

**WRITTEN FINDINGS OF THE
WASHINGTON STATE NOXIOUS WEED CONTROL BOARD
(Updated March 1998; 1988)**

Scientific Name: *Hypericum perforatum* L.

Common Name: common St. Johnswort

Family: Hypericaceae

Legal Status: Class C

Description and Variation: An erect, opposite-leaved perennial herb, ranging from 2 - 4 feet tall, from a taproot. The plant can have single or multiple stems. The reddish stems are smooth, somewhat 2-edged, woody at the base, branching out toward the top of the plant. The narrow, lance shaped leaves are about one inch long, stalkless with pointed tips. Each leaf is spotted with tiny translucent dots. Each flower has 5 yellow petals and many yellow stamens. The black dots often visible along the petal margins are glands containing hypericin. This red pigment is also visible in glands on leaf margins giving the leaf a perforated look. The inflorescence is a flat topped clusters of many flowers, found at branch ends. The extended flowering period is from May - late September. St. Johnswort spreads both by underground and above-ground creeping stems, and by seed. The Hypericaceae family contains 10 genera and 400 species, worldwide. An estimated 350-370 species are in the genus *Hypericum*.

Economic Importance:

Detrimental: St. Johnswort is invasive as well as toxic to livestock. It is a vigorous competitor in pastures, rangelands and natural areas. Introduced to California around 1900, *Hypericum perforatum* spread over 2 million acres by 1950. At one time St. Johnswort was considered the leading causing of economic loss to California, attributed both to the loss of pasture and rangeland and to stock fatalities (Turner and Szczawinski 1991; Mitich 1994).

Like many *Hypericum* species, St. Johnswort contains hypericin, a phototoxin that travels to the skin after ingestion. It is activated by ultraviolet rays responsible for dermatitis, inflammation of the mucus membranes, itching, swelling, blisters and open sores. Light skinned livestock (horses, cattle, and to a lesser extent sheep and goats) are affected, and humans can experience the same reactions when using herbal remedies containing hypericin. Once a sensitivity to hypericin is developed, it is cumulative. Secondary reactions include infections of the affected areas, and these infections in livestock can lead to starvation or dehydration. (Turner and Szczawinski 1991; Piper 1997; Kingsbury 1964). It is also blamed for poor wool crops when sheep suffered from photosensitization (Mitich 1994).

Wear gloves and avoid touching the eyes when collecting. Reports of contact photosensitivity include second degree blisters on eyelids and forehead (Upton 1997 as cited in Hobbs 1997).

Beneficial: Used to treat mild to moderate depression, particularly in Germany, because of the minimal side effects as compared to prescription antidepressants. Hypersensitivity to sunlight, or use in combination with a photosensitizing drug like tetracycline, is mentioned as a precaution (Newsweek, 1997; Turner and Szczawinski 1991). The medicinal properties are used in the treatment of chronic fatigue syndrome, as an antiviral agent and wound-healing (Cech 1997; Hobbs 1997). *Hypericum* is listed in pharmacopoeias of Czechoslovakia, France, Germany, Poland, Romania and Russia (Hobbs 1989; Reynolds 1993 both as cited in Hobbs 1997).

Habitat:

St. Johnswort is well adapted to a variety of temperate climates and soil types. It prefers poor soils and full sun, and can be found primarily in meadows, dry pastures, rangelands, roadsides and empty fields. However, it has the capability to invade healthy rangelands. It is not considered a serious threat in cultivated fields.

Geographic Distribution:

Hypericum perforatum is native to all of Europe, North Africa and Asia except for the Arctic regions. It is listed as a weed in 21 countries, where the plants spread is attributed to cultivation both as a medicinal herb and garden ornamental (Piper 1997; Mitich 1994). This weed is widespread and considered naturalized throughout most of the United States (Kingsbury 1964).

History:

Medicinally, it is mentioned in the first *Pharmacopoeia Londonensis* (1618) (Hobbs 1997). St. Johnswort has been used in Europe for the past 50 years to treat a range of depression (Cech 1997). In the United States St. Johnswort arrived in Philadelphia in June, 1696 with German pilgrims fleeing religious persecution. This was one of many herbs used in mystic rites, and it was thought to exorcise the devil, protect newborns and ward off imps and demons of melancholy. English and German settlers brought along seeds for gardens, where it escaped from Maine to Florida. It was introduced to California at the turn of the century, and it was found in Washington shortly after. By 1930 it was blamed for severe economic losses because of impacts on pasture and rangelands.

