**Salvia miltiorrhiza, Bge.**

*Common name: Red Sage  
Pinyin: Dan Shen  
Part used: root  
Family: Lamiaceae*

**Plant description**
This attractive sage grows 1' to 2' tall and almost as wide. The foliage is dark green and has slightly crenate pinnate leaves with purple highlights. The flowers are purple and are held on spikes above the foliage, blooming in spring through summer. The taproots, as one can imagine from the common name, are red. Good or at least fair drainage is good. Salvia miltiorrhiza can be found in China on hillsides, stream banks and in forests; from roughly 300’ to 4000’\(^1\). In looking at the area of distribution it equates to a cold hardiness of about 0 degrees Fahrenheit.

**Propagation**
If kept protected fresh seed has good viability for at least 3 years. Generally germination occurs in 10-21 days. Bottom heat will speed germination. It will sucker from roots, but seed is best for genetic diversity and is easy to do. Transplants work well in the field instead of directly seeding, though it will occasionally reseed. Works well as transplants for containerized sale.

**Field Production**
Transplant 1’ on center. Full sun and average water are best, as is a moist, but not wet sandy soil. Having said that it seems to grow well in a clay-loam soil. Average fertility is fine. Weed once or twice a season to keep competition in check.

**Pest**
Gophers will occasionally eat this but it is not their first choice. Occasionally deer will browse the flowers. No other pests noted.

**Harvest**
Collect or dig 2 year or more roots in the late fall to early spring, while dormant. Later to express dormancy than most herbs, it becomes deciduous at about 25 degrees Fahrenheit. The bright red 1- 1½’ roots are thick, straight and fleshy and a little brittle, with no root bark forming. Roots are cleaned and then dried. Take care not to wash too vigorously or the red will wash off the roots!

**Note**
There are other Salvias that are acceptable as Dan Shens, most notably Salvia przewalskii, and S. bowleyana.

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Missouri Botanical Garden, St. Louis, MO & Harvard University Herbaria, Cambridge, MA
**Saposhnikovia divaricata** (Turcz.) Schisch.

*Common name: Laserwort, Siler*
*Pinyin: Fang Feng*
*Part used: root*
*Family: Apiaceae*

**Plant description**
Outdated but still used names are Ledbouriella seseloides, or Siler divaricatum, as well as several others. This is a very cold hardy, herbaceous perennial that grows to 1’ tall with roots reaching several feet. The leaves are long, and deeply cut, and a blue green color or glaucus. The small yellow flowers appear in summer in the typical umbel fashion. Roots are whitish-yellow ropy taproots with no bark.

**Propagation**
Sow seed in the fall, and by mid spring they are should be 7-8" tall and ready for transplant. Early spring sowing works well too. They hold well in pots. Root cuttings work as well but offer little genetic diversity. If growing in pots take care not to overwater in the winter dormancy period.

**Field Production**
Plant 1’ on center in full sun, and a well-drained soil is best. Although I have not had many die on me - they are slow growers. They just take their time.

**Pest**
This may be the favorite food of the gophers; a single rodent can eat a hundred plants in a mere week. Trapping can be effective - if one keeps with it. They may suffer from the disease of “aster yellows”, which shows as distorted and yellow leaves and robs vigor.

**Harvest**
If gophers are a problem harvest in the fall immediately after the leaves have died down. Fall as well as spring are traditional harvest times. Generally, harvestable plants are several seasons old.
**Schizonepeta tenuifolia Briq.**

Common name: Japanese catnip  
Pinyin: jing jie  
Part used: Flowers, stems, leaves  
Family: Lamiaceae

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**Plant Description**  
*Schizonepeta* is an annual mint that grows from 12 to 24 inches in height. It has delicate foliage that is highly fragrant. Lax flower spikes appear from mid July to early August.

**Hardiness**  
Transplants of this annual are sensitive to frost.

**Propagation**  
Direct seeding in early spring is the best method. Transplants are very sensitive to handling.

**Field Production**  
Thin seedlings to one-foot centers in full sun. Keep the plants evenly watered. Pinch back the stem early in the season to increase branching.

**Pests**  
None observed.

**Harvest**  
Cut the plants at the base when flower buds have formed. Cut the side branches from the main stems and lay on drying racks. This herb dries naturally in about four days. “Good quality is light purple and has a thin stem and dense spikes.” (Bensky et al, 2004)

**Invasiveness**  
If one is cultivating *Schizonepeta* to harvest the flowering plant, invasiveness of this annual is not an issue. However, if this plant is allowed to mature seed, it can cross with the native *Poleo chino* or *Hedeoma nana*.

