiny triangles like pine nuts, small spiky husk, two nuts per shell, easy to peel shell with thumbnail, some are empty but worth casual processing, edible, very delicious, great roasted at 250F for 5 minutes, cook or eat in small amounts, large amounts may be toxic, 80 percent oil, beech nut oil is delicious and used for cooking and lighting oil, good wildlife food, colonists harvested them after the first black frost when the nuts fell from the opening burrs, were eaten by native Americans. WOOD: dense, heavy, hardwood, sapwood 20-30 outer rings, pores tiny and diffuse, small dark rays, very stable, rots fast, good for interior, woodworking tools, kitchen utensils, spools, clothespins, bends easily for chair parts, growing shiitake, pulp. Good for firewood, splits easily except very bottom of trunk, must be split quickly and kept dry or it rots, but dries easily for next winter and makes good firewood, sustained hot burn with long lasting coals. European Beech Fagus sylvatica, smaller, ornamental, long lived. Virgil described a beech cup won in a fighting contest. Bacchus drank from a beech goblet. In Germany and Belgium, a small piece of beech was cut from a tree on All Saint's Day Nov 1st; if dry it would be a mild winter, if wet a cold winter. Germans believed that beech was never struck with lightning. Beech was used to make yule logs burned on Christmas eve. Oriental Beech, Fagus orientalis, from black sea area, resistant to beech scale. Red-humped Oakworm, Symmerista Canicosta, attacks oak, beech, chestnut; moth is brown and gray, a white line on each wing, hairy shoulders; worm has orange bulb shaped head, orange stripe at rear-end, long white/black/yellow stripes along body. Decaying maple and beech get charcoal mat fungus, looks like charcoal from a fire but is a fungus, does not darken fingers when touched. Beech bark disease: white waxy scale insect Cryptococcus Fagisuga sucks sap, letting fungus get under bark, kills stem but not roots. Beech Leaf Disease: Japanese foliar nematode, Litylenchus Crenatae Mccannii, feeds inside leaves, mostly overwinters in buds but sometimes in leaf litter, causes yellowing stripes on leaves, deformed curly or shrunken leaves, early leaf drop, branch death, tip death, aborted buds, thin canopy, vulnerable to pests, control by limiting transmission of plant material.

**Birch:** Betula spp. 40’ or more, hardy, smooth grey bark; alternating buds; leaves oval, pointed, serrated. Seeds very small, must land on soil, usually the mound of a wind thrown tree or a nurse like, or exposed area. Nutrient accumulator. Inconsistent for coppicing, rots fast, can support soil health and great for mulch, compost, hügelkultur, etc. Deer don’t usually browse young birch. Leaves used in wine making. Birch twig tea: tightly stuff fresh black and yellow birch twigs into jar, add warm not boiling water, seal jar, leave overnight; optional use raw maple sap as water. Minor pest Anthracnose, many related fungi each attack one tree species, attacks young leaves or wounded mature leaves, needs cool wet conditions, causes leaf curling and brown leaf dots or patches, killed by warm sunny weather; try to reduce weeds that weaken younger trees. Bronze birch borer, Agrilus anxius, metallic wood boring beetle, feeds on birch, prefer to feed/reproduce in stressed/dying trees, foliage dies top down, raised ridges on trunk/branches; larvae head have hidden mandibles, rear-end has two pincer-like tails; beetles long and black. Hemlock and birch can root graft to each other. Yellow birch: Betula allegheniensis, swamp birch. 100’, 4’ diameter, swamps. About 1’ diameter at 50yrs old, 2’ diameter at 100yrs old. Wood moderately hard, difficult to stain, may have attractive wavy grain or circular “bird’s eye” grain, stained as “fruitwood”, sapwood 60-80 outer rings, wood for building, cabinets, furniture, flooring, fuel, toys, doors, sashes, trim, veneer, panels, toothpicks, cutting boards. Bark contains methyl salycate, toxic or fatal in low doses. Bark makes soft yellow dye. Tar skin irritant. Edible leaves, twigs, inner bark, catkins, sap. Leaves, twigs, and inner bark for tea. Birch and hawthorn leaves available at the same time in spring, makes beautiful salad. Birch leaves are 10 percent sugar, sweet raw, also cooked in water a few hours then discard leaves and simmer to reduce for complex delicious syrup. Inner bark edible raw, cooked, dried and ground into spice or flour additive. Tap March to April, after Maple, when buds swell and bark is peeling. Tap 3’ up, on south side, into cambium not into inner wood, and trunk must be 8” or more. Sap edible raw, for wine or beer, boiled into syrup, takes more sap and much longer than maple for syrup. Sometimes hosts medicinal mushrooms like Chaga and formitopsis betulina. Some people allergic to catkin pollen. Outer bark great fire starter, burns when wet. Bark buried under hot ashes from a fire catches the fumes to produce tar, useful for glue and toolmaking. Alternating buds. Leaf buds have shiny coat of resin, provides bees with propolis. Bark makes watertight containers but needs reinforcement and distorts when exposed to hot water. River birch: young leaves edible, slight astringent flavor from tannins. Bark white, papery, long thin lenticels, some dark blotches. Black Birch: bark starts smooth, dark vertical fissures at 50yrs, outlines of bark plates at 80 yrs, starts shedding bark plates at 120yrs; twigs added to heated maple syrup with hickory nuts makes great brew!

**Black Locust:** Robinia Pseudoacacia, false acacia, named after French herbalist Jean Robin. Native to Appalachia and Ozarks. Nitrogen fixer, grows fast six feet a year, pioneer species only in disturbed areas, suckers from root buds, forms colonies, good erosion control, needs sun and drained soil, light canopy allows undergrowth, short lived 60yrs, grows in ANY soil, compact clay, gravel pits, etc. Cuttings easily rooted in soil. Can regrow 15 feet in a year from a stump. May work in silvopasture system. May have toxins, fungicides, may help with rot resistance. Animal fodder in moderate amounts. Feeds bees with long bloom time and makes tasty honey. Wood not good for mulch, compost, hügelkultur, etc. Wood extremely hard and heavy, dulls tools quickly, extremely rot resistant even on soil, Appalachian saying “lasts 2 yrs longer than stone”, world class hardwood, ring porous, sapwood yellow only 2-3 rings, heartwood yellow green but darkens to beautiful red brown with age or light, used for timber, pegs for timber framing pegs, boats, railroad ties, flooring, furniture, springy for long tool handles, fences, utility poles, foundations, board walks, fences, decks, docks, playgrounds, raised beds, terracing, bridges, piers, instruments, some long split branches make good hay forks, hardens significantly when dried, heartwood extremely rot resistant when air dried but less when kiln dried, best firewood hotter than other hardwoods at 26.8 million BTU per cord. Great for coppicing, pollarding, small firewood in 7yrs, lumber in 20yrs. Peeled bark fibrous for weaving. Iroquois charred ends of trunks and used to build longhouses. Pods a few inches long, row of seeds, hard seed coat, seeds may be edible. Flowers white clusters, edible, delicious, sweet pea flavor, better when young, no red spots before drying out. Green seeds edible shelled and boiled like green beans. Generally a gnarly twisty tree. Leaf has small pinnate ovals, common legume look. Branches have tiny thorns in pairs. Locust borer damages wood, lets heart rot fungus into tree, alternative host Goldenrod. Locust leaf miner eats leaves inside out, does a lot of damage but trees re-leaf. Feeds wildlife and adds diversity to disturbed areas. Seeds can survive many years in soil.

**Black Willow:** Salix nigra. 100’, middle and eastern north america, wet areas; leaves alternating long thin lances; bark dark brown to black; catkins upright, reddish brown, hairy seeds; sapwood white heartwood red brown; wood is weak, used for baskets, boxes, furniture, carving, artificial limbs; roots for erosion control.

**Catalpa:** Catalpa Speciosa, latin for “showy” catalpa due to flowers, also called hardy catalpa, cigar tree. 100’ tall, 4’ diameter, native to central midwest. Wood soft, light, bad odor, pale color, straight grained, decay resistant even on soil, looks like butternut wood, sapwood only 1-2 rings, ring porous, microscopic rays, used for outdoor building, fence posts, railroad ties, carving, veneer, plywood, bad for cabinetry or fine work due to difficulty sanding and easy denting.

**Cedar:** Foliage has fern shape made of tiny scale shaped leaves, no needles. Foliage makes very delicious tea, avoid if pregnant. Wood aromatic, natural anti-microbials, very rot resistant, great for outdoor building/boats, not as good for mulch, compost, hügelkultur, etc.

**Cherry:** Prunus subgenus cerasus. Many types. Black Cherry: Prunus serotina, latin for “late plum”, 60-100’, largest native cherry, middle and eastern north America. Bark is dark and chunky, twigs are slender, leaves can have almond aroma, inedible, seeds and leaves have toxic hydrogen cyanide, ok in extremely small amounts, bad animal for fodder. Fruits for wildlife. Wood mid-level strength, hard enough to hold but soft enough to work, wonderful color, sometimes wavy grain, sapwood 10-12 rings, can be dried very stable, can form gum pockets between growth rings, great for cabinets, chairs, veneer, turnings, furniture. Berries edible, jelly, flavoring rum. Prunus species sap makes very useful “cherry gum” or “plum gum”. Stone fruit seeds sprout next spring if planted immediately from fruit, take 2 years if dried and stored before planting. Prunus best pruned in July to avoid Silverleaf fungus, Chondrostereum purpureum, usually saprophytic but can infect living tissue through cuts, turns leaves silver, spreads fact, foliage dies back/drops, some trees can recover. Different strains of Plum Pox infect different prunus species, causes yellow spots on leaves, round spots on fruit, dark rot on pits.

**Chestnut:** Castanea. Fagaceae family with oak and beech. Many types around world with good nuts. Some chestnuts are edible raw with soft leathery shells; slight drying gives sweeter and richer flavor; you must pierce or cut the shell before heating or they explode. Chestnuts spoil easily, just remove the moldy part, eat the rest. They last up to 3 months in cool storage, but can sprout down to 34F, still delicious with sprouts up to 2”, longer sprouts edible but strange taste. Freezing changes their texture. Dried storage lasts longer. Drying stages: slightly pliable to squeeze, then , fully dry rock hard and nut sticks to shell, either remove shell halfway through drying process when it is easy to remove, or leave in shell for storage and soak in water to remove shell when cooking. Leaves shiny with points, alternating, nuts have white top strand. American, Asian, European, and hybrids will cross-pollinate. American Chestnut, Castanea Dentata, usually 35-60’, can be 100’ with 4’ diameter, middle and eastern US. Seed can be sown immediately. Chestnuts can have delayed graft failure, not initially apparent, top dies over 3-5yrs, kills 50 percent of grafted trees. Large pores, rings have larger pores in early spring wood and smaller pores in later wood. American Chestnut impacted by chestnut blight, cryphonectria parasitica, chinese species and hybrids more resistant. In 1909, America produced 600,000,000 board feet of chestnut wood. In 1910, Patrick County VA alone harvested 160,000 pounds of chestnuts. by 1920 the forest service recommended harvesting remaining chestnuts ASAP; no hope for recovery. Pest Chestnut Gall Wasp, Dryocosmus kuriphilus, invasive from china, affects trees in southern areas. Nuts roasted, ground into flour. Bears nuts annually. Wood is hardwood, stable, very rot-resistant, lightweight, easily worked, fine grain, takes stain well, darkens with age, used for everything, construction timbers, split rail fences, posts, railroad ties, millwork, interior finishing. Old dead silver trees still harvested due to rot resistance and good wood. Can be coppiced. Probably the greatest tree in north American history. Castanea Sativa, Spanish chestnut, sweet chestnut, popular in Europe, great for coppicing, faster and tougher than softwood coppicing, but wood must be split quickly to dry for firewood or else it takes years to dry. American Chestnut, C. Dentata, tall timber tree; nuts smaller, many stick in burr, very susceptible to chestnut blight and phytophthora root rot. Chinese Chestnut, C. Mollissima, moderate size, adaptable, great disease resistance; nuts most delicious, can be large, peel easily, edible raw or cooked. European Chestnut, C. Sativa, from Europe/Asia Minor, extremely long-lived, not as hardy, some vulnerable to blight/root rot, good for timber and nuts; nuts large, some good raw, others cooked, some hard to peel. Japanese Chestnut, C. Crenata, from Japan/Korea, vigorous, large crops, disease resistant; nuts can be large, difficult to peel, bland/starchy like a potato, great with cooking, sometimes bitter. Seguin, C. seguinii, South China, medium sized tree, small nuts, 3 per burr, constant flowering thru summer, nuts ripen over long period in fall. In England, “chestnut” means toxic horse chestnut and “sweet chestnut” means the real chestnut. Poison lookalike, horse chestnut, Aesculus hippocastanum, also called “Buckeye”, in Sapindaceae family with soapberry and lychee, not in unrelated to chestnuts; nuts have lots of saponins, glycosides, toxins, usually only stomachache but sometimes serious illness; leaves, bark, flower, nuts, have esculin toxin; palmate leaves, burrs are mostly smooth with a few spines, only one nut inside; leaf buds have shiny coat of resin, provides bees with propolis; nuts have saponins that can wash and whiten hemp, flax, silk and wool, removes spots, never damages cloth; 20 seeds peeled, rasped or dried, ground, steeped in 1.5 gallons cold soft rain or river water, not hard well water, the water becomes frothy then milky, stir well at first, let settle, strain or pour clear liquid, wash linen in this clear liquid then rinse in clear running water for light sky-blue color. Red-humped Oakworm, Symmerista Canicosta, attacks oak, beech, chestnut; moth is brown and gray, a white line on each wing, hairy shoulders; worm has orange bulb shaped head, orange stripe at rear-end, long white/black/yellow stripes along body.

**Douglas Fir:** Pseudotsuga Menziesii. Fake fir. Not actually a fir. West coast. 300’ tall, 10’ diameter. Bark chunky, deep, chaotic. Wood decent strength for studs, beams, posts, floors, siding. 1st thinning at 17-24yrs, 1st felling 50yrs.

