

Shire of Plantagenet four years on

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Introduction

Plantagenet Shire is an area of diverse agricultural practice. Considerable areas of remnant vegetation remain within the shire. Much of this is found on roadsides. In 1989 due to concern expressed from the community within the shire, a control program for *Watsonia* sp. (watsonia) was initiated after consultation with the Agriculture Department of WA.

This paper details all aspects of the control program, and future proposals for an ongoing effort to control this environmental weed.

General district profile

The Shire of Plantagenet has a total area of 4800 km² and is serviced by 1600 km of roads. Approximately 1400 km are throughout the rural area and of these an estimated 300 km are sealed, the remainder being unsealed gravel.

The Shire has seven river systems and six Land Conservation Districts within its boundaries covering approximately 25% of the shire, some 1200 km², mainly in the south and west.

There are some 460 farm properties in the Shire occupied with a wide range of agricultural activities. Substantial areas of private land have been planted with pine trees and Tasmanian blue gums and advice of additional plantings are increasing monthly.

There are considerable areas of remnant vegetation throughout the agricultural area and farmers are actively encouraged to fence and protect these areas on their properties.

A recently completed survey of roadside vegetation throughout the Shire shows a relatively high percentage of remnant vegetation with medium to high conservation value. The Council is well aware of the importance of supporting and encouraging initiatives to retain and protect remnant roadside vegetation. With the increasing demands on its financial resources, however, Council is limited in what it can do and is therefore unable to carry out as much as it would wish.

This forms a brief background before describing what has been commenced and achieved in controlling and progressively eradicating *watsonia* infestation within the shire.

Recognition of need for *watsonia* control

Four years ago concern was expressed at

the increasing spread of *watsonia* along roadsides and there was recognition that some action had to be taken to contain its spread.

While herbicides were available which most certainly would eradicate *watsonia*, they would also eradicate native shrubs and grasses. The need was for a selective spray, able to be applied by a broad spraying method in order to reduce the labour cost to a minimum and yet cover the maximum distance of roadside verge during the optimum spraying times of August and September.

With these requirements in mind John Moore of the Department of Agriculture Western Australia was consulted and this resulted in a spraying formula being developed with Dalapon as the active constituent. The correct ratio of mixing is vitally important in order to gain maximum results on the *watsonia* with the minimum of harm to other vegetation. It also has the residual effect needed to control the germination of seeds or cormils dropping from the flower stems.

Equipment

The equipment used to spray the mixture comprises a 300 litre tank with pump and motor mounted on a 1.5 tonne truck. A spray nozzle is mounted at the rear of the tray and is controlled by the driver operator. This allows for selective spraying at various road speeds depending upon the density of the *watsonia* growth and allows the operator better opportunity to gauge when to turn the spray on and off. The rear mounted spray also ensures the operator is driving away from the spray. A hose reel and hand spray are also available for selective spraying of less accessible areas and small infestations.

While there is no doubt a more sophisticated unit could be designed, this unit is able to double for other general purpose spraying needs within the shire.

Spraying program

Spraying commenced in 1990 during the optimum months of August and September, and that year approximately 340 km of roads were sprayed using 412 kg of Agripon 2.2. DPA mixed at the rate of 5 kg per 100 L of water giving a spraying rate of 200:1 per hectare. This amounted to a total of 24 720 litres of spraying over an area of 124 hectares.

It is difficult to equate the amount of spray to distance and area covered as con-

siderable variation in speed of travel was necessary depending upon the density of *watsonia* growth. As well the road distance covered does not necessarily mean that the full length of the road was infested. The operators record of spray quantity applied to individual roads and taking into account their length, however, does give an indication of the density of infestation.

In 1991 the spraying program during September and early October covered 406 km of roads and 312 kg of Agripon was used. In 1992, 235 km of roads were sprayed during August and September. In 1991 and 1992, areas within the Mt Barker townsite were sprayed, and in 1990, 1991 and 1992, 33 kg of Agripon was used in spaying *watsonia* in old gravel pits.

Results

The result of the initial spraying program in 1990 was extremely encouraging and Council has continued to make an annual allocation of \$6000 in its budget for *watsonia* control.

While the need for the broad spraying technique has decreased, the need for hand spraying application of smaller areas of regrowth and inaccessible places has increased. As well the need is arising for areas of reserves adjoining roadsides to be sprayed.

These areas have been bypassed until now as the main concern was to reduce the major infestations along roadsides. However, it must be pointed out that eradication in these reserves though not great in area, is extremely labour intensive.

Future concerns

The major concern to achieve total control of *watsonia* is not on land controlled by the Shire but from the Rail Reserve that runs through the Shire from South to North-East.

Westrail have totally rejected any requests to control *watsonia* on their reserves and take no responsibility for the problem. While there are large tracts of remnant vegetation along the rail reserve many areas that have been cleared are now extensively infested with *watsonia*. With no attempt at control of the problem being made, total eradication of this plant throughout the Shire will not be achieved.

