

Control of blackberry in the New England region

K.G. Waters, New England County Council, PO Box 881, Armidale, New South Wales 2350, Australia.

Summary

Blackberry (*Rubus fruticosus* L. agg.) continues to be a weed of importance in the New England area of New South Wales. Following its introduction to the Tablelands with the early European settlers, the species adapted quickly to the high rainfall conditions and especially to areas of higher fertility. Early attempts at control were handicapped by a lack of suitable herbicides and application equipment. The presence of blackberry in such proportions caused so much concern that it was largely responsible for the formation of a specialist Local Government organization to deal with it (namely, the New England Tablelands Noxious Plants County Council or NETNPCC). The introduction of phenoxy herbicides followed by significant improvements to application technology had a dramatic effect on blackberry control. Control standards set by the NETNPCC had a positive influence on community expectations. Later developments in herbicides revived flagging confidence and pushed control to higher levels. Blackberry control is positively influenced by grazing management. Elevated soil fertility levels, whether applied as fertilizer or occurring naturally, increase control requirements significantly. Implementation of sound management principles will ensure that the effect of blackberry is minimized. The overall costs of control and the penalties associated with delay in managing blackberry can be very high.

Introduction

My earliest recollections of control of blackberry (*Rubus fruticosus* L. agg.) in New England as a young boy are of lugging a rather heavy knapsack sprayer around deep basalt gullies, heavily infested with large blackberry bushes, on a favourite uncle's property just west of Armidale in the late 1940s. Little did I realise the revolutionary changes in the use of herbicides that had occurred at about that time, bringing with it the prospect of a measure of success hitherto unattainable.

Much later in life, in my professional capacity as a Weeds Officer for the New England Tablelands Noxious Plants County Council (NETNPCC), I have had the opportunity to hear from other people and see for myself the effects that blackberries have had on the Tablelands.

A glimpse of the past is necessary to provide a better appreciation of the present position and to understand why the blackberry problem should never be taken too lightly. There are several anecdotal references to the introduction and early care of blackberries by the first settlers. There were, apparently, stern reprimands for those (usually children) entrusted with their care if they were negligent in their duties. Blackberries were already a problem in the New England area early this century, as evidenced by early records which show that they were infesting the old dog-leg fences constructed of logs and poles in a criss-cross fashion. These bushes found the environment very much to their liking with a trellis already provided.

These early blackberry infestations coincided with the introduction of rabbits to the area which used the cover thus provided to construct burrows that later developed into large warrens. Foxes also used the cover provided by blackberry thickets in venturing out to prey on a host of native fauna, rabbits and young lambs. The effect of the blackberry presence was far more than a cursory assessment would reveal. At a much later date, wild pigs also occupied areas infested with large blackberry thickets.

Many areas were so heavily infested that the best grazing land was rendered unproductive and access to watering points severely restricted. Sheep were particularly affected by becoming entangled in the long canes and dying there.

In some areas, up until the mid-1940s, more modern fences constructed of wire had become so heavily infested that they formed virtual hedges of blackberry, especially on the better soils at locations with good rainfall.

Aerial application of superphosphate to pastures in the New England area began in the 1950s and brought about a major and rapid change to the fertility regime of improved and natural pastures. A succession of above-average rainfall years followed. Blackberry thrived under these conditions.

Regulatory responses

Control of blackberry was a prime motivation for the formation of the NETNPCC in 1947. Council records show that roadsides were heavily infested with blackberry to the extent that, as an early policy, Council decided it would limit

blackberry control operations to 10 km around each of the principal towns, because it could not afford to do more. This zone was extended to 24 km in 1956. The herbicides used by the County in controlling blackberry in the beginning were hazardous to both the operator and the environment and, on one occasion, one product even caused the hospitalization of an employee for burns when an accumulation of herbicide on clothing ignited from tobacco ash.

A new era dawns

The arrival of the herbicide 2,4,5-T for woody weed control marked a new era in the control of blackberry. For the first time operators could treat the plant with a degree of confidence and relative safety, using a product that was easily mixed and applied. During the 1960s and 1970s, Council retailed herbicides and orders were placed regularly for several hundred gallons at a time, the principal use being for blackberry control.

