CONTROL OF ST JOHN'S WORT

These are some of the issues raised at the meeting organised by FOG and Friends of Mt Majura held on 11 May 2024 at The Knox Made in Watson

For all operational aspects of SJW control, please consult the **ACT Weeds Manual, Pages 74-76**. (https://sactcg.org.au/wp-content/uploads/2023/11/ACT-Weeds-manual-Nov-23.pdf)

This meeting was originally intended as a field inspection of areas at The Fair where Friends of Mt Majura (FoMM) have trialled different approaches to controlling St John's Wort (SJW). (Note: the Office of Nature Conservation (ONC) has recently started to run SJW control trials in the same area.) As it was raining, most of the assembled attendees opted to repair to a café to talk about their experiences with SJW.

Attendees at café meeting: Margaret Ning (FOG), Waltraud Pix (FoMM, FOG), Sarah Hnatiuk (FOG, FoMP), Fay Wareham (FOG), Don Beattie (FoMM), Lewis Mcpherson (NPWS), Michael Bedingfield (FOG), Andrew Zelnik (FOG), Jenni Marsh (FoMM), and Margaret Strong (FOG).

John Fitz Gerald (FOG, FotPin), John Byrne (FOG), Max Pouwer (FoMM), and Ann Milligan (FOG) attended at the start of the activity but did not participate in the discussion. The two Johns and Max visited the trial sites instead, as did Michael Bedingfield before he joined the café group.

St John's Wort. SJW is a major weed that, following several years of above average rainfall, appears to the attendees to be spreading and establishing more rapidly than in the past. In some places, such as Urambi Hills, it forms near impenetrable monocultures. If this is a foretaste of how currently sparsely populated areas may develop elsewhere, it has very serious implications for the biodiversity of those areas. An article about SJW on Urambi Hills will appear in Friends of Grasslands' (FOG) next newsletter (July-Aug 2024).

Drawing on his experience of controlling SJW on Mt Majura over the last 10 years, Don Beattie (FoMM) made these **observations on SJW's behaviour**.

- Seeds remain viable for 10 years, but after three years of spraying, reduced germination is already noticeable. Some seeds are still viable after a fire goes through so seedheads need to be removed from burnt stems.
- It grows best in open areas.
- It appears first along paths and in places where kangaroos rest, and spreads from there.
- It is also spread by mowers.

Approaches to SJW control

- **Pulling.** Don pulls plants out if he thinks most of the plant will come out. He then returns to spray any resprouting plants. A staff member from ONC has suggested that pulling

SJW may stimulate regrowth from lateral roots that might otherwise not happen. Pulling is useful in areas of high native biodiversity.

- **Spraying.**
    - Don first sprays in December when plants start flowering and returns in February. Other attendees pointed out that they do their second and third sprayings in response to flushes of SJW growth following summer rain events. These flushes can happen at any time from December to March. Waltraud Pix (FoMM) recalled six flushes one summer.
    - Don has found that spraying resprouting rosettes at other times of year or following a burn is effective. Margaret Ning (FOG) plans to trial the effectiveness of spraying some SJW rosettes with glyphosate every month through winter and will monitor the results.
    - Don commented that in very wet years when grass grows very tall, it overtops the SJW plants which are then difficult to locate. In more normal years, flowering SJW is more visible.
- **Herbicides**.
    - Don uses ***glyphosate*** because it is easier to use. He uses it at 50% more than the recommended rate; Margaret uses twice the manufacturer's recommended rate for grasses because she also has other targets. Since 2005, other FoMM members have routinely used **starane** or sometimes both starane and **brushoff** at sites that either lack native forbs or where SJW can be sprayed between "robust" forbs such as Clustered Everlastings.
    - It is important to wet the whole plant and to avoid using understrength herbicide mixtures. Failure to take these steps can encourage proliferation of plants resistant to the herbicide.
- **Slashing**. Fay (FOG) reported that a month after cutting back in March, some plants had resprouted from the top of the stem and gone on to flower. New leaves also began growing from the base of the stems. We need to know if other Landcare groups, PCS and TCCS have observations on the effectiveness of slashing.
- **Burning**. Don observed that burning does not affect SJW roots which resprout, nor are all the seeds in seedheads killed. The latter need to be collected. (Added after the meeting: Waltraud reports that PCS controlled SJW on Oakey Hill with an environmental burn followed by spraying. Sarah reports that after both arson and prescribed burns on Mt Painter, SJW rosettes are among the first recovering species to appear. They are very easy to spot against a black, charred background.)
- **The Green Machine (steam)**. Does this method effectively control SJW?

- **Management plans**. Waltraud stressed that volunteers aiming to control SJW should have a management plan that details the location of SJW infestations, particularly in areas of better native vegetation, that need to be monitored so the timing of control measures is optimal. ***Mapping is crucial*** in informing others about the areas of untreated and treated SJW.

Post control restoration. Direct seeding following spraying may be necessary if there is little or no seed in the seedbank to provide native ground cover. In areas with weeds only and after herbicide and manual treatment of the weeds – usually in a mosaic pattern – FoMM broadcast native grasses such as the little grazed Slender Speargrass and Tall Speargrass.

Political pressure for better resourcing of SJW control. Landcare groups should push for more resources, stressing that SJW is a major weed that can take over. Material to support lobbying is provided by:

- SJW data on Field Maps and through its links to NatureMapr photo point shots,
- Results from Landcare ACT's Weed Forum survey of participants' perceptions of the five most troublesome weeds, and
- The upcoming FOG newsletter article.

This record was made by Sarah Hnatiuk and checked by Margaret Ning and Waltraud Pix.

The information on the following pages has been extracted from two authoritative websites and attached as it adds to and expands on points raised in the discussion.

