



Farmers Rural Electric Cooperative Corporation

504 S. Broadway, Glasgow, KY 42141 • P.O. Box 1298, Glasgow, KY 42142 • (270) 651-2191 • Fax (270) 651-7332

Farmers RECC Controls Tree Growth and Improves Wildlife Habitat

Our members want reliable power, in good weather and bad. Trees are generally the most common cause of power outages, and vegetation management is a critical component of reliable electric service.

To prevent outages, Farmers RECC developed a comprehensive program to manage vegetation around power lines located on the approximate 3,600 miles of distribution rights of way. Keeping trees and other vegetation away from aerial lines is very important, as is creating a safe habitat for wildlife and allow native, desirable plants to flourish.

Why do we prune trees?

Farmers RECC generally prunes or trims trees away from its distribution lines. Additionally, any trees or tall growing vegetation in the easement is cleared from the utility right-of-way to avoid future conflicts.

How do we prune trees?

A trained arborist is utilized to guide and assist Farmers RECC in our vegetation management programs and selects the best way to control and manage tree growth around power lines, while protecting you and the environment and keeping the cost to deliver power low.

Our arborist works directly with the Farmers RECC contractors to ensure work is performed properly and in compliance with Farmers RECC specifications. Farmers RECC contractors use a widely accepted industry best management technique known as directional pruning, which removes only those branches growing towards the power lines. With directional pruning, entire branches under, over or beside power lines will be pruned back to the main stem of the tree or to another large branch. Remaining branches are left to grow naturally, providing more of the tree's natural shape without weaker sucker growth or re-sprouting. By only removing those branches that are growing towards the power lines, less stress is placed on each tree.

The National Arbor Day Foundation strongly endorses directional pruning techniques as being better for tree health. This method of pruning also follows the nationally recognized Standards for Tree Care Operations (ANSI A300).

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What is integrated vegetation management?

Farmers RECC is controlling the growth of tall growing trees on our rights-of-way (ROW) using a system called integrated vegetation management (IVM). Through the continued use of IVM, the density of tall growing tree species will decline and brush control methods will be adjusted accordingly.

IVM is a way of controlling vegetation around power line rights-of-way which selects from among several practices such as pruning, manual removal, mowing, and herbicides or biological methods to control tall growing tree species, promote greater plant diversity, and support healthy ecosystems. The desired outcome is the development of grassy areas and low lying shrubs that do not interfere with overhead power lines, or hamper access.

The appropriate control of dense brush may initially require mechanical clearing (mowing) followed by application of herbicides to selectively control tall growing tree stump sprouts. As brush density decreases, a very selective herbicide application will be utilized. Selective application is targeted toward only those tree species that would interfere with overhead lines or ROW access is allowed to mature. Selective application reduces the volume of herbicide and promotes additional environmental benefits.

Farmers RECC relies on the expertise of the ECI trained arborist to select the most appropriate method of managing vegetation based on effectiveness, environmental impact and cost. Multiple options often work together to produce more desirable results than any single option. No one treatment is consistently used to the exclusion of all others. ECI's arborist selects the best method to use in different situations after full consideration of all treatment options. IVM does not rely exclusively on any one method but may utilize numerous means of controlling vegetation in an integrated program. Hand cutting or mechanical cutting may be most appropriate for control of large trees or dense brush and is frequently the first step in the process. Incompatible trees that re-sprout after cutting are treated with an herbicide to stop further regrowth. Ultimately, growth of diverse species of grasses, forbs, wildflowers and shrubs serve as biological control helping to prevent reestablishment of problem trees.

What are the benefits of IVM?

A well-managed ROW corridor can become home for a myriad of native plants and wildlife. When incompatible trees are removed from a ROW, desirable plants, previously suppressed, are allowed to flourish. IVM methods recognize the unique environmental potential of different sites and utilize treatments, which enhance positive site attributes.

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Consequently, well managed ROW corridors support a diversity of plants and provide healthy habitats for a variety of wildlife including butterflies songbirds, birds of prey and mammals.

Scattered shrubs and berry bushes provide both food and nesting sites for songbirds. The habitats promoted by IVM are some of the same habitats promoted by wildlife conservation groups for healthy populations of deer, turkey, quail, as well as other mammals.