Growth and Development:

Hypericum perforatum is a somewhat long-lived perennial herb. Germination occurs during summer, and seedlings are not considered competitive. It may take two to several years to reach maturity. St. Johnswort flowers from May to September. Basal foliage that overwinters will start growing in early spring, followed by vertical stem growth. Each plant may include several well spaced crowns, each with lateral roots. Lateral root buds are capable of producing new crowns. Plants connected by these lateral roots separate when these roots rot. (Piper 1997).

Reproduction:

St. Johnswort spreads both by underground and above-ground creeping stems, and by seed.

The amount of seed produced annually ranges from 15,000 to 33,000 (Tisdale et al. 1959, Parsons 1981 and Crompton et al. 1988 cited in Piper 1997) and up to 100,000 with a small percentage germinating and reaching maturity (Cech 1997). Germination is increased after rainy periods, due to a germination inhibitor that is washed off by heavy rains. (Rees et al. 1996) The seeds are viable in the ground from six to ten years (Clark 1953, Bellue 1945 cited in Piper 1997). Dissemination is by wind, animals (both externally and internally), water and human activity.

Response to Herbicide:

Always refer to PNW Weed Control Handbook when using herbicides for noxious weed control to check for timing and rates of application. ALWAYS READ THE LABEL.

The best time to apply 2,4-D is right after germination on new seedlings, before any blossoms open. Repeated applications will be necessary. Biological control agents are recommended for large weed infestation sites.

Escort, with a surfactant is recommended as a postemergent for use in noncropland, pastures and rangeland. (William et al. 1997)

Response to Cultural Methods:

St. Johnswort seedling growth will readily establish in disturbed situations that include roadside, overgrazed pastures or open rangeland where native or forage species do not offer any competition. The combination of site-specific range management which includes encouragement of beneficial plants species as well as a grazing management plan will prevent new infestations and reinfestations. (Piper 1997). A successful control program in Australia included cultivation, sowing a competitive grass species and fertilization. (Campbell and Delfosse 1984 as cited in Piper 1997; Moore et al. 1989 as cited in Mitich 1994).

Response to Mechanical Methods:

Pulling should only be considered an option on new or small infestation sites, and repeated pulls will be necessary to ensure removal of the whole plant and any lateral roots. Do not leave plants at the site, since vegetative growth will occur, and the seed source will remain. Tillage is effective when repeated in croplands (Crompton et al. 1988 as cited in Piper 1997). Mowing is a limited option depending both on site accessibility and the fact that no seed formation has occurred, and repeated cuts are necessary (Piper 1997).

Biocontrol Potentials:

Two foliage beetles, *Chrysolina hyperici* and *C. quadrigemina* were released in California from 1945 to 1946, and established within two years. This was the first intentional release of biological control agents on a weed population in North America. (Holloway 1957 cited in Piper 1997). A root-boring beetle *Agrilus hyperici* and a leaf bud gall-forming midge *Zeuxidiplosis giardi* were released in 1950 to help the *Chrysolina* spp. (Holloway and Huffaker 1953 as cited in Piper 1997). These established California colonies became the source for collections and distribution to *Hypericum perforatum* infestations throughout the western United States. Recently released and established is the moth *Aplocera plagiata*. (McCaffrey et al. 1995 cited in Piper 1997).

References:

- Bourke, C. 1997. Effects of *Hypericum perforatum* (St. John's wort) on animal health and production. *Plant Protection Quarterly*. 1997. Vol. 12, (2):91-92.
- *Cech, R. 1997. Herb of the Sun Saint John's Wort. Horizon Herbs Publication, Williams, OR. 21 pp.
- *Dennis, L. 1980. Gilkey's Weeds of the Pacific Northwest. Oregon St. Univ. Press. Pp 194-5.
- *Foley, T. 1997. The NVF Program. "Controlled Growing of Essential Plants For the pharmaceutical Industry". Northwest Venture Farms, Inc. 25 pp.
- *Gilkey, H. 1957. Weeds of the Pacific Northwest. Oregon State University Press. Pp. 228-9.
- Goeden, R.D. 1978. Biological Control of weeds, Hypericaceae: St. Johnswort, Klamath weed (*Hypericum perforatum* Linnaeus). Pp 387-393. In Clausen, C. P., Introduced parasites and predators of arthropod pests and weeds: a world review. USDA Agric. Handbk. No. 480.
- *Hawkes, R. and L. Burrill and L. Dennis. 1989. A Guide to Selected Weeds of Oregon (Supplement). Oregon Department of Agric. in cooperation with Oregon State University. P 45.
- *Hitchcock, C. and A. Cronquist. 1973. Flora of the Pacific Northwest an Illustrated Manual. University of Washington Press. Seattle and London. P295.
- *Hitchcock, C. and A. Cronquist, M. Ownbey and J. Thompson. 1961. Vascular Plants of the Pacific Northwest. University of Washington Press. Seattle and London. Vol. 3:434.
- *Hobbs, C. 1997. St. John's Wort *Hypericum perforatum* Quality Control, Analytical and Therapeutic Monograph. Herbalgram No. 40. July 1997. 16 pp.
- *Huxley, A. 1992. The New Royal Horticultural Society Dictionary of Gardening. The MacMillan Press Limited, London. Pp. 620-634.
- *Kingsbury, J. 1964. Poisonous Plants of the United States and Canada. Prentice-Hall, Inc. Englewood Cliffs, NJ. Pp. 52-57 and 171-175.
- *McBarron, E. 1983. Poisonous Plants Handbook for Farmers and Graziers. Inkata Press. Melbourne, Sydney, London. P. 99.
- McCaffrey, J.P., C. L. Campbell and L. A. Andres. 1995. St. Johnswort, *Hypericum perforatum* L. (Hypericaceae), pp. 281-285. In Nechols, J.R., L. A. Andres, J. W. Beardsley, R. D. Goeden and C. G. Jackson (eds.), Biological control in the western United States: accomplishments and benefits of regional research project W-84, 1964-1989. Univ. Calif. Div. Agric. Nat. Res. Pub. 3361. Oakland, CA.
- *Mitich, L. 1994. Common St. Johnswort. *Weed Technology*, 1994. Vol. 8, Issue 3:658-661. No. 46 of the series "Intriguing World of Weeds".
- *Piper, G. Unpublished. St. Johnswort. 18 pp.
- *Rees, N. and P. Quimby, G. Piper, E. Coombs, C. Turner, N. Spencer and L. Knutson. 1996. Biological Control of Weeds in the West. Western Society of Weed Science in cooperation with USDA Agricultural Research Service, Montana Department of Agriculture and Montana State University.
- *Roche, B. Goatweed (*Hypericum perforatum*) 1 p.
- Rosenthal, S.S., and D. Maddox and K. Brunetti. 1984. Biological methods of weed control. California Weed Conf. Monogr. No. 1. Thompson Publ., Fresno, CA.
- *Turner, N. and A. Szczawinski. 1991. Common Poisonous Plants and Mushrooms of North America. Timber Press, Portland, OR. Pp 24, 136-137.
- *United States Department of Agriculture. 1971. Common Weeds of the United States. Dover Publications, NY. Pp 266-7.

- *William, R. and D. Ball, T. Miller, R. Parker, J. Yenish, R. Callihan, c. Eberlein, G. Lee and D. Morishita. 1997. Pacific Northwest Weed Control Handbook. Washington State University Coop. Ext. Serv., Pullman. Washington.
- *Whitson, T. and L. Burrill, S. Dewey, D. Cudney, B. Nelson, R. Lee and R. Parker. 1992. Weeds of the West. The Western Society of Weed Science in cooperation with the Western United States Land Grant Universities Cooperative Extension Services and the University of Wyoming. P 280.
- * ***References available from the Washington State Noxious Weed Control Board Office in Kent.***

Rationale for Listing:

Hypericum perforatum negatively impacts rangelands and pastures when it outcompetes and replaces native and forage species used by livestock and wildlife. This species also has the ability to be toxic to livestock. While livestock will ignore St. Johnswort as long as forage is available, it is toxic if ingested, particularly to light skinned animals. The blistering can lead to secondary infections, which can lead to death. It retains these toxins in dried plants found in hay. The impacts caused to the California dairy industry both in losses to livestock and rangelands were only rectified with the introduction of several beetles used effectively and successfully as biological control agents.