**References**  
**Scutellaria baicalensis Georgi**

Common name: Baikal skullcap, scute  
Pinyin name: huang qin  
Part used: root  
Family: Lamiaceae

### Plant Description

This herbaceous perennial is famous as one of the three huangs (yellows), and also can be used as a highly ornamental rock garden plant. In its first or second year the much-branched stems will be erect to 12-15 inches in height, but the older plants will flop and sprawl to a 3-foot radius. The pairs of opposite narrow leaves, 0.5 to 1.5 inches in length, alternate in the four square pattern characteristic of the mint family. Stems are yellow green when young and brown when older. The plant flowers in terminal racemes, July to August, in a mint-typical dragon mouth shape with pendulous lower lip, vivid purple-blue. The black-brown seeds are held inside the calyx and ripen in September. Hardy to Zone 4.

### Propagation

Propagate by seed from plants at least two years old. Barely cover seed with potting medium. Germination 15-21 days at 70°F. Does not transplant well, consider direct seeding.

### Field Production

Full sun, alkaline soil and absolutely no standing moisture are the basic requirements for scute production. Plant on a 24-36 inch radius, no organic mulch. Clip brittle stems at season’s end. Yield estimated at 12 pounds dry weight per 100 square feet.

### Pests

None noted.

### Harvest

Dig roots after 3 or 4 years. The chrome yellow, cylindrical roots with a longitudinal grain may be branched and may have a thin brown skin removed by power or tumble washing. The typical size is up to 8 inches long and an inch in diameter. Black core rot may be a problem, especially near the crown. Clean out rot, wash and slice in thin uniform transverse or oblique pieces, dry.

### Notes

*Scutellaria lanceolaria* Miquel and *S. macrantha* Fischer are synonyms. *S. rehderiana, amoena, hypericifolia* are substitute species.
**Tribulus terrestris**

Common name: Goatheads  
Pinyin: cì jí lí 刺蒺藜  
Part used: ripe green dried pods  
Family: Zygophyllaceae

**Plant Description**

Goatheads are a taprooted herbaceous perennial plant, native to Central Asia, which grows as a summer annual in colder climates. The stems radiate from the crown to a diameter of about a foot to well over six feet, often branching. They are usually prostrate. The leaves are pinnately compound with leaflets less than a quarter-inch long. The flowers are one quarter to one-half inch wide, with five lemon-yellow petals. A week after each flower blooms, it is followed by a fruit that easily falls apart into four or five single-seeded nutlets. The nutlets or "seeds" are hard and bear two to three sharp spines, 10 mm long and 4–6 mm broad point-to-point. These nutlets strikingly resemble bull or goat heads, hence the name. (1) Goatheads grow readily in poor soils, waste places and dry compacted soils, and is very drought tolerant.

**Hardiness, Propagation, Field Production & Pests**

USDA Zones 5-10. Goatheads are a common weed in the Southwest and readily found, so propagation and cultivation is neither necessary nor recommended. A weevil for biological control has been introduced that feeds exclusively on goatheads, eating the seeds and seedpods. Still, there are plenty of goathead pods to go around.

**Harvest**

Goathead pods must be collected from clean, safe, uncontaminated areas only. Do NOT collect from driveways, roadides, dump sites, corrals, pastures or areas where livestock or pets have run. THE PODS MUST BE FREE FROM ANY POSSIBILITY OF FECAL CONTAMINATION, TOXIC OR HARMFUL MATERIALS, OR DEBRIS. Pods should be in the green, ripe stage, fully developed, but not brown or dead. Larger whole pods are preferred; pods must be free of mold, mildew, insect damage, or disease. Pick pods individually, or cut entire vine and brush off pods onto a tarp or newspaper with a knife, spatula, clean flat stick, or other suitable hand tool. The first method is recommended, because there is no leaf material or debris to clean off later. Rinse off pods in clean fresh tap water, making sure pods are free of dirt, sand, grit, or debris. Drain thoroughly or run through a strainer, colander, window screen or sieve; spread cleaned, rinsed pods evenly onto a window screen or drying rack indoors in a shaded area. Dry at room temperature for 2-3 days, stirring once daily to insure uniform drying. Finished product should be clean, light green in color, uniformly dry, whole and free of any surface moisture or foreign material.