Ongoing and well documented research, such as that initiated on Central Pennsylvania's State Game Lands 33 fifty-nine year ago, has shown that integrated vegetation management programs that utilize herbicides provide significant wildlife benefits to populations of reptiles, amphibians, song birds, and mammals by increasing habitat diversity. The IVM approach can create natural, diverse and sustaining ecosystems, such as meadow transition habitat. These transition landscapes, in turn, reduce wildlife habitat fragmentation and allow species to be geographically diverse, remaining in areas from which they might have otherwise been excluded. A variety of wildlife species (including threatened and endangered species) consider these habitats home, such as butterflies, songbirds, small mammals, and deer. These habitats encourage the growth of native plant species and can increase plant diversity.

Adopting IVM for ROW maintenance can:

- Improve system reliability
- Reduce vegetation management costs and thus cooperative member costs,
- Improve native plant and songbird habitat,
- Provide other ecological benefits (e.g. reduce runoff, control invasive species, create wildlife habitat

Mechanical Cutting, Mowing and Trimming

While mechanical methods like cutting or mowing at first may seem the least harmful way to control vegetation, these methods, in fact, have disadvantages. Periodic mowing often has the undesired effect of causing vegetation to grow back thicker and fuller, requiring repeated and often more frequent hand cutting and mowing. Mechanical mowing has hidden risks, such as worker and environmental exposure to petroleum products that power the mechanical equipment, physical injury from sharp tools and equipment, and the disruption of wildlife habitats. Over time, IVM methods reduce the need for mechanical or manual tree cutting. These traditional control methods, while often necessary, also may increase risk of soil erosion, worker injury and other negative impacts.

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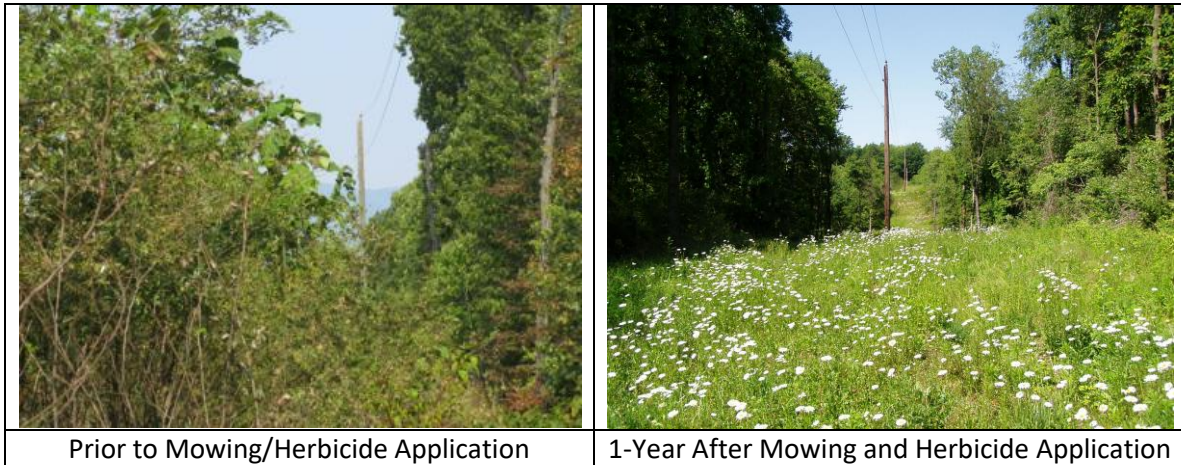
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Why do we use herbicides?

Herbicides are one of the tools that Farmers RECC has used for many years to safely and effectively control the unwanted regrowth of trees and brush in our rights-of-way. Herbicides are an important component of an IVM program, since they control the entire plant to which they are applied, including the root system. Small amounts of herbicide are applied to the leaves of the target trees or the cut surface of stumps (when trees are removed).

