

Managing Perennial Weeds with Early Spring FoamStream™ Application

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Justification: Evaluating alternatives to glyphosate for landscape weed management

- Several options are possible:
 - Systemic postemergence herbicides
 - Contact herbicides
 - conventional chemistry, e.g., Diquat
 - Softer chemistry, e.g., Suppress, clove oil
 - Misc. herbicides, chelated iron
 - Cultural practices, mulches, etc.
 - Propane flaming
 - Hot water+/- foam

Objective:

- Although postemergence application of hot water has been known to be effective in managing weeds with an annual lifecycle, its efficacy is unknown on several perennial weeds.
- Our goal was to determine if application of hot water delivered with foam can be an effective means of managing Japanese Knotweed and Mugwort early in the growing season.

Methodology:

2019 project established in late April at two areas in the Hallock State Park Preserve, eastern Long Island.

Weed species:

Mugwort (*Artemisia vulgaris*)

Japanese Knotweed (*Reynoutria japonicum*)

- Both species emerged in early April.
- Treatments were applied on April 30, 2019.
- Treatments:
 1. Mowed only
 2. Foamstream™ (1X)= time for operator to cover weeds with 'normal' time.
 3. Foamstream™ (2X)= application was slowed so that operator covered the ground taking twice the amount of time as 1X treatment.

Methodology:

- RCB Design: 4 reps.
- Treatments were applied on April 30, 2019.
- Evaluations: Weekly for 7 weeks
- Subsample: Emerged stems counted and evaluated for vigor.

FoamStream™: Foam is a proprietary blend of plant oils and sugars made from wheat, maize, coconut oil, rapeseed oil and potatoes.



Hot Water: reached a temperature of 201°F within minutes.

FoamStream™ applicator: diesel powered generator producing hot water at up to 12 liters per minute.

2019 project established in early May at two areas in
the Hallock State Park Preserve.

Weed species: Mugwort & Japanese Knotweed

Mugwort



Japanese Knotweed



Day of Treatment: April 30, 2019

Mugwort (applied April 30, 2019)



Japanese Knotweed (April 30, 2019)





