Weeds of Western Australia - St. John's wort - (Hypericum perforatum L. var angustifolium D.C.)

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St. John's Wort, a common European plant, was with little doubt introduced from Victoria along with hay during the early timber milling days. It has been found at many old campsites in the timber country. Besides being a vigorous perennial weed, St. John's Wort is also poisonous to animals.
ST. JOHN'S WORT

*(Hypericum perforatum L. var angustifolium D.C.)*

ST. JOHN'S wort is native to the temperate regions of Europe and Asia, but as with many other of our weeds, appears to have little significance in its natural habitat. In countries of its adoption, however, the story is very different. For example, in Canada and America it occurs over extensive areas of range land while in Australia it is proving a very serious weed.

The main centres of infestation in this country are the hillsides and elevated valleys of north-eastern Victoria, the high rainfall area of the Southern tablelands of New South Wales and also the Mudgee, Rylestone and Wallerawang districts of the Central tablelands of that State. It occurs to a limited extent on the Mt. Lofty Ranges in South Australia and has been located in a number of districts in this State. Moore and Cashmore (1942) record that, in general, the most severe wort infestations occur at elevations of almost 2,000ft.; having an annual rainfall exceeding 30 inches with a winter peak but otherwise evenly distributed throughout the year.

St. John's wort has been known in Victoria and New South Wales since the latter part of last century having been introduced as a garden plant about 1880. At first the weed showed little tendency to spread, but subsequently in a period of a few years, occupied extensive areas.

Some impression of the rapid spread in Victoria can be gained from the following figures presented by Calvert (1932)—

<table>
<thead>
<tr>
<th>Year</th>
<th>Crown Land</th>
<th>Private Property</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1880</td>
<td>acres</td>
<td>acres</td>
<td>acres</td>
</tr>
<tr>
<td>1902</td>
<td>2,910</td>
<td>5,639</td>
<td>8,549</td>
</tr>
<tr>
<td>1905</td>
<td>4,000</td>
<td>6,210</td>
<td>10,210</td>
</tr>
<tr>
<td>1916</td>
<td>156,000</td>
<td>28,000</td>
<td>184,000</td>
</tr>
<tr>
<td>1931</td>
<td></td>
<td></td>
<td>244,519</td>
</tr>
</tbody>
</table>

A similar pattern of rapid spread after a quiescent period has been followed by many weeds in other countries as well as Australia. Mesquite in the North-West of this State is a further spectacular example.

The first record in Western Australia was in 1934 when plants were found in the Margaret River, Augusta and Karridale areas. It has since been recorded from Arumvale, Pinjarra, Holyoake, Mornington, Greenbushes, Nannup and Capel. There is little doubt that many of the occurrences are associated with the importation of chaff from affected areas in the other States and the weed provides a link with the early timber felling and milling.

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ST. JOHN'S WORT.

(Hypericum perforatum var. angustifolium.)

A—Showing habit; B and C—Leaves; D—Flower; E—Stamens; F—Fruit; G—Seeds.
days. The nucleus of an infestation is often a horse-yard or paddock at an old mill camp.

DESCRIPTION
The name St. John's wort is no doubt a modification of St. John's blood which refers to the pigment derived from the petals. In America and Canada it is known as Klamath weed while other common names include Witch's herb and Racecourse weed.

It is a glabrous perennial with erect stems, sometimes exceeding three feet in height and arising from a creeping root system. The narrow leaves, up to one inch long, arise opposite one another on the stems and are sprinkled with conspicuous oil glands which give a perforated appearance when held to the light. The showy yellow flowers each having five petals are formed in leafy panicles at the ends of the branches. The fruit is a sticky three valved capsule containing numerous minutely pitted cylindrical seeds, brown in colour. The plants are relatively dormant during the winter period but make rapid growth during the spring and early summer. Flowering usually extends from November to February and seeds are produced from mid summer onwards. Although a limited amount of spread occurs from the rhizomes, particularly when carried by cultivating implements, seeds are responsible for the main distribution.

SIGNIFICANCE
Agricultural scientists in California have pointed out that St. John's wort, by poisoning live stock and reducing fodder, is the greatest single cause of financial losses on range and pasture in that State. The replacement of useful grazing species by this weed can cause a big reduction in carrying capacity, while its toxic properties are an important aspect. It has been responsible for photosensitivity of sheep and cattle in parts of Victoria and New South Wales where the plant is prevalent. So far no trouble has been reported in this State but no doubt this is due to the fact that there are no extensive areas of St. John's wort on grazing land. As with other plants which cause photosensitivity, un-pigmented skin of animals is most likely to be affected.

