JAPANESE BARBERRY CONTROL OVERVIEW

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Lyme disease incidence is high in many states where barberry is reported invasive.

Japanese Barberry – The problem

Health

- Increased nitrification (may affect drinking water quality)
- Decreased litter layer (may affect drinking water quality)
- Increased tick populations (may increase exposure to Lyme disease)

Habitat

- Lower tree regeneration
- Lower herbaceous plant cover
- Increased earthworm densities

Barberry and Ticks

Controlling Japanese barberry reduces the number of blacklegged (deer) ticks infected with *Borrelia burgdorferi*, the causal agent of Lyme disease. Thus, controlling barberry may benefit human health by reducing a major vector of the disease agents that cause Lyme disease, human granulocytic anaplasmosis, and human babesiosis.

Barberry Control Overview

Our work has found that a two-step process can control barberry.

2-Step Procedure

Initial healthy plant  Step 1 – Kill aboveground tissues with prescribed fire, torch, or mechanically

Root reserves used to grow new shoots, lowers root reserves  Step 2 – Kill much smaller plant with heat or herbicides
Initial Treatments

- Initial treatments (prescribed burning, propane torch, mechanical mowing with a drum chopper, or mechanical mowing with a brush saw) reduces the size of established barberry clumps and causes some mortality of clumps less than 3-ft tall.

- All initial treatments were equally effect for reducing barberry cover. Brush saw treatment was half the cost of using a drum chopper. Nevertheless, we recommend using medium or heavy (bulldozer) equipment to cut or flatten corridors in barberry that is waist high or taller to increase worker efficiency.

The graph above shows barberry cover in relationship to timing of initial (April) and follow-up (July) treatments.

- The graph above shows that without follow-up treatments, most barberry clumps larger than 3-ft were still alive 16-months after initial treatment. Therefore, successful control of barberry infestations requires a follow-up treatment.
Follow-up Treatments

- The second, follow-up steps (directed heating with a propane torch, application of herbicide (triclopyr, glyphosate) treats the sprouts that develop after initial treatments.
- As shown in the graph below, labor costs vary among treatment alternatives. Propane torches provide an ‘organic’ alternative where in parks, nature preserves, or forests where herbicide use is restricted. Cost of propane torches is similar to herbicides where a volunteer labor pool is available. Larger barberry clumps (> 3 feet) may require two or three follow-up propane treatments. Where herbicide use is permitted, initial treatment with propane torches or brushesaws reduces the amount of herbicide that would be needed.

### Individual species and directed heating with propane torches

The following are from our research and research by Peter Smallidge at Cornell University ([pjs23@cornell.edu](mailto:pjs23@cornell.edu)). Species with * are based on field observations, not scientific study.

- **Japanese barberry** (*Berberis thunbergii*) † effective in CT
- **Japanese stiltgrass** (*Microstegium vimineum*) † effective in CT
- **Burningbush** (*Euonymus alatus*) † effective after 2-yrs in CT
- **Multiflora rose** (*Rosa multiflora*) † effective in CT in shade*, not in NY in sun
- **Bush honeysuckle** (*Lonicera spp.*) † effective in NY, not in CT*
- **Autumn olive** (*Elaeagnus umbellata*) † effective control in NY in August
- **Tree of heaven** (*Ailanthus altissima*) † in CT, effective in shade but not sun*
- **American beech** (*Fagus grandifolia*) † moderately effective after 2-yrs in NY
- **Striped maple** (*Acer pensylvanicum*) † marginally effective in NY
- **Buckthorn** (*Rhamnus cathartica*) † poorly effective in NY
- **Oriental Bittersweet** (*Celastrus orbiculatus*) † not effective in CT*
- **Swallow-wort** (*Cynanchum spp.*) † not effective in CT*
- **Japanese knotweed** † probably not effective, but merits examination