

Practical Phragmites Control

August 2012



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

Phragmites.org

3

Problems caused by Phragmites



Blocks Views

Phragmites.org

2

Fire Hazard



Phragmites.org

5

Clogs Water Intakes and Reduces Water Flow Capacity

NJ.com - April 22, 2011



"The Salem 1 nuclear reactor is shut down today because of problems with "grassing," the blocking of cooling water intakes by vegetation, . . . Grassing is caused by vegetation such as Phragmites . . ."

Phragmites.org

4



Reduces native plant and animal population and diversity

Phragmites.org

5



Limits access for recreation, Fills in canals, rivers and streams

Phragmites.org

6

- Dries out wetlands

- Reduces property values & tourism

- Navigation hazard on roads and waterways

- Can hinder search and rescue operations

Phragmites.org 7

How does it spread?



by seed and rhizome

Phragmites.org 8

It is persistent



Phragmites.org 9

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 10

Can I dig it out?



Digging, tilling, pulling will help it spread

Phragmites.org 11

One Exception to not pulling it out



Phragmites.org 12

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 13

Exception – cut below the water line



Phragmites.org 14

Later in the season



Phragmites.org 15

What does control it?

Landscape fabric has been used by some to smother patches of Phragmites, however, the area is then not compatible to supporting other plants. Also, the roots may spread outside of the covered area.

Cornell University staff has tested over 150 different fungi, diseases and insects and have found four wasps which might control Phragmites biologically. The testing will not be completed until 2012 or 2014. Others researchers at the USGS are testing for endophyte disruption and gene silencing.

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

Phragmites.org 16

**The best Phragmites control
WITHOUT USING HERBICIDES**

is achieved by drowning the plant by repeated cutting of the stems below the waterline.

Best control is achieved by never letting the stems reach the surface.
If you can't cut often enough to keep it below the surface a cut in June is the most important.
Another cut in August would be second most important.

Phragmites.org 17

**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 in September.

Phragmites.org 18

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 19

How can we get the herbicide into the plant?

Foliar spraying

Glove of death

Cut and dab

Phragmites.org 20

Why cut or burn along with the herbicide?



- Cutting or burning the old dead material allows chemicals to reach the live plant surfaces easier, allows better human access for future treatments and shortens the height of new growth
- Cutting the live growth a couple of months before herbicide treatment stresses the plant
- Burning specifically allows soil exposure and blackening to encourage native seed bank germination

Phragmites.org 21

Wastes chemical **Cut to stress the plant**



Phragmites.org 22

Not pre-cut **Per-cut**



Phragmites.org 23

When to cut or burn

- Not between April 15 and July 15
- Not after August 1
- Not within two weeks following the herbicide treatment
- If cutting with riding equipment the best time to cut, while avoiding soil disturbance, is when the ground is frozen



Phragmites.org 24

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.

- If no native plants are present and you have the equipment you may want to consider cutting below that water line.

Phragmites.org 25

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 26

Getting started

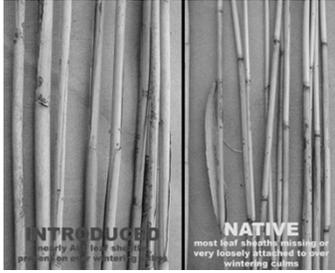
- Make sure you can identify Phragmites and distinguish it from other plants

Phragmites.org 27

Native vs. Non-native Phragmites

Make sure you can ID Native Phragmites

Phragmites.info



Phragmites.org 28

Collect Information and Make a Plan

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

Phragmites.org 29

Equipment

(Do not use any metal tank equipment)

