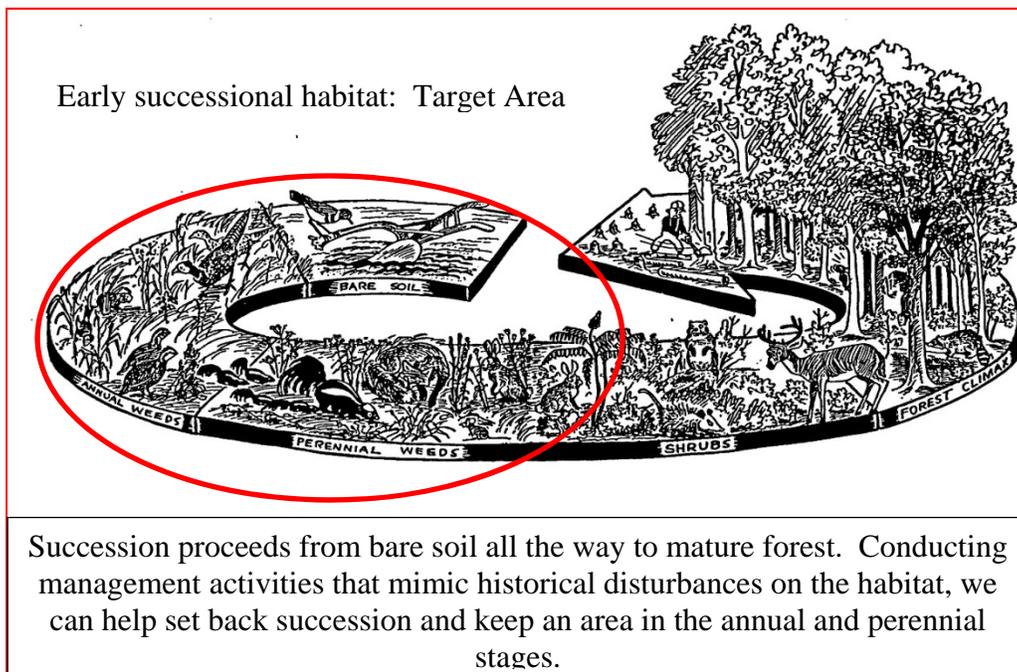


Early Successional Habitat Management



In order to maintain early successional habitats, landowners must carry out management on the property. Early successional habitats are open habitats generally covered in annual plants, grasses, and forb species. These areas are maintained through management activities such as strip disking, strip spraying, and prescribed burning, and/or mechanical clearing.

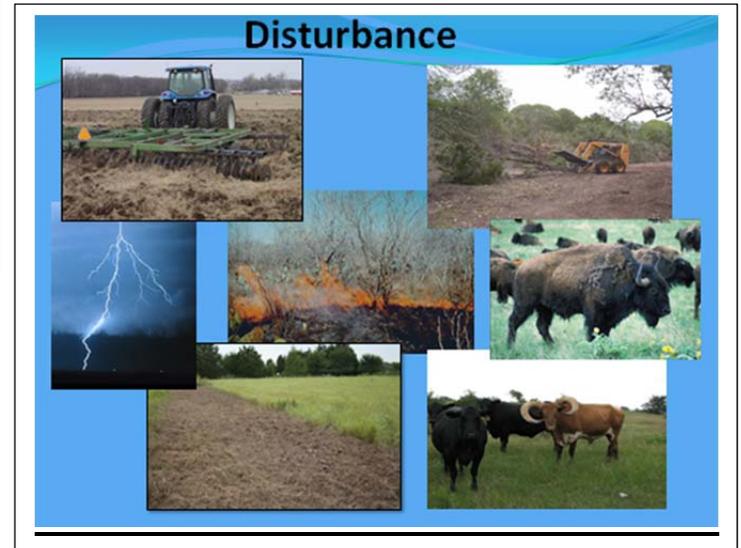
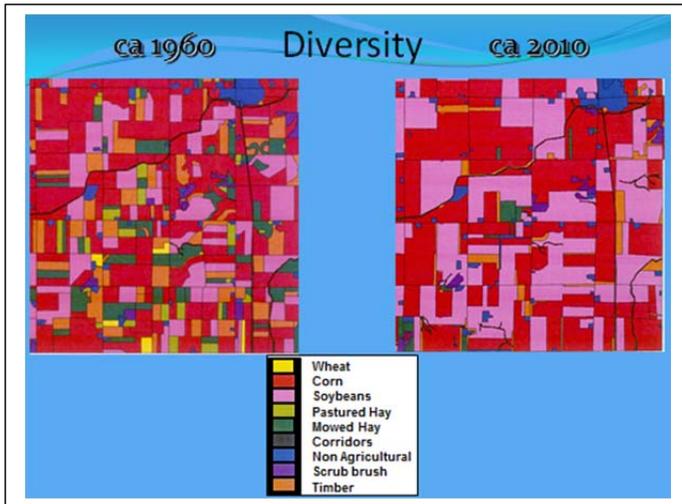
All of these activities will set your land back in succession, which is important to many game and non-game species. All habitats will go in succession from bare soil to an annual plant community, then a perennial grass and forb community, to a grass and shrub community, into the final stages of woodlands and forest communities. Setting back successional means to keep disturbing the area to move it back towards one of the earlier steps in the succession cycle.



