

Practical Phragmites Control

2016



By Bob Williams from Phragmites.org
Bob@Phragmites.org

“Practical Phragmites Control”

Homeowners

- Small Sites
- Limited Resources
- Do the work themselves
 - Want fast results
 - Want complete removal
- Focus on the details

Conservation Agencies

- Large Sites
- Short term funding
- Hire Contractors
- Responsible to provide the greatest service for the \$.
- Looks at the big picture

Different goals.

All of these factors can affect your approach to the problem.

Phragmites.org

2

Results

Homeowners

- 99 - 100% control
- Invested continued control

Conservation Agencies

- 90 - 95% control
- Control while funding is available

Phragmites.org

3

What can we do to control Phragmites?

- Prevention

Clean equipment being brought onsite

- Early Detection

Know how to ID Phragmites

- Rapid Response

Start controlling it the first season it is found

Phragmites.org

4

Can I dig it out?



Digging, tilling, pulling will help it spread

Phragmites.org

5

One Exception to not pulling it out



Phragmites.org

6

Can I cut it or burn it?

Cutting or Burning alone usually encourages growth

Cutting every two weeks for years may set back a small stand alone patch

Goats and sheep have been used to graze areas infested with Phragmites. They will eat it, but, it will just keep growing back.



Phragmites.org

7

Exception – cut below the water line



Phragmites.org

8

Later in the season



Phragmites.org

9

What does control it?

Landscape fabric not compatible to supporting other plants.
The roots may spread outside of the covered area.

Cornell University biological control.

<http://acwc.sdp.sirsi.net/client/search/asset/1035680>.

USGS testing for endophyte disruption and gene silencing.

Flooding, cutting and burning in combination with multi-year herbicide applications can control Phragmites.

Phragmites.org

10

The best Phragmites control
WITHOUT USING HERBICIDES
is achieved by drowning the plant by repeated cutting of the stems below the waterline.

It is best to cut it when the phragmites reaches four feet or more above the waterline.

Cut the stems as low as possible below the waterline.

Phragmites.org

11

The best Phragmites control
WITHOUT FLOODING
or cutting below the waterline is achieved with a multi-year plan of cutting and/or burning in combination with herbicide and surfactant applied Mid-August through September.

Phragmites.org

12

Why do herbicides work the best?

80% of Phragmites biomass is underground

Rhizomes can persist through most disturbances.

Herbicide is the only known method to effectively kill Phragmites roots and rhizomes and leave the area in a condition which can support other plants.

Phragmites.org

13

How can we get the herbicide into the plant?

Foliar spraying

Cut and dab

Glove of death

Wipe-It

Phragmites.org

14

Why cut or burn along with the herbicide?



Phragmites.org

15

- Stresses the plant
- Allows soil exposure and blackening to encourage native seed bank germination
- Allows chemicals to reach the live plant surfaces easier
- Allows better human access

When best to cut or burn



- November to May
- Not within two weeks following the herbicide treatment
- If cutting with riding equipment the best time to cut to avoid soil disturbance is when the ground is frozen, late January.

Phragmites.org

16

My biggest mistake in 10 years of Phragmites Control

*Not pre-cutting before the first
season of treatment*

Phragmites.org

17

MDEQ Cutting Recommendations

- No lower than 4" from ground or water.
- 6" min. where native plants are present.
- Up to 12" where there are tall native plants.

Phragmites.org

18

Field notes from cutting dense dead Phragmites with a tractor/brush hog

- Make sure you are in 4-wheel drive.
- Keep the cutting blades high.
- Make sure your coolant is topped off.
- The seeds will clog the air intake grilles and screens. In warm weather watch your temperature gage and stop on occasion to clear the seeds and let the engine run 1/3 speed to cool off.
- When done, clear all seeds from motor area with an air compressor.
- If you have a front end bucket in winter you can use it to scrape the Phragmites off clean to the ice.

