

QUESTIONS

Preventing Problems: Best Practices for Preventing the Spread of Invasive Species

Suggestions taken from:

New Hampshire Department of Transportation

BEST MANAGEMENT PRACTICES FOR ROADSIDE INVASIVE PLANTS 2008

<http://www.nh.gov/dot/org/projectdevelopment/environment/documents/BMPsforRoadsideInvasivePlants.pdf>

Questions

Page 1:

1. What is an invasive plant?

2. Why are roadways ideal habitat for invasive plants?

3. How do invasive plants impact transportation corridors?

4. How do invasive plants impact native species?

Page 2:

5. How do invasive plants spread?

a. Natural:

b. Human:

6. How do we eliminate the spread and establishment of invasive plants?

A.

B.

7. Describe in your own words Figure 1.

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8. What does the law established in New Hampshire regarding invasive species mean?

“No person shall collect, transport, sell, distribute, propagate or transplant any living and viable portion of any listed prohibited invasive plant species, which includes all of their cultivars and varieties.”

Look up any word that you do not know from the sentence above.

Put the law into your own words:

9. Are the invasive species we are concerned about (Japanese Knotweed, perennial pepperweed, Phragmites, and Purple loosestrife) listed as invasive species in New Hampshire?

Page 5:

10. What are the characteristics of Priority invasive species?

They are:

- a. Easily spread by
- b. They have significant negative impact on _____
- c.

11. What are the priority species:

- a.
- b.
- c.
- d. Oriental bittersweet
- e. Spotted knapweed

Pages 7-12

What are General Best Management practices for

- Soil Disturbance and Stabilization
- Movement and Maintenance of Equipment
- Mowing
- Disposal of Plants
- Excavated Material

Soil Disturbance and Stabilization

BMP #1:

Minimize _____ whenever possible. Invasive plants readily colonize areas of _____.

_____ recent work sites for the emergence of invasive plants for a minimum of _____ years after project completion.

BMP #2: Stabilize disturbed soils as soon as possible by _____,

_____ that is free of invasive plant material. Seeds of _____ should be used whenever possible. Species on the prohibited invasive plant list should never be planted.

BMP #3: Materials such as _____ should **not** be brought into project areas from sites where invasive plants are known to occur. If the absence of invasive plant parts in these materials cannot be guaranteed, recent work sites should be monitored for the emergence of invasive plants for a minimum of _____ years after project completion.

Movement and Maintenance of Equipment

BMP #4 If work in areas containing invasive plants cannot be avoided, then the movement of maintenance and construction equipment should be from areas _____ to _____ whenever possible. This is especially important during _____ and _____ activities.

BMP #5: Locate and use _____ that are free of invasive plants to avoid spreading seeds and other viable plant parts.

BMP #6 If equipment must be used in areas where invasive plants occur, all equipment, machinery, and hand tools should be _____ before leaving the project site. Equipment should be cleaned at the site of i _____. Acceptable methods of cleaning include, but are not limited to:

⌚ Portable wash station that _____ (containment must be in compliance with wastewater discharge regulations);

⌚ _____ air;

⌚ _____ (used without water).

BMP #7 If equipment must be used in areas containing Japanese knotweed, Phragmites, or purple loosestrife, aboveground plant material should be _____ (see BMP #11) prior to the start of work. *If excavation occurs in these areas, see BMPs #13-16.*

Mowing

BMP #8: These invasive plants have the ability to sprout from stem and root fragments: **purple loosestrife, phragmites, and Japanese knotweed**. Mowing these plants should be avoided whenever possible. _____ is one way to accomplish this. If these plants are cut, all plant material must be _____ and extra care should be taken to avoid _____ (see BMP #11).

BMP #9: In areas where invasive plants occur and the plants listed in BMP #8 (purple loosestrife, phragmites, and Japanese knotweed) are *not* present, an attempt should be made to mow the right-of-way prior to _____. This could be accomplished by identifying roads that are _____ with invasive plants or roads that are in _____, and making those roads a priority in the mowing schedule.

BMP #10: Mowing equipment should be cleaned _____, as well as prior to _____ (see BMP #6). This is particularly important if mowing occurs after seed maturation (after August 1st).

Disposal of Plants

BMP #11: When invasive plants are cut or removed for roadside maintenance, construction, or control of plants, the spread of _____ must be avoided by rendering plant material _____. The following methods can be used to destroy plant material:

⌚ **Drying/Liquefying:** For _____ amounts of plant material or for plants with _____ stems, place the material on _____, and cover with _____ to prevent the material from blowing away. For _____ amounts of plant material or for plants with _____ stems, bag the material in _____ garbage bags. Keep plant material covered or bagged for at least _____. Material is nonviable when it is _____. Once material is nonviable, it can be disposed of in a _____.

Recommended for: _____.

⌚ **Brush Piles:** Plant material from most invasive plants can be piled on site to _____. However, when piling purple loosestrife, phragmites, and Japanese knotweed, care must be taken to pile stems so _____.

Recommended for: Woody shrubs, trees, and vines; spotted knapweed; large quantities of purple loosestrife, phragmites, and Japanese knotweed.

NOT recommended for: any invasive plant with _____, unless plants can be piled within the limits of the infestation.