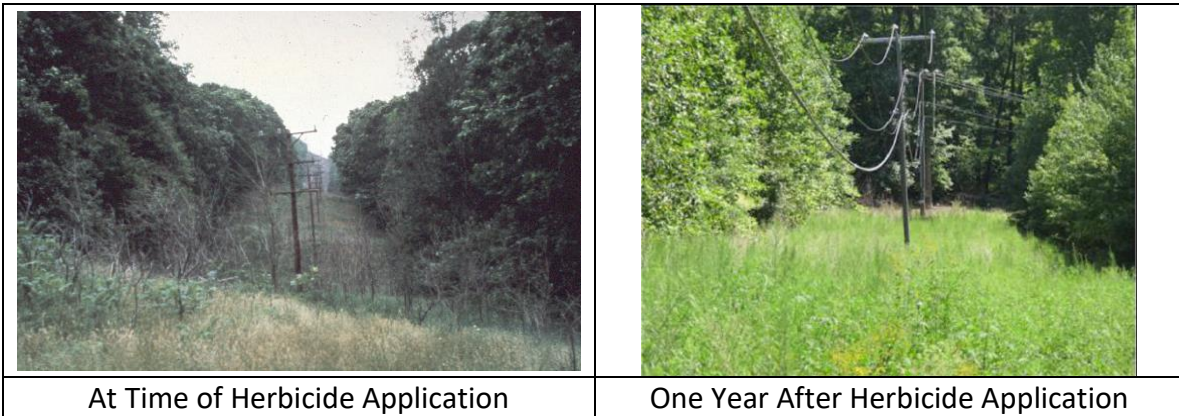
When first starting an IVM program, vegetation must first be cut or mowed because of its overall thickness (density) and height, but after it re-sprouts, the incompatible trees and brush are treated with herbicides that stop the roots and stumps from further growth. Today's herbicides do this by blocking chemicals plants need to convert water, sunlight and nutrients into food to grow. Since animals and humans do not have these same chemicals, these herbicides are very low in toxicity to people and animals. Without any food, the treated tall growing tree species on the ROW withers and decomposes.





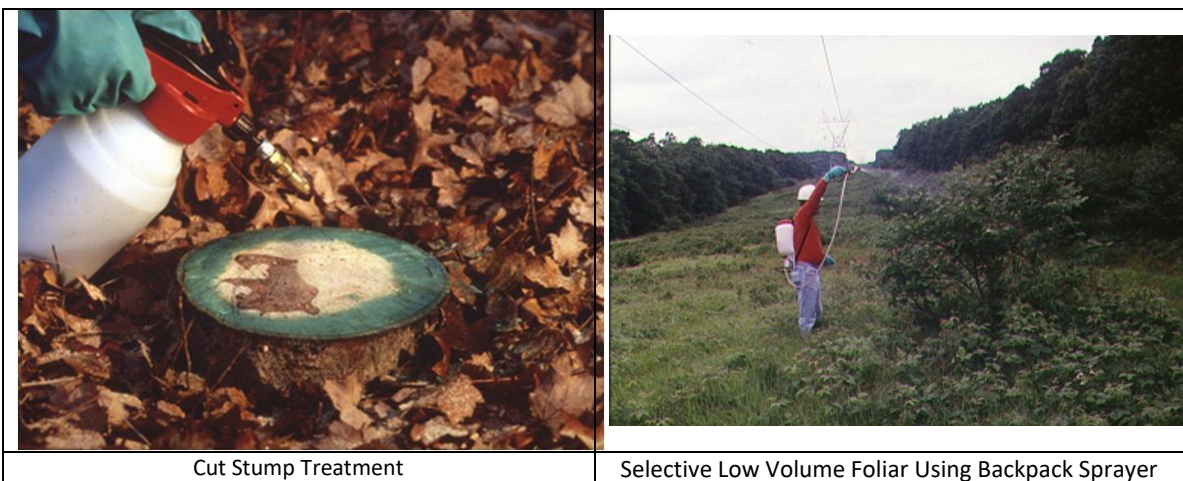
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Herbicides can be applied in a number of ways, from hand treatment of freshly cut stumps to the use of spray equipment mounted on the back of pickup trucks to treat larger, more rural areas and areas of dense or taller brush. Once areas of tall or dense brush are controlled, Farmers RECC will be able to reduce the amount of herbicide needed for future control, and improve selectivity of the application.