Phragmites.org

19

What do I do with the cuttings

- Burn them standing in place (only by professionals)
- Burn them in place, but mowed down first, with firebreaks
- Burn them after mowing and moved to piles or rows
- Roll down and leave in place
- Mow down and leave in place
- Mow down and move to degraded areas or trails. Check with DEQ to assure you are not violating wetland laws. Do not move cuttings to or through un-infested areas.
- Mow down and remove from the site in bulk
- Hand cut and bag them for removal with trash
- Hand cut and bag the heads only and remove with trash

Phragmites.org

20

Collect Information and Make a Plan

- Goals
- Resources – financial & manpower
- Procedures
- Timing
- Equipment needed
- Supplies needed
- Monitoring progress

Phragmites.org

21

Chemical Definitions

“PESTICIDE” - A chemical preparation for destroying plant, fungal, or animal pests

“HERBICIDE” - A substance or preparation for killing plants, especially weeds. An “Herbicide” is a type of “Pesticide.”

“SURFACTANT” - A chemical agent capable of reducing the surface tension of a liquid in which it is dissolved [wetting agent]

“A.I.” – The percentage of **“Active Ingredient”** in the bottle

Phragmites.org

22

The Chemicals

On dry land above the ordinary high water mark you can use

Round-Up

(herbicide and surfactant mix)

Anywhere near water you can only use

DEQ approved Glyphosate and surfactant

For a list of DEQ approved chemicals go to:

http://www.Michigan.gov/documents/deq/wb-swas-anc-approvedherbicides_261935_7.pdf

Phragmites.org

23

The Mix

- Herbicide
- Surfactant
- Water
- Water Conditioner
(Do not use if under DEQ permit)
- Dye (optional)

Phragmites.org

24

Why mix my own chemicals?

- DEQ approved aquatic formulas are not available pre-mixed ready to use out of the bottle
- You can mix your own herbicide comparable to RoundUP for about 1/5 the cost.

Phragmites.org

25

In Michigan, do home owners need to be certified to mix and apply herbicides?

No. People can mix “general use” herbicide products themselves and they can apply them themselves if in compliance with the label requirements, including the use of personal protective equipment and disposal, and they are not doing it for commercial purposes and not in the course of employment.

Phragmites.org

26

Phragmites Herbicides Approved by Michigan DEQ

- EPA Labeled “CAUTION” as opposed to “WARNING” or “DANGER”
 - “General Use Pesticides”
 Not classified by the EPA as Restricted Use.
- “Systemic”

Taken into the plant and translocated to the roots
- “Non-selective” or “Broad-spectrum”

Will kill most other plants it contacts

Phragmites.org

27

Phragmites Herbicides

- Imazapyr
 - Can be applied in the fall and/or in the summer
 - Has a little better control rate than Glyphosate
 - Costs about seven times as much as Glyphosate
 - *Habitat*
- Glyphosate
 - Apply to Phragmites only in the fall
 - *Accord, Aquamaster, Aquaneat, AquaPro, AquaStar, Eagre, Glyfos, Glypro, Rodeo, Shoreklear*

Phragmites.org

28

Phragmites Herbicides - Toxicity

Comparative Oral Toxicity of Aquatic Herbicides and Common Household Products
David G. Peay, NDR Research

Product	Oral LD ₅₀ (mg/kg)	Usage	Product	Oral LD ₅₀ (mg/kg)	Usage
Nicotine	50	Personal choice	Vitamin C	2,000	Vitamin
Caffeine	140	Personal choice	Topramezone	>2,000	Herbicide
Hot sauce (capsaicin)	161	Food seasoning	Table Salt	3,000	Food seasoning
Bleach (sodium hypochlorite)	192	Household cleaner	2,4-D	3,129	Herbicide
Aspirin	200	Medication	Vinegar (Acetic Acid)	3,310	Food seasoning, household cleaner
Endosulf	233	Herbicide	Allypyrazol-sodium	4,077	Herbicide
Naproxen sodium	248	Medication	Carfentrazone	>5,000	Herbicide
Cinnamon	275	Food seasoning	Flumioxazin	>5,000	Herbicide
Diphenhydramine HCl	500	Antihistamine	Fluridone	>5,000	Herbicide
Diquat	866	Herbicide	Glyphosate	>5,000	Herbicide
Pink bismuth (bismuth subsalicylate)	1,200	Medication	Imazamox	>5,000	Herbicide
Vitamin A	1,510	Vitamin	Imazapyr	>5,000	Herbicide
Triclopyr	1847	Herbicide	Nail Polish Remover	>5,000	Beauty product
Acetaminophen	1944	Medication	Penoxsulam	>5,000	Herbicide