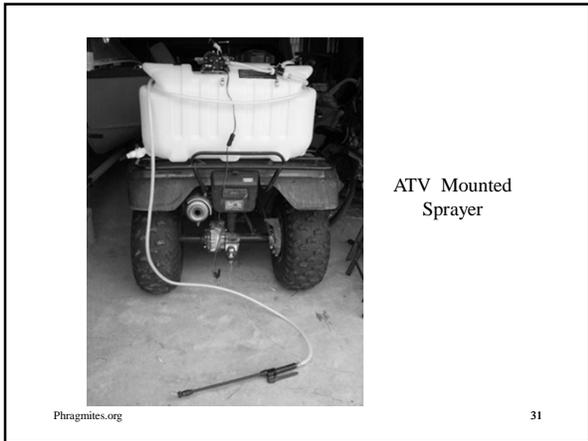


Handheld sprayer



Backpack sprayer

Phragmites.org 30



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 32

- The Mix**
- Herbicide
 - Surfactant
 - Water
 - Water Conditioner
(Do not use if under DEQ permit)
 - Dye (optional)
- Phragmites.org 33

The chemicals you use around water must be DEQ approved

For a list of DEQ approved chemicals go to:
http://www.Michigan.gov/documents/deq/wb-sw-as-anc-approvedherbicides_261935_7.pdf

Phragmites.org 34

- 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 35

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 36

In Michigan, do volunteers at nature areas need to be certified to mix and apply herbicides?

No. Volunteers can use “general use” herbicide products if in compliance with the label requirements, including the use of personal protective equipment and disposal. The following quote is from the MDA procedures manual. (now the MDARD, Michigan Department of Agriculture and Rural Development)

“Example: An individual who works for an organization as a volunteer and is using a non-ready to use pesticide to control pests on the property managed by that organization and is not compensated is exempt from certification/registration requirements.”

Phragmites.org 37

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 38

Phragmites Herbicides

- Imazapyr
 - You must be a certified pesticide applicator to use it
 - 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
 - Homeowners and volunteers can use it
 - Apply to Phragmites only in the fall
 - *Accord, Aquamaster, Aquaneat, AquaPro, AquaStar, Eagre, Glyfos, Glypro, Rodeo, Shoreklear*

Phragmites.org 39

Surfactants

- Enhance spreading, sticking and wetting properties of the herbicide. Break down the waxy surface coating on plants.
- *Cygnat Plus*

Phragmites.org 40

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 breakdown or tie up the Glyphosate

Phragmites.org 41

Desirable Water Qualities

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

Phragmites.org 42

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

43

Preferred Water

- Ideally but usually impractical, use pure water or de-ionized water
- You may want to use a water conditioner if using distilled water, soft water, municipal water, clean clear lake water or clean clear rain water
- I don't recommend well water or pond water

Phragmites.org

44

Maximum Application Rates

- Under a DEQ permit
 - Glyphosate – 6 pints per acre
 - Cygnet Plus – 1 pint per acre
 - Water Conditioner – not approved
- Per the labels for broadcast spray
 - Glyphosate – 6 pints per acre
 - Cygnet Plus – 2 quarts per acre
- Per the herbicide label with “hand-held equipment”
 - 3/4% solution of the 53.8% Glyphosate product (resulting mix is about 3/8% a.i.) (1 oz. of the 53.8% herbicide per one gallon of mix)

Phragmites.org

45

Mixing one gallon of low volume sprayer mix under Michigan DEQ permit

- Start with about 3/4 of the water (96 oz.)
- Add Herbicide – 53.8 % Glyphosate (1 oz.) – 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 450 square feet (about 21' x 21' area) with one gallon of the above mix

Phragmites.org

46

Mixing one gallon of low volume mix **Not** under Michigan DEQ permit

- Start with about 3/4 of the water (96 oz.)
- **Add Water conditioner - AquabupH (1/2 oz.) – mix it**
- Add Herbicide – 53.8% Glyphosate (1 oz.) – mix it
- Add Surfactant - Cygnet Plus (1/2 oz.) – mix it
- Top it off with water to 128 oz. total – mix it
- Add Dye – Cygnet Select (1/6 oz.) – mix it

Phragmites.org

47

Chemical Availability & Costs

- **HERBICIDE**
 - Most brands of Glyphosate herbicide (53.8% a.i.) are available in 2.5 gallon containers for about \$50 per gallon.
- **SURFACTANT**
 - *Cygnet Plus* surfactant is available in a one gallon container for about \$25 per gallon.
- **WATER CONDITIONER**
 - *AquaBupH* liquid water conditioner is available in 2.5 gallon containers for about \$25 per gallon.
- **DYE**
 - *Cygnet Select* liquid organic water dye is available in one gallon containers for about \$25 per gallon
- **OPTION**
 - *Shoreklear Plus*, a combination of Glyphosate herbicide (18% a.i.) and a surfactant, is available in a one gallon container for about \$60 per gallon. However, you are paying about 2.5 times as much for the a.i. for the convenience of being able to order a small quantity.