Herbicide Application Methods



Farmers RECC is committed to managing vegetation in ways that will have a minimal impact on our environment. Only herbicide products that have been registered for use on utility rights-of-way by the U.S. Environmental Protection Agency are used. These products have undergone significant testing to ensure that, when used in accordance to label instructions, they pose no threat to you, wildlife or the environment. In fact, some of the materials our contractors will use are the same as those commonly used by

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homeowners. All herbicides used on our right-of-way are applied by state certified applicators, working from the ground with hand held application equipment. Within the rights-of-way, vegetation that is acceptable is generally left untreated, while vegetation that has potential to grow and encroach on clearances that must be maintained between the conductors and the vegetation, is treated. Herbicides provide the most effective means to reducing re-sprouting by effectively treating the entire plant system.

Research has shown that herbicide use on rights-of-way can greatly enhance wildlife habitat diversity, while promoting low growing plant communities. By promoting low growing plant communities and increased habitat for wildlife that feed on many of the undesirable vegetation species, less herbicide use will be required to ensure safe and reliable electric service.

Habitat Improvement for Plants, Wildflowers, Pollinators, Birds and Mammals

| | |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|  |  |
| Pollinators | Ground-Nesting Birds |
|  |  |
| Low Shrub-Nesting Birds | Habitat Improvement |

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Habitat Improvement



Habitat Improvement

Planting Near Power Lines

Power line corridors can be cultivated with native grasses that can be visually appealing, provide food value to birds and wildlife, and are more compatible with the operation of high voltage power lines. If you plan to plant a new tree, or replace an existing tree, please pay close attention to what type of tree you plant and where. When choosing a spot to plant your tree, make sure it will have plenty of room to grow to full maturity. Speak with the nursery where you plan to purchase the tree and tell them about any power lines so they can help you select the right tree.

Selecting the right tree for the right place will make your property safer, more attractive, and reduce the likelihood for power outages. Farmers RECC's Right of Way Supervisor can also advise you to proper tree selection for the location you have chosen.

Reliable Service

Delivering continuous electric power safely and reliably is critical to Farmers RECC and its members. Trees cause power outages by growing too close to power lines or by falling onto them or other electrical equipment. To avoid frequent and unnecessary interruptions in electric service that overgrown or fallen vegetation can cause, electric companies use various methods to control or remove vegetation in a safe and reliable manner. The goal of Farmers RECC's IVM program is to provide safe electric service and minimize disruptions caused by trees and other vegetation, while respecting the environment.

Farmers RECC is committed to managing trees and other vegetation on the ROW in a manner that effectively controls incompatible vegetation and at the same time

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enhances other desirable plant communities. The vegetation management process being implemented by Farmers RECC are widely recognized and encouraged by environmental agencies and wildlife groups.

By controlling plant species that are incompatible with the intended use of our ROW's, Farmers RECC is able to help ensure the safe, reliable delivery of electricity to our members.

Our Commitment to You

Easements grant Farmers RECC the right to operate and maintain electric facilities on property owned by others. We will do our best to notify residents/property owners in advance of any vegetation management work related to transmission or distribution electric facilities. We want our members to understand what vegetation management work Farmers RECC must perform, the reasons for the work and the timing. If you have any questions about our approach, you can call Farmers RECC at 270-651-2191 or toll free at 800-253-2191.

For More Information:

- Farmers RECC
 - o www.farmersrecc.com
- Utility Arborist Association
 - o www.utilityarborist.org
- Tree Care Industry Association
 - o www.treecareindustry.org
- National Arbor Day Foundation
 - o www.arborday.org
- International Society of Arboriculture
 - o www.isa-arbor.org
- National Association of State Foresters
 - o www.stateforesters.org
- Articles in Transmission & Distribution World
 - o <https://tdworld.com/veg-management>
- Electric Light & Power, "Utilities Employ Vegetation Management Programs to Keep Power Flowing"
 - o http://www.elp.com/index/display/article-display/5029169110/articles/utility-automation-engineering-td/volume-15/Issue_6/Features/Utilities_Employ_Vegetation_Management_Programs_to_Keep_Power_Flowing.html
- EPA Fact Sheet: Benefits of Integrated Vegetation Management on Rights-of-Way
 - o https://www.epa.gov/peps/publications/landscaping/row_face_sheet.pdf
- Kentucky Department of Agriculture



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- <https://www.kyagr.com>
- Study: Final Report, October 2011. Virginia Department of Game of Inland Fisheries
 - <https://www.dgif.virginia.gov/>

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The Touchstone Energy logo consists of a stylized human figure with arms raised, formed by three curved lines in red, blue, and yellow.