apse membership resources

APSE briefing 15 -33

The Need for Integrated Weed Control

This briefing is provided to all APSE member authorities but will be of particular interest to the environment, parks, grounds and horticulture sector on a UK wide basis.

Key Issues:

- This APSE briefing outlines the main issues around the argument for adopting integrated weed control methods: EU Legislation, public health concerns and worries over the environmental impacts chemical weed control methods may be having.
- The briefing also addresses the current concerns over the use of glyphosate and the latest DEFRA guidance available on this issue.
- How the latest guidance on integrated weed control can help local authorities meet their legal duties to reduce harm to the public and the environment.

1. Introduction

APSE shares the view that the reliance upon chemical methods of weed control is unsustainable and recognises the growing evidence that points towards the increased use of herbicide and pesticide is damaging to the environment. However, APSE is equally aware that in a time of austerity, introducing a new method of working, which has the potential to cost more initially, may be difficult to introduce. Therefore APSE finds the issuing of guidance by the Department for Environment, Food and Rural Affairs (DEFRA) '***Weeds: Best Practice Guidance Notes for Integrated and Non-chemical Amenity Hard Surface Weed Control'*** helpful. The guidance sets out how, with careful planning and implementation, long term savings and reduced negative impacts on human health and the environment can be achieved.

In addition to the DEFRA guidance EU legislation has been implemented as a response to growing concerns over health threats, whether real or 'suggested' from the regular and growing use of herbicides and pesticides. It also looks to restrict the number of products available and limit the way they are used as there are serious worries that herbicides and pesticides are entering water courses in dangerous levels with a potential to effect the quality of drinking water. Local authorities and landowners will now have to make alternative arrangements other than simply relying on chemical solutions to prevent weeds.

More and more local authorities are looking at using a variety of weed control methods to address these problems in their areas. Integrated Weed Management (IWM) uses several techniques to control weeds thereby reducing the chance the weed species will adapt to the control techniques, which is likely if only one technique is used and at the same time reduce health and environmental impacts.

2. Why change?

The need for different approaches to weed control has recently been heightened by a report which states the most commonly used weed killer in the world, glyphosate, may cause cancer. Accounting for over a third of all herbicide sales and most commonly used in the product Roundup, glyphosate has been classified as 'probably carcinogenic to humans', in a report by the well-respected International Agency for Research on Cancer (IARC).

Despite the fact there has been a great deal of questioning of the academic validity of the report, and the wealth of human health records which have produced no convincing evidence that glyphosate has cancer- causing potential, there has been a world-wide reaction to the continuing reliance on chemical weed control methods.

Indeed what the IARC report itself is saying is that glyphosate probably *could* cause cancer in humans not that it probably *does*. However, now that the issue has been raised there is a duty by all organisations which use glyphosate to ensure user safety is considered.

All substances which could be seen as being hazardous to health fall within the remit of the Control of Substances Hazardous to Health Regulations 2002(COSHH), and as such employers must make sure human health and the environment is protected, reduce the spread of the herbicide to the area to be treated and, that as little as practicable is used, and the frequency is confined to no more than is necessary. More detailed information on employers responsibilities can be found at:
https://www.tuc.org.uk/www.tuc.org.uk/glyphosate

Quite clearly therefore, other weed treatment approaches other than chemical applications are necessary.

There are a number of different methods of weed control, the most frequently used being:-

- **Physical control** – in which weeds are removed by mowing, grazing, mulching, tilling, burning or by hand. The point being that weeds are either removed before they have chance to seed or they are suppressed by forming barriers, such as being buried or destroyed totally by fire. Whilst many of these approaches can improve soil quality they are labour intensive and in some cases when all vegetation is removed, soil erosion may occur.

- **Biological control** – Plants in their natural range are rarely troublesome as they have natural control agents such as insects and pathogens (fungi and bacteria) which keep them under control. However in the UK we have imported hundreds of non-native species which have no native pests and as such have grown unchecked to the point where they have become serious weed problems; Japanese Knotweed (Fallopia japonica) and Giant Hogweed (Heracleum mantegazzianum) are two examples. Biological control is the use of living organisms to control pest populations. The advantage of natural control is that it does not rely on the use of man-made chemicals that can impact adversely on the eco-system in which they are used. However, great care needs to be taken that these natural control agents do not then cause a problem by attacking non-target species. Scientists therefore spend at least three years studying a large number of potential plants these control agents may attack and only when they are sure that the control agent poses no threats to other species will it be released. Tests are currently being carried out on such a control agent, the highly specialised sap sucking insect *Aphalara itadori*. These insects will initially be released on a handful of sites. These will be isolated and, in addition to having the Japanese Knotweed present, they will also have UK species that are closely related to Japanese knotweed planted there to check that the insect only targets the invasive species. If successful the insect will be released at further controlled sites across the UK until scientists are fully satisfied the aphid is only attacking Japanese Knotweed.