Phragmites.org

48

Minimum Purchase Option to make low volume sprayer mix

- 1 gallon of *Shoreklear Plus* (18% a.i.) = \$60 + s&h
(you will need to use about 3.5 oz. per gallon of mix)
- Skip the water conditioner, skip the dye
- For \$70 you can make 35 gallons of mix and treat about 1/3 acre once.
- \$2.00 per gallon (\$200 per acre per treatment)

Phragmites.org

49

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

- 2.5 gallons of *AquaPro* (53.8% a.i.) = \$125 + s&h
- 1 gallon of *Cygnets Plus* = \$25 + s&h
- 2.5 gallons of *AquabupH* = \$65 + s&h
- 1 gallon of *Cygnets Select* = \$25 + s&h
- For \$260 you can make about 320 gallons of mix to spray over 3 acres with water conditioner and dye and have some *AquaPro*, *AquabupH* and *Cygnets Select* left over.
- \$0.80 per gallon (\$80 per acre per treatment)
- w/o water cond. or dye
- \$0.60 per gallon (\$60 per acre per treatment)
- Unused Glyphosate can be stored for up to 5 years

Phragmites.org

50

My Preferences



Cygnets Plus
2.5 gallon

AquaPro
2.5 gallon

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

Phragmites.org

51

When to Treat

- In Southeast Michigan - September
- Not after the first killing frost
- Not within 4 weeks of the last cutting or burning

Phragmites.org

52

Before Treatment Day

- Post signs as required by permits
- If spraying over water close down potable water intakes within ½ mile
- Review your plan
- Prepare waivers if using volunteers
- Reread the chemical labels

Phragmites.org

53

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

54

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

55

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

56

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 my best results by retreating the stand of phragmites a second time about a week after the first treatment, then following up about a week later spot treating any phragmites that were still green.

Phragmites.org

57

The WIPEOUT program

Williams Invasive Phragmites Eradication OUTime

- July 15 – pre-cut
- September 7 – treat
- September 14 – retreat
- September 21 – spot treat any remaining green phragmites
- October 15 – post-cut

Phragmites.org

58

Herbicide Safety

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

Phragmites.org

59

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

60

Diluted Glyphosate Applicator PPE

- Dedicated clothing
- Long Sleeves, Long Pants
- Closed Shoes, Socks
- Gloves, Hat
- Optional add-ons if you choose:
rubber boots, protective aprons, chemical resistant suit or overalls, rubber gloves, safety glasses or goggles and optional respirator

