Rope Wick versus Canopy Spraying for Controlling Woody Encroachment of Grassland Quail Habitat

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Smooth and winged sumac, roughleaf dogwood, and other trees and shrubs can develop dense stands on native grasslands. Frequent burning helps control some trees and shrubs, but both sumacs increase area coverage with burning alone. Mowing in late May-early June reduces shrub height and stand density if repeated several years, but mowing at that time of year severely limits nesting cover and nesting opportunity. Tunnell, et al., (2006) reported on effectiveness of several herbicides used through rope-wick applicators for controlling sumac on Nebraska prairie. Several herbicides are effective but only two are labeled for rope-wick application—picloram (Tordon 22K) and glyphosate (Roundup, Buccaneer, Glymax, Accord). We experimented with each on Hi Lonesome Prairie, northwest of Cole Camp, Missouri, in the spring of 2006 and 2007. Recommended mix solution for both herbicides is 2:1, water to herbicide. We wicked with and without non-ionic surfactant (crop-oil) and observed little difference. Ground speed was about 2.5 mph. Both herbicides were about 95 percent effective on plants 2.5 – 6!feet tall. We observed little forb damage as long as seed stalks were not in the zone of wicking.

Jim Stubbendieck (personal communication) suggested mowing prior to wicking to eliminate old woody stems to encourage tender, new stems for wicking. We found that timing needed to be different for this objective than for reducing plant height. Late spring mowing stunted sumac for a couple years, and the increased sunlight encouraged forb seed stalks, thus increasing the risk of the wick contacting, damaging or killing forbs. Late summer mowing eliminates old sumac stems, but new growth the next spring and summer can get as tall as previous old growth and may be intermingled with forb stalks.

Picloram is about double the cost of glyphosate. Effectiveness was about the same. Some plants treated with glyphosate exhibited resprouting the following summer but later died. Dripping of the solution from the rope wick was noted but did not appear to be of significant concern if the equipment kept moving. Changing drivers or refilling the wick resulted in an area of damage that was more significant from the non-selective glyphosate than picloram. Tightening the ferrules around the rope wick reduced drip rate but also herbicide consumption, which may reduce kill. We noticed no significant forb damage from dripping, so we suggest keeping ferrules loose so herbicide flow is not restricted as long as dripping is not severe.

Rotate drivers for breaks and lunch, and drain the wick each evening to avoid herbicide leakage and damage to non-target vegetation. Draining was easier with pipes with end elbows versus center-fill portals.

Wicks come with other wicking material, e.g., canvass or felt, but we felt nylon or polyester ropes would be more durable and resistant to abrasive woody stems. Mowing prior to wicking could eliminate older, more abrasive stems, as suggested by Subbendieck, but neither Tunnell, et al., nor we compared herbicide effectiveness on older woody versus succulent newer stems.

Other woody species were treated during the process, but we did not record effectiveness on these species. However, we noted dead Osage orange, multiflora rose, roughleaf dogwood, black cherry, and wild plums that were in the treated zone.

Herbicide appeared to be relatively fast on stems. We noticed forb damage that might have been due to herbicide transfer from treated stems to tires to forbs. We felt results were better from the front-

mounted equipment than it would have been from rear-mounted equipment because plants were wicked before being run-over rather than after.

Follow-up treatment will be necessary to catch plants that were too short to be wicked without encountering native forbs the same height. Re-treatment may be within two years, depending on subsequent management (burning or mowing).

We also experimented with canopy spot spraying using 1!1.5 percent solutions of triclopyr (Remedy) or triclopyr plus fluroxypyr (PastureGard). Both herbicides are effective and may minimize non-target forb damage compared to 2,4-D solutions (Crossbow or Grazon 2+D) that drift badly. Damage from canopy spraying is more likely with sparsely distributed plants where wicks would be more effective, but careful equipment operators can avoid significant damage by either method.

Rope wicks can be easily made in the shop, but they are relatively inexpensive to buy, averaging $20/linear foot. Support and mounting brackets need to be built for the specific equipment onto which they will be mounted. We preferred mounting wicks on front-end loader buckets but mounting on tractor rear lifts and ATVs also works well. Front loader mounting allows adjusting wick height according to vegetation height and anticipating plant height changes and hazards.