

Southern Indiana Purdue Agricultural Center Forestry Research

Title: Autumn olive control in a hardwood forest understory

Date Initiated: 2011

Location: SIPAC, PFP14

Background

Amur honeysuckle and autumn olive were planted at SIPAC beginning in 1974 for wildlife habitat around farm ponds. They have since spread to forest edges and continue to infiltrate forest interiors. Autumn olive invaded an upper slope old field portion of Woods PFP14, probably before complete crown closure occurred. It subsequently formed a dense understory canopy of a 4 to 8 feet tall shrub layer.

Objectives

Gain experience in integrated vegetation management methods for controlling non-native invasive brush in a forest environment.

Site: Naturally regenerated eroded old field prior to 1960. Medium to low site index.

Stands: Tulip poplar, sweetgum, ash, and other pole and small sawtimber overstory. Escaped, well-established autumn olive (AO) with small amounts of Amur honeysuckle (BHS), multiflora rose (MFR), burning bush (BB), and Japanese honeysuckle (JHS) growing on forest edge and in the interior.

Treatment Area: 2 acres

Treatments

Equipment

- 50 gal., 3-point hitch mounted sprayer with PTO-driven 6-roller pump with 22 gal/min. flow rate all attached to a JD850 4x4 24 hp tractor. Herbicide was sprayed by the tractor operator using a gunjet type hand wand at ~50 psi pressure. The tractor was operated at ~ avg. 25'/min or 0.28 mile/hr.
- 5 ft, 2-blade BrushMonster rotary cutter mounted on 67 hp, steel-tracked, New Holland LS180 skid steer retrofitted with a 35 gpm (hi-flow) hydraulic pump.
- Husqvarna clearing saw
- Solo diaphragm pump backpack sprayer
- Solo piston pump backpack sprayer
- Sideswipe synthetic knap herbicide applicator

September 22, 2011

- BrushMonster worked interior and edges where accessible.
- 20% Garlon 4 + 1% Stalker + 79% Arborchem basal oil diluent applied to cut/shattered stumps over ~ 0.7 acre of treatment area. Most stumps treated within 20 minutes of being cut.

Results – Good control with few sprouts on larger stumps. However, numerous smaller stumps were not treated with herbicide and sprouted.

September 30, 2011

- Husqvarna clearing saw used to cut all remaining target shrubs. 50% Garlon 3A applied to stumps using a Sideswipe applicator.

Results – good kill, no re-sprouting.

November 2, 2011

- Foliar sprayed target vegetation with 2.1% glyphosate (41% a.i.) + 0.53% non-ionic surfactant, along forest edge on south edge of tract using JD855 tractor and 50 gal. sprayer.

Results – Good kill of BHS and JHS. Spotty, inconsistent control of AO and MFR.

June 22-28, 2012

- Directed foliar sprayed invasive brush sprouts over entire area using 2% Garlon 3A + 0.5% Arsenal + 1% MSO adjuvant. Applied using backpack sprayers.

Results – Initial excellent kill. Following growing season at least 50% of treated AO re-sprouted from stumps or as root suckers. Severe non-target damage occurred on large overstory tulip poplar, sweetgum, ash, and at least one oak.

July 10, 2012

- Husqvarna clearing saw used to cut target shrubs expanding out from the core infestation. 50% Garlon 3A applied to stumps using a Sideswipe applicator.

Results – Good kill. Some MFR resprouting.

July 13, 2012

- Follow-up mop up treatment to scattered remaining shrubs along forest edge. Used Stihl 260 chainsaw to cut target shrubs. Applied 6% Arsenal to cut stump using a household pump spray bottle.

Results – Excellent kill.

Results

Skidsteer brush cutting equipment is very effective in reducing medium to large (excluding old, mature BHS and AO) brush in a relatively short amount of time to the ground level. Follow-up treatments using herbicides, alone or in combination with prescribed grazing, can then more easily control regrowth. Such equipment also opens up forest interiors and provides access for follow-up treatments, whether motorized equipment-based or foot-based.

Late season foliar application of glyphosate consistently provides excellent control of BHS and JHS, but poor to moderate control of AO and MFR.

Spraying a basal-bark type herbicide on shattered stumps in September provided good control of sprouting. However, where there are high densities of small diameter stems, trying to apply herbicide to these numerous small cut stumps is not practical and could result in over-application of herbicide and non-target damage.

The Husqvarna clearing saw has sufficient power to easily cut through stems up to 3-4 inches in diameter when proper technique is used. Where tree spacing, down logs, and/or adverse terrain preclude the use of the Brush Monster, hand power cutting equipment is necessary to complete the reduction of larger brush to a more easily managed level. Garlon 3A applied in early fall as a cut stump treatment at a 50% dilution provides excellent control of target sprouting. When applied in mid-summer, target control was somewhat reduced, particularly with MFR. The Sideswipe applicator reduces the amount of herbicide applied, eliminates overspray, is easier to use in a forest and brush environment than a backpack sprayer, and thus improves herbicide application efficiency and reduces cost.

Directed spray foliar application of 2% Garlon 3A + 0.5% Arsenal applied in mid-summer produced quick topkill but did not provide complete kill of root systems, especially with AO. Most AO re-sprouted the following growing season. Foliar spraying occurred at the onset of a severe drought in late June. A significant quantity of the Arsenal active ingredient (imazapyr) likely would not have leached into the root zone until September rainfall. Nonetheless, severe herbicide damage occurred to non-target overstory trees, especially tulip poplar and sweetgum, but also on dogwood, persimmon, and even one black oak. Seemingly tolerant trees were sugar maple, red maple, beech, blackgum, and sassafras.

Planned Management

Follow-up foliar application of glyphosate in fall 2013 to control invasive brush sprouts. South edges will also receive foliar application to invasives.