

COMMON ST. JOHNSWORT

Hypericum perforatum
L.

Plant Symbol = HYPE

Contributed by: USDA NRCS Cape May Plant
Materials Center



Common St. Johnswort (*Hypericum perforatum*) Photo by, Jolie Dollar, USDA NRCS.

Caution: This plant may become invasive.

Alternate Names

Common Alternate Names:

Klamathweed
St. Johnswort
Klamath weed
goatweed
perforate St. John's-wort
Tipton weed
rosin-rose

Uses

Wildlife Use:

Common St. Johnswort provides a nectar source for pollinators and is well-suited for use in pollinator restoration habitat. Preliminary observation found that common St. Johnswort attracted 7 different species of Hymenoptera in Cape May, New Jersey. Brown-belted bumble bee, (*Bombus griseocollis*), common eastern bumble bee (*Bombus impatiens*), and sweat bee (*Lasioglossum tegulare*) were most frequently observed visiting the flower. Field observations suggest that pollinators exhibit a range of responses to this plant. There is not enough conclusive data to determine if the plant is highly preferred or less preferred among pollinators.

Erosion Control:

With lateral root growth extending .4–3in (1–8cm) below the surface, and taproots extending 2–5 ft deep, St. Johnswort could make a good erosion control plant. However, the benefits of erosion control should be weighed against the plant's overall aggressive, invasive characteristics.

Status

Please consult the PLANTS Web site and your State Department of Natural Resources for this plant's current status (e.g., state noxious status, and wetland indicator values).

Weediness

St. Johnswort is an introduced species that is considered a noxious weed in 7 states in the U.S. Although the plant invades disturbed areas it does not easily invade natural areas. It tends to form dense colonies that crowd-out native plants. Please consult with your local NRCS Field Office, Cooperative Extension Service office, state natural resource, or state agriculture department regarding its status and use. Weed information is also available from the PLANTS Web site at <http://plants.usda.gov/>. Please consult the Related Web Sites on the Plant Profile for this species for further information.

Description

General: Common St. Johnswort is an erect, multi-stemmed, perennial forb that grows to 1–3 ft. It has long slender "runners" or stems growing at the soil surface or just below the ground. It also has aggressive rhizomes. St. Johnswort is part of the family Hypericaceae which includes trees, shrubs, and herbs with resinous sap.

The numerous flowers (roughly 25–100 per stem) are symmetrical around a central point, determinate, in flat-top clusters. The main and branch stems end in a flower, and open before the flowers below. The short-stalked flowers are about 1 in (2.5 cm across), with five yellow to bright yellow-orange flowers. The petals are peppered with black dots around the edges. The yellow tipped stamens join in clusters at their bases, which may also be spotted. There are three stigmas and styles.

Stems are often reddish and woody at the base. There may be several stems (up to 30) from the base of the plant. St. Johnswort has a tap root and vertical roots extending to 5 ft.

The 1–2 in long, stalk-less leaves are oblong or linear, opposite, round-tipped, and roughly ¼ in wide. The pale green or yellow-green leaves have scattered translucent dots that make the leaf look perforated when held up to the light. The species name for this plant, *perforatum*, denotes this characteristic. The branches are sharply ridged below the base of each leaf.

The sticky seed pod is a 3-sectioned capsule that turns deep reddish brown as it matures. It dehisces by splitting along the partitions of the seed capsule. The outermost floral whorl is persistent below the capsule. The plant produces both persistent and abundant seed. The small round, darkly colored seeds have a resinous smell like turpentine. The seed is about 1 mm long.

Ethnobotany

St Johnswort was recommended in the first century by Greek physicians as a diuretic, wound-healer, and treatment for menstrual disorders. It has been used as an anti-inflammatory, anti-bacterial, disinfectant, and a remedy for disorders of the respiratory tract and gall bladder.