Twenty years ago application technology was basic by modern standards, although it served the purpose and played its role in very significantly reducing the incidence of blackberry. Although not as common as previously, consistently heavy infestations of blackberry were still being encountered until relatively recently. Scattered infestations now characterize the general situation on private land on the New England Tablelands, with isolated heavy patches in places only where access is difficult or where there is a history of poor control.

The NETNPCC has played a pivotal role in establishing blackberry control standards by placing a heavy emphasis on maintaining land under its care in good condition, such as roadsides, parks, reservoirs and other public areas. Inspection of private property is conducted on a systematic 3-year cycle, and more often when required, with *Inspection Reports* and *Weed Control Notices* issued when appropriate. The positive response rate is high, thereby obviating further regulatory action by Council. The attitude of the NETNPCC in its dealings with landholders has always been reasonable, but firm, believing that money is better spent on control than that on fines. The Council has to resolve to follow through on issues when that becomes necessary. Landholders have reported on many occasions that they were unaware of the level of blackberry infestation on their land until they commenced control operations and they appreciated the reminder.

The principal herbicides used for blackberry control in New England are Grazon DS and metsulfuron products. All these products are giving satisfactory results when properly applied according to directions. Some operators prefer one or the other depending on location, time of

season and whether other weed species such as sweet briar (*Rosa rubiginosa*) are being treated simultaneously. Council prefers to use metsulfuron because of its low odour when working in city or town areas. These latter areas are also avoided when blackberry plants are bearing ripe fruit and/or when vegetable gardens are in their prime. An indication of the seriousness of blackberry in municipal areas can be gauged by the fact that in Armidale City area alone in the 1996/97 season, 20 000 litres of herbicide were used for blackberry control. Blackberry control accounts for approximately 45% of the NETNPCC's physical control budget. Herbicides have played a very important role in the control of blackberry in the past and continue to do so. Blackberries are identified easily and are relatively easy to control with modern herbicides, which is not the case with some other weeds, such as introduced grasses.

Roadsides present special control problems in that the environment is usually conducive to proliferation of blackberry. Most roads act as tree-lined corridors with abundant fallen timber and other overgrown vegetative material. Blackberries that establish under these conditions are often not visible for control purposes until they have reached a considerable size. Grazing of roadsides is intermittent and often not at all, so there is little or no control from grazing animals.

Grazing management

In grazing country (the predominant land use on the New England Tablelands), blackberry can occur as a weed on any open land, although it is found most commonly growing vigorously along creeks, on stock camps and other areas with significantly raised fertility levels, such as improved pastures. Soil type also influences blackberry vigour, with rich basalt soils in high rainfall areas providing the ideal environment. Where sound management systems are in place, especially on properties running sheep, blackberries are treated as a routine function, often with quite modest equipment and do not represent a serious economic burden for the landholder, the greatest cost being in regard to the operation of equipment and the time taken in locating individual blackberry plants.

Early detection, control and persistence is the key to success. However, this situation can change rather dramatically under certain circumstances and especially under good rainfall conditions, for example, when cattle only are grazed, when country is closed up for an extended term or when heavy applications of superphosphate are applied. District Weeds Officers observed that during the severe economic downturn, brought about chiefly by the collapse of the wool industry in the 1990s

and the later difficulties experienced in the cattle market, the amount of blackberry maintenance work carried out on well managed properties was not affected materially, which reflects positive recognition on the value of on-going control and the inherent risks of delay. In such times, staffing levels on properties are reduced to the absolute minimum, so the question of lost opportunity costs, if direct income-producing activities are a consideration; regular control of blackberry thus is an effective means of capping that outlay.

At reasonable stocking rates, where blackberry is under control, sheep play a very important role in maintaining control of *seedling* plants. Cattle do not exert the same controlling influence and landholders involved with cattle-only enterprises need to ensure that a vigorous control program is implemented. Many properties run both sheep and cattle, and a sound rotational grazing system with sheep and cattle does help to minimize the blackberry problem.