**Eastern Hemlock:** Tsuga canadensis, 100’ tall, pyramidal, up to 800yrs old, conifer, needles have two white stripes on underside. Small hanging cones. Mature bark dark purplish brown. Hemlock and birch can root graft to each other. Deer and moose est new growth and needles. Squirrels, chipmunks, voles, other rodents eat seeds. Hemlock Wooly Adelgid, Adelges Tsugae, attacks hemlock and spruce, asian insect covered in white soft substance, feeds on the sap at the base of needles causing them to fall off, killing tree, but Tiny Ladybeetle Sasajiscymnus Tsugae, eats them and keeps them under control. 7,000 years ago a pathogen nearly wiped them out, took 500 years to recover.

**Eastern Redbud:** Cercis Canadensis. 25ft, legume but some don’t fix nitrogen, good for pollarding. Many small clumps of pink buds on branches before leaves. Flowers edible, peanut flavor, vitamin C, edible raw, colorful garnish, salad, condiments, desserts, baked goods like pancakes, pickled like capers, briefly stir fried, infused in vinegar for salad dressing with deep purple color then buds strained and added to sauteed greens. Some people remove stems and dark flower base but you don’t have to. Young leaves edible raw, salads, spring roll wraps. Young seed pods like green beans, harvest early when they snap off easily before getting stringy, edible stir fried, steamed, boiled, pickled.

**Elm:** Ulmus spp. Wood has “interlocking” or “ribbon” grain, reverses direction every few years, beautiful but hard to work. Leaves jagged pointed, bottom is often slightly lower on one side than the other, edible raw when young and soft. Samaras disc shaped, edible when young and green, eaten whole, delicious and sweet, edible raw, salads, briefly steamed. When samaras turn brown, rub out seeds, seeds edible raw like sunflower seeds, salads, cooked, cereal, grain, too oily for flour. Minor pest Anthracnose, many related fungi each attack one tree species, attacks young leaves or wounded mature leaves, needs cool wet conditions, causes leaf curling and brown leaf dots or patches, killed by warm sunny weather; try to reduce weeds that weaken younger trees. Siberian elm, U. Pumila, and Slippery Elm, U. Rubra, have best samaras. Siberian elm, U. Pumila, species is shorter, wider, smaller leaves, chunky bark, and seedpods are hairless with notch on bottom; inner bark makes fragrant porridge. American Elm: U. Americana samaras are smaller, hairy, dry, but still edible; great shade tree with arched canopy, vulnerable to dutch elm disease, wood decently hard, light beige, sometimes green or grey hues, grain shifts direction every few years, tricky to work and make firewood, used for cabinets, upholstery frames, barn floors, trim, toys, boxes, pallets, veneer, plywood, slack cooperage.

**Empress Tree:** Paulownia shantong, fortunei, elongata etc. Wood super lightweight and strong, easily carved, holds screws and nails without splitting, makes surfboards, kayaks, boxes. In Japan, traditionally planted with the birth of a daughter and harvested at the wedding to pay the dowry. Produces hundreds of pounds of leaves for fertilizer etc. Paulownia tomentosa can be invasive.

**Fir:** Abies spp. Does not include douglas fir. Bark edible raw, cooked, usually chewed in winter and early spring, mildly sweet and mucilaginous. Sap antiseptic and analgesic, used on burns and wounds, harvest by cutting a bump on the trunk. Needles citrusy resin flavor, edible in small amounts, raw, breath freshener, tea for cold and cough, seasoning, beverages, syrup, desserts, vinegar, vinaigrette, infused honey, brewing/distilling alcohol, flavored salt, pickled, baking, smoking meat, avoid if pregnant. Needles grow individually, attached to branches with little green suction cups, not on a woody peg like spruces or in a cluster/fascicle like pine. Needles are glossy green with a clear groove and undersides have two clear whitish bands of stomata. Bark usually silver grey with numerous obvious resin blisters. Wood hard to stain. Conifers for firewood dry easily but burn quickly. Poison lookalike Yew, Taxus spp., needles flat and soft, grows smaller and often planted as hedge, red berries, no cones. Poison lookalike Norfolk island pine, Araucaria heterophylla, needles not edible, cones look like pineapples and have edible seeds, grows in subtropics warm and humid along coast, salt tolerant, short needles with feathery look all along branches, branches have spaced lateral look. Lookalike pine, pinus spp., needles grow in clusters, long and slender, citrusy flavor, most have edible needles except ponderosa pine, avoid eating conifers if pregnant. Lookalike cedar, foliage looks like fern with tiny scale shaped leaves, no needles, makes delicious tea, avoid if pregnant.

**Ginkgo:** Ginkgo Biloba, 50-70ft, Called a hardwood due to broad leaves but actually a gymnosperm softwood, extremely tough, slow growing, shade tolerant, stinky fruits and medicinal nuts, very old species. Fruits smell like vomit and have burning chemical, handle with gloves and clean well to get nuts, then bake nuts at 350F for 30 minutes, delicious lightly salted, roasted with tamari sauce, soup, pureed into a spread.

**Hackberry:** Celtis occidentalis, 60’. Related to Elms. Very cold hardy. Bark unique tall, thick, grey furrows. Fruits edible, mildly sweet, thin flesh. Seeds edible, high protein and fat, great for birds. Fruits and seeds ground into flavoring. Native tribes ate them with parched corn. Roots make dye. Wood for furniture.

**Hickory:** Carya spp. Juglandaceae family includes Walnut, Hickory, Pecan, Pignut, Hican. 140’, 30” diameter, 200 years, large taproot, middle and eastern north america. Prefers longer season so some nuts don’t ripen in the north. Hickory best propagated by nuts, keep moist and cold stratify, poor grafting, poor transplanting due to important tap root. Wood extremely hard and heavy, rings have larger pores in early spring wood and smaller pores in later wood, great for tool handles (ax, hammer, pick, shovel, tennis racquet), gymnastic bars, wagon wheels (spokes, rims, shafts, springs), longbows, green wood for chairs, best chair spindles, wood can bend in a circle without cracking, great firewood burns hot (24 million BTUs per cord equal to 200 gallons of fuel oil) but hard to split, chips good for smoking meat, jerky, bacon, etc. “Calico” is hickory wood board/item showing softwood and heartwood. Nuts extremely delicious, 75 percent oil, eaten raw for shagbark, leached then eaten raw for bitternut, lightly toasted in dry skillet, pressed for delicious oil, meal, nut milk, candied, stored in the white shell they can last for years, if shelled they must be frozen or they go rancid. Milk: grind nuts, boil, skim off hickory cream for thick nutritious cream or stir it back in, milk wonderful with pinch of syrup, used to cook cereals and grains, must be refrigerated. Best to smash them, boil nuts and shells, shells sink while nutmeat floats and oil rises to top, skim off oil for cooking, save nutmeat for eating and adding to dishes, use broth water for healthy drink with added cocoa or syrup or spices, and discard shells. Smash hickories with shells, boiled to separate the oil called “pawcohiccora”, sweet, rich like fresh cream, used as drink, base for soup, frying food, sweet or savory recipes, native tribes used in cooking like hominy and corn cakes; native tribes crushed and roasted sweet potatoes in powcohiccora as a kind of gravy; Virginia colonists relied on it from native tribes; grind leftover nutmeal and add to soup with meat stock base, onion, salt, dried and crushed spicebush berries. Drink recipe: boil nuts in maple sap rather than water, add chopped black birch twigs, delicious! Candied nuts: nuts, maple syrup, and butter in a saucepan, warm on low heat, stir, let cool. Press nuts for oil, good for salad, rice, beans, popcorn. Syrup: Harvest bits of outer bark, clean, bake 350F for 30 minutes, barely cover with water, bring to boil, reduce heat, simmer 30 minutes, strain for liquid, add sweetener, use for baking, drinks, desserts, meat glaze, salad dressing. Sporadic nut production to deter local pest populations, mast year every 2-3 years. Shagbark Hickory, Carya Ovata, bark peels in long strips, nuts delicious, edible raw but hard to shell, green husk in 4 sections, break off easily when ripe, remove husks for storage to avoid mold, prefers dry hillsides, associated with oak. Shellbark Hickory, C. Laciniosa, similar to shagbark, no peeling bark, larger nuts, prefers rich wet soil, associated with walnut. Bitternut Hickory, C. Cordiformis, “Oilnut”, bark smooth and laced with foot flare, buds mustard color, husks very thin with ridges and peel easily like a rind, nuts bitter raw so lots of nuts avoided by wildlife, few/no worms, easy to leach and then edible, lots of nutmeat, easy to shell, easily pressed for valuable delicious oil, do not underestimate value of bitternuts! Pignut, Carya Glabra, bark smooth, husks pear shaped and peel like a rind and have no ridges, nuts hard to shell but delicious, great for hickory milk, leave the husk to rot then it’s easy to remove. Pecan, Carya Illinoinensis, cold hardy, delicious nuts, thick shell but nut falls out easy, requires long season to ripen so rare in northeast.

**Honey locust:** Gledistiat Triacanthos, 65-100’. Nitrogen fixing. Shade tolerant. Spreads a bit by runners but more by seed. Grows well. Drought tolerant. Massive crops of seedpods, edible for humans, great fodder for animals, usually pigs or cows. Open canopy allows light for lower story plants. Great for sylvopasture or two-story agriculture with crop growing below. Most have many long 6” thorns, "Inermis" cultivar has no thorns. Wood is good, pink, fast growing timber, great lumber. Ring porous: rings have larger pores in early spring wood and smaller pores in later wood. Pods a foot long, edible raw, sweet, dried and ground to flour, good for fodder, sweet like carob pods when harvested at the right time and prepared correctly. Seed edible raw or cooked, roasted and used as a coffee substitute. Young seedpod pulp edible raw, sweet, made into sugar, older pods pulp is bitter. Seedpods and pulp make drinks.

**Eastern Hophornbeam:** Ironwood, Ostryra virginiana/spp. In Carpinus genus with common Hornbeams, in Birch family Betulaceae. Good medium for Shiitake mushrooms. Wood hard, heavy, stable, burns very hot, makes woodworking planes and beams for ox ploughs. Leaves like birch, double-toothed, oval, pointed tip. Male catkins. Seedpods look like hop flowers. Tiny seeds ripe when dark and no green, edible raw or dry roasted. Bark has vertical papery peeling strips, used to make tea for topical application to aches and pains, sore muscles, arthritis. Minor pest Anthracnose, many related fungi each attack one tree species, attacks young leaves or wounded mature leaves, needs cool wet conditions, causes leaf curling and brown leaf dots or patches, killed by warm sunny weather; try to reduce weeds that weaken younger trees.

**Japanese Raisin Tree:** Hovenia Dulcis. 30-100ft. Fruit edible raw, cooked, dried like raisins,. Seed extract honey substitute, used for wine, candy. Wood for construction or fine furniture. Used in Asian medicine for fever, parasitic infection, laxative, liver issues, hangovers. From Asia, invasive in some areas like Brazil.

**Judas Tree:** Cercis siliquastrum, nitrogen fixer, edible seedpods and flowers.

**Kentucky Coffee Tree:** Glymnocladus Dioicus. Fixes nitrogen. Dioecious. Okay with drought, pollution, acidic, alkaline, etc. Seeds edible cooked, roasted like chestnuts, cooked 300F 2-3 hrs then ground into nice coffee substitute, pulp sweet like caramel, hydrocyanic acid and saponin so cook it! Scarify seeds before sowing.

**Larch:** Larix laricina, tamarack, hackmatack. 60’, trunk 2’ diameter. Pine family. Deciduous conifer. Dry or swampy areas. Bunches of short needles along branches with small cones. Wounds leak resin, used by bees for propolis. Wood weak but if grown crowded without thinning growth rings are closer, wood denser and stronger for roundwood construction. Wood oily, decent strength and decay resistance, used for snowshoes, lumber, pulp. Juncture of trunk and roots used as knee braces in ships. Larch 1st thinning at 17-34yrs, 1st felling 60yrs. Needles up to 1 1/4”, single on new wood, bunches 12-20 on old wood. Western larch: tender young needles edible raw, citrus flavor.

**Linden:** Tilia spp. Basswood, Lime Tree, Butterwood. 110’, 75’ wide, 140 years old, some centuries old. Included in hardwoods but actually soft. Beekeepers love it for fragrant flowers. Fast growing from bush into tree, shade tolerant, deep and broad roots, regenerates well. Great coppicing, pollarding, windbreak, beneficial insects, butterflies, moths, honey. Young Leaves edible raw, cooked, delicious, salads, pesto, sandwiches, taste better than lettuce, better young, a bit tougher but still edible when old, tree suckers so young leaves available spring thru fall. Leaves used in wine making. Cambium edible raw, sweet fresh flavor, harvest in spring when sweet thru early summer fast growing stage, peel bark, scrape slushy cambium, can be dried into good flour. Large winter buds edible raw, cooked, stir fry, rice dishes. Young flowers sweet and aromatic, edible raw, tea reduces anxiety and fever, infused syrup, infused honey wonderful in tea, brewing, finishing salt, garnish, infused in warm cream for desserts, harvest 1-2 days after opening, older flowers may be narcotic, harvest flowers with the long leafy bract, can be dried for later. Immature seeds ground with flowers into chocolate substitute, mature seeds more bitter. Nuts edible raw, tiny, laborious. Suckers flexible, used for basketry. Foliage high nitrogen, goo mulch makes soil more alkaline and decompose rapidly, good animal fodder fresh or dried. Lime aphid feeds on foliage, drops honeydew, enriching soil microbes. Feeds honeybees, lots of production, unique woodsy flavor. Wood very lightweight, not durable, easy to work, fine even grain, contracts a lot but stable after drying, creamy white or brown, sapwood 55-65 rings, good for tubs, excelsior, slack cooperage, poles, timber, poor firewood, carving, boxes, barrels, toys, venetian blind slats, piano keys, beehive interiors and tools, artist charcoal, gunpowder, furniture secondary wood, plywood, veneer. Inner bark can make a brush, cut a small length and rough up one end to make a brush for wood finish, glue, etc. Saplings remove pith, makes wooden tube, used as spile for tapping trees. Bast fiber: peel off bark, soak 1 month, peel inner bast fibers, used for rope, basketry, clothing, shoes, roofs, mats, source of name “Basswood”. Sap in spring, hard to tap, brief period, low sweetness. Coppicing: for small wood and edible leaves coppice at age 6-8 then every 1-5 years; large wood coppice every 10-25 years. Propagation: transplant suckers is easiest, layering takes 1-3 years, cold stratify seed 40 weeks. Some lindens in Europe 1-2,000 years old. Germans used the wood for shields and sculptures. Wilhelm Müller wrote a poem about the linden, Der Lindenbaum, which was set to music by Schubert. Herodotus, Homer, Horace, Virgil, Ovid, and Pliny mentioned the Linden in their works. In greek mythology, Baucis and Philemon, the poor old married couple treated the disguised Zeus and Hermes hospitably and were saved from a flood by being changed into a linden and an oak. American linden, Tilia americana, 60-80’. Littleleaf Linden, Tilia Cordata, smaller leaves, pruned to hedge or 60’ tree. Silver Linden, tilia tomentosa, 6” leaves, hardy.