Succession proceeds from bare soil all the way to mature forest. Conducting management activities that mimic historical disturbances on the habitat, we can help set back succession and keep an area in the annual and perennial stages.

Disturbance to set back succession was historically completed by different mechanisms. Lightning would start fires that would burn occasionally, buffalo would roam the land grazing, and tornadoes and wind storms would flatten areas of trees. Native Americans would also routinely burn in order to improve wildlife habitat on their hunting grounds and reduce the amount of brush and pests (ticks, etc.) in the area. All of these activities increased biological diversity in the area because succession was moved towards early successional habitats.

Species diversity is very important for any habitat type. An interspersed of different habitat types will benefit a wide array of wildlife populations, and then be available to those species when they require that type of habitat in their life cycle. As communities proceed towards successional climax (forest), it may lose some of the biological diversity that was present (i.e. trees shade out prairie species, etc.). Change in land use over time reduces the diversity of habitats available to wildlife species. Diversity is key to the different habitat types available.



When interspersions of habitat are lost, and habitat fragmentation becomes a problem, wildlife populations can be impacted negatively. Extensive areas of monocultures (i.e. corn fields, bean fields, fescue pastures, stands of bush honeysuckle or Russian/autumn olive, etc.) reduce the species diversity on the landscape, thereby reducing the amount of wildlife species in those areas.

By mimicking occasional disturbance that was historically typical of most North American landscapes can be very beneficial in promoting species biodiversity. Healthy grasslands and forest lands have a wide variety of species that are working together to support a particular ecosystem. These types of management activities also negatively impact non-native invasive species that did not evolve under such conditions.

Setting back succession will also help a variety of grassland and edge wildlife. These will include grassland birds, bobwhite quail, rabbits, whitetail deer, and a multitude of other species. The diverse habitats also tend to be better at preventing soil erosion and improving water quality. So by managing for early successional habitat in places will improve wildlife habitat while improving the environment as well.

Video:

https://www.youtube.com/watch?v=v_oXCGh6F5g

Other Useful information is available at:

<http://extension.missouri.edu/explorepdf/miscpubs/mp0907.pdf>

<http://extension.missouri.edu/explorepdf/agguides/wildlife/g09432.pdf>

<http://extension.missouri.edu/explorepdf/miscpubs/mp0903.pdf>

<http://extension.missouri.edu/p/G9412>

<http://extension.missouri.edu/main/DisplayCategory.aspx?C=82>

<http://bobwhite.samrose.me/download/nbc-the-comprehensive-guide-to-creating-improving-managing-bobwhite-habitat/>

Strip Disking

After several years, pasture or lawn grasses will eventually form mats that are not beneficial to wildlife. Species such as brome, fescue, and orchard grass occasionally require some type of disturbance or they will become a monoculture. The dense stands of the same type of grass have little wildlife benefit due to lack of diversity of plant seed for forage, dense mats that force wildlife to move across the top of them, and increased predation due to having to move over the top of these habitat types. In order to increase biodiversity, strip disking is a useful tool in monoculture grass stands.