- **Chemical control –** Herbicides are an important and effective method of any weed control programme, however they usually require the weed to be growing before they can be applied. Equally some weeds can develop resistance to herbicides and stronger doses may be needed to kill the weed. Other considerations include the possibility of rain diluting the dose, the proximity to waterways and the wind speed and direction. Plants take up herbicides differently and therefore different application methods need to be employed such as leaf spraying, injection into the plants stem or applied to soil where the chemical is taken up by the roots. Traditionally herbicides and pesticides have been the first choice method to control weeds, however the growing concern about the long-term effects of these chemicals in humans and the environment has caused a re-think about their continued use and therefore plans are being implemented which will reduce their usage in favour of increasing alternative methods, or at the very least significantly reducing herbicide and pesticide reliance.

3. Integrated Weed Control – Guidance Notes

As referenced in the introduction to this briefing the UK Government via DEFRA, has issued the first integrated pest-management guidance for amenity use which gives land managers an easy set of tools to analyse their pesticide use and reduce it. '***Weeds: Best Practice Guidance Notes for Integrated and Non-chemical Amenity Hard Surface Weed Control'***, (http://www.emr.ac.uk/wp-content/uploads/2015/03/BPWeeds2015web1.pdf) is aimed primarily at local authorities, who represent two-thirds of amenity pesticide use. The study only looked at hard surfaces because it had limited resources, but it is hoped an integrated or non-chemical approach will be adopted in general.

The guidance document is the result of a five-year scientific study commissioned by Defra, run by East Malling Research and hosted by Kent County Council. It studied amenity use of herbicide, non-herbicide and integrated approaches to weed removal.

Despite there being no legal requirement to use less pesticides, the UK must comply with the Sustainable Use and Water Framework Directives laid down by the EU. The Government's preferred approach is to ***persuade and encourage*** the adoption of an integrated approach so that the nation cuts its overall use of pesticides, the environment is preserved and the EU does not move to more stringent measures. The guidance further notes that it is also important to remember that local authorities have an obligation to minimise pesticide use in public spaces and take "reasonable precautions to protect human health and the environment".

The guidance advises adopting a four-stage approach:

- planning
- determine appropriate treatment
- contract procurement and implementation
- review progress

The Guidance document says good **planning** will cut down on the amount of pesticide used from the start. By mapping areas where known weed problems occur will allow for a more targeted approach, for example proximity to surface water, groundwater boreholes, street furniture and regularly heavily parked areas, where access to street surfaces is difficult. Therefore by carefully mapping vulnerable areas then this will allow selective treatment rather than a blanket approach.

Avoiding surfaces which promote weed growth is also an issue, comments were made that asphalt is better than paving as paving allows weeds to grow in the cracks, however paving also creates a permeable surface to help drainage whereas asphalt does not. Therefore discussions need to be had with regards to how best to create surfaces which can suppress weed growth or equally can withstand non-chemical weed treatments such as thermal methods.

By understanding where herbicides and pesticides may not be the only option, then identifying the **appropriate treatment** where fewer chemical resources may not be needed, means potentially a saving can be achieved. Examples given in the guidance document include new methods of weed control. One such approach is the killing of weeds with electricity, which is currently being trialled with local authorities, sports, heritage and utility companies.

Thermal heat treatment, including steam, hot foam, hot water and weed burners are already popular in Europe and can be delivered via manual and machine mounted systems. However employers need to be aware of health and safety implications; such as vibrations; obstructions such as parked vehicles and flammable objects, such as wooden fences. Aberdeen City Council have recently implemented a hot water weed and moss killing system after a trial period proved successful. In addition the thermal heat treatment can also be used for graffiti and gum removal as well as deep cleaning of paved areas thereby providing a holistic street scene cleaning service.

Although reputed to be twice as costly as traditional herbicide treatment methods, manufacturers argue that changing to an integrated weed control approach, which relies less on chemicals, will become more cost-effective over time as they continue to innovate and more people adopt new systems and thereby economies of scale make products more affordable. Indeed since the reports publication, manufacturers are further questioning some of the cited disadvantages highlighted in the report on integrated weed control, and argue that as new machinery and technology has advanced they have already addressed many of the concerns raised.

In order to meet EU regulations and avoid potential penalties it is argued, chemical treatments should only be used to target persistent and inaccessible weeds as suggested in the guidance. By spot-treating weeds with herbicides at the start of the growing season and rotating alternative control methods then this should also prevent, or at the very least, reduce, herbicide resistance and therefore avoid using stronger chemical doses.

Therefore, by using several techniques to control weeds, the chance that weed species will adapt to the control techniques can be reduced, which is unlikely if only one technique is used. The long term approach to integrated weed management should therefore reduce the extent of weeds and reduce the weed seed stock in the soil.