**Maple:** Acer spp. Sugar maple is hardwood but some types are weaker “soft maples” including red (A. rubrum), silver (A. saccharinum), bigleaf (A. macrophyllum), striped (A. pennsylvanicum), boxelder (A. negundo) and Norway (A. platanoides). Good medium for Shiitake and oyster mushrooms. Sugar Maple: A. Saccharum. Wood hard, heavy, diffuse porous, sapwood 30-40 rings, hard to stain, grain can be wavy or curly or circular “bird’s eye” designs, used for bows, cutting boards, butcher block, flooring, bowling pins, shoe lasts, shuttles, bobbins, crocquet balls and mallets, tool handles, furniture, cabinetry, veneer, frames, musical instruments, piano pin blocks. Good for pollarding. Young tender leaves edible raw. Sap in spring edible raw or boiled for syrup; only use 5/16" spiels, called “health spouts”, tree heals faster; don't use old/rusty spouts; maple sap is 2 percent sugar, mostly water, and probably the cleanest water you could ever drink; raw maple sap is healthy drink, only drink in beginning and middle of sap season and store cold for short period like milk; over 50 vitamins and minerals, nutrients, enzymes, anti-oxidants, probiotics similar to dairy, and phenolic compounds; considered a spring tonic by traditional cultures; Korean maple called "gorosoe", “tree that is good for bones” because sap is high in calcium, magnesium, and potassium, consumed in sauna retreats. Flowers edible, sweet, some varieties unconfirmed, eaten raw, salad, garnish, fried, vinaigrette, candied. Samara seeds eaten raw, salads, roasted, steamed, boiled, add butter and salt or favorite spices, dried and ground into flour; boil if bitter tannins, harvested spring and again in fall. Inner bark edible. Mature bark has plates, doesn’t chip off when touched, commonly has white lichen. Some vigorous growers have less rugged more smooth bark. Buds are opposite, pointy and brown; slender twigs; leaves green stem with smooth margins and smooth U shape between lobes; prefers nice conditions like hills or slopes with rich soils, longer lived. Decaying maple and beech get charcoal mat fungus, looks like charcoal from a fire but is a fungus, does not darken fingers when touched. Maples can get sapstreak and heart rot. Minor pest Anthracnose, many related fungi each attack one tree species, attacks young leaves or wounded mature leaves, needs cool wet conditions, causes leaf curling and brown leaf dots or patches, killed by warm sunny weather; try to reduce weeds that weaken younger trees. Red maple: A. rubrum, buds usually blunt and red, leaves red stem with toothed serrated margins and sharp V shape between lobes, wood less dense and hard, called swamp maple, will grow anywhere including bottom areas, grows faster. Red maple has red flowers, red samaras, reddish twigs, reddish young twigs. Sugar maple has yellow flowers. Red maple, “soft maple”, very adaptable, wet or dry, forms dense stands in wetlands. Lookalike maple leaf viburnum. Nectria fungus infects red maple, tree forms callous around it each year, forms a target shape on bark. Red maple short lived, 150-200 yrs, moves into open space, specimens up to 300 yrs. scientists found some red maples only form growth rings half the time, sitting in understory, “zombie maples”. Silver maple, leaves underside silver and deep lobes, usually in occasional/seasonal flood areas, fast growing, permits lush understory, weak wood, shallow roots. Box elder, acer negrum, rarely grow up, usually low and contorted, very simple leaves, green young twigs makes many samaras. Soft maples used for lumber, furniture, chairs, millwork, veneer, crates, pallets, flooring, firewood, sometimes musical instruments or gunstocks.

**Oak:** Quercus, from Celtic for beautiful tree. Extreme hardwood like stone, difficult to dry, moves. Large taproot. Seed can be sown immediately. Large oaks can transpire 120 gallons of water a day. Good quality timber in 80-150 years depending on soil. Alternating buds. Large pores. Good medium for Shiitake mushrooms. Bark used to tan leather. Acorns high starch, edible processed, deep malty flavor, especially roasted. Don’t harvest if shell has tiny pinhole, whitish, strongly attached cap, or floats in water. Acorns dried and cured until the acorn shrinks and darkens will last decades in storage, but once tannins are removed they can go rancid. Hot leaching: shell, boil until tannins turn water brown, drain, repeat until water is clear; heat destroys starch, more rough, dark colored, edible as is or ground into polenta, hot cereal, crumbly flour, falafel. Cold leaching: shell, soak 3 days in running water like a stream, dry, remove paper covering, grind into flour; or shell them, remove paper, grind them, soak in jar of fresh water 24hrs, repeat several times, put in cloth, squeeze out liquid, dry, grind into flour; cold preserves starch, softer texture, better for baking, fine flour, best with binding agent like eggs. Fast cold leaching: blend acorns into a flour, put under running water faucet/stream, removes tannins under ten minutes but also removes starch. Oak starch: When squeezing liquid from ground acorns for flour, save the water, let it sit so starch settles to bottom, pour off water, dry the starch for powder, use like corn starch, thickener, egg substitute, breading, acorn jelly. Nut butter: sprout to turn starches into sugar, then leached, lightly roasted, add maple syrup or simmer in apple juice. Acorn mole sauce: acorn flour, hot peppers, tomato, onion, salt, fat, water, cinnamon, allspice. Oak wood is strong but absorbent and fluctuating, takes stain well, bad for coppicing, some good for pollarding. 1st thinning at 26-38yrs, 1st felling 125yrs. Bark used in tanning. Oak used to make “swills” for baskets: butt end of 4-6” oak trunk cleft into lengthwise billets, boiled several hours until softened, billets torn into thin strips, shorter ribs or ‘spelks’ left thicker 1/8”, longer “weavers” or “taws” riven finer 1/16, spelks then smoothed with a draw knife, taws are dressed over the knee using a hand knife. Leaves used in wine making, light herbal flavor. Native tribes used green/live oak, Q. Virens acorns to thicken venison soup and express oil similar to sweet almond oil. Sweet acorns were roasted like chestnuts in Portugal and Spain. In the ninth century a French bishop asked priests to give people acorns during the food shortage. Europe used to graft sweet acorn oaks like we graft apples. Pests: Oak wilt, Bretziella fagacearum, invasive fungus, infects water vessels of tree, kills red oaks in 2 months, bur oaks 1-7yrs, white oaks up to 20yrs, spreads through roots or beetles, makes spore mats that swell and burst bark, leaves fall in summer. Prune oaks when dormant, don’t thin or prune from April 15 thru July 15, to avoid oak wilt spores and picnic beetles that transport them to fresh wounds. Interplant and surround oak stands with other species trees to reduce infection through root grafting. Armillaria spp., “shoestring root rot”, aggressive fungus, one of the largest and oldest organisms, forms white mat of mycelium on cambium and thick black threads along roots/wood, can grow above and below ground, eats living and dead wood, uses dead stumps for food to spread to nearby trees attacks crown and roots, conifers and hardwoods, makes patches with black outlines on wood, forms clumps of honey-colored mushrooms at base of tree that may be edible, mycelium glows in the dark especially when cut and traditionally called “foxfire”; contributes to oak decline in east, kills many conifers out west. Twolined chestnut borer Agrilus bilineatus, metallic wood boring beetle, feeds on white and red oak, prefer to feed/reproduce in stressed/dying trees, foliage dies top down, raised ridges on trunk/branches; larvae have head with hidden mandibles, rear-end has two pincer-like tails; beetles are black, long, with two gold parallel lines along body.Minor pest Anthracnose, many related fungi each attack one tree species, attacks young leaves or wounded mature leaves, needs cool wet conditions, causes leaf curling and brown leaf dots or patches, killed by warm sunny weather; try to reduce weeds that weaken younger trees. Red-humped Oakworm, Symmerista Canicosta, attacks oak, beech, chestnut; moth is brown and gray, a white line on each wing, hairy shoulders; worm has orange bulb shaped head, orange stripe at rear-end, long white/black/yellow stripes along body; defoliates oaks late in year, little damage, increases susceptibility to shoestring root rot and two-lined chestnut borer. White Oak: Q. Alba, high quality wood, long rays, pores small and closed, more strong and rot resistant than other oaks, used for everything, furniture, flooring, baskets, agricultural tools, plywood, fence posts, ship building, railroad ties, cooperage. Red Oak: Q. Rubra, 90’, beautiful, fast growing, transplants well, cold hardy, grows well in cities, host plant for many caterpillars that feed birds, fallen leaves create fungi rich soil, strong but open pores so seal and keep away from water, good for coppicing, rings have larger pores in early spring wood and smaller pores in later wood, sawdust has sweet cherry like smell, wood very hard, polishes well, tears easily when worked so careful with planning or lathe or shaping it into a point, used for lumber, flooring, furniture, cabinets, doors, sashes, trim, mill work, railroad ties, mine timbers, fence posts, pilings, slack cooperage, pulp. Burr Oak, Q. Macrocarpa, leaves smooth lobed, wide top narrow waist; bark has ridges in the stems; very cold hardy, expanded into prairies to compete with prairie grass; acorn cap has big hairy burr. Live Oak: Q. Virginiana, 60’ tall, 100’ wide, 7’ diameter, southeast US; extremely hard, dense, hard to work with hand tools, sinks in water, great polishing, used for turning, ship knees, used in USS constitution “old ironsides”.

**Pecan:** Carya Illinoensis, edible nuts. Related to hickory. 150’, 4’ diameter, middle, east, and southern north America. Long pinnate leaves, 9-17 leaflets, fine toothed edges. Nuts in clusters 3-11, delicious, easy to process, more valuable than the wood, used in desserts. Husks oval, pointed, thin, four sections. Wood is hard, just under the other hickories, not rot resistant, good firewood high BTU, good charcoal for smoking food, makes flooring, furniture, handles, ladder rungs, veneer. Good shade tree.

**Pine:** Pinus genus. Softwood. Related to Larch. Remove branches by cutting bottom of joint with tree. 1st thinning at 20-35yrs, 1st felling 50-60yrs. Yellow pine included in softwoods but actually hard as walnut. Sugar pine has aromatic wood. Pines make lumber. Allelopathic chemical inhibits other plants’ growth. Wood hard to stain. Resin with linseed oil (flax oil) makes great wood finish. Young tips edible raw as seasoning, flavored salt, sorbet; boiled in water makes tea for fever, cough, cold, diuretic helps with urination. Young green unopened cones high yeast content, kickstart fermentations like sourdough, alcohol. Needles citrusy resin flavor, edible in small amounts, seasoning, beverages, syrup, desserts, vinegar, flavored salts; winter tea with optional other spices like cinnamon or cardamom; needles with peppermint or catnip makes tea to sip all day for colds; needles steamed with optional thyme and bee balm, and inhale to clear lungs, phlegm. Young tips ground into seasoning for meat, fish, desserts, infused in vinegar for dressing or marinade, mixed with salt or sugar. Pollen edible in baking, mixed with flour, in sauces, mixed with honey; slight yellow color, mild flavor, great texture; harvest small male cones when releasing pollen, shake in a jar or bag to separate pollen, sift out bits of cone; lasts a few weeks, frozen lasts longer; lots of vitamins, minerals, amino acids, antioxidants. Bark has more resin, very astringent, makes antimicrobial wash, gum, poultice, infused in bathwater for muscle aches. Cambium edible raw, replaces pine nuts in pesto. Bark bacon: harvest small strips of inner bark, remove outer bark and green resinous parts, fry in oil/fat in a skillet 1-2 minutes per side, add pinch of salt. Outer bark strong flavor and resinous; inner bark more calories, vitamin C; bark infused in vinegar, marinade, salad dressing, baked 350F 30 minutes then ground into flour with strong taste, harvest responsibly. Resin antimicrobial, used in dressing on wounds or as salve, helps pull out splinters, insect bites, muscle aches, glue. Pine resin glue: harvest when fresh and stick, gently melt it but don't boil or the turpentine burns of and it will be brittle; add a little finely pulverized charcoal to temper the glue for strength (also use pulverized plant matter, sawdust, bone, scat, or hair); optional add fat or beeswax for flexibility. Pliable resin applied as bandage on small wound or insect bite, has strong drawing power, anti-inflammatory, antimicrobial; use only small irregular doses, not large amounts, not regularly, not if pregnant, can cause kidney irritation. Pine gum: Collect hard resin bits found on side of tree in spring before undergrowth and vines; put in pot and warm to melt it, keep below 300 Fahrenheit; strain out solids to leave liquid spruce resin; pour into simple mold, as it cools coat it in corn starch and roll it into long strings, cut into pieces, store it in wax paper, don't store in a large pile or bottom pieces stick together, works as chewing gum, no need to add beeswax or honey, antiseptic cleans your mouth and helps with colds, sore throat, mouth issues, alcohol is a good solvent for it. Pine bark is chunky, regular, like cracked soil; long needles in clusters; wounds leak resin, used by bees for propolis. Conifers for firewood dry easily but burn quickly. Long needled pines can be raked for pine straw for mulch/animal bedding. White pine blister rust: cronartium ribicola, fungus, from asia, kills pines; alternate hosts ribes like gooseberries and currants, Indian paint brush, snap dragons; infection occurs under 9ft so simply prune off infected limbs; spore from pine to ribes travels up to 100 miles; spore from ribes to pines only travels couple hundred yards; during great depression the Civilian Conservation Corps ripped up thousands of ribes plants. White Pine Weavel, Pissodes Strobi, affects white pine and white spruce; prefers trees under 15yrs in full sun with terminal shoot as thick as your thumb; trees older or shaded have too thin shoots; larvae burrow thru leader and emerge leaving holes, leader dies, tree puts out several new leaders; thus trees with split about 15yrs height were probably young and in the sun; an area with many trees hit around the same time was probably open land at the time. White pine: pinus strobus, northern pine, soft pine, balsam pine, or Weymouth pine; up to 200’ and 400 years old, across middle and eastern US and Canada, used for masts in old English navy; puts out a whorl of limbs each year, can be counted; needles in bundles of 5 and have paper sheath in first year; cones thin, flexible, 2 years to mature; sapwood yellowish white, heartwood beige, exposure turns it reddish brown; wood light, straight, fair amount of sap, great for workshop jigs, patterns, painted; quartersawn is extremely stable. 20 species produce edible pine nuts, called “pignoles”, edible raw, cooked, pesto, salad, dried and ground into a powder for flavoring and thickener in soups etc; Korean pine, P. koraiensis, and Swiss stone pine, P. Cembra, produce in temperate north; Stone pine, P. Pinea, and Pinyon Pine, P. Edulis, are most common, largest nuts, but not cold hardy; start producing 10-15yrs, partially self-fertile, wind pollinated, boom and bust cycles. Sugar pine: pinus lambertiana, big pine, purple cone pine, up to 180’ and 500 yrs old, west coast, young cones purplish and upright. Lookalikes: Spruce, Fir, Australian pine (Casuarina spp., Casuarinaceae). Pitch Pine: P. Rigida, 50’, 1-2’dbh, needles in 3s, one of the few conifers with dormant buds that sprout from base after trunk destroyed in fire; wood highly flammable, used to make turpentine, colonists preferred it for firewood. Poison lookalike Yew, Taxus spp., needles flat and soft, grows smaller and often planted as hedge, red berries, no cones. Poison lookalike Norfolk island pine, Araucaria heterophylla, needles not edible, cones look like pineapples and have edible seeds, grows in subtropics warm and humid along coast, salt tolerant, short needles with feathery look all along branches, branches have spaced lateral look.