**Invasiveness**

This plant can be very weedy and invasive, and has become naturalized in much of the Southwest. Harvesting and use of this plant as a vegetable and medicinal helps to reduce the plant pressure of this noxious weed.

**Notes**

The whole plant at any stage of growth can be harvested, cleaned, dried and used in Western medicine. In the US it is more commonly used as a Western medicine than for Oriental medicine.

**References**

**Trichosanthes kirilowii**, Maxim.

Common name: Chinese Cucumber  
Pinyin: gua lou (fruit); tian hua fen (root)  
Part used: Fruit and root  
Family: Cucurbitaceae

Plant Description  
Trichosanthes is an attractive herbaceous perennial climbing vine with 6” broadly ovate lobed leaves. Vigorous plants emerge in late spring and grow rapidly to 15’. Pure white tubular flowers are deeply dissected and borne on either male or female plants. There will not be fruit production without there being both sexes present. Look immediately behind flowers to see if there is a fruit initiate or not – similar to garden cucumbers. If there is a very small immature fruit that plant is a female, males only show stems behind flowers. Chinese Cucumber is cold hardy to at least -20 degrees Fahrenheit, and like most of the Cucurbits enjoys hot summers. Traditional USDA zones 5-9.

Propagation  
Seeds sown in the heated greenhouse give a long season of growth; however seed will germinate in cool soils as well. Seed emergence takes place in 3 weeks. Pot up as needed to keep plants from becoming pot bound.

Field Production  
Grow Chinese Cucumber in a sunny location in well drained, average soil with medium fertility. Plant 1’ apart, provide support for climbing tendrils. Soil should drain well, if not vines and roots show evidence of die back. Trichosanthes is not considered drought tolerant. First year roots grow about 2’ deep; in subsequent years they grow to 3’ deep.

Pest  
None

Harvest  
Roots are dug while dormant in the fall or winter after at least 2 years growth. The brittle, white roots grow 3’ straight down making hand harvesting the norm as a machine harvest will miss much of the root. Wash thoroughly, cut roots a little less than ¼” thick on a slight diagonal, and dry. Expect roots to be several pounds each. Harvest fruit in the fall when red and ripe, slice and dry.

Note  
The Chinese Cucumber roots look very much like *Dioscorea opposita* roots. Do not confuse them. They are very different medicines; it is important to label them well.
**Vaccaria segetalis** (Neck.) Garcke

Common name: Cowcockles  
Pinyin: wang bu liu xing 王不留行  
Part used: seed  
Family: Caryophyllaceae

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**Plant Description**  
A native to south central Europe and Asia, now widely introduced to North America, this species is an annual, weakly erect to 2 ft, delicate and tiny pink clawed flowers falling on ends around clasping heart-shaped leaves. (1) It is fast growing, but the slender stems break easily in the high winds common in the Southwest.

**Hardiness**  
USDA Zones 2-10.

**Propagation**  
Direct seed after last frost, thin emerging plants to 8-12 inches.

**Field Production**  
Cowcockles tolerate a wide range of soils and growing conditions. In the Southwest, it grows well in full sun on sandy loam soils with moderate irrigation. Over-fertilization with compost or green manure reduces seed production.

**Pests**  
None observed.

**Harvest**  
*Vaccaria segetalis* is an indeterminate plant, so not all the seed will ripen and be ready to harvest at the same time. A single destructive harvest is the most practical method of seed collection. The seed shatters easily, so cut the entire plant before the seed is fully dry, windrow in the field or complete the drying process indoors, then thresh, clean and winnow seed by hand or stationary threshing and seed-cleaning equipment. The seed is small, so hand processing of large quantities is laborious and time-consuming.

**Invasiveness**  
Cowcockles are already an established weed in the US, but are not aggressive or competitive. Hoe out unwanted plants before they set seed. Rotate crops to control volunteer plants in the field.

**Notes**  
Because of the small seed size and low yields of Cowcockles, profitable production is best carried out on a large scale using mechanized harvesting and threshing equipment.