Goats have been used successfully on the Tablelands in a few instances, particularly in steep country; however, a few rules must be observed. Goats must be confined to a specific area and not be allowed to roam about the countryside at will, thereby annoying the neighbours. Sufficient numbers of goats must be introduced to do the job; a handful in a large, established infestation will have virtually no impact. Some mechanical intervention by pushing the bushes over once the goats have cleaned up peripheral areas of bushes helps to speed up the control process. For goats to achieve their maximum potential effect, careful attention must be paid to their health. Poor goats, and those affected by parasites or foot disease, simply do not have good appetites and are not as mobile as they need to be. Sufficient sheep numbers should be run in conjunction, to force the goats to browse blackberry.

Herbicides

The amount of herbicide required to control an established large infestation of blackberry is very significant. Herbicidal control can be a long drawn-out experience, which taxes operators, equipment and the financial resources of the landholder, especially in difficult terrain where water may be some distance from the application site.

Aerial application has been tried at times in the past and did serve a purpose in some situations where heavy blackberry infestations in rough country made conventional treatment extremely expensive. This technique has been abandoned in most cases largely due to the attendant detrimental effects on trees, an unnecessary loss that is frowned on in New England because of the effects of eucalypt

dieback. On some occasions, aerial application has been used as a quick fix with inadequate provision for essential follow-up, which is absolutely necessary regardless of the application method. Initial expenditure in these circumstances is usually lost and poor performance of the herbicide blamed for subsequent regrowth.

Quantities of herbicide used by operators on control of blackberry varies enormously. For the record, and this is not an isolated experience, one landholder told of how he had switched from using a contractor to doing the work himself and observed the difference. A significant decrease in the amount of herbicide used was noted, with no appreciable difference in the result. This was not intended as a criticism of the contractor, who was well respected but who believed that he could not afford to take risks. He was intent on producing the best result. The landholder, on the other hand, was prepared to tolerate a less-than-perfect result, should that happen, in order to save money. Waste of herbicide and damage to off-target species should be avoided in every instance.

High pressure equipment certainly has its place when dealing with large and very dense infestations of blackberry. This is also needed to compensate for friction loss in long hoses needed to access difficult places. Regardless of the method of application, good coverage is essential. Careful selection of orifice sizes in handjets is fundamental. Very light applications were advocated by chemical companies at one stage, which led to some disappointing results, accordingly an ongoing educational focus on correct application is still required. The role of surfactants, although vital in some situations, is only partially understood.

Application techniques

The introduction of the Quikspray system with remote controlled hose reels has been one of the most revolutionary changes to application technology. This, coupled with modern diaphragm pumps, has resulted in enormous productivity gains, a far cry from the days of unreliable huge cast iron pumps and engines belching steam and smoke that required constant attention, coupled to steel tanks or 44 gallon drums.

Weed management priorities

Some landholders have been placed in the difficult position, with limited resources, of having to decide between control of a more aggressive fecund species of weed, such as Nodding Thistle, and blackberry. The choice has to favour the former but at the same time, at the very least, there is a need to attend to follow-up activities on blackberry and act as a responsible neighbour.

General

Burning, after treatment with a herbicide is sometimes carried out to improve access to blackberry infestations. This option needs to be carefully considered because the soil is bared, covered with ash and often more friable which provides an ideal environment for the proliferation of a range of broad-leaf weeds, notably this-tles. This practice is generally discouraged but may have some value in certain circumstances. Burning of green blackberries is sometimes carried out, which only serves to prolong control efforts.

State agencies have adopted a more pro-active approach in regard to blackberry control in recent years. This is, in some measure, a recognition of new responsibilities under the *Noxious Weeds Act* but also a more responsible attitude to land management generally and good neighbour relations.

The proliferation of subdivisions, especially in the area around Armidale in the 1970s and later ones at other locations, has had an effect on Council's operations, with blackberry figuring prominently in dealings with local and absentee landholders. As new people come in to these places, often from metropolitan areas without a knowledge of noxious weeds, it is necessary to place importance on weeds education.

