

Fact Sheet

Integrated Vegetation Management

What Is Integrated Vegetation Management?

Integrated Vegetation Management (IVM) is generally defined as the practice of promoting desirable, stable, low-growing plant communities—that will resist invasion by tall growing tree species—through the use of appropriate, environmentally-sound, and cost-effective control methods. These methods can include a combination of chemical, biological, cultural, mechanical, and/or manual treatments. The IVM approach strives to manage vegetation and the environment by balancing the benefits of:

- Cost,
- Control,
- Environmental quality,
- Public health, and
- Regulatory compliance.

IVM strategies are both integrative and site-specific. By properly evaluating a site and choosing the most appropriate IVM strategy, IVM practices can generate numerous benefits:

- Lower overall vegetation management costs,
- Safer managed sites,
- More effective long-term vegetation control and management,
- Reduced environmental impacts on land, water, habitat and wildlife, and
- Reduced environmental and human health risks.

Where Can I Use IVM?

IVM strategies can be applied wherever there is a need to manage vegetation. IVM programs are frequently used to manage vegetation along rights-of-way (ROW) to balance safe, reliable, and cost-effective vegetation management—while minimizing risk to human health and the environment.

Proper vegetation management, on ROW in particular, is essential for avoiding problems attributed to poorly managed vegetation and overgrowth, such as:

- Service or function disruption,
- Forest fires, erosion, and pollutants, and
- Worker endangerment.

Examples of ROW

- Federal, state, county, and township highways and roads
- Public airports
- Railroads
- Electric utilities
- Pipelines
- Public surface drainage ways and irrigation waterways
- Banks of public barge ways
- Areas around locks and dams
- Bicycle, bridle, and other public paths or trails (outside established recreational areas).

Who Can Use IVM?

Any individual or organization seeking to control unwanted or poorly managed vegetation can implement IVM strategies. For example:

- Land managers and public officials can use IVM to address vegetation management issues in military installations, wildlife refuges, parks, forests, and communities;
- Utility and transportation industries can use IVM to manage vegetation on ROW, to ensure the safe, reliable, and cost-effective transmission of electric power; or
- Road and highway managers can use IVM to help maintain safe road conditions while enhancing roadside scenery.

How Do IVM Programs Work?

IVM is not a single vegetation management tool but rather, a combination of management approaches, including: site assessment, control, evaluation, and maintenance. Each IVM program is designed around individual goals, needs, and resources in the context of a specific environment or setting. Consequently, every IVM program is unique. By tailoring an IVM program to an individual's or organization's need, IVM programs integrate the appropriate vegetation management strategies to ensure safe, cost-effective, reliable service or function, while reducing environmental and human health risks. Successful IVM programs use a four-tiered approach: site assessment, control, evaluation, and maintenance.

1. Site Assessment

Before designing an IVM program, users must first assess the site and determine the site's:

- Geography,
- Habitat and wildlife needs, and
- Habitat needed to attract desired wildlife species.

Sites assessed for an IVM program can vary greatly. For example, ROW situated on woodlands or less-developed areas offer the greatest potential for wildlife habitat improvement. On the other hand, ROW along cropland, pasture, residential areas, and industrial developments offer less habitat potential, but can provide niche habitats.

2. Control

IVM programs combine various vegetation management control methods, such as biological, chemical, manual, mechanical, and cultural controls.

Biological Control – Within IVM programs, this involves using living organisms to control and manage unwanted vegetation – often through destruction or competition. Examples of biological control include: animals, plants, fish, insects, and disease organisms (e.g., bacteria, viruses, parasites, fungi, etc.). There are two primary biological control methods:

- Living systems – Grazing sheep, goats, cattle, and horses can be used to control weed growth.
- Beneficial predators – Predatory species are introduced to a site to destroy and/or out-compete unwanted vegetation.

Chemical Control – Within IVM programs, herbicides are judiciously applied in a focused, selective manner. Not only is

this method more efficient and cost-effective, it also reduces the environmental and human health risks associated with herbicide application.

Mechanical and Manual Control – Within IVM programs, these controls physically damage or remove vegetation on a site. This can include, but is not limited to: mowing, cutting, grubbing, hand-pulling, girdling, tilling, and thermal control (i.e., prescribed burns). IVM programs sometimes work to reduce mechanical and manual controls to:

- Increase worker safety,
- Reduce environmental and landscape alteration and damage,
- Increase long-term efficacy and costs, and
- Reduce wildlife's and workers' exposure to petroleum products from machinery.

Cultural Control – Within IVM programs, this involves the introduction of specific plants or mulches to control vegetation growth or promote a desirable plant community. Examples of cultural control include:

- Reintroduction of native species,
- Use of weed barriers, such as hardscapes and weed mats, and
- Use of mulch and compost.

3. Evaluation

Regular evaluation of an IVM program examines the IVM program's efficacy and indicates if any adjustments are necessary to improve the IVM program.

4. Maintenance

An IVM program is a long-term approach to vegetation management that requires less vegetation management as the IVM program matures over time. Maintaining a successful IVM program will reduce the cost and effort required to manage vegetation, and will:

- Reduce vegetation management costs,
- Reduce environmental risks, and
- Reduce human health risks.



For More Information...

Visit EPA's Pesticide Environmental Stewardship Program Web site at:

www.epa.gov/pestwise/pepsp