Mowed
only



FoamStream™
1X



FoamStream™
2X

Mugwort: 23 days after treatment

Japanese Knotweed: 23 days after treatment



Mowed
only



FoamStream™
1X



FoamStream™
2X



Mowed
only



FoamStream™
2X

- Mugwort: 7 weeks after treatment
-



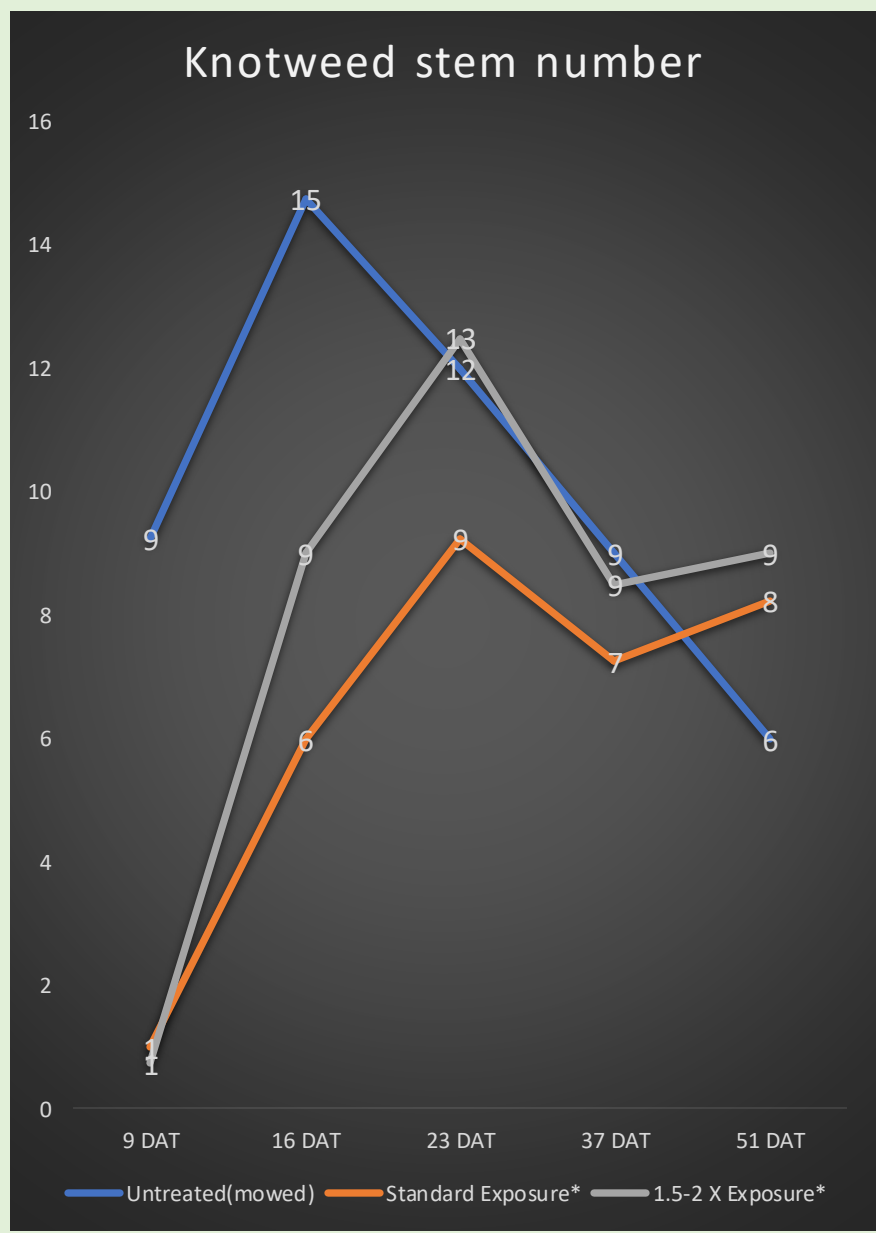
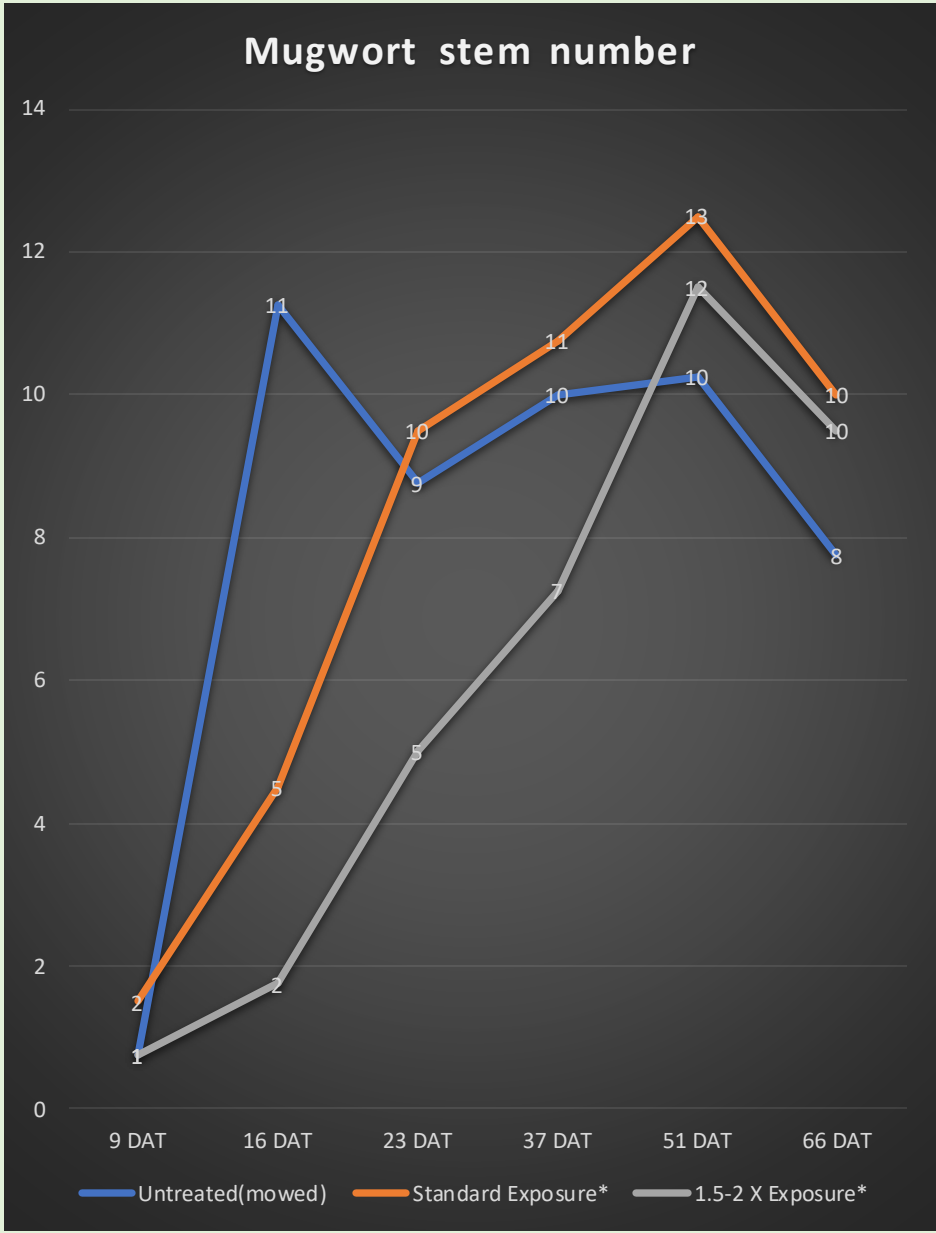
Mowed
only