**Poplar:** Populus. Includes Poplars, Aspens, Cottonwood. Does not include tulip poplar. Grow shockingly fast, spread by suckers, regenerate quickly, lots of biomass, light canopy allows lower growth, all of this building habitat and soil, regenerates damaged areas, erosion control, windbreaks, great coppicing, biochar, firewood. Can absorb toxins, heavy metal, even sewage from soil. Good medium for Oyster mushrooms. Endophytic fungi in the leaves fix nitrogen for rapid growth, good for chop and drop nitrogen. Wood is soft, low flammability, good for matches and paper, roof slats in Russia, difficult to stain. Wood can support soil health, great for mulch, compost, hügelkultur, etc. Leaf buds have shiny coat of resin, provides bees with propolis. Avoid genetically modified anti insect hybrid poplar used in pulp industry. Poplar: Populus Tremuloides, quaking aspen, golden aspen, "popple" in New England; 60’ tall, 2’ diameter, most of northern north America, spreads aggressively by root suckers, lots of biomass builds habitat and soil; white non papery bark, heart shaped leaves, tiny teeth, flat leaf stems, leaves shimmer in the wind; great for wildlife, browse for deer, catkins for grouse and turkey, beavers love to chew on them; leaf buds have shiny coat of resin, provides bees with propolis; sapwood pale white, heartwood beige; grain straight, fuzzy, warps easily, weak, decays easily, used for boxes, excelsior, cordwood, veneer, plywood, pallets, carving.

Bigtooth Aspen: Populus Grandidentata. Cottonwood: Populus Deltoides, fast growing, giant, called a hardwood but actually soft, wood can support soil health, great for mulch, compost, hügelkultur, etc. Tulip poplar wood has disagreeable odor.

**Raisin Tree:** hovenia dulcis, 30-100ft, raisin pear flavored fruit.

**Red Adler:** nitrogen fixer, nothing edible. Good for coppicing.

**Sassafras:** Sassafras albidum. 50’. Leaves fruit loop scent, lemony flavor, effectively no safrole, eaten raw, salads, sandwiches, cooking, soup thickener, dried and ground into spice. Tender young stems peeled and eaten raw. Flower edible raw, great garnish. Tree forms colony from shoots. Winter buds eaten raw. Flowers eaten raw, tea, desserts, garnish. Root bark wonderful root beer aroma, used in perfume, tea, beverages, candy, soap, dried and boiled with sugar into condiment paste, some safrole. Safrole oil also found in anise, black pepper, cinnamon, mace, nutmeg, carcinogenic in massive pure amounts, used to make ecstasy, only found in roots in low amounts, broken down in boiling or evaporation, so just boil or dry roots. Alternate host to rare spicebush swallowtail caterpillar. Tree can live 1,000 years. Native americans used Sassafras in cooking to flavor bear fat and cure meat. Colonists overharvested the bark from 1 ton shipments in 1602 to less than 30 pounds in 1626. Sassafras mixed with other roots and aromatic plants, sugar/grain, and yeast to make fermented carbonated beverage, eventually turns alcoholic. Bark for orange dye. Wood heavy, strong, aromatic, yellow, sapwood 7-8 rings, good rot resistance contacting soil, used in sills, small boats, fence posts, siding, inner wood for cabinetry with spicy aroma, furniture, excellent firewood, used in old Hollywood movies because it makes beautiful flames. Rubbing leaves on skin may deter mosquitoes. Roots allelopathic.

**Siberian Elm:** Ulmus Pumila.

**Spruce:** Picea genus. Softwood. Remove branches by cutting bottom of joint with tree. Boatbuilders used root knees as supports. 1st thinning at 20-35yrs, 1st felling 50yrs. Young green tips edible raw, citrus resin flavor, high vitamin C, harvest from interior/low branches because they don’t grow back, freeze for long term storage, used for breath freshener, nice tea with nettle, seasoning, beverages, syrup, desserts, sorbet, popsicles, cookies, infused vinegar, vinaigrette, infused honey, brewing/distilling alcohol, flavored salt, pickled, baking, smoking meat, avoid if pregnant. Spruce water: soak tips in water 8 hours, lasts a few weeks in cool storage; used with warm honey and citrus juice then frozen and stirred for sorbet. Finishing salt: finely chop or mash spruce tips with salt, used for meat rub, brine, herb cocktails, finishing long cooks like roasts. Balsamic vinegar: combine spruce tips, apple cider vinegar, honey, peppercorns; let sit 3 months; use for bread dip, marinade veggies, grilled apples, infused tips on cheese. Small male cones edible raw, salad. Pollen edible in baking, harvest male cones, let them sit on a table or paper a few days to release all pollen, gather pollen and keep in freezer. Spruce grows in cone shape. Needles grow individually stem, sit on raised brown bumps on stem, have pointy ends, have multiple sides not flat. Wounds leak resin, used by bees for propolis. Spruce gum: Collect hard resin bits found on side of tree in spring before undergrowth and vines; put in pot and warm to melt it, keep below 300 Fahrenheit; strain out solids to leave liquid spruce resin; pour into simple mold, as it cools coat it in corn starch and roll it into long strings, cut into pieces, store it in wax paper, don't store in a large pile or bottom pieces stick together, works as chewing gum, no need to add beeswax or honey, antiseptic cleans your mouth and helps with colds, sore throat, mouth issues, alcohol is a good solvent for it. Conifers for firewood dry easily but burn quickly. Hemlock Wooly Adelgid attacks hemlock and spruce, asian insect covered in white soft substance, feeds on the sap at the base of needles causing them to fall off, killing tree. White spruce: picea glauca, canadian spruce, cat spruce, skunk spruce; 70’, lower elevations across North America, pyramid shape, drooping branches, cone scales rounded, single needles from pegs on branches, young needles orange brown; wood weak, good for musical instruments, pulp, paper, beams for construction; roots fibrous, used to tie birch bark canoes; good winter animal fodder. Black spruce: picea mariana 60ft, wet areas, branches root in the ground under snow load. Spruce gum and spruce beer. Red spruce - picea rubens, 80ft, ornamental, wood for construction and musical instruments, spruce gum. Norway spruce: can regenerate trunk, makes a good hedge, specimen in Sweden had roots carbon dated to 9,950 years old, another in Germany was 468 years old. Poison lookalike Yew, Taxus spp., needles flat and soft, grows smaller and often planted as hedge, red berries, no cones. Poison lookalike Norfolk island pine, Araucaria heterophylla, needles not edible, cones look like pineapples and have edible seeds, grows in subtropics warm and humid along coast, salt tolerant, short needles with feathery look all along branches, branches have spaced lateral look. Lookalike Fir, Abies spp., tips edible, needles flat, soft to the touch, white lines on underside of needles. Lookalike pine, pinus spp., needles grow in clusters, long and slender, citrusy flavor, most have edible needles except ponderosa pine, avoid eating conifers if pregnant. Lookalike cedar, foliage looks like fern with tiny scale shaped leaves, no needles, makes delicious tea, avoid if pregnant.

**Sweet Gum:** Liquidambar styraciflua. In Witch Hazel family. 100’, moist and fertile areas, east coast. Leaves alternating, star shaped, 5-7 points, aromatic. Round burred seed balls in fall. Sapwood called “sap gum”, heartwood “red gum” or “satin walnut”, heartwood moderately hard, great color, workable, used for cabinets, boxes, flooring, trim.

**Sycamore:** Platanus Occidentalis. 160’, Wood moderate strength, many tiny dark rays, grain changes direction every few years, hard to split, used for butcher block, cigar boxes, baskets, panels. Bark is papery grey and brown splotches. Leaves like maple but broader, fuller. Produces round “buttonballs”.

**Tulip Tree:** Liriodendron tulipifera, tulip poplar, yellow poplar, white wood. “Lirio” Greek for lily, “tulipifera” Greek for “makes tulips”. Not a poplar. In magnolia family. 150’, 4’ diameter, huge size, mid/east US. Ancient tree from dinosaur era. No major pest or disease. Leaves palmate, pointed, shallow lobes, like flattened/simple maple leaf. Beautiful tulip like flowers. Cones stay on tree in winter. Twigs thick and stubby. Great for pollinators, honey bees. Wood is light, tan colored, bad odor gets worse with age, grows very straight, used for coffins, boxes, crates, canoes, carving, veneer, plywood, trim, painted furniture. Bark used to make shingles.

**Walnut:** Juglans spp. 60’. Great nuts and timber. Walnuts need to cure in the shell several months. Due to this delay, squirrels eat them late and instead go for other nuts like hickory. Leaves pinnate, alternating, with petioles. Walnuts vulnerable to walnut caterpillars, bud borers, anthracnose, nectria canker, fusarium canker. Prune only in winter to avoid canker. Minor pest Anthracnose, many related fungi each attack one tree species, attacks young leaves or wounded mature leaves, needs cool wet conditions, causes leaf curling and brown leaf dots or patches, killed by warm sunny weather; try to reduce weeds that weaken younger trees. Carpathian Walnut: J. Regia, nuts sweet flavor, desserts, baking, ground into meal, pressed for oil but goes rancid quickly; unripe fruits pickled in vinegar; unripe fruits in liqueurs, Italian Nocino, Croatian Orahovac, French wine Vin De Noix; trunk tapped to make sugar; leaves for tea; leaves in wine making, rich caramel flavor; shells ground fine used as stuffing in angnolotti pasta. Black Walnut: J. Nigra, 60-100’, large taproot, thick stubby twigs, long compound pinnate leaves with 13-23 lance leaflets. Black walnuts retain their flavor when cooked, unlike other nuts; make rich bread with whole wheat flour; awesome for dessert, candy, cake, ice cream, better than English walnut and hickory. Chinese would grind walnuts into paste mixed with boiled water for walnut milk to replace breast milk. Good hardwood, sapwood 10-20 rings, pith very pronounced dark layer, pores filled, very rot resistant, beautiful, easily worked, moves very little, perfect cabinet wood, used for railroad ties, gunstocks, Appalachian frame buildings. Nuts edible raw or cooked, rich pungent flavor, exposed nut goes rancid quickly, great for seasoning, savory stuffing, cooked with grains, desserts such as cookies, cakes, crumbles. Unripe nuts pickled or used for liqueur with deep smoky tobacco flavor. Sap is sweet, edible as drink or reduced to syrup or sugar. Husks make cloth dye, wood stain, weed prevention. Black Walnut dye: does not need mordant, has anti-fungal properties, used in wool underclothing to prevent skin conditions, use wool fibers "in the grease" unwashed with natural oils, wash with lye soap, dye with black walnuts, wash again in lye soap, makes deep blackish brown. Black walnut leaves are least desirable for forest insect pests, used for folk insect repellent. Black Walnut produces hydrojuglone, non-toxic and colorless until exposed to the air, then oxidizes to become toxic juglone; prevents other plants from growing, shavings poisonous to horses, usually safe for other livestock, possible irritant to humans, not good for animal bedding, can cause laminitis, not good for mulch, compost, hügelkultur, etc.; effectively selects some tolerant ally species, giving them an advantage of no competition; walnuts produce little to no juglone until 15 years old. More juglone with age.

**VINES**

**Akebia:** Akebia Trifoliata, 6x12. Fruit looks like purple pod, edible raw, bland, better with acidic juices. Young leaves dried for tea.

**American Groundnut:** amphicarpaea bracteata, nitrogen fixer, vine, beans raw, tubers cooked.

**Blue Bean:** Decaisnea fargesil, 8x8, relative of akebia, edible fruit.

**Carrion Flower:** Smilax Herbacea, ecirrata, illinoensis lasioneura. One species flower putrid scent. Related to green briar. 6-10ft, die back every year, falls onto other foliage, related to asparagus. Flower shoots edible raw, salad, cooked, stir-fry, stew, boiled or steamed with salt and butter, very delicious, thicker shoots tender up to 3ft long.