Phragmites.org

29

Surfactants

- Enhance spreading, sticking and wetting properties of the herbicide. Break down the waxy surface coating on plants.
- *Cygnat Plus*
 - Biodegradable
 - d’limonene, extracted from citrus rind
 - methylated seed oil - canola, soybean, or cotton

Phragmites.org

30

Water carries the herbicide to the plant cells

- Over 98% of your mix will be water
- Glyphosate is a mild acid
 - In water it can split into pieces and connect to other larger molecules
 - The parts not split are more readily absorbed by the plants
 - Hard water or dirty water can split the Glyphosate

Phragmites.org

31

Desirable Water Qualities

- Clean, clear and free of organic materials
- Low mineral content (soft water)
- Slightly acidic (pH from 3 to 6)

Phragmites.org

32

Water Conditioner

- Lowers pH
- Do not use if treating under DEQ permit
- I prefer *AquaBupH* liquid water conditioner
 - Use 1/2 oz. per gallon

Phragmites.org

33

Preferred Water

- Distilled water
- Soft water
- Municipal water
- Clean clear lake water
- Clean clear rain water.
- Not well water or pond water

Phragmites.org

34

Application Rates

- Maximum amount allowed per treatment are
 - Glyphosate – 6 pints per acre
 - Cygnet Plus – 1 pint per acre
 - Water Conditioner – not specified
- Low Volume sprayer mix recommendations from the USFWS, MDEQ, MDNR document "*A Guide to the Control and Management of Invasive Phragmites*"
 - 1 to 1.5% solution of a 53.8% A.I. Glyphosate product.
(2 oz. per gallon = 0.84% A.I.) ($2/128 \times 0.538 = 0.0084$)
 - Use a state-approved nonionic surfactant at a rate recommended on the label. (The label states 1 pint to 2 quarts per acre)
 - There is no mention of using a water conditioner

Phragmites.org

35

Mixing one gallon of low volume sprayer mix

(Assuming you will only be treating once during the season)

- Start with about 3/4 of the water (96 oz.)
- If using a water conditioner add 1/2 oz. per gallon here – mix it
- Add Herbicide – 53.8 % Glyphosate (**2 oz.=.085% A.I.**) – mix it
- Add Surfactant - Cygnet Plus (1/6 oz.) – mix it
- Top it off with water to 128 oz. total – mix it
- Add Dye (optional) – Cygnet Select (1/6 oz.) – mix it

The maximum application rate of 6 pints of glyphosate per acre would be comparable to spraying 900 square feet (about 30' x 30' area) with one gallon of the above mix

Phragmites.org

36

My second biggest mistake in 10 years of Phragmites Control

*Not applying multiple
treatments in the first year*

Phragmites.org

37

Retreatment

- The maximum herbicide quantities to be used that are given on the label are “per treatment”
- State of Michigan DEQ permits state that there shall be a minimum of 24 hours between treatments.
- I have obtained the best results by mixing the herbicide at a lower a.i. rate and retreating at two week intervals any **remaining green phragmites**.
- Not retreating the surviving phragmites is like not taking all of your antibiotic prescription. The strong ones survive to reproduce next year.

Phragmites.org

38

The WIPEOUT program

Williams Invasive Phragmites Eradication OUTline

(short term, labor intensive, maximum control)

- Prior to June – Pre-cut
- August 15 - treat
- September 1, 15 & 30 – retreat any green phragmites
- October 15 – Post-cut

Phragmites.org

39

Mixing one gallon of low volume mix under the WIPEOUT program

- Start with about 3/4 of the water (96 oz.)
- If using a water conditioner add ½ oz. per gallon here – mix it
- Add Herbicide – 53.8% Glyphosate (**1 oz.=0.42% A.I.**) – mix it
- Add Surfactant - Cygnet Plus (1/2 oz.) – mix it
- Top it off with water to 128 oz. total – mix it
- Optionally add Dye – Cygnet Select (1/6 oz.) – mix it

The maximum application rate of 6 pints of glyphosate per acre would be comparable to spraying 450 square feet (about 21' x 21' area) with one gallon of the above mix

Phragmites.org

40

Different A.I.'s for Different Treatment Methods

(followed by ounces of 53.8% product per gallon of mix)

Foliar spraying – 0.42% to .85% A.I. (1 oz. – 2 oz.)

