PENN STATE
Department of Horticulture
College of Agricultural Sciences

Roadside Vegetation Management

FACTSHEET 1

Implementing Integrated Vegetation Management on Pennsylvania's Roadsides

Introduction

Integrated Vegetation Management (IVM) is a subset of Integrated Pest Management (IPM). IPM can simply be defined as a systematic approach to common sense pest management.

The IPM approach gained an audience in the 1960's in response to the increasing failures of agricultural pest control efforts that relied too heavily on pesticides. In effect, pest managers realized that many methods used prior to the availability of pesticides were still viable, and a balanced approach combining proven techniques and the new man-made pesticides was more effective and environmentally sound than sole reliance on pesticides.

IVM Definition

Based on the simple definition of IPM given above, IVM can be thought of as preventive maintenance for vegetation.

Listed below are some fundamental principles of an IVM program:

- Whether a plant needs to be controlled depends on where it is, and what it is.
- Non-problem (desirable) plants provide a valuable service by occupying space that a pest plant might otherwise occupy.
- Therefore, the preservation of desirable plants is equally important as controlling pest plants.
- Invasive weeds are a form of pollution. Keeping your weeds out of adjacent properties is an integral part of IVM.

Vegetation Management Zones

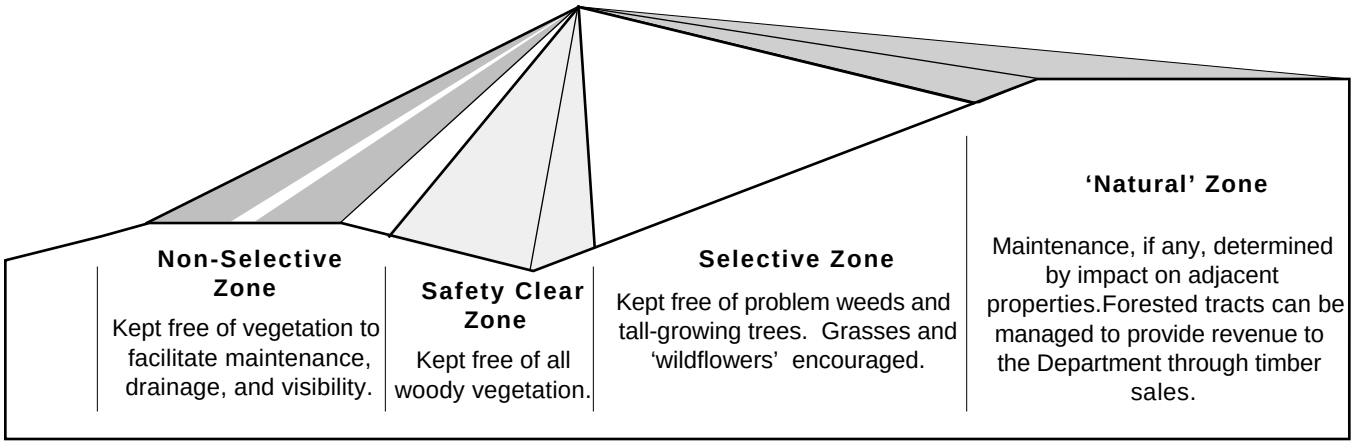
Since the location of a plant often determines whether it is a weed, it makes sense to divide the roadside into zones based on maintenance needs, and determine what is a pest in each zone. Figure 1 features a generalized cross-section of a limited access highway, showing the Non-Selective, Safety Clear, Selective, and Natural Zones.

The Non-Selective Zone is the area immediately adjacent to the roadway that must be kept free of all vegetation to facilitate flow of water off the roadway, and to maintain visibility.

The Safety Clear Zone extends to a distance of 30 feet from the road edge. This area is kept free of all woody plants to provide motorists a recovery space free of obstacles.

A secondary roadway would consist of only the Non-Selective, and a few feet of Safety Clear Zone. Wider ROWs include the additional vegetation management zones.

Figure 1: Generalized cross-section of roadside vegetation management zones



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The Selective Zone would ideally extend to 80 feet from the roadway. In this zone, tall growing tree species would be selectively removed, preferably while they are still quite small. Keeping this zone free of tall trees significantly reduces the possibility of a tree falling into the roadway.

In very wide ROWs, the Natural Zone would only be maintained to prevent undesirable weeds from spreading to adjacent properties, and when appropriate managed for sustainable timber harvesting.

Weed Control Methods

A fundamental aspect of IVM is using as many approaches as possible, in a coordinated fashion. Weed control methods can broadly be grouped into the following categories:

- *Cultural* - practices that promote the growth of desirable plants, which reduces the opportunities for weeds to grow.
- *Mechanical* - physical damage or removal of all or part of the weed. Cutting and grubbing are common examples.
- *Biological* - using one organism to control another. Classic examples are the release of insects to feed on specific plants, such as purple loosestrife. Dense groundcover that excludes weeds can be a form of biological control.
- *Chemical* - the use of herbicides.

Department maintenance practices that are considered weed control measures include mowing, brushing, seeding, and herbicide application.

Mowing

Mowing can be both a means of cultural weed control, and mechanical weed control.

Mowing is always stressful to turf. Reducing stress by mowing high (4 to 6 inches) and infrequently (twice a year) improves the vigor of turf and reduces invasion opportunities for weeds.

Here are some key points to consider when developing a mowing program for roadside turf:

- The practice of close mowing produces brown, brutalized turf.
- Tall green grass looks better than short brown grass.
- Reduced mowing at a higher cut, in concert with a suitable herbicide program will keep problem weeds in check.

Brushing

When brush has become too large to practically spray, or too close to the road, removal is necessary. Brushing is labor and equipment intensive. Chainsaws and brush chippers are hazardous equipment. You can greatly increase the effectiveness of this tremendous investment of effort by treating the stumps with herbicide after cutting.

Even after stump treatment, species that sprout off their roots such as tree-of-heaven, black locust, sassafras, and sumac will still regrow, but less than untreated stumps would.

Seeding

When road maintenance or vegetation management activities expose the soil, reseeding is necessary. Making the time and effort to choose the right seed mixture and seed it properly will prevent vegetation headaches in the future.

Herbicides

The flexibility you have in specifying spray equipment and herbicide mixtures provides a wide spectrum of applications - from non-selective, residual treatments that prevent any growth for areas like guiderails; to highly selective treatments that can control undesirable seedling trees without damaging the surrounding groundcover.

Coordination, or Integration of Control Methods

Weed control methods do not work in isolation. The effect of one practice influences the use of other practices. Some brief examples are listed below.

A weed and brush spray program will suppress persistent weeds in turf, reducing the pressure to mow. Reducing mowing frequency of turf will reduce the amount of weeds in turf, reducing the use of herbicides.

Treating stumps with herbicides after brushing reduces the inevitable resprouting. Treating the resprouts prevents re-establishment. Selective treatments early in the life of a road reduce the need to brush later.

Summary

- IVM is preventive maintenance. Maintenance dollars are better used by shifting resources towards preventing weed problems. Proactive is cheaper than Reactive.
- IVM is management, not manicure. The ideal roadside is free of hazardous and noxious plants, yet *looks* as if it's being managed by Nature.

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