Lack of diversity in these stands makes these areas almost like a desert to the native wildlife in the area. In a couple of years, these types of grasses push everything else out. In order to allow other species to sprout, disking is done to expose bare soil and allow for germination of a variety of other plants. Increasing the diversity positively helps the wildlife populations in the area by giving the habitat a different structure and allows annual plants to produce a variety of seeds wildlife need to survive over the winters. You may also plant forb (flowering) species after disking the ground in order to enhance the biodiversity on the ground

In order to accomplish a successful disking and interseeding effort, landowners must 1st burn off all the thatch on the area 1st thing in the spring. Having this thatch on top of the ground would cause a disk or other implement being used to clog up constantly. With the thatch removed, bare soil should be ready for disc blades to make direct contact. A 75 foot pass can be made with a disk, then skipping 150 feet, and doing another 75 foot pass. Some areas may not be wide enough but a general rule of thumb is to try to do 1/3 of acreage.



Brome Field Disking/Interseeding



D/I Cool Season Grass (4/26/2011)



D/I Cool Season Grass (6/1/2011)



D/I Cool Season Grass (7/27/2011)



D/I Cool Season Grass (9/1/2011)



D/I Cool Season Grass (12/1/2011)

Strip disking and interseeding a cool season grass stand increases the biodiversity of the stand as well as rejuvenated the grass that was originally in the stand. In the pictures above, it can easily be seen that the disked area has more vigor and a variety of plants growing in it after the treatment. The stand also has more structure to it, so during the winter snows, not all of it is matted on the ground like the solid stand of brome.

Disking and interseeding is a cost effective way to increase the wildlife value of stands of cool season grasses. This treatment will need to be conducted every few years to ensure that the grasses do not form a monoculture again.

Strip Spraying

Strip spraying is very similar to strip disking. In your plantings, spray a 30 foot swath to kill everything that is there. Then skip 60 foot strip, and spray another 30 foot strip. What this will do is knock back the overlying vegetation and allow annual plants and other forbs to come up. By only doing strips, you will only be spraying 1/3 of the area at any given time. This will leave good perennial cover while the areas that were sprayed will create annual plant cover.

Depending on what you are trying to accomplish will also help determine what you spray. In a rank native grass stand, where the grasses have outcompeted all the forbs in the area, spraying a grass specific herbicide would be beneficial. In areas where there is a woody brush or serotia lespedeza problem, Garlon (brand name) may need to be used in order to remove these species. In a native grass planting that is being overrun by fescue, it may be beneficial to wait for all the native plants to go into dormancy and then spray the area with Plateau, which is an effective fescue killer. Where you want to kill everything, it would be ok just to use glyphosate.



Strip spraying allows for good interspersed habitat while leaving enough remaining cover to benefit wildlife populations. Please consult your chemical dealer on the appropriate chemical to use for strip spraying. Landowners are responsible to follow all chemical label directions.

Firebreak Establishment - NRCS Practice Code 338/394 -

Refer to:

http://efotg.sc.egov.usda.gov/references/public/MO/PrescribedBurn_InfoSheet_4_08.pdf



IT IS THE LANDOWNERS RESPONSIBILITY TO GET PREPARED AND CONDUCT A PRESCRIBED BURN!!! **When conducting a controlled burn take all the necessary precautions, retain the necessary permits, and inform the necessary agencies including your local fire department. Pay careful attention to wind direction and speed, humidity, firebreaks, and the surrounding landscape. The landowner is responsible for all aspects of a prescribed burn.**

Established firebreaks aid in the process of prescribed burning. These areas are maintained to give control of varied units on the property in order to safely conduct a prescribed burn. A good rule of thumb is that your firebreak should be 3X as wide as expected flame height. There are several methods in which firebreaks can be established. These are:

1. Green Firebreak
2. Disked Firebreak
3. Rake/Leaf blower firebreak
4. Wet line firebreak
5. Natural/Man-made Firebreaks (creeks, ponds, roads, ATV trails)

When preparing your property for a prescribed burn, one, two, or a combination of all should be used to ensure a safe and successful prescribed fire. Also take your time when starting a prescribed fire and ensure that your fire lines are holding and a black line is extending into your burn unit before moving to far along. Be considerate of where the smoke will be travelling. You could smoke out a major intersection or habitations if smoke management is not taken into account. Wind can also carry embers across the best fire lines. Be diligent about checking for spot fires outside of the fire lines.

Green firebreak - Green Firebreaks can be established by planting species that green up early in the year. Firebreaks should be at least 30 feet wide consisting of cool season legumes (e.g. clover and/or alfalfa). Firebreak mowing should be done to maintain the firebreaks. DO NOT bail the area (Program Reg.). Mowing Firebreaks can control woody growth, stimulate legume growth, and prevent weed invasions. *Mow firebreaks in the late Fall before a burn.*

Disked Firebreak – Firebreaks can also be established by disking a 30 foot wide strip around the area to be burned. The bare soil will help mitigate the chance of a fire escaping to an area that is not intended to be burned. Areas with thick vegetative cover may need to be disked several times to get bare soil showing. If a large amount of thatch is still present that could burn across the break, disk the area again. Make sure there are no fuel connections across the firebreak.

Rake/Leaf Blower Firebreak – Fire lines can also be established by removing all thatch, leaves, vegetation, and all branches on top of the ground to expose bare soil. This can be done in areas where the ground cover is sparse or easy to remove (i.e. leaf litter, Ag residue). With these lines, you will start a backfire in order to get a black line established. Make sure the black line is at least 30 foot wide before setting flank/head fires.

Wet line Firebreak – A wet line firebreak is established by wetting down the ground and vegetation on the edge of the prescribed burning unit. This can be done when water is readily available for the burn crews. You do not want to run yourself short on water and then need it later.

Natural/Man-Made Firebreaks - Good fire lines can also be along barriers such as ATV trails, roads, creeks, ponds, and agricultural field (little crop residue on top). These areas are generally maintained but any debris or thatch that crosses these areas must be removed to prevent a fire from crossing them.

Green Line

Note: Dead thatch under green firebreaks may still be able to carry a flame. Maintaining breaks and using several practices in conjunction will help prevent



Rake/Leaf Blower Line



Disked Line



Wet Line



Field Road Burn Break (bottom of photo)



Prescribed Burning (Practice Code 338) - Dates – Oct 1-April 30 annually

Burning will be one of the most efficient and useful management tools for wildlife management and invasive species control. Used properly, fire is a safe and economical tool, but careless burning can threaten life and property. Removes vegetation debris (duff) increasing bare ground, controls woody plant invasion, promotes growth of grasses/forbs that produce wildlife food, and stimulates mast and legume growth important for birds and other wildlife.

Prescribed Burning to Benefit Wildlife – From Missouri NRCS (IS-MO338)

http://efotg.sc.egov.usda.gov/references/public/MO/PrescribedBurn_InfoSheet_4_08.pdf

One of the primary uses of prescribed fire is to manipulate or manage vegetation for the benefit of wildlife species. The timing of the burn depends on the wildlife management objectives for the specific species. Some things to consider are:

1. Burns should be managed with consideration for wildlife needs, such as nesting and feeding cover. There should always be habitat available. Burn 1/3 or 1/2 of the area.
2. Fall and winter burns generally favor the forb component in mixed stands, and help improve plant structure and habitat diversity.
3. Burning in spring and fall of the same year greatly reduces stands of cool season grasses, including tall fescue.
4. Fall burns are generally best for forest habitats to reduce undesirable species.

Grassland: Late spring fires promote warm season grasses as well as inhibit woody encroachment (March to April). Dormant (Oct, Feb-March) fires promote forbs (flowers), so this type of fire may be better occasionally to promote the forbs in the stand. If prescribed fire is unable to be conducted, a conservation mowing management activity may be acceptable over short durations (i.e. drought, wet during burning season). Stands need to be burned periodically to rejuvenate the stand and inhibit woody plant invasions.