**Caucasian Mountian Spinach:** Hablitzia tamnoides. Shoots and leaves edible steamed.

**Grapes:** Wild grapes, Vitis Riparia, labruscis, aestivalis, etc. Very cold hardy, disease resistant, grows well with walnut. Grapes juice may have tartrate, causes burning feeling on skin and mouth, crush while rinsing hands, let juice sit a few hours, tartrate settles as grey sludge on bottom, keep juice, discard sludge. Juice edible raw, cooking, make jelly, fantastic wine, dried and rolled into fruit leather balls, etc. Fruits edible small amounts fresh, salads, trail mix, veggie peanut butter snack, cooking with cabbages/brussels sprouts, dried into raisins, fruit leather, fermented raisin chutney. Fruits storage: Cold and moist 40 degrees 80-90 humidity. Some species’ leaves edible in cooking, stuffed with grain, oil, spices, lemon juice, nuts, tomato paste. Concord grape domesticated from wild fox grape, cold hardy, vigorous growth, lots of fruit, needs trellis and pruning, some disease. Lookalike Virginia Creeper Parhenocissus, poisonous, leaves compound, palmate, pink, stems bright pink, fruit umbel clusters. Vikings called America “Vineland” because they could smell them from the shore. Poison lookalike Canada Moonseed, Menispermum Canadense, poisonous, no tendrils, leaves rounder and smoother, petiole attaches to underside of leaf, fruit small and bitter with single flat round seed.

**Greenbrier:** Smilax. Edible shoots, young leaves, young soft green thorns, eaten raw, briefly steamed, quickly stir fry, soups at end of cooking time. Winter greens. Vine 6-10ft, sometimes thorns.

**Hardy kiwi:** 10-15, tough, invasive grower, male pollinates up to six females.

**Hog Peanut:** small aerial seeds cooked, buried peanuts raw or cooked, harvest in fall, nitrogen fixer, shade, groundcover.

**Honeysuckle:** Lonicera spp. Most of plant inedible. Flowers sweet and aromatic, edible raw, sun tea, infused syrup, infused honey wonderful in tea, brewing, finishing salt, garnish, infused in warm cream for desserts, eaten with mild cheese.

**Perennial Sweet Peas:** lathyrus latifolius or sylvestris, 3 to 10 feet, eat young pods in summer and fall in moderation trace toxin can accumulate in large amounts.

**Perennial Thicket Bean:** Phaseolus Polystachios. Native. Small. Edible cooked like dry bean. Works in partial shade. Takes over space.

**Silver Vine:** Actinidia polygama, cats love it, spicy fruits, medicinal fruit raw or cooked, grind leaves and stems for bath, hardy 10 to 25 feet, need male and female.

**Wild kidney Bean:** Phaseolus Polystachios, hardy, nitrogen fixer, 5-8 feet, edible dry beans like lima beans, some anti-nutrients so soak them and toss the water then boil them and toss the water to make them perfectly edible.

**BULBS, CORMS, ROOTS, TUBERS**

**American Ginseng:** Panax Quinquefolium. Root is adaptogen, can help body resist stress, cold, flu, upper respiratory tract symptoms, control blood sugar in type 2 diabetics, root tincture or tea can help immune system. Leaves and roots make tea. Aromatic roots candied for chewing. Use in small doses. Harvest root in fall and dry for storage. Needs moderate shade and rich soil. Grows extremely slowly, prefers 70 percent shade, North or notheastern slope, moist well-draining soil, high organic matter, high calcium, near sugar maple, maidenhair fern, spikenard (nardostachys jatamansi), rattlesnake fern (botrychium virginianum). Fertilizer harms them, increases leaf and crown blights. Seed sown in fall, double dormancy, needs stratification. Less than 1lb of root in 10 years.

**American Groundnut:** nitrogen fixer, large main ground tuber.

**Babbington’s Leek:** allium ampeloprasum var. babingtonii, edible leek shoots, bulbs, top set bulbils.

**Bunching onions:** Allium Fistulosum, A. Cepa, etc. Hardy. Onion greens spring through winter edible raw, salad, cooked, soup, eggs, potato salad, savory breads, etc. Pretty snowball shaped flowers. Under fruit trees they may help reduce rodents, repel pests in grub stage in soil, and fungal diseases.

**Burdock:** Arctium Minus, A. Lappa. Biennial or perennial. First year roots edible cooked, fried veggies, stew, rice dishes, optionally peeled, becomes fibrous during second year flowering. Young leafstalks edible peeled and boiled. Young second year flower stalks up to 1ft, peeled, then edible raw, cooked, boiled, steamed, casseroles, discolor when exposed to air but harmless. ID: 1st year basal rosette; leaves large, oval, wavy edges, white underside, look like rhubarb but fuzzy and not poisonous; 2nd year flower stalk; flowers purple spike balls; seed pods spikey brown balls with burrs, like chestnut.

**Chinese artichoke:** stachys affinis, edible tubers, soak ten minutes then eat raw or lightly boiled/roasted, aggressive.

**Chives:** Allium Schoenoprasum, Greens in salad, smoothie, sandwich, cooked, eggs, baked potatoes, soup, fermented onion greens hot sauce, Shan pickles. Flowers cooked or pickled and added to bagels with cream cheese and lox.

**Chufa:** Cyperus Esculentus. Nut Sedge. Small tubers harvest when dormant fall winter and spring, delicious flavor, edible ???, dried, ground into flour, boiled into Horchata milky drink, pressed for oil. Ancient food. Grows like grass. Allelopathic for corn and soybeans. Lookalike other umbrella sedges, not dangerous, just inedible.

**Cut Leaved Toothwort:** Roots and leaves edible raw, cooked, nice peppery pungent flavor like watercress.

**Daylily:** Hemerocallis fulva. Other varieties inedible. Daylily is not a true lily. Possible allergies. Young tender shoots edible. Flower petals edible, not pistils or stamens. Unopened buds are delicious from one inch long green until three inches long colorful, used in salads, sauteed, soup, pickles. Tubers edible when starchy in fall or early spring, roasted like potato, delicious pickled. Leaves in large amounts may be hallucinogenic. Stalks leafless or only 1-2 leaves. Shoots like iris but yellower, cupped at the base and facing each other rather (iris flat and fanned out), roots go down into soil with tubers (iris roots lateral).

**Earth Almond:** Cyperus esculentus, sow spring harvest fall, sweet nutritious nutty tubers eaten raw, ground with water for a drink, in porridge, toasted, dried, roasted and ground as a coffee or chocolate substitute, pressed for sweet fine oil. Sweeter when dried first.

**Egyptian Walking Onions:** Allium x Proliferum, hardy, tough, bottom divides, also forms top bulbs, aggressive.

**Elephant garlic:** allium ampeloprasum, pinched seedheads for perennial.

**Fennel:** All arial parts are delicious, edible raw, best when young and tender, can peel off stringy skin when mature. Leaves good in salads soups, seafood. Stems in soup, candied. Flowers edible raw, salad, soup, fried veggies, great in pickles. Green seedpods delicious raw. Seeds edible raw, spice, tea, meat dishes, curry, sweet and savory dishes. Pollen anise flavor, edible raw, topping for baked goods, seasoning, wonderful on roasted vegetables, cheese. Seeds, flowers, and pollen dried for seasoning, replaces dill. Prefers to rocky sunny slopes.

**Field garlic:** allium vineale.

**Goldenseal:** Hydrastis Canadensis. Root medicinal. Fruit poisonous. Root helps mucous membrane infections in the body, sometimes used in weight loss formulas. Needs moderate shade and rich soil. Whole plant may be poisonous, avoid if pregnant or high blood pressure. Sow seeds immediately, double dormancy, or use root cuttings in fall.

**Hardneck garlic:** allium sativum var ophioscorodon, hardy, flowering doesn’t affect bulbs, average storage, edible leaves in spring, edible whole baby plants, edible flower stems in early summer then edible bulbs when leaves wilted in late summer or fall. Use garlic cooked, raw (not children or pregnant women), insect repellant. Garlic scapes for pesto, pickles, cooking. Green onions simmered in oil on low heat for 25 minutes to make delicious onion oil, used for salad, steamed dishes like fish, at the end of soup cooking, marinade, pan fried bread, simple noodle dishes.

**Horseradish:** Armoracia Rusticana. Spicy edible roots, aggressive rhizomatic growth. Stems used in cooking, horseradish sauce, fermented veggies. Storage: Cold and wet 32-40 degrees 95 humidity. Cellar box with lid.

**Hog Peanuts:** Amphicarpaea Bracteata. Low flowers bury seedpods, inner seed edible raw or cooked, sweet bean flavor, peanut substitute. High flowers make aerial seedpods, smaller, inner seed edible cooked. Root edible peeled then boiled. Fixes nitrogen.

**Japanese Mountain Yam:** Dioscorea Japonica. Jinjejo. Cluster of thick delicious easy to harvest tubers at base of vine, spring shoots cook like asparagus, cook roots and shoots, starch, good enzymes, calcium, iron, used in soba noodles, often confused with dioscorea batatas or opposita.

**Jerusalem Artichokes:** helianthus tuberosus, cooked tubers, harvest after frost, flatulence, aggressive. Contains chemical that upsets stomach. Storage: Cold and wet 32-40 degrees 95 humidity. Cellar open box.

**Large Toothwort:** Cardamine Maxima. Root edible raw or cooked, pungent and acrid, usually piled into heap and left to ferment several days to sweeten then boiled. Streams or calcareous slopes.

**Little Indian Breadroot:** Psoralea Hypogaea, Pediomelum Hypogaeum. Fixes nitrogen. Native out west. Roots highly edible high protein.

**Meadow Garlic:** allium canadense.

**Myoga Ginger:** Zingiber Mioga. Edible shoots, tasty flower buds in asian cooking, needs shade, possibly toxic.

**Orris Root:** Rhizoma Iridus, wonderful fresh scent used in laundry, perfume, potpourri, can be poisonous/allergenic.

**Qamash:** Camassia Quamash or Esculenta. Bulbs fall and winter edible cooked.

**Rampion:** Campanula Rapunculus. Small herbaceous biennial, once popular euro food, thick white delicious roots eaten raw, leaves and flowers are excellent in salads.

**Ramps:** Allium Tricoccum. Wild Leek. Overharvested and threatened in wild. Greens and bulbs delicious earthy garlic flavor, edible raw, salad, sandwiches, cooking, soup, stir fry, rice, eggs, baking, added to butter or cheese, dried powder with similar spices, fermented onion greens hot sauce, bulbs pickled with vinegar, mustard, celery, ginger, sweetener. Dehydrate when flavor strongest later in season before flowering. Prefers moist woods and can be picky. Lookalike Lily-of-the-valley, inedible, but ramps have onion aroma in all parts of plant.

**Ramson:** Allium Ursinum. Perennial garlic greens, prefers moist woods, winter and spring, edible leaves, flowers, bulbs, dry/grind into powder for long term use.

**Scorzonera:** Scorzonera Hispanica. Edible raw young leaves, raw flowers, cooked old leaves, cooked roots when two years old during fall and winter, no woodiness with age.

**Silverweed:** Potentilla anserine. Roots harvested when dormant, thin, nutty flavor, edible raw, cooked, dried and ground for soup or cereal, stores well. Young shoots edible raw. Leaves make tea. Aggressive runner.

**Skirret:** Sium Sisarum. Roots edible cooked, harvested two years old during fall and winter, stores well, no woodiness with age but drought causes woodiness just strip the skin and cook.

**Softneck garlic:** Allium Sativum Var. Scorodoprasum. Less hardy, better storage, pinch seed heads for perennial. Use garlic cooked, raw (not children or pregnant women), insect repellant.

**Trout Lily:** Erythronium. Young leaves purple spots, fade later. Single peduncle per flower, flowers droop. Small bulbs edible raw in small quantities or cooked, steamed, braised.

**Tulips:** petals edible but must remove pollen, anther, etc. only petal edible.

**Wild Ginger:** Asarum Canadense. Buried stem and flowers harvested in fall, used as ginger substitute, edible in small amounts, can be toxic, flavor complex peppery and earthy, drying increases flavor, used medicinally, baking, desserts, meat rubs, marinades, asian recipes, curry. Leaves are poisonous and may irritate skin. Full shade. Very hardy. Pollinated by flies.

**Wild Hyacinth:** Triteleia Grandiflora. Very tasty tuber chestnut flavor raw, sweet cooked.

**Yams:** Dioscorea. Aerial tubers in late summer and fall, ground tubers in winter, cook all tubers like potatoes, tubers store well, ground tubers woody after four years, invasive in warmer south.

**Yellow asphodel:** Asphodeline Lutea. Young shoots from summer through winter edible lightly cooked like asparagus. Flowers sweet, edible raw, salads. Many small roots, harvested fall and winter, edible cooked, nutty flavor.

**MUSHROOMS**

**Chicken of the woods:** Laetiporus Sulphureus, edible. Replaces meat. Grilled with salt and butter, in recipes, soup, pasta sauce, dried/smoked, dried and added to nukazuke. Dehydrating: Wash briefly in cold water. No pre-treatment. Never blanche.

**Granulated Slippery Jack:** ???

**Hen of the Woods:** Grifola Frondosa. Grilled, in recipes, soup, pasta sauce, dried/smoked, dried and added to nukazuke. Dehydrating: Wash briefly in cold water. No pre-treatment. Never blanche.

**Lion’s Mane:** Hericium Erinaceus, delicious cooked, medicinal, slower and finicky, great for your brain). Grilled with salt and butter, in recipes, soup, pasta sauce, dried/smoked, dried and added to nukazuke. Dehydrating: Wash briefly in cold water. No pre-treatment. Never blanche.

**Oyster Mushroom:** Pleurotus Ostreatus. Grilled, in recipes, soup, pasta sauce, dried/smoked, dried and added to nukazuke. Dehydrating: Wash briefly in cold water. No pre-treatment. Never blanche.