FoamStream™
2X

- Japanese Knotweed: 7 weeks after treatment
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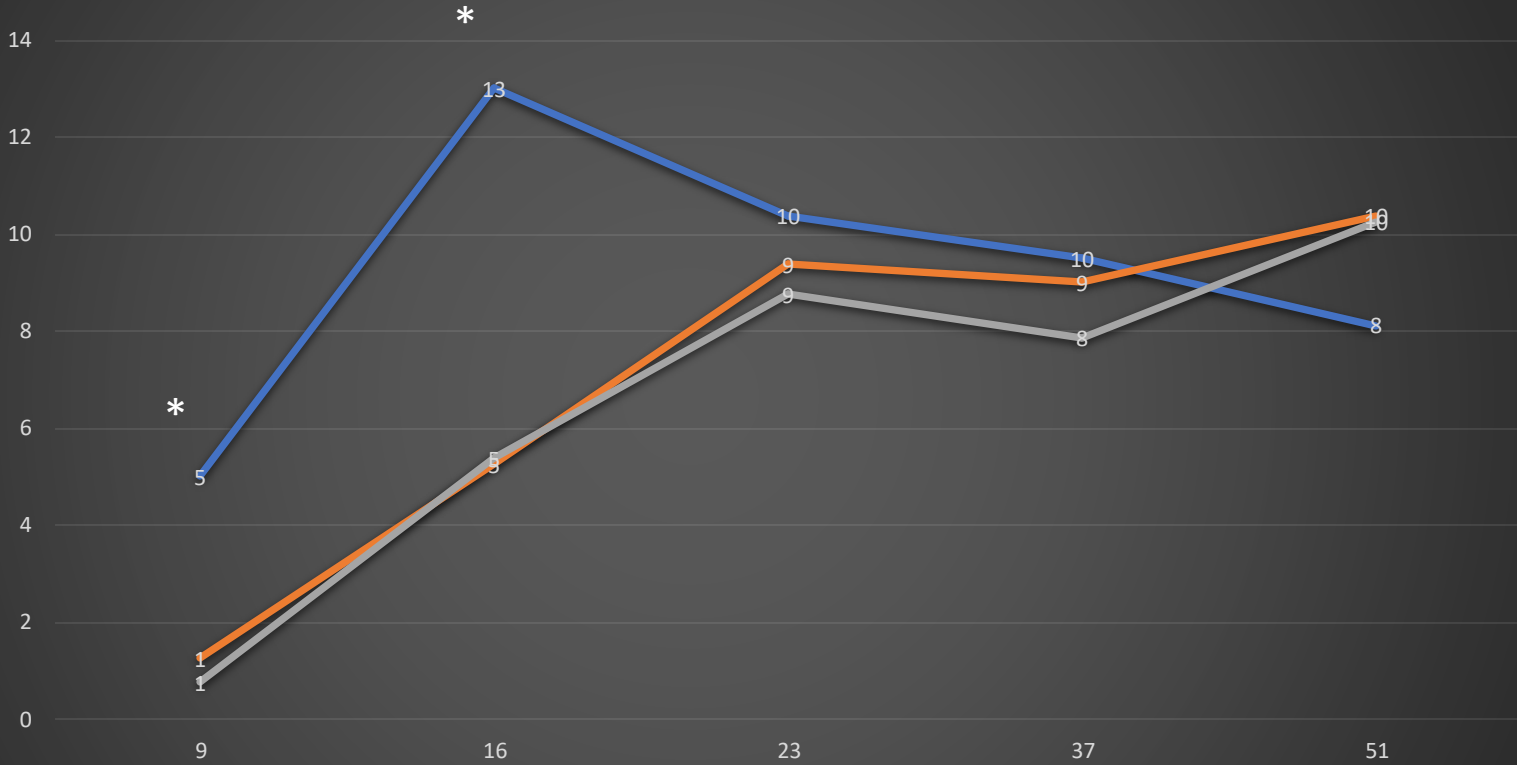
Perennial Weed Response to FoamStream™ application in late April 2019.



Perennial Weed Response to FoamStream™ application in late April 2019.

Stem Number: Combined Mugwort & Knotweed

Number of emerged stems per sample



Days after Treatment

— Untreated(mowed) — Standard Exposure* — 1.5-2 X Exposure*

*= Significantly different from other treatments p=0.05

Potential for FoamStream™ for these types of weeds?

- Retreatment will be needed: 3-5 times for rhizomatous perennial weeds.
- Isolated populations have the potential to be eliminated over time.
- Proximity to a water source is necessary.
- Probably the best fit is hardscapes and amenity areas where other options aren't available.

Conclusions

- Equipment for this type of application is expensive. To be practical, either a municipality or a landscaper providing this a specialty service to many clients.
- The foaming hot water will also kill most organisms it is applied to: algae, moss, liverwort, Nostoc?
- Simple perennial weeds such as plantain would probably be better controlled than rhizomatous species.

Thanks for support of this project:



<https://www.weedingtech.com/>

Chief Equipment | John Deere Dealer | New York City & Long Island, NY

<https://www.chiefequip.com/>

For more information or a copy of presentation:

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