APPENDIX. Additional material relevant to the above record extracted from the internet.

EXTRACTS FROM NSW WEEDWISE MATERIAL ON ST JOHNS WORT, https://weeds.dpi.nsw.gov.au/Weeds/Details/135, accessed 18 May 2024.

What does it look like?

Fruit are:

- a sticky, three-celled capsule
- about 8 mm long
- split open when ripening.

Seeds are:

- in sticky seed capsules
- small (0.5 – 1 mm)
- cylindrical
- light brown to black
- with a pitted seed coat

Roots are:

- vertical - growing to about 1 m deep into the soil
- horizontal - producing buds that form new growth above ground.

How does it spread?

- **By seed**
- The sticky seed capsules stick to animals. Seeds are also carried in the digestive tracts of animals. Wind spreads seed over short distances. Water, machinery, humans, livestock or feral animals spread seed over long distances.
- **By plant parts**
- Roots sucker and new plants grow from fragments. Cultivation can move root fragments.

Control

Long-term control of St John's wort needs to consider that:

- new seedlings appear from autumn to spring
- seeds need mild temperatures, light and rainfall to develop
- competition suppresses young seedlings
- most new foliage grows in autumn and winter
- foliage dies off in late spring
- flowers develop in spring to autumn
- new plants do not flower in the first year
- seeds are released autumn to winter
- a plant can produce up to 33 000 seeds per year

- seeds can remain viable for 12 years.

Biological control

Eleven biological control agents have been released in Australia. Six have established.

- **Chrysolina beetles (known to be in the ACT)**
    - Chrysolina larvae and beetles feed on the leaves of St John's wort. Larvae feed on winter growth. Adult beetles attack spring growth. Beetles can form dense infestations that remove all leaves on St John's wort.
    - Chrysolina beetles are most effective when beetles and larvae feed in the same or consecutive years. They are only effective in unshaded situations as they mate only in sunlight.
    - Catch beetles in spring and move them to new infestations. Do not use herbicides when high numbers of Chrysolina beetles are present. Partially defoliated plants are unlikely to absorb enough herbicide to kill them.
    - *Chrysolina hyperici* and *Chrysolina quadrigemina* are black with bronze, dark-blue or purple reflections. They are oval shaped. *C. quadrigemina* is slightly larger (6.0 – 7.1 mm) than *C. hyperici* (5.3 – 6.1 mm). Some *C. quadrigemina* beetles are bluish.
- **Gall midge (*Zeuxidiplosis giardi*).** This small fly lays eggs in the terminal buds. When they hatch, larvae feed on the leaf buds and cause lumps (galls). Populations rarely get large enough to have an impact on St John's wort infestations. The gall midge helps to control St John's wort in shady country where other insects are not active.
- **St John's wort stunt mite (*Aculus hyperici*).** The stunt mite affects the narrow-leaf form of St John's wort. It is too small to see with the naked eye. The mites feed on the growing tips of plants. Damaged leaves often have yellow streaks or mottling. Rosettes and flowering stems are stunted. Mites can kill narrow-leaf St John's wort over 2 – 3 years. All life stages are present throughout the year.

Chemical control.

- Only spray when St John's wort is actively growing. Try to reduce damage to pastures through herbicide selection and timing. Two consecutive years of spraying is often required to kill plants. The deep, extensive root system can survive the first treatment, and the plant can regrow. (Highlighting added)
- **Spot-spraying.** Spot-spray isolated infestations when St John's wort is in flower (November to January). It's too late once the flowers have turned brown. (Highlighting added) Cover all the foliage with herbicide.

Weed wiper. Weed wipers can treat patches of St John's wort. Graze useful plants below the wiper height before the start of St John's wort flowering. Treat with the wiper at full flowering.

ADDITIONAL INFORMATION EXTRACTED FROM THE CRC FOR WEED MANAGEMENT SYSTEMS (2000), republished by NSW DPI, https://archive.dpi.nsw.gov.au/__data/assets/pdf_file/0010/347995/st-johns-wort-best-practice-management-guide.pdf, accessed 18 May 2024. Red highlights added.

Reproductive techniques: St John's wort reproduces from seed or by suckering. It mainly sets seed without pollination but can also outcross. New crowns may be produced by shoots from the lateral roots in spring and autumn. The origin of a mature crown can be determined by digging up the roots. If the main tap root is vertical the plant originates from a seedling, but if there is a right-angled bend just below the crown it originates from a sucker.

Dispersal: An individual plant may spread concentrically (at a rate of 30 cm per year) by shooting (suckering) from lateral roots which is the main method by which infestations are maintained locally.

Persistence: A single plant can produce up to 30 000 seeds annually. Fresh seeds are dormant for 4-6 months before they can germinate but may remain viable in the soil for as long as 12 years. Seedlings grow slowly and are susceptible to drought and plant competition. In an average year, very few seedlings survive to maturity. Favourable years in which there is massive establishment can occur periodically. Once established, lateral spread of individual plants occurs primarily through suckering. The risk of spread into a new region is greatest in a wet year following a drought. Such conditions favour the survival of newly germinated seedlings, probably because of reduced competition.

Ecology. Fire generally favours St John's wort as the crowns can reshoot after being burnt, depending on the intensity and timing of the fire. The hotter the fire the greater the death of crowns. A low intensity fire may stimulate suckering from surviving lateral roots and thereby increase weed density. Fire in autumn may favour St John's wort as it recovers and becomes dominant when it is too cold for other species to germinate. A fire in spring may favour other species that can germinate and compete with St John's wort under warmer conditions.

Slashing is not effective as it may induce suckering in certain situations.

St John's wort does not grow well under closed-canopy pine forests due to shading.