**References**  
**Vitex agnes-castus**

Common name: Chaste tree  
Pinyin: man jing zi 蔓荊子  
Part used: Fruit  
Family: Verbenaceae

**Plant Description**  
Chaste tree is technically not a tree but an aromatic woody shrub, growing to 6-8 feet high and equally as wide. Leaves are oppositely arranged, palmate. Flowers are small, butterfly-shaped, very aromatic and arranged in dense racemose clusters, blooming from mid-summer until frost. Seeds form in late summer and early fall. It is very drought tolerant and performs well in a wide variety of soils. Chaste tree can grow in full or partial sun; yields are greatest when grown in full sun.

**Hardiness:**  
USDA Hardiness Zones 5-10. Some top die-back may occur in more temperate climates.

**Propagation**  
Chaste tree can be readily started from seed or dormant stem cuttings, but is slow to grow and get established. Expect a minimum of two years to establishment and four years to full production. Keeping seedlings in pots under nursery conditions, then planting out to the field is recommended.

**Field Production**  
Transplant to 3-foot spacing within the row, then thin growing plants to a final spacing of 8-10 feet when mature. Chaste tree tolerates low fertility soil well. Irrigate regularly until established, infrequently thereafter. For ease of harvest, prune and shape entire shrub yearly to keep seedheads within easy reach.

**Pests**  
None noted.

**Harvest**  
Strip mature dry berries by hand from stalks in early fall, rub seed over cleaning screens or sturdy window mesh to remove chaff and husks, then winnow to get the final clean seed product. Yields at the Alcalde experiment station have averaged 2 to 2.5 lbs clean dry berries per mature plant, or about 25 pounds per one hundred feet of row.

**Invasiveness**  
None noted.

**Notes**  
Chaste tree berries are also used in Western medicine. Because of die-back, chaste tree is more profitably grown in southern climates.
**Plant Description**
Ashwagandha is a strong smelling tender perennial that enjoys hot dry conditions and well draining soil. With irrigation these semi-woody plants can grow to 3-4’ tall and 3’ wide. Leaves are bright green, obovate and pubescent. Small clustered light green flowers yield an orange fruit encased in a lantern-shaped calyx. Where winters go below 20 degrees Fahrenheit or if cultivating in a high rainfall area Ashwagandha can be grown as an annual, though roots will be larger if they grow more than one season. Roots will not survive wet winters. Reseeding can be problematic.

**Propagation**
To give the longest growing season possible sow seed in very early spring in heated greenhouse. Seed is a light-dependant germinator; cover lightly with sand or media. Emergence takes place in 2-4 weeks. They grow quickly and may need to be potted up before planting out. Alternately, sow in deep wooden flats and transplant directly into the field.

**Field Production**
Grow Ashwagandha in a sunny location in well drained, sandy, soil. Plant 2’ apart. Fertilizers and compost are not recommended. Growing Ashwagandha lean (low water, low fertilizer) makes superior medicine. This is a low maintenance crop.

**Pest**
Spring aphids are common.

**Harvest**
Roots are dug after receiving a hard frost in the fall, after 1 or 2 seasons’ growth. The whitish yellow branching root system grows about 1’+ deep. Wash thoroughly with a power washer, cut the roots lengthwise, and dry. If the roots are large, using large pruners or a saw will be more efficient to reduce the size for drying.

**Note**
Occasionally Ayurvedic practitioners will request berry or leaf harvests; it is difficult to find a price point as these two crops are labor intensive to harvest.
**Xanthium sibiricum, mongholicum or strumarium**

- **Common name:** Cocklebur
- **Pinyin:** cang er zi 蒼耳子
- **Part used:** dried ripe fruit (bur)
- **Family:** Asteraceae

### Plant Description
Cocklebur is a coarse, bushy summer annual broadleaf that infests pastures and other moist areas. Cotyledons (seed leaves) are bright green, shiny on the upper surface, pointed, and about six times longer than they are wide. True leaves on seedlings are notched on the margins and taper toward the leaf tip. Mature plants have thick, highly branched, fleshy stems with purple or black spots. Leaves are lobed, triangular, coarsely toothed, and are borne on long stalks. Clusters of small green to rusty red male flower heads develop where the upper leaf stalk meets the stem (axils). Female flowers develop in leaf axils below the male flower heads. At maturity parts of the female flower become hardened prickly burs that enclose 2 seeds. Burs are oval-shaped with a pair of beak-like hooks. (1) The different species of cocklebur are distinguished primarily by the size and number of spines on the bur.