It is a well-investigated medicinal herb. The translucent dots on the leaves and peppered spots on the petals are sacs of essential plant oils. When crushed, the black glands on the petals exude dark-red oil. These essential oils make common St. Johnswort a popular homeopathic supplement for a variety of conditions. The most important risk of taking St. Johnswort products medicinally are their interactions with other drugs. Homeopathic tinctures, pressed juices, or oils can be prepared from the fresh plant material. Dried plant material can also be used in teas.

St. Johnswort tea is used as a folk remedy for bladder ailments, depression, anxiety, nervous tension, dysentery, diarrhea, and worms. The tea is also commonly used to treat tuberculosis; as a mild sedative for disturbed sleep; and as a treatment of stomach cancer, herpes, and hemorrhoids.

St. Johnswort contains the biologically active compounds choline, pectin, rutin, sitosterol, hypericin, pseudohypericin, and hyperforin. It also contains compounds that regulate brain levels such as dopamine, interleukins, melatonin, monoamine-oxidases, and serotonin.

The Cherokee used a compound decoction as an abortifacient; and the leaves in an infusion to reduce diarrhea, fever, and gastrointestinal pain. They used a milky compound to rub on sores; sniffed the crushed plant for nosebleed; and the root was used in poultice

for snake bite. Iroquois used the plant as a fever medicine, and the roots to prevent sterility.

St. Johnswort plays an important role in the traditional knowledge (TK) systems in Spain. In this context, the flowers are macerated in olive oil and applied externally as a treatment for wounds, burns, or chapped skin.

St. Johnswort blooms early, near the summer solstice; thus derives its common name by blooming near June 24th, the birthday of St. John the Baptist. Traditionally, during this day the plants would be hung over religious icons in the house to ward off evil. In the middle ages it was called “Fuga Daemonium” or “devil’s flight” to denote this tendency to ward off evil spirits.

Distribution:

St Johnswort is native to Europe, western Asia, and North Africa, and is widely distributed through temperate areas of the world. It is considered a weed in many countries in its native range. In the United States, St. Johnswort is found from Minnesota to central Texas, stretching to the Atlantic and Pacific oceans.

For current distribution, please consult the Plant Profile page for this species on the PLANTS Web site.

Habitat:

St Johnswort is most commonly found in grasslands, pastures, meadows, and rangelands. But it also occurs in forested areas in natural clearings, openings, or areas that have been disturbed by fire, logging, or road construction. Because the seeds of *Hypericum* species can remain viable in the soil for several years, they can be found in the seed bank of forested areas.

Little information is available regarding elevation limits, yet observations have found that populations tend to occur below 5,000 feet.

Common St. Johnswort grows in well-drained, coarse-textured soils, and does not grow well under wet conditions. Generally, the plants require more water (35–40 in) in areas with winter rains, and less (10–12 in) in areas with winter snow. St Johnswort has been found to perform equally well in acid and calcareous soils. The roots of the plant are colonized with vesicular-arbuscular mycorrhizal (VAM) fungi, making the plant tolerant of harsher environmental conditions.

Establishment

Common St. Johnswort is an early-flowing forb (June or July) that requires full sun or part shade. It can be propagated by seed, division, or by softwood cuttings. It grows well in moist, well-drained soils.

Wet summers are beneficial to establishment. When soil moisture increases during fall or winter, the densely leaved, non-flowering stems will grow along the ground.

First-year seedlings do not produce flowers or seeds. Seedlings are small and tend to grow slowly and are improved when inoculated with arbuscular mycorrhizal fungi. When favorable growing conditions are met, there may be a sudden increase in plant density and new sprouts will create dense mats around the base of parent plant. Interspecies competition will restrict seedling survival. Poor site quality appears to be associated with increased vegetative propagation.

It has been observed that seedlings grown from seed develop a strong taproot, while vegetative propagation produces taproots not aligned with crowns. The taproot grows 2–5 ft deep, depending on soil type and moisture content. When injured the plant's lateral roots will produce buds from which new root crowns develop.

Although seeds are not equipped for wind dispersal, new colonies have been observed in the direction of prevailing winds. This would suggest that the seed, to some extent, is wind dispersed.