When considering **contract procurement and/or implementation,** local authorities are encouraged to combine weed-killing and street sweeping contracts or service delivery methods. Where external contractors are used this will include contractors being given the task of identifying weed problem areas, develop targeted approaches to dealing with them and ensuring weed treatments precede street sweeping to allow dead plants to be cleansed as part of the street sweeping service. It is also important to consider whether the contract is an outcomes based or in-put based contract, and consider the best way of determining how integration of weed control can be facilitated within the contract; and the cost implications of this; for example specifying it as an additional outcome or specifying it as an input to avoid additional costs being incurred at a later stage. Where

services are delivered directly these matters can of course be integrated into service delivery methodologies.

It is important that any actions taken against weeds is regularly **monitored**, in order to ensure the methods chosen to deal with the weeds are effective. This should include the contractor having a good GIS system which allows contractors to keep a record of the work undertaken and the results achieved over a twelve month period. This will allow different weed treatment approaches to be assessed and reviewed.

To assist with monitoring the guidance from Defra has included a 'weediness scale' which uses a traffic light monitoring system to denote the level of weeds present. Green being acceptable, yellow indicates that action is required and red is unacceptable. Criteria includes height and coverage of weeds present. Levels of acceptability will depend on local circumstances such as whether it is a high profile public area or a low footfall area. A more detailed explanation of how the scoring system works can be found in the guidance document itself.

4. Integrated Weed Management Plans

The key to the success of adopting integrated weed control programmes is obviously the availability of financial resources. This concern has been raised by a number of practitioners. Equally there may be a challenge from public expectations as weed levels may increase slightly due to the fact current alternatives may not always be as effective as blanket herbicide applications, but improved weed control techniques are steadily improving. However, any doubters as to the future need to adopt a more integrated approach to weed control should take note of the fact that integrated weed control has already been widely adopted across Europe. Indeed many European Governments have strict laws limiting and in some countries banning the use of herbicides such as glyphosate outright as part of the European Union's, Sustainable Use Directive (SUD) which outlines nation states must '*keep the use of pesticides and other forms of intervention to levels that are economically and ecologically justified and reduce or minimise the risks to human health or the environment*'.

Therefore it is argued that integrated weed control must be strongly considered and ideally adopted if the UK if it is to meet EU Directives. A long-term integrated weed management plan, that considers all available management control techniques or tools to control weeds, can be developed for a particular area. It is important that any integrated weed management plan or strategy should focus on the most economical and effective control of the weeds and include ecological considerations. It should also consider how to achieve this goal without degrading the desirable qualities of the land, such as its native ecology, amenity or agricultural value.

In conclusion therefore the guidance aims to provide managers and contractors with tools to develop more effective and efficient medium to long-term integrated and non-chemical weed management approaches, enabling the minimising of herbicide and pesticide inputs. This guidance will therefore allow local authorities to begin to introduce integrated weed management techniques long before they are possibly legally required to.

5. APSE Comment

Ever since Rachel Carson's book, '*Silent Spring'* was published in 1962, people have become increasingly aware of the potential effect of introducing chemicals into ecosystems, no matter how 'specialised' or 'thoroughly-tested' they may have been. Recent concerns about widely-used herbicides has further increased public concern and this has further been reflected in the EU's decision to take action on the growing use of pesticides and herbicides in view of their potential negative effects on human health and the environment.

It is abundantly clear that the continued blanket use of these chemicals is unsustainable, particularly as many weed species are now showing increasing resistance to their effect. However what must be emphasised, is that chemical control methods are not being seen as a 'no-go area' but that rather their use needs to be more carefully controlled and their application seen as a last resort if other more environmentally friendly and effective options are available.

By raising awareness of other weed control methods and the publication of the DEFRA guidelines there is now an opportunity for local authorities to build integrated weed control methods into street scene service delivery methodologies. APSE feels this opportunity should be taken as it is likely if the UK fails to meet its obligation under the Sustainable Use and Water Framework Directives, then ultimately legislation will be introduced in the UK which will ensure targets are met for fear of being subjected to EU financial penalties.

APSE is aware that affordability will be an issue particularly as local authorities struggle to meet budgetary savings, but equally local authorities have a legal and moral responsibility to reduce impacts which may cause adverse effect to human health and the environment. With developing technology and proven use across Europe, there is a potential in the medium to long-term that the adoption of integrated weed control will produce savings with reduced chemical use and ultimately will help improve, and protect, both human health and environmental assets.

APSE will therefore on behalf of its members look to keep abreast of developments in this field and via its communications network of advisory groups and seminars help local authorities make the transition to integrated weed control where there is a need.

Wayne Priestley

APSE Principal Advisor