Start back fire first to establish good fire lines



Do not burn tree plantings – Protect them



Established Forest: Established forest stands also can benefit from occasional burning to remove invasive and unwanted species from the stand. In Illinois, dominated by oak-hickory forest type, fire is key in opening up light pockets for oaks to grow. Fire also inhibits many invasive plants (bush honeysuckle) and other undesirable species in the uplands (maples). Fire can be useful in controlling your woodland from being overcome with brush. Prescribed burning in the timber usually takes a lot longer than grass burning that most people with fire experience have conducted.

For best forest management, burning can take place bi-annually for several years to control invasive species. After invasive/undesirable species have been controlled and the next generation of oak saplings has started to sprout in the understory, fire needs to be excluded for several years for the trees to establish. Protect tree plantings from prescribed burning as well.

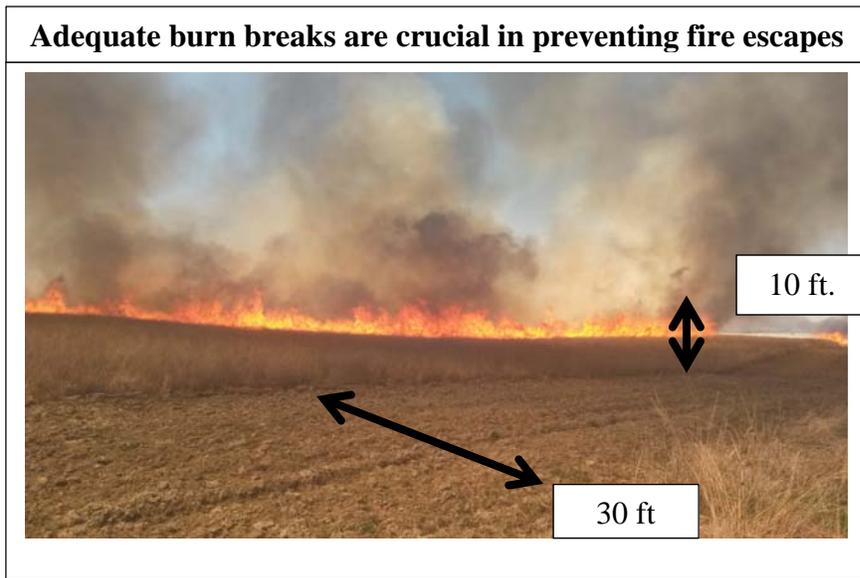


Conducting a prescribed burn: In order to ignite a prescribed burn, 1st have your firebreaks prepared surrounding the entire area that is going to be burned. Be aware of where all people are at all times and be in constant communication. Prescribed burns generally start on the downwind side in order to create a safe firebreak. Some of the most effective burns for controlling woody species are these slow backing burns that put more heat on woody stems for a longer time. Be aware of topography, relative humidity, wind speed, amount of fuel (leaf litter, dead grass, downed trees etc.) and other things that could change the behavior of fire.

An example of this is a hill will act like a chimney during a prescribed burn, with heat rising and heating the vegetation above it quickly and rapidly moving up a hill. If you start at the top of the hill and burn downhill, the fire is much slower and more controlled because the heat cannot build up as well going downhill.

On the downwind side, you will ignite the fire along the firebreaks. You will allow the fire to continue to burn into the stand but will make sure it is extinguished along the firebreak side so that it will not cross the firebreak. After letting this burn for a while and making sure the backline is extinguished, you can continue to move on the downwind side of the unit. Continue until the entire side of the unit has a black line across it before you start a head fire (with the wind).

When the back line has sufficiently burned a large area, you can proceed to starting flank (side) fires moving into the wind. Take your time and ensure that the firebreaks are still secure and that no spot fires have started across the lines. Continue to light flanking fires all the way the other end of the unit. After the backline and flank lines have been well established, a head fire can be lit. This should only be done if adequate lines have been established around the unit.