Prevention of spread

Road maintenance

With the *watsonia* corms being easily spread along roadsides when grading of roads and verges occurs it is important that plant operators are made aware of exotic weed problems and take every care and endeavour to ensure the *watsonia* plants are not carried on their machines

from one site to another. Operators should also report to the overseer areas where they have been operating and noticed *watsonia* in order that it may be logged for spraying that year.

Road works

When road work is undertaken and spoil is removed along roadsides and stockpiled in old gravel pits or degraded areas to assist with rehabilitation, it is important that spoil be sprayed twice during the following twelve months with a herbicide such as Roundup to ensure a minimal risk of the spread of *watsonia* and other exotic weeds.

Community awareness

A program to inform landholders and residents of the need to prevent the spread of *watsonia* and other exotic weeds along roadsides, and the importance of preserving remnant roadside vegetation needs to be introduced by the way of articles in the local newspaper and displays of specimens mounted at the Shire Office and other appropriate venues.

Conclusion

To conclude this address, it should be noted that the Shire of Plantagenet has adopted in principle a Draft Environmental Policy which at present is being revised with input from CALM, Department of Agriculture, Department of Planning and Urban Development and the Albany Waterways Management Authority. Sections of this policy deal specifically with Linear Reserves and Rural Land Management. When it is formally adopted by Council, the Environmental Policy will provide the framework to guide the Shire in dealing with environmental issues which will need to be addressed in conjunction with all developments in the years to come.

Practical experience with control of pretty *watsonia* (*Watsonia versfeldii*)

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Summary

***Watsonia versfeldii* is a herbaceous perennial plant with wind-dispersed seeds. It competes vigorously with native vegetation, eventually displacing it. Difficulty with management of this plant within a remnant of native vegetation in the Helena Valley is discussed and successful control by hand painting with a "watsonia glove" is described.**

Introduction

Watsonia versfeldii, 'pretty *watsonia*', is a handsome plant with 2 m high flowering spikes of white, pink, crimson and lilac and was introduced from South Africa as a garden plant. It is a tufted, winter-growing herbaceous perennial plant with wind-dispersed seeds. When the opportunity arises, the plant competes vigorously with native vegetation, eventually displacing it.

The introduction of *W. versfeldii* into the Helena Valley can be traced to a nurseryman, Mr C. Rhodes, who, in the early 1920s, developed a block on Clayton Road to supply cut flowers to Perth florists. His principal crop was roses but he also put in rows of perennials, one of which was *W. versfeldii*. He stated that bunches sold well, as the plant is long-stemmed, attractive, and lasts well in water (C. Rhodes 1993 personal communication).

The plant is now common along the lower Helena River, forming dense stands in areas of good soil with a fairly high moisture content such as alluvium or "Wandoo clay". It will invade undisturbed bushland, but spreads most rapidly after disturbances such as track and firebreak maintenance and frequent fires.

Life history

Clumps of *W. versfeldii* increase in size as a result of vegetative replication by the corms. New clumps arise after germination of seeds. The dense clumps die off in summer, reshooting with the first autumn rains.

The flowers are produced in November and have a faint sweet scent which attracts bees and other insects and birds such as honeyeaters. Usually about 10 capsules are set per flowering stem, with an average of 20 seeds per capsule. The seeds have a papery wing and can be blown at least 10 m, but it is more usual for them to fall within a 3 m radius of the

parent plant. The seeds germinate with the first rains and will flower after five years' growth.

Predation and disease

With the exception of fallen seeds, which are taken by ants, I have seen no evidence of predation by either vertebrates or invertebrates, nor have I seen any evidence of fungal disease. The plants thus have no natural checks on their growth.

Fire

The aerial parts of the plant dry off during summer, annually creating a high fire threat. If ignited, they burn very hot. When green the plants do not burn at all well and will, in fact, stop the spread of a fire.

Summer fire destroys the dead above-ground portion of the plants, but the corms survive and shoot with the rains. The plants respond to the open conditions and increased nutrients after a fire by flowering prolifically, and the germination rate of seedlings in the following year is especially high. Frequent fires thus advantage the *watsonia*, and they can thrive and increase even under annual burning regimes.

Control

Watsonia versfeldii is a vigorous competitor for space and if left unchecked will displace native vegetation, suppress regeneration and form a continuous ground layer. It forms large quantities of easily ignitable fuel and therefore increases fire hazard. It should be exterminated wherever possible.

The plant can be controlled by herbicide or by physically removing whole plants. The very minimum of control is the slowing of spread by removing flowering stems before they set seed.

Herbicide

Knockdown herbicides such as glyphosate (e.g. Roundup®) are most effective when the plant is growing rapidly, after fire, or when the flowering spikes are just becoming visible. Applications may be needed in a second year.

Selective herbicides for grasses such as fluazifop (e.g. Fusilade®) are not effective at the rates recommended to control Veldt Grass (*Ehrharta calycina*).