**Shiitake:** Lentinula edodes, cultivated in china in 1100CE, nutritious, medicinal, great form of protein. Use Oak, Maple, Beech, Hop Hornbeam, Ironwood. Cut logs logs 4-6” diameter, 3-4’ long. You want lots of sapwood and less heartwood, thick bark to slow moisture loss. Cut in spring before budbreak. Inoculate within 2-3 weeks. Mushrooms easier to cultivate than others. Can force to fruit by soaking in water. Grilled, in recipes, soup, pasta sauce, dried/smoked, dried and added to nukazuke. Dehydrating: Wash briefly in cold water. No pre-treatment. Never blanche.

**Truffles:** Delicious, rare, possibly inoculate roots of hazelnut and oak.

**Turkey Tail:** ???

**Wine Caps:** Stropharia Rugosoannulata, easy, prolific, wood chips or straw. Grilled, in recipes, soup, pasta sauce, dried/smoked, dried and added to nukazuke. Dehydrating: Wash briefly in cold water. No pre-treatment. Never blanche.

**AQUATIC**

**Achira:** moist shoreline.

**Arrowhead, Wapato:** Sagittaria Latifolia, Cuneata, Rigida. Tubers delicious peeled then boiled, fried, potato salad, casserole, boiled 30 minutes then mashed and dried and ground into cereal, blanched and frozen, like potatoes. Tender lateral rhizome tips edible raw or cooked. Young curled leaves edible cooked. Leaves and leaf stalks edible boiled, delicious. Young tender unopened flower stalks edible boiled. Aquatic. Tubers harvested in north late summer to fall as plant dies back, harvested in south all spring until mature, 2-8 per plant, at end of spongy unbranching rhizome, up to 1.5 inches, round or oval, sometimes slightly flat, with one curving shoot, mild grapefruit peel scent, purple or reddish or white. Leaves arrowhead shape, one large point at end, two points backwards, leaf veins fan out from center. S. Rigida leaves are lanceolate or linear. S. Cuneata leaves sometimes floating. Lookalike Pickerelweed, Pontederia Cordata, hind lobes rounded. Lookalike Arrow Arum, Peltandra Virginica, central vein with branches.

**Cattails:** Typha angustifolia, T. Latifolia. Aquatic. Sometimes aggressive. Young cores edible raw, cooked, steamed, stir fry, delicious mild flavor, gelatinous raw but better cooked; harvest before flowering, cut shoots at base, cut off green tips, peel off outer layers to leave soft white core. Shoots ooze gel that helps cuts. Young male top flower spike edible raw small amounts, boiled or steamed briefly to soften then eaten or added to recipes, mushroom corn flavor, harvest young and green when snaps easily. Pollen edible as flour additive, baked goods, thickener, yellow, nutty flavor, harvest when male top flower spikes fill with pollen, cover with bag and shake out pollen. Seed heads brown, cigar shaped, edible roasted, ripped apart and cooked longtime in sauce, fluff used for bedding or warm lining in slippers and clothes. Stems for cordage, baskets, mats, shelter. Young lateral rhizomes fall edible raw, cooked, soup, stew, steam, stir fry, casserole, simmered with butter and syrup, harvest when starchy late summer after flowering through early spring before they curve upward to shoot, not when fibrous late spring through summer, peel off brown outer layer before cooking. Mature rhizome upward tips, bundle of packed leaves, peeled and cooked. Root cores peeled, squeeze out liquid, sweet starch settles to bottom, used for flour or thickener. Round cluster of blades 5-9ft tall, flower head always top of stalk and vertical, rhizomes don’t branch between stalks. Lookalike Sweet Flag Acorus Calamus has spicy scent, shorter, flower spike hangs to one side. Lookalike Yellow flag Iris Pseudacorus, poisonous, similar leaves, grows with cattails, different flowers.

**Dulse Seaweed:** Palmaria Palmata. Rocky coastlines. Rich purple color, not green, brown or yellow. Fronds have a single base shaped like a disc called a “holdfast”, with finger like segments growing from it. Easier harvest at low tide. Fronds have B vitamins, protein, fiber, potassium, iodine; edible raw, soup, stew, seaweed salads, sauteed into chips, dried for crunchy snack, dried and then softened with water. No seaweeds are poisonous but they can accumulate toxins growing below low tide.

**Fish:** Gambusia, koi, guppies, or common feeder goldfish can eat mosquito larvae and add organic material. Trout and catfish add organic material.

**Fuki:** Petasites Japonicas. Cooked flowerbuds like artichoke, leaf stalks antioxidants, but flower stalks damage liver, expansive, moist shoreline.

**Lotus:** nelumbo nucifera. Grows in water. Young leaves toxic raw, edible boiled in one or more batches of water. Flowers and seeds raw or cooked but remove skin and green embryo shoot. Seeds harvested when pods turn brown. Young fruits and tubers harvested in fall when flowers die or water freezing. Young nuts peeled and old nuts shelled, all nuts edible raw, roasted, ground into flour, but only eat nuts with white flesh, dark flesh is bitter. Young tubers eaten raw or cooked, old tubers eaten cooked but sometimes too fibrous. Tubers stored in water. Leaves round, complete circle no breaks, up to 3ft across. Lookalike water lilies have a cut in each leaf.

**Pawpaw:** fruit, moist shoreline. Harvest when falling or easy to pluck. They only ripen a little bit off the tree. Don’t eat skin or seeds. Eat flesh raw, in smoothies, frozen as ice cream, or in baking recipes. Freeze the flesh for long term use. Do not eat frequently due to annonacin neurotoxin.

**Pickerelweed:** pontederia cordata. Wetlands. Young leaves edible raw, lightly steamed, stir fry. Seeds crunchy, edible raw, dried and added to cereal, cooked like grain, ground into nutty flour.

**Quince:** fruit, lemony, moist shoreline.

**Sweet Flag:** Acorus Americanus, A. Calamus. Root spicy pungent, different from horseradish or ginger, candied, good for sore throat, cold, phlegm, used by singers, antibacterial, antifungal, anti-insect. Heart of the stem/leaves edible raw, salads, cooked. Leaves too tough to eat raw, can be chewed for sweet flavor, blend then strain out liquid then mix with other juices for refreshing drink. Young tender spikes delicious, edible raw, salad, soup, stew. Plant contains Beta-Asarone, carcinogenic, high in A.Angustatus, low levels in A. Calamus, not found in A. Americanus.

**Taro:** shallow in submerged pots to prevent invasion.

**Water spinach:** Ipomoea Aquatica. Young leaves and shoots edible raw, salads, cooked. Old leaves edible cooked, stir fry, steamed, boiled.

**Watercress:** Rorippa Nasturtium Aquaticum. Edible leaves, antioxidants, vitamin c, minerals, harvest all year especially with running water to avoid frost damage, raw or lightly cooked. Don’t eat leaves near grazing animals, flooding, or stagnant water due to possible liver fluke infection. Invasive. Illegal in some states. Propagation: Can root in water.

**SHADE**

Almond, American Ginseng, Asian Ginseng, Arctic Raspberry, Bee Balm, Bethroot, Black Cohosh, Black Cohosh, Bloodroot, Blue Cohosh, Bush/Japanese Clover, Creeping Dogwood, Currants (red and white), Elderberry, Fuki, Myoga Ginger, Ginkgo tree, Goldenseal, Greens, Hardy Kiwi, Hazelnut, Herbs, Hog Peanut, Honey bees, Honey Locust, Hostas, Jostaberries, Kirilo’s Indigo, Linden/Lime/Basswood tree, Mayapple, Mushrooms, Nannyberry, Northern Wild Raisin, Oregon Grape, Ostrich Fern, Pawpaw, Ramps, Salmonberry, Spicebush, Sweet Cicely, Thimbleberry, Toothwort, Vines, Wild Ginger, Wild Sarsaparilla, Wintergreen, Tap trees for syrup, Japanese Plum Yew,

**GRAIN**

**Perennial Rye:** secale montanum var. mountaineer, 5 feet tall, easily threshed.

**Perennial Wheat:** triticum aestivum x thinopyrum intermedium, 5 feet, up to eight years in poor soil, only two years in rich soil.

**Wild Rice:** Northern Wild Rice Zizania Aquatica, Southern Wild Rice Z. Palustris. Folle Avoine. Seeds edible cooked, more flavor and nutrition than domesticated rice. Ripens early, knock thin spear shaped husks off plant into container, dry, parch, rub, winnow, cook. Aquatic, native, widespread, large colonies dominate areas for centuries. Large grass, in water, several stems, usually 3-7ft, up to 12ft, kernels shorter thicker and ripen earlier in rivers, kernels longer and later in lakes. Lookalike Manna Grass, Glyceria Grandis, extremely tiny seeds, no large colonies.

**MEADOW**

Plugs are quicker but expensive and laborious. Seeds are slower but cheaper, cover more area, natural, and stronger. If you want to keep it a meadow then mow rarely, maybe once or twice a year, just to cut down woody bush/tree saplings. Use a scythe, mow high if you can, and leave plant material for cover, nutrients, and wildlife fodder.

**EDIBLE RAW**

Angelica leaves, young shoots, stalks; Apples; Arrowhead lateral rhizomes; Asiatic dayflower leaves, stems, seeds; Astralagus roots; Bee Balm leaves, newly opened flowers; Blackberries; Black Locust blossoms unopened; Black Nightshade leaves; Bladder Campion young shoots, leaves; Bramble berries; Butternut nuts, syrup; Canadian Honewort leaves, stems, flowers; Caraway leaves, seeds; Cardoon young leaves, flower buds; Carrion flower shoots; Chickweed leaves; Cleaver young shoots; Common Daylily flowerbuds, flowers, tubers; Common Mallow leaves, young shoots, fruits, young seeds; Costmary greens; Creeping Dogwood Fruits; Dandelion leaves, flowers, stalks, roots; Dock leaves, Elm young seedpods, mature seeds; Evening Primrose leaves, flower stalks, roots; False Dandelion leaves, flowers, roots; False Solomon’s Seal young leaves, fruits; Fennel leaves, flowers, bulb, green seedpods; French Scorzonera leaves; Garlic Cress leaves, flowers; Garlic Mustard leaves, stems, flowers; Glasswort tips; Golden Saxifrage leaves; Goldenrod leaves, young flowers; Goutweed leaves, young stalks; Greenbrier leaves, shoots, young green thorns; Ground Cherry Fruits; Ground Ivy greens; Hazelnuts; Henbit greens; Hop Hornbeam seeds; Hops young leaves; Hyssop leaves; Ice Plant leaves; Japanese Honewort leaves, stems, roots; Japanese Parsley leaves; Kale leaves, stalks, flowers; Lady’s Thumb leaves; Lamb’s Quarters leaves; Lavender leaves, petals, flowering tips; Lemon Balm leaves; Lesser Stichwort leaves; Linden young unfurling leaves, early summer cambium; Lovage leaves, young shoots; Maple young leaves, flowers, sap; Marsh Mallow roots; Melilot leaves, flowers; Mint leaves; Mountain Sorrel leaves; New England Aster leaves, flowers; Orpine leaves; Our Lady’s Bedstraw leaves; Oxeye Daisy rosette leaves; Peppergrass leaves, seedpods; Plantain leaves; Prickly Pear young pads, fruit; Prickly Sow Thistle stalks; Purple Deadnettle leaves; Purslane greens; Quickweed leaves; Raspberries; Red Clover leaves, sprouted seeds; Salad Burnet leaves; Sassafras leaves, young stems peeled, flowers; Sea Beet leaves; Sea Kale leaves, florets, flowers, roots; Sea Radish young leaves; Shepherd’s Purse rosette leaves, young flower shoots; Silverweed roots, young shoots; Sochans young leaves, young shoots, stems; Sorrel greens; Spring Beauty roots, leaves, stems, flowers; Spruce young tips; Strawberry fruits; Sweet Cicely leaves, young seeds, young roots; Sweet Fern leaves, young nutlets; Sweet Flag hearts, young tender spikes, leaves chewed and spit; Sweet Rocket leaves; Sweet Woodruff leaves; Tarragon leaves; Thistle stalks; Thyme greens; Trout Lily bulbs; Turkish Rocket leaves; Violet leaves, flowers; White Clover leaves, flowers; White Deadnettle leaves; Wild Chamomile leaves, stems, flowers; Wild lettuce leaves tiny amounts; Wild Rocket Arugula leaves; Wintergreen young red leaves; Yarrow young leaves; Yellow Wood Sorrel leaves, flowers, seedpods.

**COOKED**

Creeping Charlie, Good King Henry, Henbit, Nettle, Purple Dead Nettle

**SPRING SPECIALTIES**

Cattail shoot hearts and rhizomes, Clover, Dandelion, Daylily shoots and tubers, Elm seedpods, Hosta shoots, Japanese Knotweed, Linden young leaves and flowers, Mint, Maple young leaves and samaras, Mushrooms Morels and Turkey Tail, Nettles, Ostrich Fern, Peppergrass, Ramps, Redbud flowers, Sassafras bark and roots, Spicebush leaves and green berries, Spruce tips, Violet leaves and flowers, Yarrow.

**SUMMER**

Hickory Nuts, Spicebush red berries, Wood Sorrel, some early nuts.

**FALL**

Acorns, Amaranth seeds, Autumn Olive, Berries, Black Walnuts, Chestnuts, Dandelion roots, Daylily tubers, Evening Primrose roots, Fruits, Ginkgo, Hickory nuts, Lamb’s Quarters seeds, Nuts.

**WINTER**

Caraway root, Cattail rhizomes, Chufa, Creeping bellflower roots, Dulse seaweed, Evening Primrose rosette and roots, Field garlic leaves and bulbs, Hickory bark and maybe nuts, Kentucky coffee tree seeds, Maple sap, Miners lettuce, Pine bark, Purple poppy mallow roots, Rose hips, Sassafras’s root, Spicebush twigs and bark, Sweet root roots, Water parsnip roots

**BENEFICIAL INSECTS**

Umbel for spring predator wasps. Aster for fall predator wasps. Borage, anise hyssop, and yarrow for arthropods. Marigold and nasturtium are edible, ward off pests, and attract pollinators. Birds prefer green, red, large flowers, long tubes. Bees prefer yellow, blue, easily accessible flowers. Flies, wasps, beetles and ants prefer brown, drab, open bowl flowers, and smelly flowers.