Glove of death – 2.5 to 5% A.I. (6 oz. – 12 oz.)

Wipe-It – 2.5 to 5% A.I. (6 oz. – 12 oz.)

Cut and dab or injection – 15% to 25% A.I. (36 oz.– 60 oz.)
(which equals 4.5 oz. – 7.5 oz. per pint of mix)

Phragmites.org

41

Chemical Availability & Costs

- HERBICIDE - Glyphosate (53.8% a.i.)
 - 2.5 gallons, \$100
 - *Shoreklear*, 1 quart, \$50
- SURFACTANT - *Cygnet Plus*
 - 1 gallon, \$25
- WATER CONDITIONER - *AquaBupH*
 - 2.5 gallons, \$70
- DYE - *Cygnet Select*
 - 1 gallon, \$25
- OPTION - *Shoreklear Plus*, Glyphosate (18% a.i.) plus surfactant
 - 1 gallon, \$60
 - However, you are paying about 2.5 times as much for the A.I. for the convenience of being able to have the surfactant included.

Phragmites.org

42

Minimum Purchase Option to make low volume sprayer mix

- 1 gallon of *Shoreklear plus* = \$60 + s&h
- Skip the water conditioner, skip the dye
- For \$80 you can treat about 1/3 acre.
- \$240 per acre per treatment

Phragmites.org

43

Larger, More Economical Purchase Option to make low volume sprayer mix

- 2.5 gallons of *AquaPro* (53.8% a.i.) = \$100 + s&h
- 1 gallon of *Cygnat Plus* = \$25 + s&h
- 2.5 gallons of *AquabupH* = \$65 + s&h
- 1 gallon of *Cygnat Select* = \$25 + s&h
- For \$250 you can make enough mix to spray over 3 acres with water conditioner and dye and have some *AquaPro*, *AquabupH* and *Cygnat Select* left over.
- \$75 per acre per treatment
- w/o water cond. or dye \$50 per acre per treatment
- Unused Glyphosate can be stored for up to 5 years

Phragmites.org

44

My Preferences



From Cygnat Enterprises in Flint, MI
1-800-359-7531 – Joe Bondra

Phragmites.org

45

When to Treat

- In Southeast Michigan – Mid-August to end of September
- Not after the first killing frost
- Not within 4 weeks of the last cutting or burning

Phragmites.org

46

Before Treatment Day

- Check the weather reports
- Post signs as required by permits
- If spraying over water close down potable water intakes within ½ mile
- Review your plan
- Reread the chemical labels

Phragmites.org

47

Treatment Day

- Not too windy, unless you want the wind to carry the herbicide into a deep stand
- Not expecting rain – needs 6 hours set time
- Sunny – Increases absorption
- Spray the leaves and stems to coverage without drip off
- If possible spray while walking backwards
- Try to use all of the mix that day or soon after
- Clean all equipment and save rinsate for next time

Phragmites.org

48

Record Keeping

- Date, time, weather
- Person doing the treatment
- Location and area treated
- Chemicals and source of water
- Rates of mix
- Equipment used
- Comments
- Observations later in the month
- Photos

Phragmites.org

49

After Treatment Day

- Do not re-enter the area or swim there for 24 hours
- Potable water intakes within ½ mile should remain closed 48 hours
- Be patient – Don't expect plant discoloration symptoms for two weeks or more
- Don't cut or burn for two weeks

Phragmites.org

50

Herbicide Safety

- Glyphosate products are labeled "Caution"
- Follow all instructions on the labels
- Use proper procedures
- Use recommended safety equipment

Phragmites.org

51

Safety Equipment

- PPE as specified on the label
 - Personal Protection Equipment
 - Equipment recommended for the person using the diluted mixed solution.
- Additional protection recommended
 - More stringent for persons handling the concentrates and doing the mixing.