Phragmites.org

61

Glyphosate Mixer Protection

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

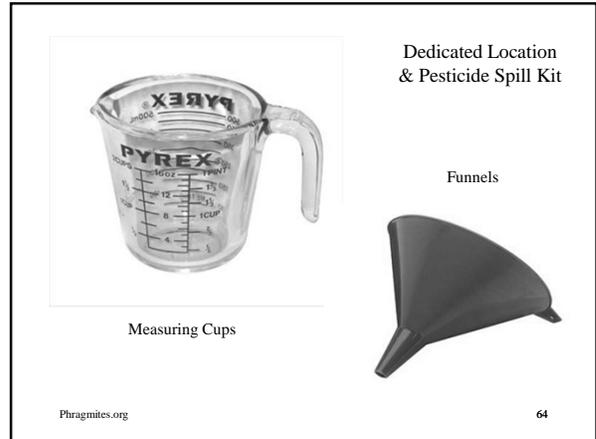
Phragmites.org

62



Phragmites.org

63



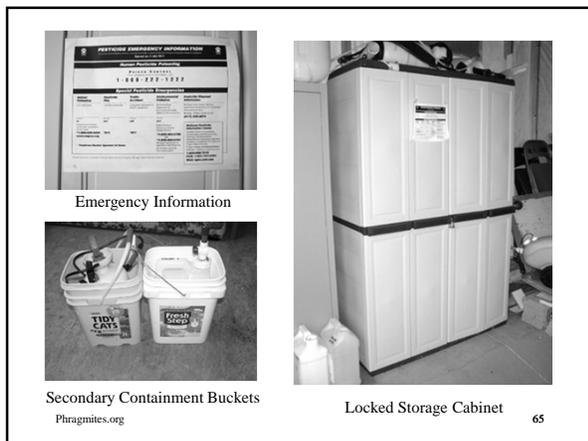
Dedicated Location & Pesticide Spill Kit

Funnels

Measuring Cups

Phragmites.org

64



Emergency Information



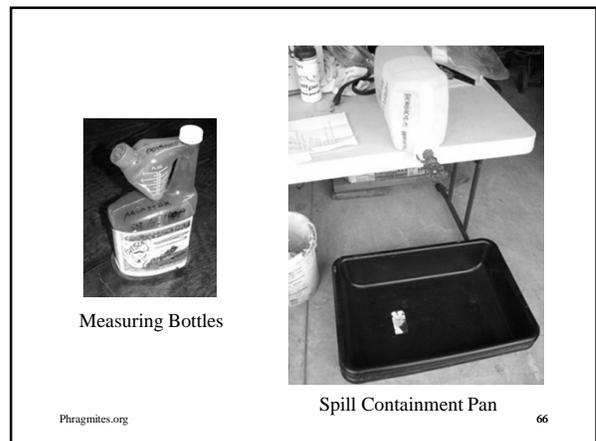
Secondary Containment Buckets

Phragmites.org



Locked Storage Cabinet

65



Measuring Bottles

Phragmites.org

Spill Containment Pan

66

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.
- This is not a complete herbicide safety class.

Phragmites.org 67

Permits

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

Phragmites.org 68

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 69

Permits to Burn Phragmites

Local Fire Department only
(Hire a prescribed burn contractor)

Phragmites.org 70

Permits to Cut Phragmites

- Michigan Department of Environmental Quality – Michigan DEQ
 - Above the ordinary high water mark – NO
 - Below the ordinary high water mark – MAYBE

Phragmites.org 71

Cutting Permit – DEQ – Below OHWM

- REQUIRED
 - Between the OHWM and the water's edge a permit to cut and a Phragmites control plan are only 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.

Questions? – call DEQ at 800-662-9278

Phragmites.org 72

Cutting Permit – DEQ – Below OHWM

- **NOT REQUIRED**

In areas of Michigan regulated under Michigan Inland Lakes and Streams, Part 301, a person may cut their Phragmites down to not closer than two inches from the ground or water line without a permit. (4" recommended) They may not use any mechanical equipment such as brush cutters, mowers or weed whips in or over the water.

Phragmites.org

73

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

Herbicide sprayed over water is now considered a point source of pollution. Only required if you are spraying over 80 acres or 20 miles of shoreline. Permit valid for five years.

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

contact Jeff Fisher - MI DEQ 517-335-4188

Phragmites.org

74

Permit to herbicide Phragmites Environmental Protection Agency

Exemption

Automatic coverage is extended to any person treating "aquatic nuisance" pests if all of the following criteria are met:

- (a) the waterbody does not have an outlet;
- (b) there is no record of a state or federal endangered or threatened species present;
- (c) the waterbody has a surface area of less than 10 acres;
- (d) the bottomlands of the waterbody are owned by either of the following: (i) a single person; (ii) more than 1 person and written permission is obtained from each person.

Phragmites.org

75

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 active outlet and
no recorded threatened or endangered species
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

76

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.

Questions? Call DEQ at 517-241-1554

Phragmites.org

77

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

78



Treated 9 months ago, not cut

Treated 9 months ago, cut 6 months ago

Not Treated or cut

Mid-summer – St. John’s Marsh

Phragmites.org 79

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 80

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 81

Resources

- Phragmites.info & Phragmites.org
- “Subscribe” to Newsletter@phragmites.org
- www.ClayTownship.org/Phragmites
- 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 82