⌚ **Burying:** Plant material from most invasive plants can be buried a minimum of _____ below _____. This method is best used on a job site that already has disturbed soils.

Recommended for: any invasive plant.

NOT recommended for: _____, unless other options are not feasible and knotweed can be buried *at the site of infestation at least* _____ *below grade*.

⌚ **Burning:** Plant material should be taken to a designated burn pile. (All necessary _____ must be obtained before burning.)

Recommended for: any invasive plant, especially purple loosestrife, phragmites, Japanese knotweed.

• BMP #11 (continued)

⌚ **Herbicide:** Herbicide applications must be carried out by a _____ with a permit from the NH Department of Agriculture Division of Pesticide Control.

Recommended for: any invasive plant, especially purple loosestrife, phragmites, Japanese knotweed.

BMP #12: Invasive plant material must be _____ during transport.

Excavated Material

BMP #13: Excavated material taken from sites that contain invasive plants cannot be used away from the site of infestation until _____. Excavated material from areas containing invasive plants may be reused within the *exact* limits of the infestation.

BMP #14: Any excavated material that contains viable plant material and is not reused within the limits of the infestation must be _____ until viable plant material is destroyed OR the material must be disposed of by burying a minimum of three feet below grade. Japanese knotweed must be buried at least five feet below grade.

BMP #15: Whenever possible, excavation should be avoided in areas containing _____. If excavation does occur in these areas, the BMPs described in Section II must be followed.

BMP #16: Soil and other materials containing invasive plants must be _____ during transport.

Vocabulary Words:

Viable

Nonviable

Grade

Impervious surface

Riprap

Follow-up Assignments

1. As a team: Design a poster that illustrates the Best Management Practices for one of the above, or for perennial pepperweed. (Your teacher will assign one topic to each person or group.)

ANSWERS

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Questions and Answers Page 1:

1. What is an invasive plant?
*An **invasive plant** is a non-native plant that is able to persist and proliferate outside of cultivation, resulting in ecological and/or economic harm*
2. Why are roadways ideal habitat for invasive plants?
because of its high level of disturbance and abundant sunlight.
3. How do some invasive plants impact transportation corridors?
Some species reduce sight distance, block signs, increase the risk of fire, and encroach on travel lanes. Some push up through pavement and damaging shoulders and road edges. Some species plug ditch lines and block culverts.
4. How do invasive plants impact native species?
They reduce native biodiversity.

Page 2:

5. How are invasive plants spread?
 - a. Natural: Birds, wind and water
 - b. Human: Transport in gardening, erosion control, and wildlife plantings
Through routine maintenance and construction activities.
6. How do we eliminate the spread and establishment of invasive plants?
 - a. Avoid new introductions especially those caused by human activities.
 - b. Detect invasives early and eradicate new populations.
7. Describe in your own words Figure 1.
(Sample answer)
Invasive species go through four phases, a “quarantine” phase where there are few present, a “eradication priority stage” where there are some, but not a lot, a “control priority stage” where the invasive is rapidly expanding, and a “saturation phase where there are a lot of invasives present, no longer spreading, but hard to control.

Page 3-4:

8. What is the 2004 law established in New Hampshire regarding invasive species?

“No person shall collect, transport, sell, distribute, propagate or transplant any living and viable portion of any listed prohibited invasive plant species, which includes all of their cultivars and varieties.”

Look up any word that you do not know from the sentence above.

Put the law into your own words:

(Sample answer)

It is illegal to collect, move, sell, give away or grow any piece of invasive plant species that can grow. This includes all varieties of the species on the list.

9. Are the invasive species we are concerned about (Japanese Knotweed, perennial pepperweed, Phragmites, and Purple loosestrife) listed as invasive species in New Hampshire?

The department of Agriculture lists:

Perennial Pepperweed, and Japanese Knotweed.

The Department of Environmental Services lists Phragmites Australis, and Purple loosestrife.

Page 5:

10. What are the characteristics of **Priority invasive species**?

They are:

- d. Easily spread by Department of Transportation activities.
- e. They have significant negative impact on transportation infrastructure
- f. Very difficult to eradicate.

11. What are the priority species:

- a. knotweed,
- b. Purple loosestrife
- c. Phragmites
- d. Oriental bittersweet
- e. Spotted knapweed

Pages 7-12

What are General Best Management practices for

Soil Disturbance and Stabilization

BMP #1: Minimize soil disturbance whenever possible. Invasive plants readily colonize areas of disturbed soil. Monitor recent work sites for the emergence of invasive plants for a minimum of two years after project completion.

BMP #2: Stabilize disturbed soils as soon as possible by seeding and/or using mulch, hay, rip-rap, or gravel that is free of invasive plant material. Seeds of native species should be used whenever possible. Species on the prohibited invasive plant list should never be planted.

BMP #3: Materials such as fill, loam, mulch, hay, rip-rap, and gravel should **not** be brought into project areas from sites where invasive plants are known to occur. If the absence of invasive plant parts in these materials cannot be guaranteed, recent work sites should be monitored for the emergence of invasive plants for a minimum of two years after project completion.

Rip-rap : is rock or other material used to armor shorelines, streambeds, bridge abutments, pilings and other shoreline structures against scour, water or ice erosion