Mop Up: After the unit has been burned entirely, you will need to ensure that all things that are still smoldering or on fire will not start additional fires when you are finished. This can be completed by making sure that all smoking areas are extinguished before leaving. Snags and other debris that is off the ground and either smoldering or still on fire needs to be brought to the ground to prevent sparks from being sent airborne. This can happen hours after a burn say when the winds pick up stoking the fire inside the hollow tree (like a chimney) and sending embers flying through the air out of the top. Be sure that all things still smoldering are extinguished or at least on the ground surrounded by a large blacked out area from the burn.



Woody Invasive Brush Management - NRCS Practice Code 314 –



Refer to:

http://www.il.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1081640.pdf

Proper brush management is very important and one of the most cost-effective ways to improve wildlife habitat. Stands may become overcrowded or choked by undesirable species such as bush (Amur) honeysuckle and autumn olive. By reducing the competition around mast producing trees and removing low quality species, brush management increases mast food production, improves understory habitat, and improves native species diversity.

It is recommended that the species targeted in the brush management practice be cut and chemically treated, foliar sprayed, girdled, or a combination of these practices. Similarly, smaller trees should be cut down and their stumps treated. The time to do this is when shrubs/trees are actively growing. This process will also release nutrients to the remaining native species.

Exotic Control Recommendations

To create optimum growing conditions for selected crop trees and prepare for the next generation of crop trees, an exotic species control is needed. The exotic control should be carried out in the following manner:

Target Species

Bush (Amur) honeysuckle, autumn and Russian Olive, Buckthorn, Burning Bush, Osage orange (Hedge/hedge apple), Locust (Black and Honey), multiflora rose, and others:

Treatment Methods

There are several ways to remove invasive species from your property. These methods may be used in conjunction with each other over time in order to achieve desired results. The treatment types are:

1. Foliar Spraying
2. Cut Stump Method
3. Basal Bark Spraying
4. Girdling
5. Prescribed Burning

Each method has its advantages and disadvantages. One thing is for certain; all practices will require follow up treatments in order to maintain quality conditions. Foliar spraying is one of the cheapest ways to control an infestation, but several treatments need to be applied in succession in order to ensure eradication. Cut stump method will ensure a higher kill percentage but is hard labor in order to do it this way. Basal bark spraying is a cost effective way to eradicate infestations, but with some species it is hard to get near the stem to spray directly on the bark. Girdling is a cost effective ways to remove vegetation, but areas must also be chemically treated and checked for re-sprouting. Prescribed burning will help reduce non fire tolerant species (i.e. many invasive plants) as well. All of these practices used in conjunction with each other can aid a landowner in returning their property to native species.

Cut stump method



Foliar Spraying



Machinery may be used to remove woody vegetation



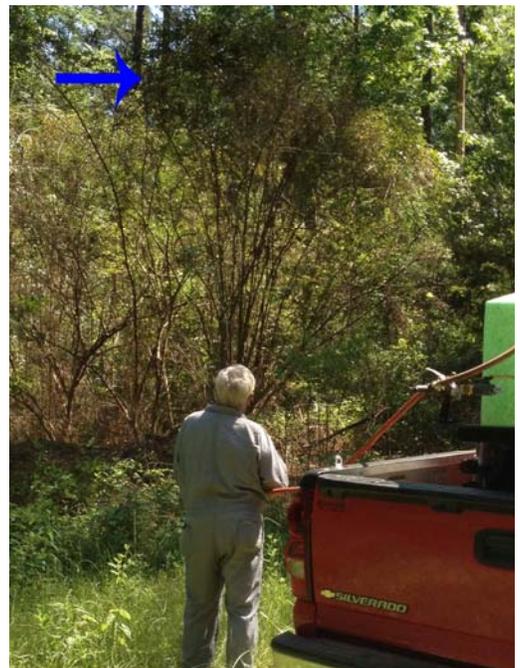
Removing non-native invasive species



Can create wildlife structures with woody debris



Works along the edge of woods



Basal bark spray



Remove undesirable species from grasslands



Open woodland with lots of diversity



Girdle entire tree and treat chemically



Prescribed Burning



Herbicide selection

Herbicide should be selected based upon the species you are trying to control. We recommend that you contact a local chemical dealer to talk about the alternatives. It is a person's responsibility to read and follow all label directions for a pesticide. Follow all procedures set forth for obtaining and using a chemical applicator's license (if applicable).