Phragmites.org

52

Diluted Glyphosate Applicator PPE

- Dedicated clothing
- Long Sleeves, Long Pants
- Closed Shoes, Socks
 - Gloves, Hat

Phragmites.org

53

Glyphosate Mixer Protection

- Dedicated Clothing
- Long Sleeves, Long Pants
- Closed Shoes, Socks
 - Nitrile Gloves
 - Nitrile Apron
 - Goggles or Face Shield

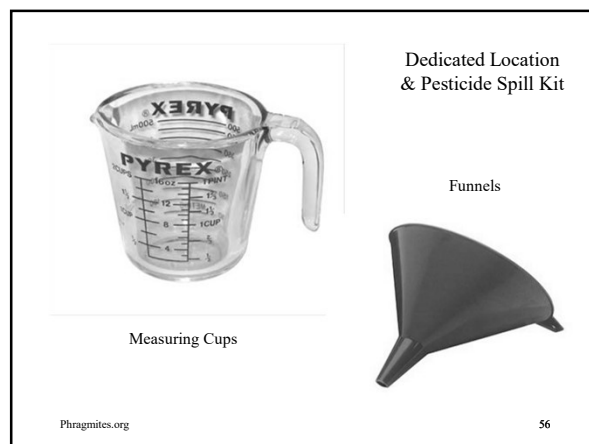
Phragmites.org

54



Phragmites.org

55

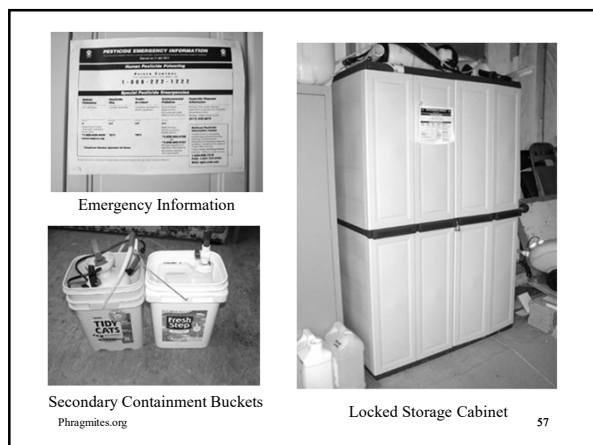
Dedicated Location
& Pesticide Spill Kit

Funnels

Measuring Cups

Phragmites.org

56



Emergency Information



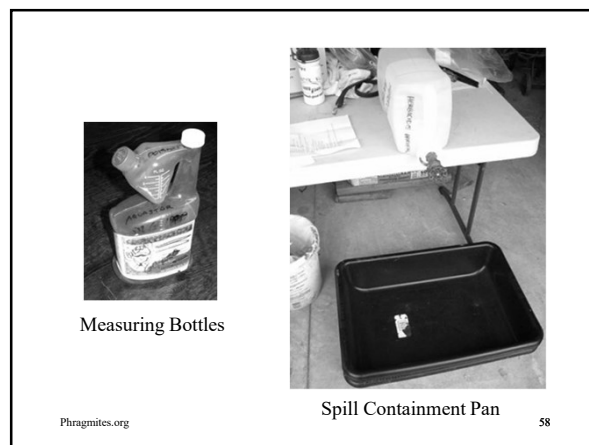
Secondary Containment Buckets

Phragmites.org



Locked Storage Cabinet

57



Measuring Bottles

Phragmites.org



Spill Containment Pan

58

Abbreviated Herbicide Safety Procedures

- After working with chemicals
 - Wash hands thoroughly before eating, drinking, using tobacco products or going to the bathroom.
 - If possible wash gloves and footwear with detergent and water before removing them.
 - Change clothes and take a shower at the end of the workday.
 - Do not wash those clothes with the family laundry.
- Read all labels for specific instructions.

Phragmites.org

59

Pesticide Safety Tips from State of Michigan Permits

- Always read the label before buying or using pesticides. Use pesticides only for the purpose(s) listed and in the manner directed.
- Do not apply more than the amount of pesticide specified in the permit. Overdoses may harm you and the environment, and will likely not result in better control of the nuisance.
- Keep pesticides away from food and dishes.
- Keep children and pets away from pesticides and treated area.
- Do not smoke while spraying.
- Avoid inhalation of pesticides.
- Never spray outdoors on a windy day.
- Pesticides that require special protective clothing or equipment should be used only by trained, experienced applicators.

Phragmites.org

60

Pesticide Safety Tips from State of Michigan Permits- cont.