Animal transport is another known vector. The seed capsules exude a sticky substance that adheres to the bodies of birds and mammals. Because of this, thick colonies of St. Johnswort are found along livestock driveways and animal trails.

Management

Common St. Johnswort does not exhibit invasive tendencies in undisturbed areas, but in disturbed areas it is much more dominant. St. Johnswort can be potentially invasive in prairie, mountain grassland, western hardwoods, maple-beech-birch, oak-hickory, and oak-pine complexes.

Repeated cultivation has been found to destroy the weed. Colonies can also be controlled by mowing several times before maturation. Additionally, a covering of grass litter may be used to reduce germination and shoot extension of St. Johnswort. Vegetative propagation is encouraged by grazing or fire.

Pests and Potential Problems

Although St. Johnswort has been reported in the United States since the 1800s, it did not spread to the western United States until the early 1900s. Since the 1940s, biological control efforts have used Klamath weed beetles (*Chrysolina quadrigemina*), and (*Chrysolina hyperici*), St. Johnswort root borer (*Agilus hyperici*), and the St. Johnswort midge

(*Zeuxidiplosis giardi*) to control populations. These beetle populations are limited by climate.

Winter warming and summer droughts increase herbivory. Insect herbivory has a strong negative effect on populations and when treated with insecticide, treated plots have twice the seedling survival rates as untreated plots. There is a high degree of phenotypic and genotypic variation between St. Johnswort populations, and herbivore resistance is also variable.

Environmental Concerns

Due to its ability to produce large amounts of persistent seed, sites that have had plants for only one or two years may still have large amounts of seed in its seed bank even after mature plants are removed. In mature forests where aboveground vegetation of St. Johnswort has been crowded out, seeds have still been found in the soil bank. Therefore, it is possible that forests and plantation sites of various ages will contain seeds of St. Johnswort, even if St. Johnswort was not previously established on site. Similarly, populations of St. Johnswort can increase from clear cutting or variable-density thinning of forest stands, even if aboveground vegetation is absent. In short, there is a high likelihood of St. Johnswort establishment from buried seed in areas of disturbance (logging, thinning, burning, and construction).

Common St. Johnswort has small black glands that contain the photodynamic pigment hypericin. Hypericins are found in the flowers, leaves, and buds of the plant. If digested by livestock, hypericin can cause photosensitization, blisters, and lesions; especially in light-skinned animals. More severe symptoms include loss of appetite, diarrhea, blindness, convulsions, coma and death. Symptoms are often delayed. Light-colored animals are most affected by photodynamic properties. The exposed skin of horses may also be affected when the plant comes in contact with the skin. No hybrids are known to occur in North America.

Seeds and Plant Production

St. Johnswort reproduces both sexually and asexually, and flowers are both pollinated and self-pollinated. Field studies have indicated a large amount of variability in seed production per plant. This variation could be the result of variations in environmental or site conditions. Each plant produces roughly 15,000-33,000 seeds and the seeds numbered 580,000 per ounce. Seeds remain viable in the soil for long periods of time; as much as 50 years by some accounts.

St. Johnswort seed requires a period of dormancy before germination. This dormancy may be broken by washing, heat treatment, light, or an after-ripening

period of 3–4 months. St Johnswort seed is reported to have 94% germination after 5 years of dry storage, and 50% germination after 16 years of storage. It has been observed that after 5 years of storage in water, 7% of seeds were still able to germinate. Other observations suggest that germination rates increased with length of time the seed was immersed. If seed exudates are not removed through washing or wear, seed dormancy is increased. This would indicate that at least one mechanism of seed dispersal is through water.

Seed germination of both new (1–6 month old) and old (9 years) seed has been shown to increase from seed washing. Heat treatments of the seed, exposed from 5–60 minutes to temperatures of 212° F and 260° F showed germination percentages of up to 81%. Subjecting seed to hot water immersion decreased the germination rates.

Conditions for germination are very specific and temperature requirements for optimal germination are still unknown.

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