NRCS Natural Resources Conservation Service
MISSISSIPPI

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WILDLIFE MANAGEMENT TECHNIQUES – QUALITY VEGETATION MANAGEMENT (QVM) FOR RESTORATION OF WILDLIFE HABITAT IN PINE STANDS

Definition: Quality vegetation management (QVM) is a technique that uses a combination of tools to restore wildlife habitat through the removal of invasive, dense, undesirable woody species. To improve wildlife habitat conditions for many wildlife species in pine stands, QVM is used to remove the invasive, dense, undesirable woody species in the under and mid-story canopy along with the removal of the ground litter layer by using the combined application of the selective herbicide, imazapyr, and controlled burning.

Purpose: Management actions are needed to restore wildlife habitat that provides quality herbaceous food and cover plants in pine stands. Unmanaged pine stands often contain a dense mid-story of invasive, undesirable woody species along with a thick ground litter layer that prevent growth of desirable foraging and nesting vegetation. In Mississippi, fire suppression and lack of active management in upland pine habitat commonly produces an under- and mid-story canopy that reduces habitat for many wildlife species. Herbaceous food and cover plants that are stimulated by fire and open canopy conditions decline over time without these management activities. Losses of habitat containing herbaceous vegetation and an open ground layer in upland pine stands have led to declines in populations of wildlife species including game species, such northern bobwhite quail and endangered non-game species, such as gopher tortoises and Bachman's sparrows.

In recent university studies, treatment of mid-rotation pine stands with imazapyr, in conjunction with silvicultural practices (thinning and/or prescribed burning) has been shown to produce excellent results in releasing desirable, high quality native vegetation. This method of hardwood control releases preferred native forbs, legumes, vines, shrubs, and grasses that are beneficial to wildlife. QVM increases the number of plant species present and canopy cover of grasses, forbs, and native legumes. Therefore, nutritional carrying capacity increases significantly for most wildlife species. Improved nesting and brood foraging habitats increases carrying capacity for ground nesting birds. Additionally, restoration of habitat with herbaceous ground cover can increase avian diversity and abundance of regionally declining bird species (e.g. northern bobwhite, Bachman's sparrow, brown-headed nuthatch, common-yellow throat).

Prescribed burning for wildlife habitat is applying a controlled fire to a predetermined area as a habitat management tool. It is used to improve wildlife habitat on early successional/grassland areas and certain woodland areas by setting back the successional stage of an area, controlling undesirable vegetation, and reducing wildfire hazards. Ground nesting habitat is improved by reducing stand density. Prescribed burning in late winter to early spring is the preferred method for maintaining healthy stands of native warm season grasses. This practice increases stand diversity, reduces weed competition, increases plant vigor, recycles nutrients, and reduces thatch and ground litter. Winter prescribed burning also promotes establishment of herbaceous vegetation, especially legumes.

Management: This practice should be applied in pine stands (mid-rotation to sawtimber) that have been thinned within the last 3 years **or** have a basal area equal to or less than the site index **and** have a substantial hardwood component in the understory. Imazapyr should be applied between July through October before plants go dormant for calibrated applications to foliage (June through February for the "hack and squirt" application method) to control undesirable woody lower and mid-canopy encroachment with minimal effects on forbs and grasses.

Management:(cont.) A minimum of 20 percent of the pine stand (up to 100%) should be treated to assure the desired vegetation results. Imazapyr is commercially available in two formulations, 2 pounds of active ingredient per gallon (lbs AI/gal) and 4 lbs AI/gal. Therefore the herbicide should be applied at a rate of 0.5 – 0.75 pounds active ingredient **per acre** (maximum of 0.5 lbs AI**/acre** in longleaf/slash) to achieve hardwood brush control. Using this rate, hardwood brush control can be expected for approximately 10 years. Using a skidder with a tank and cluster nozzle spraying a 30 - 50 feet wide swath, the herbicide should be mixed in 20 gallons of water to treat one acre. In addition tanks/sprayers mounted on all terrain vehicles/farm tractors and helicopter spraying are other methods that can be used to apply the herbicide. All equipment must be calibrated to assure that the proper rate is applied. **BEFORE APPLYING, READ AND FOLLOW ALL LABEL DIRECTIONS FOR THE SELECTED HERBICIDE.** The "hack and squirt" method of application may be used according to guidelines in the MS-ECS-645-12A job sheet. Foliar spraying with non-calibrated hand held spray wands is currently not an approved application method.

Applying the herbicide alone will encourage the establishment of native vegetation. However, prescribed burning the treated area will enhance the establishment of the desired vegetation and speed the process considerably. Prescribed burning one to two years after the hardwood brush has been treated clears the leaf litter and small branches from the ground which allow sunlight to penetrate to mineral soil. This encourages the native plant seeds within the seed bank that require scarification to germinate. Prescribed burning every 3-5 years after the initial burn will help maintain the quality of the vegetation once the hardwood brush has been controlled. The prescribed burns should be conducted in late December through February (cool season) and should be primarily a backing-type fire. Consult with the County Forester or a consulting forester for information concerning prescribed burns. Disking in pine stands to incorporate the litter layer and to expose the soil after the herbicide has been used to control the hardwood brush is a practice that will encourage vegetation growth in areas where prescribed burning is not an alternative. This method of soil disturbance scarifies the plant seeds in the seed bank and provides a good seed bed for their germination. **Consult NRCS technical specifications (such as Practice Codes 338 – Prescribed Burning and 645 – Upland Wildlife Habitat Management), technical notes, bulletins, and other job sheets for additional information concerning prescribed burning, light strip disking and woodland disking**.

Maintenance: Once the desired native vegetation has been established within the pine stand, a periodic cool season prescribed burn or disking (every 3-5 years) will keep the vegetation in optimal quality for wildlife. Vegetation and soil disturbances of higher frequency should not be needed. However, burning regimes of higher frequency than every 5 years will not be detrimental to the vegetation established by use of imazapyr.

Considerations: This practice is not intended to be for site preparation for pine stand establishment nor is it intended for a release treatment in young pine stands that have not been thinned.