**NITROGEN FIXERS**

Legumes, sweet gale bog myrtle, goumi berries, northern bayberry, clover, apios priceana, american groundnut, hog peanut, red adler, Kirilow’s indigo, goumi berry, siberian pea bush, seaberries, false indigo, new jersey tea, russian olive, black locust, honeybush, kudzu, honeybush, rooibos, licorice, beans, peas, clover, vetch, alfalfa, soybeans, chickpeas/garbanzos, jicama, lentils, peanuts, lupins, indigo, wisteria, bladder Senna. Some share the nitrogen slowly with neighbors. Some grow aggressively. You can chop them down as green mulch (“coppicing”). Or you can till the whole plant into the soil.

**NUTRIENT ACUMULATORS**

Anything with deep roots like tall trees or prairie grasses. Black Walnut (juglans nigra, allopathic chemicals impacts neighboring plants, phosphorus, potassium, calcium, valuable wood, wood stain), chamomile (chamaemelum nobile, phosphorus, potassium, calcium), Chicory (cichorium intybus, potassium, calcium), Chamomile (calming tea), Chives (allium schoenoprasum, calcium, sodium), Comfrey (symphytum spp, aggressive, phosphorus, potassium, calcium, iron, magnesium, silicon), Dandelion (taraxacum officinale, phosphorus, potassium, calcium, copper, iron, magnesium, silicon), Dock (rumex spp, phosphorus, potassium, calcium, iron, sodium), Dogwood (cornus florida, phosphorus, potassium, calcium), Hickory (carya ovata, phosphorus, potassium, calcium), Horsetail (equisetum spp, inedible, calcium, cobalt, iron, magnesium, silicon), Maple (acer saccharum, potassium, calcium), Nettle (urtica dioica, aggressive, nitrogen, potassium, calcium, copper, iron, sodium, sulfur), Pecans (carya sp, potassium, calcium), Plantains (plantago spp, potassium, calcium iron, copper, silicon, sulfur), Sorrel (rumex spp, phosphorus, potassium, calcium, iron, sodium), Watercress (nasturtium officinale, phosphorus, potassium, calcium, fluorine, iron, magnesium, sodium, silicon).

**SELF SOWING ANNUALS, BIENNIALS**

Some work well in a wild forest area. Most need prepared ground/weeding. Lambs Quarters, Wild Rocket Arugula, Ground Cherries, Dill, Tomatoes, Zucchini, Common Mallow, Burdock, Kale.

**DOMESTICATED VEGGIES**

**Amaranth:** Amaranthus Cruentus. Leaves nutritious, edible raw but course texture, better cooked like spinach. Young snappy stems edible raw or cooked. Stalks fermented. Collect seed heads when they turn from green to brown. Seeds edible raw or cooked, great combined with other seeds or grains, great popped like popcorn, used in baking, salads, granola, ground into flour. Flowers for food coloring in baking. Soils with heavy nitrogen fertilizers may put nitrates in leaves.

**Barley:** barley dough in murri, roasted with dandelion root and chicory root for healthy coffee drink powder, podpiwek.

**Basil:** leaves and flower cones. For salad, sandwich, pesto, fermented herbs, cooking, tea for stomach/relax, apply to insect bites.

**Beans:** Green/English/Pole beans: eat peas not pod. Dry beans: let them dry and harden on plant, remove hull, keep beans in sealed glass jar. Dry beans difficult to dehydrate in young green stage. Use in quick fermented bean paste, soup, chili, rice dishes. Sugar, snow, snap beans: raw, baked, added to pasta, salads, stir fry, pickles, dilly beans, fermented bean paste, dehydrated, frozen veggie mix, dilly beans, pao cai. Roasted in balsamic, salt, pepper, lemon, cheese. Flowers of scarlet runner bean in salads or steamed veggies. Mung beans sprouted in recipes, fermented Tood ngork dorng. Soybeans in asian fermented soybeans, Doenjang, Tungrymbai, tu’o’ng. Mung beans in tood ngork dorng. Seed saving: Self-fertile. No population requirement. No special process. Just choose the healthiest plant. Label it. Don’t harvest from it. Let it grow until pods dry and seeds harden. Then take them! Soybeans in the pod storage: Cool and dry 32-50 degrees 60-70 humidity. Or freeze. GREEN BEANS: Dehydrating: blanche shorter time.

**Beets:** Harvest greens many times like lettuce. Eat fresh in salads, roasted, marinated in vinegar and spices, dehydrated chips, make juice and mix with fruit juice, make into veggie burgers, kvass, kaanji, podpiwek, salgam suyu. Greens in soup, spaghetti, pizza, scrambled eggs with onions and cheddar, sautéed with garlic and bacon, dried and crumbled into soup. Storage: Cold and wet 32-40 degrees 95 humidity. Wash. Box with lid and moist sand, leaves, or wood shavings to keep moisture. Eat smallest first. Soft ones are safe to eat when boiled. Dehydrating: slice thin, optional add spices, no pre-treatment, dehydrate low temp, eat as chips. Or boil beets 30 minutes, dip in cool water, remove skins, slice and dehydrate. Watch for dripping during drying.

**Bok Choy:** Baby leaves raw, salads, sandwiches. Mature leaves stir fry, fried rice, asian noodles, miso soup, smoothies, stored as gundruk. Whole head baked, barbecued, steamed.

**Broccoli:** Harvest at four to seven inches wide, before it turns yellow. Cut 4 to 6 inches of stem. Soak 20 minutes in salted water so worms float out. Foliar spray the side shoots of the plant for new crop. Baked, added to salad, sautéed with garlic and chili flakes, pasta, pizza, quiche, roasted with nutritional yeast, frozen for cooking later. Greens in smoothies, pesto, stored as gundruk. Stems shredded in slaw. Storage: Cold and wet 32-40 degrees 95 humidity. Plastic bags in cellar or fridge. Short term only. Dehydrating: Wash. Soak ten minutes in 1 qaut water with 1 tsp salt to remove bugs. Chop florets 1 inch and stalks 1/2 inch. Blanche. Dehydrate. Watch for falling pieces during drying.

**Brussels Sprouts:** Cut the stalk with them on it for better storage. Cooked in casserole, cheesy dip, fried rice. Sautéed with eggs, mushrooms, cheese, and nuts. Roasted with olive oil, salt and pepper. Roasted with garlic, shallots and bacon. Roasted with maple syrup, bacon, and nuts. Roasted with sweet potato chunks. Breaded and baked into fries with parmesan or spices. Skewered with veggies and bacon. Chopped with kale, green beans, and raisins. Greens in smoothies, pesto, stored as gundruk. Storage: Harvest after a couple frosts improves flavor. Cold and wet 32-40 degrees 95 humidity. Short term only. Cellar mesh bag, or replant in bucket of soil, or hang bare root stalk. Dehydrating: Blanche, cut in half, dehydrate. Don’t dehydrate with mild veggies due to strong smell.

**Cabbage:** Thin slices for salad, smoothie, tacos, hot dogs, sandwiches, meat, fermented cabbage juice, stir fry, yellow curry, pad thai, dumplings, coleslaw, soup with rice and broth, sauerkraut, kimchi, Ka Lam Dorng, Pak kaat dorng, Tang chai, Meigan Cai, kapusta kiszona duszona. Baked with lemon, nuts, bacon. Sauteed with butter, salt, pepper. Grilled with onion, meat, BBQ sauce on a bun. Diced into potato pasta salad. Greens in smoothies, pesto, stored as gundruk. Storage: Choose solid tight heads, slightly immature, before top wrapping leaves lose bright color. Cold and moist 32-40 degrees 80-90 humidity. Keep near freezing. Above 35 degrees botrytis leaf mold and alternaria leaf spot. Releases odor and changes flavor of nearby veggies, so wrap in wet newspaper, isolated, ventilated, outside cellar/buried rather than basement. Dehydrating: Blanche, cut into strips, dehydrate, keep away from mild veggies due to strong smell.

**Carrots:** Raw snack, salad, slaw, pickled, soup, cooking recipes, frozen veggie mix, dehydrated for chips and for soup or casserole, dipped in peanut butter or hummus, kimchi, kraut, curtido, do chua pickles, kaanji drink. Greens in salad, chimichurri, pesto. Storage: Heavy soil makes them tougher and longer lasting but less flavor. Cold and wet 32-40 degrees 95 humidity. Put in cellar or leave in ground with mulch for next spring. Box with lid and moist sand, leaves, or wood shavings to keep moisture. Eat smallest first. Dehydrating: Harvest after frost for better flavor. Peel. Shop, blanche, optional add spices, dehydrate. Or shred, no pre-treatment, dehydrate. Use for snacks, salads, baking, etc. Seeds: choose best looking plants/roots, replant or leave in ground to flower next year, remove queen anne’s lace flowers within a mile.

**Cauliflower:** Harvest 7-12 days after blanching, at 6-8 inches, tightly packed, decapitate and throw plant on compost. Raw snack. Frozen veggie mix. Use in tikka masala. Roasted in yogurt, chili and lime juice. Steamed and pureed with garlic, butter, and chives. Blend and ferment into vegan cheese. Greens in smoothies, pesto, stored as gundruk. Storage: Harvest before frost. Cold and moist 32-40 degrees 80-90 humidity. Short term only. Dehydrating: Wash. Soak ten minutes in 1 qaut water with 1 tsp salt to remove bugs. Chop florets 1 inch and stalks 1/2 inch. Blanche. Dehydrate. Watch for falling pieces during drying.

**Celeriac:** Cooking recipes, fermented, stock. Storage: Cold and wet 32-40 degrees 95 humidity. Box with lid and moist sand, leaves, or wood shavings to keep moisture.

**Celery:** Harvest outer stems. Put stump in water until green leaves then replant for more harvesting. Raw snack, soup, pickled, dipped in hummus, with raisins and peanut butter. Storage: Cold and wet 32-40 degrees 95 humidity. Dehydrating: Wash. Dry leaves as an herb. Optional snap off end of stalk to peel away strings. Chop stalk into 1/4 inch pieces. No pre-treatment. Dehydrate.

**Celtuce:** stem fermented.

**Chervil:** Harvest at 6-8 weeks. Salad, soup, sauce, scrambled eggs, fish, veggies. Cooking makes it bitter so add last! You can leave it overwinter in cold frame.

**Cilantro:** salads, dried, pesto, chimichurri. Pickle the seeds!

**Claytonia:** Harvesting opposite other leafy greens, better as it matures, best when flowering, and flowers are edible. Grows like a weed so eat/destroy it quickly or give it an isolated area. Raw snack, salad, smoothies, pesto.

**Collards:** Added to stir fry. Stuffed with grain, oil, spices, lemon juice, nuts, tomato paste. Greens in smoothies, pesto, stored as gundruk. Storage: Harvest before frost. Cold and wet 32-40 degrees 95 humidity.

**Corn:** Harvest for fresh eating 3 weeks after silks appear, ears feel full, silks are brown, kernels have milky liquid. Harvest for cornmeal when stalks and husks are mostly brown with some green at base of husks, and before frost/rain. Sometimes mold rots the silks, reducing pollination, still edible but not as plump or flavorful. Moldy ears are toxic, don’t eat, discard or use in rodent traps. Depending on variety: fresh eating, roasted, grits, crackers, pancakes, cornbread, fritters, chips, tortillas, polenta, dumplings, hominy, popcorn, frozen veggie mix, soups, salads, salsa, casseroles, rejuvelac, atole agrio, kenkey, pozol, processing into plastic material, animal feed, corn syrup, fermented alcohol, fuel, flint corn in a bag for rough cushion or heating pad. Juice colorful corns with fruit, cinnamon, clove, etc. Dehydrating: Better to dry naturally. Or harvest young and sugary before starches and hardness, then blanche and dehydrate. Cornmeal: Grow dent or flint corn. Harvest when husks are brown with a little green at base, before rain or frost. Pull back husks. Hang in shady ventilated area 2-4 weeks. Remove kernels with hands or sheller. Blow away chaff. Optional parch kernels by toasting in a pan dry with no oil. Then grind in a mill or pound with mortar and pestle. Optional pour through 1/16 inch or 1/32 inch screens to separate grits and cornmeal. Optional grind again for fine cornmeal. Crackers: Mix 1 cup cornmeal, 1 cup various seeds, 1/4 cup olive oil, 1 1/4 cup boiling water. Mix into dough. Spread VERY THIN. Sprinkle salt. Bake 300 degrees one hour. Hominy. Husks make hard mats, soft rugs, moccasins, baskets.

**Cucumbers:** Raw snack, smoothies, pickled, pan fried, tabouli, Chinese pickles. Asian salad with carrots and snap peas. Tossed with feta, tomatoes, and parsley. Storage: Cool and moist 40-50 degrees 85-90 humidity. Dehydrating: Harvest young, fleshy, thin skinned, before seeds develop. Wash. Slice. No pre-treatment. Dehydrate!

**Dill:** raw refreshing snack, salads, pickles, fermented veggies, cream cheese.

**Edamame:** Harvest all at once. Salted and cooked as a snack, salads, stir fry, asian salad, frozen veggie mix for cooking.

**Endive/Escarole:** storage: Cold and moist 32-40 degrees 80-90 himudity.

**Eggplant:** Cut stem. Harvest when young, skin is glossy and thin, feels elastic when pressed, before old, hard, bitter, and seeds. Baked, curry, stir fry, pizza, lasagna, eggplant parmesan, marinade and dry for eggplant bacon, Ma keua dorng, Persian fermented veggies. Storage: Cool and moist 50-60 degrees 85-90 humidity. Dehydrating: Better texture when rehydrated! Smaller less seeds is better. No pre-treatment. Optional blanche to remove some bitterness but it darkens them.