- Avoid splashing if you mix pesticides.
- Avoid breaks or spills of pesticide containers.
- If you spill a pesticide on your skin or on your clothing, wash with soap and water and change your clothing immediately.
- Store pesticides under lock in the original containers with proper labels. Never transfer a pesticide to a container, such as a soft drink bottle, that would attract children.
- Refer to the pesticide label for proper disposal methods.
- Wash with soap and water after using pesticides, and launder your clothes before wearing them again.
- If a pesticide is swallowed, check the label for first aid. Call or go to the doctor or the hospital immediately and take the pesticide label with you.

Phragmites.org

61

Permits

- To Remove
- To Burn
- To Cut
- To Herbicide

Phragmites.org

62

Permits to Remove Phragmites

Do not attempt to
remove, dig, till or pull
Phragmites.

It doesn't do anything except spread them.

It is not allowed under any permit as a method of controlling
Phragmites

Phragmites.org

63

Permits to Burn Phragmites

Local Fire Department only

(Hire a prescribed burn contractor)

Phragmites.org

64

Permits to Cut Phragmites Michigan DEQ

If between the OHWM and the water's edge a permit to cut and a Phragmites control plan are required for properties in the St. Clair Flats.

For any phragmites in standing water on the Great Lakes and Lake St. Clair a permit to cut and a Phragmites control plan are required.

Cutting permits are valid for three years.

If you have questions? – call MDEQ at 800-662-9278

Phragmites.org

65

Permit to herbicide Phragmites Environmental Protection Agency National Pollutant Discharge Elimination System (NPDES)

EPA permits are issued through the
Michigan DEQ as part of the Aquatic Nuisance control program.

contact Jeff Fisher - MI DEQ 517-335-4188

Phragmites.org

66

Permit to herbicide Phragmites

Michigan DEQ

(Part 33 of NREPA, as amended)

NOT REQUIRED

Above the Ordinary High Water Mark (OHWM) or
On a pond of less than 10 Acres with no outlet and
no recorded threatened or endangered species
But a record of treatment must be maintained for one year.

REQUIRED

Any other body of water or where the Phragmites stems
being treated are in standing water or below the OHWM on
the Great Lakes or Lake St. Clair.

Phragmites.org

67

Herbicide Permit – Michigan DEQ

(Part 33 of NREPA, as amended)

Individual Permit

Applies to a single water body or site.
Applications accepted Oct. 1 through Aug. 15 only
Submit by July 15 for a September 1st treatment.

General Permit (GP) or Certificate of Coverage (COC)

Simplified process. Follow DEQ control plan.
Apply no later than mid-September to treat in September.

Either permit is a 3 year permit with annual renewal.

Questions? Call DEQ at 517-241-1554

Phragmites.org

68

Hiring a Contractor

- If spraying below the Ordinary High Water Mark (OHWM) they need to have
 - Pesticide Application Business License
 - Category 5 Aquatic Pest Management certification for spraying in wet areas
 - Category 6 Right-of-Way certification for spraying in dry areas
- A list of MDARD approved contractors is at:
http://www.michigan.gov/mda/0,1607,7-125-1569_16988_35288-11993--,00.html

Phragmites.org

69

Long Range planning

- Fall herbicide treatment for three years in a row with annual winter cutting or burning preferably starting the winter before the first treatment. Spot treatments after three years.
 - Treat the outliers first.
 - Work with your neighbors.
 - Photograph your progress.
 - Be patient.

Phragmites.org

70

Please Pass It On



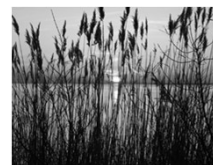
- Involve your neighborhood association or local nature club.
- Offer to show others, with workshops and literature, how to control Phragmites.

Phragmites.org

71

Resources

- PHRAGMITES.ORG
- "Subscribe" to
Newsletter@phragmites.org
- Michigan DEQ web page:
"Control and Management of Invasive Phragmites"
http://www.Michigan.gov/deq/0,1607,7-135-3313_3677_8314-178183--,00.html
- USFWS, MDEQ, MDNR Publication
"A Guide to the Control and Management of Invasive Phragmites."
http://www.michigan.gov/documents/deq/deq-ogl-ais-guide-PhragBook-Email_212418_7.pdf



Phragmites.org

72