

**WILDLIFE MANAGEMENT TECHNIQUES –
QUALITY VEGETATION MANAGEMENT (QVM) WITH “HACK
& SQUIRT” METHOD OF APPLYING IMAZAPYR FOR
CONTROL OF UNDESIRABLE HARDWOOD SPECIES**

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; controlled burning; and/or woodland strip disking.

Methodology: 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. The “hack and squirt” method of application is limited to treating 20 acres/year/forest stand. A minimum of 20 percent of the pine stand (up to 20 acres/year/forest stand) should be treated to assure the desired vegetation results.

Equipment / Supplies Needed:

- Appropriate herbicide for species to be controlled
- Trigger-activated squirt bottle (calibrated at 1ml/squirt) with chemical resistant seals*
- Small sharp ax or hatchet
- File for sharpening blade
- Safety Equipment, such as safety glasses, rubber gloves, chainsaw chaps

*(available from farm/chemical/forestry equipment suppliers & auto parts stores)

Mixture: BEFORE APPLYING, READ AND FOLLOW ALL LABEL DIRECTIONS FOR THE SELECTED HERBICIDE.

Imazapyr is commercially available in two formulations, 4 pounds of active ingredient per gallon (lbs AI/gal) and 2 lbs AI/gal.

- A 20 percent solution of the Imazapyr formulation with 4 lbs AI/gal in water (25 ounces of Imazapyr + 103 ounces of water for a 1 gallon solution).

OR

- A 40 percent solution of the Imazapyr formulation with 2 lbs AI/gal in water (51 ounces of Imazapyr + 77 ounces of water for a 1 gallon solution). Recommended formulation for plants with waxy cuticles, such as gallberry.

Application:

- Make one cut or hack through the bark into the cambium layer for every 3 inches of tree diameter measured at breast height (DBH). Example: A 12 inch DBH tree will require four hacks. Strike the tree at a downward angle. Each cut should form a pocket that holds the herbicide to prevent spillage and waste. Space the cuts evenly around the tree.
- Apply 1 ml of herbicide/water solution into each cut.
- Adjust the nozzle of the spray bottle to deliver approximately 1 ml of solution for each trigger squeeze. Inexpensive plastic dose cups graduated in milliliters available at pharmacies and drug stores can be used to check calibration.

Timing: Treat between June through February with the “hack and squirt” application method to control undesirable woody lower and mid-canopy encroachment with minimal effects on forbs and grasses. Winter prescribed burning removes woody debris and promotes establishment of herbaceous vegetation, especially legumes.

Methodology:(cont.)

Species selection: Use of this method allows for more specific selection of species to be controlled. Below is a list of species recommended to be controlled to improve wildlife habitat value and their susceptibility to the herbicide. Species that are considered highly beneficial to wildlife should not be selected for herbicide application as this practice is primarily to restore/improve wildlife habitat.

Susceptible Species	*Less Susceptible Species	*plants with waxy cuticles
<ul style="list-style-type: none"> • Boxelder • Chinaberry • Chinese Tallow-tree • Cottonwood • Privet • Sweetgum • Willow • Yellow-poplar 	<ul style="list-style-type: none"> • Ash • Sourwood • TiTi <p>*These species are considered difficult-to-control and will require one additional cut for control. For example, on a 6" DBH stem that normally requires 2 cuts, make 1 additional cut for added control.</p>	<ul style="list-style-type: none"> • Gallberry • Yaupon • Wax Myrtle <p>*These species are considered difficult-to-control and will require treatment with the 40 percent solution of the Imazapyr formulation with 2 lbs AI/gal in water.</p>

Treatment Response:

- Maximum treatment effectiveness occurs in the second growing season after treatment.
- In the first growing season after treatment, the most susceptible species (such as sweetgum) may die, but other species will lose foliage, produce a new flush of leaves which may exhibit abnormal leaf shapes, color, and clusters of small leaves or buds at branch and terminal tips. These trees should die in the second growing season following treatment.

***Imazapyr is a soil active material. Do not spray the herbicide solution on the soil near desirable tree/crop species.

Maintenance: Applying the herbicide alone will encourage the establishment of quality 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. 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.**

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