

# Control of Autumn-olive on Reclaimed and Pasture Land in Southwest Virginia

A Powell River Project Effort - Interim Report

P.L.Hipkins, Extension Specialist, Dept. Plant Pathology, Physiology, and Weed Science

Virginia Tech, Blacksburg, Va.

## INTRODUCTION

Invasive woody plants that infest eastern forests and natural areas are often left growing unchecked by land managers and private landowners. This unmonitored growth is changing the landscape by encroaching and displacing native woody plants. An integrated vegetation management approach is needed to combat their spread and shift dominance back to a native plant community. Tree species such as tree-of-heaven (*Ailanthus altissima*), shrubs such as autumn olive (*Elaeagnus umbellata*), multiflora rose (*Rosa multiflora*), and vines such as oriental bittersweet (*Celastrus orbiculatus*) are surreptitious in their spread and are seldom noticed until their presence reaches a level of importance (usually economic) to the land owner. Each requires a specific, prescriptive approach to control its spread. This specific approach is aimed at targeting the problem species while favoring the native plant community.

Autumn-olive (*Elaeagnus umbellata*) is an invasive exotic brush species that has become established over large portions of the eastern United States. It was initially introduced from the Orient in 1830 as an ornamental due to the color of its leaves and its attractive flowers and berries. Subsequently it has been used as game cover and food and, due to its hardiness, as a reclamation plant. The state of Virginia is currently experiencing a rapid invasion of autumn-olive along highway and utility right-of-ways, pastures and disturbed forest sites. This invasion is caused by birds eating the berries and spreading the seed. Autumn-olive forms pure stands that shade out herbaceous growth and decrease native plant diversity. There are two methods available to stem this invasive tide; prevention (not normally practical for the individual landowner) and remediation (cutting and/or herbicide application). Unfortunately, many landowners do not see what is occurring or choose to ignore it until remediation becomes both difficult and expensive. A successful control method must be able to kill the Autumn-olive stems and roots, while allowing for the reestablishment of native vegetation on the site.

## PROPOSED METHODOLOGY

This study will be installed to help determine the level of control that can be expected of autumn olive with different formulations of triclopyr and 2,4-D ester herbicides under different application methods and various timing regimes. A third application method has been added using another herbicide, metsulfuron methyl. The triclopyr and 2,4-D applications will be as basal bark and cut stump applications at various times of year while the metsulfuron methyl will be applied as a foliar application in late spring and summer. The first two methods of application will be compared for year round

treatments (negated only by wet bark and/or snow cover). The third method is a late spring/ summer/ early fall treatment.

## MATERIAL AND METHODS

Basal bark applications are appropriate year round so long as the stem is not wet and there is no snow cover. This method entails spraying the lower portion of the stem (up about 18") completely around the stem allowing the spray solution to also cover the root crown. The spray solution is a combination of herbicide and mineral oil\*. Autumn olive is often a multi-stemmed shrub and difficult to treat but good coverage is very important. See attached photographs made prior to application.

Cut stump applications are made after first cutting the tree/shrub at ground level. The spray solution is then applied to the stump and exposed root crown. As above, this treatment is appropriate year round as long as the stem is not wet and there is no snow cover. The spray solution is a combination of herbicide and mineral oil\*.

\* Diesel fuel can be used as the diluent, however mineral oil is recommended for environmental reasons.

Foliar applications can be made anytime after full leaf development in the spring until just prior to leaf coloration in the fall. The spray solution is sprayed on the foliage to wet the foliage but short of the point of drip. A dye added to the solution helps attain good coverage. This method may be limited by excessive stem counts per acre or overly thick growth.

## RESULTS

All three treatment methods were applied as a preliminary trial on September 5<sup>th</sup>, 2012. Plants heights ranged from six to 15 feet and stem diameters approached five inches. All were in full foliage and appeared healthy. This evaluation was made on May 5<sup>th</sup>, 2013. See attached photographs taken at application and at spring evaluation.

Trtmt. 1. Basal application with 20% triclopyr ester + 80% mineral oil	100% control
Trtmt. 2. Basal application with 20% 2,4-D ester + 80% mineral oil	60% control
Trtmt. 3. Cut stump application with 20% triclopyr ester + 80% mineral oil	100% control
Trtmt. 4. Cut stump application with 20% 2,4-D ester + 80% mineral oil	100% control
Trtmt. 5. Foliar application with 1.0 oz metsulfuron methyl in 100 gal. water + 0.25% NIS	90% control

All treatments gave from very good to excellent control except Trtmt. 2 which used 2,4-D as a basal application. Trtmt. 5 was quite good with some small application misses.

All five treatments were applied again on May 30<sup>th</sup>, 2013 but have not been rated yet. They will be rated when the late summer trial is established in mid-September 2013.

## SUMMARY

Our preliminary trials have shown that our products and methods are sound. They entail a lot of work which increases with every year of growth. Early detection and appreciation for the prospect of spread is very important along with early remediation attempts.



Autumn olive stumps treated on September 5<sup>th</sup>, 2012.



Basal stem treatment being made on September 5<sup>th</sup>, 2012.



Basal stem treatment applied September 5<sup>th</sup>, 2012 Evaluated on May 30<sup>th</sup>, 2013. The green appearance in the stems is multiflora rose climbing in the dead stems.



Cut stump treatment applied September 5<sup>th</sup>, 2012. Evaluated May 30<sup>th</sup>, 2013.



Foliar treatments with metsulfuron methyl applied September 5<sup>th</sup>, 2012. Evaluated May 30<sup>th</sup>, 2013.

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