Reforestation & Nurseries Tech Tips

United States Department of Agriculture
Forest Service
Technology & Development Program

October 2008
2400 0824–2353–MTDC

Hands Beat Machines for Collecting Native Seed

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Seed from native plants is needed for restoration projects on all national forests. Often the desired plant materials must be collected from wild stands using tedious hand labor. The best collecting methods may differ for different species. In general, seed is beaten, cut, or stripped from a plant. Using a racquet to beat seed into a hopper (figure 1) is a common method. Sickles may be used to cut stems with seeds from forbs, such as lupine and some penstemons (figure 2). Often, berries or seed pods are stripped from plants by collectors wearing gloves (figure 3).

Highlights...

- Collecting native seed involves tedious hand work.
- A hedge trimmer and a hand-held vacuum were tested to see whether they might do a better job than common methods of collecting seed by hand.
- Common methods are still the best.

Figure 1—Beating plants with a racket to collect seed in a hopper.

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Native seed collectors try to use the most efficient methods to get the job done quickly and to collect the most seed with the least effort. The Missoula Technology and Development Center (MTDC) was asked to find or develop a hand-held collection device that would make it easier to collect native seed.

Figure 2—Cutting lupine seed with a sickle.

Figure 3—Collecting seed by hand stripping.

Market Search

The best instruments for hand collection of native seed need to be simple, portable, lightweight, have a collection bin, and be able to beat, suck, or cut seed from a plant. MTDC found two devices that showed potential for collecting seed.

The Garden Groom Pro (*http://www.gardengroom.com*) is a hedge trimmer designed to cut, mulch, and capture the cuttings (figure 4). The Garden Groom Pro operates with a 110-volt power cord (not ideal for field use), but can be powered with a gas generator. It has a concealed rotary blade that operates at 2,400 revolutions per minute. The Garden Groom Pro's rotary blade was removed to try to reduce damage to the seed. The Garden Groom Pro costs about $200.

The Euro-Pro Shark (*http://www.sharkvac.com*) is a 15.6-volt cordless hand-held vacuum with a detachable motorized brush head and a small collection bin. The Euro-Pro Shark costs about $40.

Figure 4—The Garden Groom Pro (see inset) trims a hedge beautifully, but isn't as effective for collecting seed.

Field Trials

The Garden Groom Pro and Euro-Pro Shark were sent to Scott Jensen at the Forest Service's Rocky Mountain Research Station Shrub Sciences Laboratory in Provo, UT, for field evaluation. Jensen has collected native seed for many years and is familiar with the seed industry and a variety of collection methods. Jensen and a crew of six experienced

field collectors collected lupine seed at the Humboldt-Toiyabe National Forest July 30, 2008. The collection crew evaluated three seed collection methods for lupine: hand stripping, cutting with a sickle, and mowing with the Garden Groom Pro. The Garden Groom Pro also was evaluated when collecting seed from grasses (figure 5) and from seed heads of forbs.

Later during the summer of 2008, field collectors informally compared the Euro-Pro Shark (figure 6) to common methods when collecting seed from bluebunch and crested wheatgrass, and from Lewis flax and other native forbs in Nevada and Utah.

Figure 5—Lupine (left) and grass seed (right) collected using the Garden Groom Pro.

Figure 6—Attempting to collect seed with the Euro-Pro Shark hand-held vacuum.

Results

Six field collectors spent 5 minutes each collecting lupine seed using the Garden Groom Pro, using a sickle, and stripping seed by hand. Collectors using the sickle collected 412.1 grams of seeds, more than eight times as much as they collected when they used the Garden Groom Pro (49.9 grams) and almost three times as much as they collected by stripping seed by hand (140.4 grams). The Garden Groom Pro damaged 95 percent of the seed it collected. All field collectors ranked the sickle as their preferred method, followed by hand stripping.

While the Garden Groom Pro can collect grass seed, the field collectors reported that it was less efficient and took more effort than using a racket to beat the grass into a hopper. Both hands were needed to engage the main and front safety switches, preventing field collectors from relaxing one of their hands. The field collectors had to bend over until the collection bin was full, tiring the lower back.

The noise was not loud enough to require field collectors to wear ear plugs, but did prevent them from hearing what was going on around them. The power cord limits mobility and range.

The Garden Groom Pro performed well collecting seed from seed heads, but leaves and stems were included with the collection, making seed cleaning more difficult for some species.

According to the field collectors, the Euro-Pro Shark's storage bin was too small. The vacuum's brush didn't contact the seed head unless the brush was held at odd angles. Multiple passes over the plant were needed to collect the seed. When the brush did contact the seed head, thin stems wound up in the brush, stopping it. Cleaning the brush took time.

This device could be an appropriate collection tool for the right species. Suction is adequate. Its small size and battery make it convenient when searching for widely dispersed plants.

Conclusions

Neither the Garden Groom Pro hedge trimmer nor the Euro-Pro Shark hand-held vacuum is an improvement over common hand methods for collecting native seeds. For certain tasks in remote areas, simplicity just can't be beat.

Acknowledgments

The authors thank the seed collection crew at the Shrub Sciences Laboratory in Provo, UT, for field testing the Garden Groom Pro and Euro-Pro Shark. The authors would also like to thank John Smith, MTDC, for helping during the initial feasibility testing.

About the Authors

Mary Ann Davies received a bachelor's degree in mechanical engineering with a minor in industrial and management engineering from Montana State University. She worked in the Pacific Northwest Region as a facility engineer and as a tramway engineer. Mary Ann has worked in fire management as a crewmember and as a crewboss. She worked for 5 years with the Rocky Mountain Research Station in the fire chemistry and fire behavior groups before coming to MTDC in 1999.

Scott Jensen is a botanist for the Rocky Mountain Research Station's Shrub Sciences Laboratory in Provo, UT. He has worked for the Utah Division of Wildlife Resources as a habitat biologist responsible for noxious weeds, rangeland improvements, and plant materials. He received bachelor's and master's degrees from Brigham Young University in wildlife and range resources.

Library Card

Davies, Mary Ann; Jensen, Scott. 2008. Hands beat machines for collecting native seed. Tech Tip 0824–2353–MTDC. Missoula, MT: U.S. Department of Agriculture Forest Service, Missoula Technology and Development Center. 4 p.

A hedge trimmer (Garden Groom Pro) and a hand-held vacuum (Euro-Pro Shark) were tested to determine whether they might be more effective for collecting the seed of native plants than common hand methods. The common hand methods worked best.

Keywords: equipment, evaluations, restoration, trimmers, vacuums

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