It is also important to select a herbicide based on the treatment being conducted on the property. The differing methods may need to have different chemicals in order to manage the plant. Some chemicals can be used for several types of methods. Common chemicals used for each treatment will be shared in the section below. Please consult with a chemical dealer about your management objectives and treatment method before selecting a herbicide.

Conducting Each Treatment

- a. **Cut Stump Method** – The cut stump method is conducted by sawing the plant off at the base of the stem and chemically treating the stump with a herbicide. Stems can be cut using a chainsaw, axe, pole saw, or other hand tools. The stumps must be chemically treated within 20 minutes of cutting. Stumps will form a protective covering after that time which will often inhibit chemical from being absorbed by the plant. Common chemicals applied to the stumps are triclopyr (Garlon). There are generic versions of these chemicals as well. Glyphosate (Roundup) can be used for stump treatment. Use a 20% concentration of Roundup on the cut stump to achieve control. Exotics often out compete native species and WILL inhibit regeneration of desirable species if left untreated. Follow label directions for every chemical used in management.
- b. **Foliar Treatment** – Foliar treatments are conducted by spraying the entire surface area of the plant to defoliate it. This treatment should be conducted prior to the flowering of the species each year to prevent additional seed crop from that species. Foliar treatments need to be conducted several years in succession in order to achieve control. Methods used for foliar spraying include hand-pump spraying, back-spraying, or mechanical spraying (ATV sprayer, boom sprayer). This method tends to be less labor intensive than other methods, but more follow up treatments are necessary to achieve control. Chemical often used in foliar spraying include Roundup (Glyphosate) and Garlon 3A (Triclopyr). Other chemicals may be used. Please contact your local chemical dealer about other chemicals. Follow all label directions for the chemicals selected.
- c. **Basal Bark Treatment** – Basal bark treatments are conducted by spraying a chemical directly onto the stem of the plant. Often these treatments will require something to be mixed with the chemical to help ensure uptake into the target species. Often basal oil is added. Garlon 4 with basal oil is often used to conduct these treatments. These treatments do not require high pressure sprayers. Avoid high spray pressures to prevent over splash and

drift to nearby desirable plants. Please consult with your local chemical dealer to select the appropriate herbicide. Follow all label directions and uses.

- d. **Girdling**– Girdling is a way to treat woody species that may be too large to fell safely. Both methods produce wounds in the target species that are then treated with chemical. Girdling is done by taking a chainsaw and cutting a 1 ½” circle all the way around the tree. The wounds are then treated with a herbicide. Generally Garlon, or Round up (all brand names) is used in treating these wounds. Please consult with your local chemical dealer to select the appropriate herbicide. Follow all label directions and uses.
- e. **Prescribed Burning** – Prescribed burning is a useful tool in aiding in the reduction of invasive species. Most species are not fire tolerant like many native species are. Prescribed fires are conducted by establishing firebreaks around a pre-determined burn unit and then conducting a burn on the area. It is the landowner’s sole responsibility to prepare their property for a prescribed burn. Please see more information on prescribed burning on the prescribed burning and firebreak establishment section.

Maintenance is considered a long term mission. Removing invasive species is important to ensuring the quality of your land well into the future. These treatments will need to be applied several times over the coming years to ensure control of invasive species. After the initial knockback is completed, management should continue in order to ensure another infestation does not take place. Most small invasives can be pulled by hand or easily sprayed.

Other Useful information is available at:

<http://extension.missouri.edu/p/g9414>

<http://www.inhs.illinois.edu/research/vmg>

<http://ipm.illinois.edu/pubs/iapmh/08chapter.pdf>

<http://web.extension.illinois.edu/forestry/home.html>

http://www.il.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1081640.pdf