Blackberry rust (*Phragmidium violaceum*) was introduced to the New England Tablelands in the 1980s. The rust has spread virtually over the entire area. The effect has been rather disappointing. On a number of occasions conditions have been eminently suitable for it to proliferate without it having done so. In some very high rainfall areas, results have appeared to be encouraging at times, only to find that regrowth in the following season wiped out any control gains. Heavy reliance on the rust as a possible cure for their blackberry problems, has cost some landholders dearly.

The future

The control of blackberry will continue to be an important issue for all occupiers of land on the New England Tablelands. The implementation of current technologies, including integrated management, are able to cope with blackberry, provided there is a will to do so. Continuing access to reliable herbicides is fundamental, at the very least, until other effective control methods are discovered. A regulatory facility will definitely be required to ensure that the current position is maintained and even improved.

Blackberry control on farms

Fran Sorensen, Department of Natural Resources and Environment, Wangaratta, Victoria 3677, Australia.

Introduction

As control facilitator for blackberry (*Rubus fruticosus* L. agg.) for the Ovens catchment in north-eastern Victoria, my role was to provide a service to landholders that could encourage them to participate in managing their blackberry infestations. This position, which lasted only 18 months, was created to assist in the fight against a weed that is spreading at an alarming rate, despite the efforts of local catchment management officers working with landholders who have pest plant and animal problems, and especially those sharing boundaries with public land.

Contributing factors to the increase of blackberry

A number of factors have contributed to the increase in blackberry in the Ovens Catchment over the last few years.

- The major flood in 1993 caused clumps of blackberry to dislodge from eroded banks. These clumps broke up as they were transported down the catchment to be deposited on extensive areas of river flats not previously infested with blackberry.
- Fox numbers are still high enough to cause an increase in blackberry distribution, despite increased state funding for pest animal control.
- The area has established tobacco and grape crops, which are vulnerable to chemical weed control agents, thus making many landholders reluctant to spray nearby blackberry plants because of the potential for herbicide drift and thus crop damage.
- The absentee landholder, especially at the top of the catchment, is often difficult to contact to offer assistance on a personal contact level, and thereby control on the ground is rendered less effective.
- In north-eastern Victoria, a large percentage of landholders work 'off farm', thereby decreasing the time available to address blackberry management. Those landholders who do not work away from their properties have a low income base and have to prioritize works. Weed control is frequently placed low on their priority list, especially if the weed does not interfere with the farmer's enterprise.
- As a consequence of rural decline a socio-economic dilemma exists when landholders lose pride in family farms in cases where the next generation have chosen, or been forced, to seek work away from the district.

- It is also difficult to access assistance from state and local weed control programs when money is allocated to landcare groups for distribution. Landcare groups are not widely established at the top of catchment areas where blackberry is most dense!

Current assistance available to landholders

The State-initiated Good Neighbour program has given assistance financially and in-kind to landholders who share boundaries with public land. Farm visits and field days, sponsored by the Department of Natural Resources and Environment (DNRE), have given landholders the opportunity to access information on all aspects of blackberry management, including use of herbicides, goats and the effects of blackberry rust (*Phragmidium violaceum*) in their areas. Information on chemical standards has been a major part of the community awareness aspect to weed control in this 'soft' crop area of grapes and tobacco. For example, the Victorian State government has recently launched a 'war on weeds program' that offers financial assistance for weed control on private land. This money is channelled through community groups, usually landcare, for allocation to priority areas. DNRE officers assist landholders develop their funding bids for weed management and help with technical advice. Local governments offer assistance for roadside weed control, which, in Victoria, is the responsibility of the landholder.

Legislation and enforcement

It is my view that legislation will only be fully applied when:

- Public land management authorities set a good example in blackberry management, and
- When it is politically expedient to bring existing legislation into play, on a much larger scale than is currently the case.

I strongly suspect that the electorate has seen and felt the effects of pest plants long enough to accept a stronger enforcement agenda from the appropriate authorities.

Whilst we do need to see more enforcement of the legislation, a whole community contribution will be necessary to encourage control of all pest plants on farms, roadsides and public land.

In conclusion, the problem of blackberry management does not belong to any single group, but each group needs to acknowledge that they have a share of the responsibility to carry.