Virginia Cooperative Extension

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Invasive Exotic Plant Species Identification and Management

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Invasive exotic species are plants that are not native to a given area and have the ability to out-compete indigenous plant species. Invasive exotics are often brought into their non-native surroundings by humans with good intentions. For example, autumn olive (*Elaeanus umbellata*) was originally imported from Asia in the 1830s as a reclamation plant to revegetate disturbed hillsides and was later marketed for wildlife habitat due to its shrubby cover and juicy fruits. Birds distribute the seeds of the autumn olive, rapidly spreading the plant, and it is now categorized as invasive. Paradise tree or tree of heaven (*Ailanthus altissima*) was originally introduced in the late 1700s and planted as a fast growing ornamental. Over time, it gained notoriety as an invasive for multiple reasons: in addition to its rapid growth, it is a prolific seeder, sprouts abundantly from roots and cut stumps, and releases phytotoxic substances that suppress the growth of other plants. In order to overcome the past mistakes of humans, today's landowners need to be informed about invasive exotics and educated as to the best methods to correct the resulting problems.

Since invasive exotic plants out-compete native plant species, there is much concern over the displacement of native plants, and ultimately, native habitats and ecosystems, due to invasive exotic plants. These plants also invade agricultural fields and even home landscapes, which can be equally problematic. The remainder of this publication presents general information on small-scale herbicide application. This is the first in a series of Virginia Cooperative Extension fact sheets on identifying specific invasive exotic plants commonly found in Virginia and proven control methods for those plants.

Ailanthus taking over a forest opening

Autumn olive almost engulfing a structure

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Chemical Use

A chemical herbicide is often the most effective means of reducing or eradicating a population of invasive exotic plants. A wide variety of herbicides is available for controlling invasive exotics as well as other plants.

These chemicals vary in their selectivity. Some are broad-spectrum herbicides that can kill all plants or a wide variety of plants. Others are narrow-spectrum and may only work on one or a few species of plant. The label will tell you which species are affected by the active ingredient in an herbicide.

Some chemicals have a tendency to leach through the soil and reach waterways, while others remain in the soil long after the targeted plant dies. Many chemicals are available in either water-based or oil-based solutions; the difference between these formulations contributes to the chemical's environmental persistence and efficacy.

It is always important to read the label before choosing an herbicide. The label states which plants the chemical is designed to control, if it is safe to use around water, and other precautions. The label also advises on required personal protective equipment to wear during application and mixing, usage rates, and other pertinent guidelines. Most importantly for all herbicides, "It is a violation of Federal law to use this product in a manner inconsistent with its labeling." Understanding Pesticide Labels, Virginia Cooperative Extension publication 426-707, goes into greater detail about the information found on labels.

Application Methods

Four methods are commonly employed when using hand-held or backpack herbicide applicators:

- Foliar application: Herbicide is applied to the foliage or leaves of the plant.
- Basal bark application: Herbicide is applied to the bark at the base of the plant's stem.
- Basal soil application: Herbicide is applied to the soil immediately surrounding the plant.
- Cut-surface application: Large woody stems are cut with a hatchet and herbicide is sprayed directly into the wound. Alternatively, the tree can be cut down completely and herbicide sprayed directly upon the cut stump. It is important to spray the cut stump as soon as possible if a water soluble mixture is employed. An oil soluble mixture can be applied up to one month following cutting.

It is important to calibrate your herbicide sprayer to ensure appropriate spray rates. Please refer to Calibrating Hand-Held and Backpack Sprayers for Applying Pesticides, Virginia Cooperative Extension publication 456-502, for more information.

Additional Resources

The website *www.invasive.org* offers a clearinghouse for information on control, identification, and biology of invasive species.

For more detailed fact sheets on the identification of invasive species as well as 332 species native to Virginia, visit Virginia Tech's dendrology website at *www.cnr.vt.edu/dendro/dendrology/factsheets.cfm*. An ID key is located on the site for identifying unknown species.

If you have any questions, please contact your local Extension agent.

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