The plant was formally used medicinally, St. John's wort oil made from the flowers infused in olive oil being used as a remedy for rheumatism and gout. A red dye extracted from the glands of the petals under the name of St. John's blood was applied to wounds and a yellow dye material was also obtained from the petals. It is no longer regarded as having any desirable properties except by some who are still inclined to grow it in gardens. It is a declared primary noxious weed for the State.

CONTROL
St. John's wort could be used to exemplify several different control methods. Cultivation, usually the first line of attack, when used independently, is not very effective for several reasons. The plant has a strong and persistent rooting system which is stimulated rather than suppressed by spasmodic cultivation. Machinery may also carry root fragments to clean areas. Grubbing is seldom completely effective as small portions of root left in the soil soon sucker freely. Again, much St. John's wort occurs on partially cleared land where ploughing is difficult to carry out.

The cheapest and most effective method where conditions are favourable is to provide vigorous plant competition. St. John's wort in the Manus Valley of New South Wales and other areas has been controlled by the Mt. Barker strain of subterranean clover along with a perennial grass such as Phalaris tuberosa where this is possible. The effectiveness of this method was shown by Moore and Cashmore (1942). It is essential to maintain a dense pasture cover to prevent re-establishment from seed. This involves appropriate fertiliser applications and management, particularly with reference to grazing.

The control of St. John's wort by competing pasture plants is due both to a reduction in plant numbers, and a decrease in vigour of individual plants, the former being of greater significance. Reduction in light intensity could be the main factor operating. Subterranean clover along with Kikuyu grass in particular, have helped considerably to suppress this weed in the South-West.
C.S.I.R.O research works have introduced a number of parasitic insects from other countries, mainly southern France and *Chrysolina hyperici* in particular has contributed to the control of St. John's wort in a number of localities. Where a sufficient build-up in population of this leaf-eating beetle occurs, the weed may be killed by repeated defoliation. In Western Australia the beetle has proved most effective where continuous areas of St. John's wort occur on cleared land. It has been less effective with intermittent infestations, especially in forest or partly cleared land, and maximum control has occurred when the weed has been competing with a vigorous pasture.

When the wort is growing on timbered land, not only is the parasite less effective but the establishment of pasture is seldom practicable. Under such conditions, quite good results have been obtained by the use of chemicals. Sodium chlorate was the first used on a large scale in this State. Seventy five pounds applied in 200 gallons of water per acre prevented seeding and killed a proportion of the plants but the treatment was costly and two treatments were required each year. A fair degree of control followed the application of crude salt at the rate of five tons per acre. This should be applied sufficiently early to prevent flowering but late enough not to be leached from the soil by heavy winter rains. At the same time the soil must be moist or sufficient rain fall to take the salt into solution so that is can be absorbed by the plant. The use of salt has a number of disadvantages, including high transport costs and difficulty of application, along with a restricted treatment period for maximum results.

With the advent of the hormone-like herbicides it was found that good control followed treatment with three pounds acid equivalent of 2,4-D ester per acre. The early flowering stage is regarded as optimum for spraying and usually occurs in November. A systematic programme each year has resulted in substantial reduction in the extent of St. John's wort. From time to time further areas are being found, however, and seedlings arising from dormant seeds must be expected for many years. 2,4-D ester is much cheaper than either sodium chlorate or crude salt and application is also simpler.

St. John's wort is tolerant of partial shade but does not withstand severe shading. A dense growth of pines has suppressed the weed but, following the removal of the trees, recovery from dormant seeds has occurred. The seeds retain their vitality for many years and, for this reason, the method has not proved satisfactory.

REFERENCES
TRY THIS DELIGHTFUL RECIPE!

You will want—
1 1/2 cups S.R. flour.
1/2 teaspoon salt.
1/2 cup sugar.
1 egg.
1 cup water.
1 cup cleaned currants.
Juice of half lemon.
1/2 cup mint leaves
washed and dried.
1 tablespoon sugar (for filling).
1 tablespoon butter
(for filling).

This is what you do—
Chop the mint very finely and add currants, lemon juice, sugar and butter. Mix well. Sift the flour and salt into a basin and rub in the 2 oz. butter. Add the sugar. Beat the egg and add the water.

Stir into the dry ingredients, making into a rather stiff dough. Turn on to a floured board, knead lightly and divide into two. Roll to line and top a swiss roll tin. Place the lining pastry in and spread over the filling. Moisten the edges with milk and cover with the remaining piece of pastry. Prick the top with a fork and brush with milk. Bake in a hot oven for 20 minutes. Cool and cover with a simple lemon glaze or sprinkle with sifted icing sugar. Cut into finger lengths.
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