**Garlic:** Harvest long curly scapes 1 or 2 months before the bulb is ready and use for cooking or fermented pesto. Harvest young thin leaves for chives for sandwiches salads etc. Harvest bulbs when bottom third of leaves is yellow, optionally lightly water soil before harvesting to make it easier. Leave bulbs and only harvest greens for no maintenance and long term harvest. Greens fried, added to cooking, fermented onion greens hot sauce. Bulbs roasted, salsa, cooking recipes, soaked in vinegar 7 days for salad dressing or marinade, sliced and dried/smoked, pickles, Chinese pickles, kraut, dilly beans, nukazuke, Shan pickles, tang chai, tungrymbai, kra tiam dorng. Storage: Soft neck last longer. Choose tightly closed bulbs. Leave papery skin, roots etc. Cure two weeks in dry warm area. Hang in dry cool area. Seed saving: choose healthiest plant, largest bulb, cure normally and plant next year!

**Ginger:** Harvest a piece of root leaving the rest for plant health. Store in box with lid.

**Green Onions:** salads, grilled, in pancakes, roasted whole with oil and sesame.

**Hamburg Rooted Parsley:** Cold and wet 32-40 degrees 95 humidity.

**Hot Peppers:** salsa, curry, chili, grilled with cheese, hot sauce, kimchi, kraut, pranks on loved ones, added to recipes, baked goods, dried/smoked for cooking later or ground into powder, rub on muscle or joint aches, apply to shoes or gloves for winter circulation, tea for bodily warmth or circulation, fermented onion greens hot sauce, Indian pickled peppers, dried flakes in nukazuke or Pao Cai, add to podpiwek, Shan pickles, slices in quick pickles, hot pepper paste for kimchi or Zha Cai. Storage: Warm and dry 50-60 degrees 60-70 humidity. Ventilated top shelves or hanging. Keep above 45 degrees to prevent chilling injury black spots. Dehydrating: no pre-treatment. No fake sugars, cooking makes them carcinogenic. Storage: Cure then hang in dry room or cellar top shelves or hanging.

**Kohlrabi:** Edible leaves and root. Raw snack, baked veggies, slaw, chopped thinly and baked as fries, grated with egg and breadcrumbs into fritters, sautéed with mushrooms and greens over grains or potatoes. Greens in smoothies, pesto, stored as gundruk. Store in cellar box with lid. Storage: Sow in summer so they’re still young and tender at harvest. Cold and wet 32-40 degrees 95 humidity. Dehydrating: Peel, chop, blanche, dehydrate.

**Leeks:** Store in cellar box of soil. Dehydrating: no pre-treatment.

**Lettuce:** raw snack, salads, smoothies, sandwiches, hamburgers, used as a wrap, lettuce kvass. Seeds: Self fertile, save the healthiest plant, peel leaves away from seed head, let it air out until dry and brown, shake dried pods into a paper bag.

**Mache:** raw snack, salads, smoothies, with warm brie, nuts, and green apple slices

**Melons:** Harvest when closest tendril is withered/dry, fruit fully mature on vine, bottom yellow, color like pictures in catalogue. They don’t ripen off vine! Eat fresh, sliced and dried, frozen for sorbet, rinds pickled or added to stir fry. Storage: Cool and moist 40-50 degrees 85-90 humidity. Isolated from veggies.

**Mustard:** Brassica nigra, lots of biomass, up to 7ft tall. Seeds make mustard with vinegar, water, honey, salt, pepper, etc. Reduce heat by diluting, cooking, letting sit over time. Leaves edible, lower leaves milder, flavor reduced in cooking. Stems in fried greens, soup, stir fry, etc. Leaves in soup, Pak kaat dorng haeng, meigan cai, sayue asin, Shan pickles, zha cai. Seeds for spice, mustard, pickles, kraut, cooking recipes, popped in oil to add nutty flavor. Aggressive self sower.

**Nasturtiums:** Add flower to salads, leaves to salad or sandwich, dice and add to butter or cream spreads. Leaves and flowers into pesto. Seeds pickled.

**Okra:** fried, in cooking, fermented whole, just remove stem, no damage or it becomes slimy.

**Onions:** Harvest when flopped over and starting to yellow, and don’t water before harvesting. Curing: don’t rinse, wipe clean, lay out in shady warm ventilated area. Storage: clip top to one inch, clip roots, keep in cool dry place. Use in salsa, baked veggies, cooking, sliced and dried/smoked, kimchi, kraut, curtido, fermented onion greens hot sauce, Shan pickles, tungrymbai. Greens in fermented onion greens hot sauce. Storage: Thin necked varieties last longer. When tops begin to brown knock them all down to shock them into dormancy for longer storage. Cure two weeks in dry warm area. Hang in dry cool area, unheated room. Dehydrating: no pre-treatment, keep scallions below 115 degrees to avoid burning. Seed saving: choose healthiest plant, largest bulb, cure normally and plant next year!

**Parsley:** salad, pesto, sandwich, fermented herbs

**Parsnip:** Baked with pepper, honey, mustard, fermented snack. Storage: Dig them rather than pulling, which breaks roots. Cold and wet 32-40 degrees 95 humidity. Cellar box with lid, eat smallest first. Dehydrating: Harvest after frost for better flavor. Peel. Slice thin, no pre-treatment, optional add spices. For large pieces, steam, blanche, or acidulate.

**Peanuts:** roasted snack, smoothies, thai food, Tooa li song dorng, candy, baking. Ground into peanut butter. Pressed oil. Roasted and ground for coffee substitute or added to baking. Peanut soup: roasted, mashed, add milk, onion, butter, flour, celery seed, pepper, salt, warm don’t burn. Seeds: self fertile, no population requirement, no special process, just choose the healthiest plant, label it, don’t harvest from it, let it grow until it dies in the frost, then dig up the peanuts and dry them out.

**Peas:** Harvest when peas enlarge in the pod. Raw snacks, salads, stir fry, frozen veggie mix. Sautéed with garlic, orange juice, mint, mustard, pepper. Bean salad with celery, parsley, corn, pepper, vinegar, sugar, mustard, oil. Seeds: self fertile, no population requirement, no special process, just choose the healthiest plant, label it, don’t harvest from it, let it grow until it dies in the frost, then dig up the peanuts and dry them out.

**Potatoes:** Separate bruised/bad ones. Store in cool, dark, breathable sack. Baked veggies. Frozen chunks for mashing. Chopped into fries, cooked, and frozen for later. Storage: Choose late maturing to harvest in cool and keep from sprouting in warm weather. Harvest when tops brown or leave in ground up to 6 weeks if dry and pest free. Air dry in shade a few hours to brush off soil. Cure in dark warm dry area one to two weeks to thicken skin, convert some starch to sugar, and cork over cuts. Cold and moist 32-40 degrees 80-90 humidity. Put in box with lid. Bottom shelf below forty degrees to avoid sprouting. Below 35 starches convert to strange flavored sugar, so keep in 70 degrees 1-2 weeks to convert back into starch. Keep six feet away from apples. Freeze/ferment into Chuno and store for decades. Dehydrating: Wash and scrub clean. Wipe dry. Cut into fries and immediately blanche. Optional also honey dip. Dehydrate.

**Pumpkins:** Wait until the closest tendril and leaf wither, knocking makes a hollow sound, and there’s a discolored spot on bottom. Cut three inches up the stem. Eat roasted, in pumpkin soup, kenkey. Store warm and dry.

**Radish:** Raw snack, salads, pickled, fermented, dehydrated salt pepper chips, sliced onto baguette with butter salt and pepper, Hoa Pak Kaat Dorng, Pao Cai, do chua pickles. Greens in smoothies, lentil curry, soup, finely chopped into stir fry, blended into pesto, Shan pickles. Radish and greens stored as gundruk. Seed pods pickled. Storage: Cold and wet 32-40 degrees 95 humidity. Cellar bucket of sand. Dehydrating: Harvest after frost for better flavor. Slice thin, no pre-treatment, optional add spices. For large pieces, steam, blanche, or acidulate.

**Rape:** brassica napus, grows in cold, leaves delicious and nutritious raw or cooked, woody stems burned as fuel, seed oil for cooking and fuel, leftover rapeseed cake used for fuel, 1 pound seed makes .4 pound oil, ashes then returned to soil so the parts lost in burning were mostly atmospheric carbon, hydrogen and oxygen.

**Rice:** recipes, curry, paddu, rice flour, rice noodles, khao daeng, wash water in ferments, rice flour in ka nom thuai fu.

**Rutabaga:** Storage: Cold and wet 32-40 degrees 95 humidity. Cellar bucket of sand or box with lid. Greens in smoothies, pesto, stored as gundruk. Dehydrating: Harvest after frost for better flavor. Peel. Slice thin, no pre-treatment, optional add spices. For large pieces, steam, blanche, or acidulate.

**Salsify:** Tragopogon. Leaves, stalks, shoots, flower buds edible raw, but better cooked, lightly boiled, lightly steamed. Roots edible cooked, soup, stew, casserole, creamy sauces. Storage: Cold and wet 32-40 degrees 95 humidity. Cellar bucket of sand or box with lid.

**Scorzonera:** Storage: Cold and wet 32-40 degrees 95 humidity.

**Shallots:** cooking, horm dorng, dton horm dorng.

**Sorghum:** Popped like popcorn, boiled or steamed like rice, cracked and cooked like polenta, hot cereal like oatmeal, granola, ground into flour, canes pressed for syrup sweetener, fermented into vinegar.

**Soybeans:** steamed snack, salad, stir fry, asian fermented bean paste, doenjang, roasted and ground into coffee drink powder, oil, animal feed.

**Spinach:** raw snack, salads, smoothies, pesto, sandwiches.

**Summer Squash:** Harvest when young and tender, before rind hardens, normal varieties at 4 to 6 inches long, patty pan at 2 to 3 inches in diameter. Cut the stem or pull it up and twist to pop it off. Cut in half, add oil, bake until the bottom turns brown, then add salt and pepper or mint and basil. Slice thinly into noodles. Bake and add to hummus recipe. Add to kenkey. Grate them into a quick bread. Eat blossoms raw or battered and fried. Stems in soup with potatoes, onion, tomatoes, noodles, garlic, basil, pepper, broth. Leave stem attached to fruit. Eat damaged ones first. Store undamaged ones for months in a cool dry place (50 degrees, 65 percent humidity). Delicatas, acorns, and buttercups last two months. Hubbards, pie squash, and pumpkins last four months. Butternuts and moschata last until spring! Cut in half and bake. Grate into a slaw. Add to soup. Chop into fries. Pickle it. Add to pumpkin ice cream. Use in baked recipes. Bake and add to hummus recipe. Seeds roasted, in pesto, diced in soup or chili. Store in dry room or cellar top shelves or hanging, open air, no box or bag. Cure everything except acorn squash in dark warm dry area for three days, rub vegetable oil on skin, store in dry room or cellar top shelves or hanging. Dehydrating: slice, no pre-treatment, dehydrate. Eat directly as snack no further cooking. Use as crumbled garnish on soup, salad, etc.

**Strawberry Spinach:** Edible shoots, leaves, berries. Oxalic acid. Berries used as dye.

**Sweet Peppers:** Raw snack, salads, smoothies, baked recipes, cooking recipes, barbecue skewers, dried, fruit leather, massa de pimentao, kapusta kiszona duszona, paprika varieties dried and ground into spice, stuffed peppers, stir fry, omelettes. Roasted and added to salad, chicken, hamburgers, sandwiches. Dehydrated for snacks or later cooking. Storage: Cool and moist 45-55 degrees 85-90 humidity. Dehydrating: no pre-treatment.

**Sunflowers:** Seeds raw, roasted, in pesto, make vegan milk or cheese. Buds blanched then grilled, baked, in soup, or use to replace artichokes in recipes.

**Sweet Potato/Yam:** Baked. Mashed. Baked then added to hummus. Added to soup. Leaves added to stir fry. Storage: Cure in dark warm dry area. Store warm and dry 50-60 degrees 60-70 humidity. Dehydrating: They mold quickly so avoid all excess moisture. Slice, pretreat, dehydrate. Or bake whole, cool, slice, dehydrate.

**Swiss Chard:** Leaves raw, salads, smoothies. Stalks in smoothies, hummus recipe, fermented.

**Tomato:** Raw, roasted, salads, salsa, dried/smoked, fruit leather, pasta sauce, passata, ketchup, relish, added to soup, smoothies, on sandwiches and burgers, pizza, spaghetti, lasagna, curry, gazpacho, tomato basil bisque, reduced to tomato paste, frozen, dehydrated, conserva cruda di pomodoro, canned. Leaves in pesto. Storage: Isolated. Dry room, top shelves or hanging. Green tomatoes cook to eat, or store dry at 55 degrees to ripen over six weeks, or hang entire vine with green tomatoes upside down to nourish them in storage, or optional add a few apples for ethylene gas to ripen faster. Dehydrating: No pre-treatment. Optional quickly boil and remove skins of larger ones. Don’t peel small ripe tomatoes or green tomatoes. Low acid varieties turn black, should not be dehydrated unless added vinegar or citrus juice then made into dehydrated leather.

**Tsa Tsai:** use bulb for fermented spice “Zha Cai”.

**Turnips:** Greens in smoothies and pesto. Turnip and greens stored as gundruk. Root roasted and salgam suyu. Storage: Sow in summer so they’re still young and tender at harvest. Cold and wet 32-40 degrees 95 humidity. Cellar bucket of sand or box with lid and moist sand or wood shavings. Dehydrating: Harvest after frost for better flavor. Peel. Slice thin, no pre-treatment, optional add spices. For large pieces, steam, blanche, or acidulate.

**Watermelon:** Harvest very late after many signs: bottom yellow spot, last tendril and leaf die, smells sweet, drips out of bottom hole.

**Winter Squash:** Wait until the closest tendril and leaf wither, knocking makes a hollow sound, and there’s a discolored spot on bottom. Cut three inches up the stem. Store warm and dry, except acorn which needs cold. Dehydrating: all work well except pumpkins and spaghetti squash. Remove rind and seeds, slice, pre-treat, then dehydrate. Or remove rind and seeds, cook fully, mash, dehydrate, use for leather or puree or texture additive. Also dehydrate seeds!