### Hardiness, Propagation & Field Production
USDA Zones 3-10. Common cocklebur, *Xanthium strumarium*, has become naturalized in most parts of the US, and is such a common weed that propagation and cultivation is neither desirable nor recommended. Collection of the burs from wild stands is preferred.

### Harvest
Collect burs ONLY from clean, dry, animal-free areas in late summer or fall when they have fully matured and turned brown. Wait until after dew or frost has lifted to begin collection, as surface moisture on stored product may cause mildewing. If collected dry, no further drying should be necessary. Commercially available product is offered with the spines removed for ease of handling and administration. Burs may be riddled (scraped over a heavy gauge wire mesh) to remove spines. Check with prospective buyers before riddling, as this step may not be necessary, and will help keep additional labor costs down.

### Invasiveness
Cocklebur is widely recognized both as an invasive and noxious weed. Collection of burs for medicinal purposes will help reduce weed pressure. Hoe out young seedlings and plants where not wanted. Keep mature plants from going to seed.

### Notes
The ability to interchange different cocklebur species for their medicinal properties is still being debated. Grower/collectors should check with the buyer as to the acceptability of the particular species in question.

### References
**Zizyphus jujube**, Mill.

Common name: Jujube  
Pinyin: Da zao  
Part used: Fruit  
Family: Rhamnaceae

**Plant description**
Many cultivars of the Jujube tree have been introduced; with Li and Lang being some of the more commercially popular male and female varieties. Leaves are bright green with parallel veining. These deciduous trees prefer cold winters and hot summers. They are generally tolerant from about -15 to 115 degrees Fahrenheit. They are also tolerant of wet and semi-arid conditions. With severe drought they will abort fruit. Growing to 25’, occasionally they sport thorns. Jujube can also spout from root suckers, and can be problematic in this regard.

**Propagation**
Tree starts are available in the nursery trade, seeds or grafts can also be used. In reference to sowing, Roger Meyer, one of the most prominent jujube experts, wrote that one could stratify the seed and wait for up to two years for germination, or one could take a seed and cut it along the natural suture, pre-sprout, and then sow for immediate germination.\(^1\) In the Chinese Medicinal Herb Farm nursery 25% success rate has been achieved with scarifying the seed and applying bottom heat; with germination in a few months.

**Field Production**
Jujube grows productively on a variety of soils, and is easier to grow than conventional fruit trees. Many but not all are self fruitful, so depending on variety more than one may be needed for fruit. They break dormancy and set fruit late, potentially missing late frosts. Since fruit ripens early, Jujube makes a good candidate for short-season areas. Place several year old nursery-grown trees on 15-20’ centers.

**Pest**
None.

**Harvest**
Li and Lang trees fruited as 4 year old trees in coastal California. Harvest before fruit turns brown. For sweet, crisp, and juicy fruit harvest early in the morning; otherwise fruit risks being dry and pithy.

**Note**
Information is also in the Sunset Western Garden Book.

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Chinese Medicinal Herb Farm  
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**Zizyphus spinosa**, Hu.

**Common name:** None  
**Pinyin:** Suan Zao Ren  
**Part used:** Seed  
**Family:** Rhamnaceae

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**Plant description**  
Not much is known about this uncommon shrubby tree with many fine spines. The Chinese Medicinal Herb Farm has seedlings from 4 sowings and the following is what has been gleaned from growing them. The oldest were sown in 2001, and as of 2008 they are 2’ tall and many-branched. The deciduous leaves are bright green with a slightly wavy margin alternately arranged on the branches. New branches show a dark red; older bark is brown to grey with a shedding habit. In China they grow as far north as Beijing, so hardiness is estimated to be around 0 degrees Fahrenheit. It was observed in the wild and was prolific and rather weedy.

**Propagation**  
Scarify hard seed coat, which contain seed that look like small maroon lentils. Germination takes from 2 months and is on-going. Seed is sown in large, deep flats left outside to receive nature’s winterization. They would probably respond well to an artificial stratification, via the refrigerator. There is a high transplant mortality rate, more work needs to be done to determine the cause. Undisturbed they hold well in pots – they are slow growers.

**Field Production**  
Unknown, but looking at Zizyphus jujube and other members of the Buckthorn family, one can probably assume a small tree preferring sun in well-drained soil. If one was to start an orchard an estimate of placement would be 10-15’ on center.

**Pest**  
None

**Harvest**  
Unknown at this time. The trees have not flowered as of 6 years, not surprisingly, so number of seasons until fruiting is also unknown.