

closed head collections may yield some viable seeds. If the site is particularly windy a larger proportion of seeds may be harvested by early collection.

For small lot applications we have not found it necessary to remove the pappus from the achene, so cleaning is simply a matter of separating the chaff. Larger material can be picked out by hand or separated by a screen. Two grasses (Poaceae), squirreltail (*Elymus elymoides* (Raf.) Swezey) and cheatgrass (*Bromus tectorum* L.), are the most common seeds that contaminate our lots. We remove these species on our specially designed felt board. We simply drape a yard of plush felt material over a similarly sized plywood board, incline the board to a steep angle, and toss handfuls of seeds at the board. Most of the composite seeds rebound off the board and fall to the collection pan beneath. Shaking and tapping the board helps free any remaining composite seeds. Appendages on the grass seeds are caught on the loose weave of the felt (Figure 2). Different weaves may be best suited for different problems posed by various seed types. We now use the plush felt material whenever prickly seeded material needs to be separated from a seed lot.

REFERENCE

USDA NRCS. 2002. The PLANTS database, version 3.5. URL: <http://plants.usda.gov> (accessed 20 Jun 2003). Baton Rouge (LA): The National Plant Data Center.

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CLEANING GRASS SEEDS

Colleen Archibald and Craig Dremann |

ABSTRACT

Wooden frames with hardware cloth provide an easy way to effectively pre-clean small lots of grass seeds in the field. We describe frames with 2 sizes of cloth used for western grass species.

KEY WORDS

Poaceae, *Elymus*, *Bromus*, *Festuca*, *Koeleria*, *Deschampsia*, wildrye, brome, fescue, prairie junegrass, hairgrass

NOMENCLATURE

USDA NRCS (2002)

In the field, seed heads of small lots of grass (Poaceae) can be harvested with scissors or small scythes and placed into paper bags, making sure to make a donut hole in the center of filled bags. This allows air to penetrate down to the bottom of the bag and prevents seeds from overheating in the field (Figure 1). Rather than bringing all of the high moisture content plant material back to the nursery for processing, drying, and cleaning, we find it useful to coarse screen the material in the field. For this screening, we constructed simple frames with hardware cloth, scrap lumber, and woodscrews.

We attached large diameter hardware cloth (6.35 mm [0.25 in] holes) to frames made from scrap wood (66 x 71 cm [26 x 28 in] long). Small wooden flaps can be secured to the sides of the frames to give the frames some height. The hardware cloth is secured between wood frames with woodscrews. Once constructed, we used the frames (Figure 2) for cleaning directly after harvest in the field. It is essential to take a drop cloth and



Photo by David B Davis

Figure 1. A donut hole in the collection bag allows air circulation and prevents seeds from overheating in the field.



Figure 2. A wooden frame covered with hardware cloth makes an effective grass seed cleaning device.

paper bags, too. After collecting seed heads, we sit on the ground with the screen and rub the plant material vigorously a few times to dislodge the seeds from the inflorescences, which fall onto the drop cloth. We pour seeds into paper bags for transport back to the nursery.

Wildrye (*Elymus* spp. L.) and bromes (*Bromus* spp. L.) are species we commonly and easily pre-clean in the field with our screens. For smaller-seeded grass species, such as prairie junegrass (*Koeleria macrantha* (Ledeb.) J.A. Schultes), hairgrass (*Deschampsia* spp. Beauv.), and fescues (*Festuca* spp. L.), we use frames with smaller diameter hardware cloth (3.1 mm [0.125 in] holes).

We think you will be surprised how easily small lots of many species can be cleaned with this method, and how minimal the amount of chaff in the seed lot will be.

REFERENCE

USDA NRCS. 2002. The PLANTS database, version 3.5. URL: <http://plants.usda.gov> (accessed 20 Apr 2003). Baton Rouge (LA): The National Plant Data Center.

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TUMBLING FOR SEED CLEANING AND CONDITIONING

David Dreesen |

ABSTRACT

Small rock tumblers can be used to clean and condition seeds both in an aqueous and a dry mode. During the process, grit and gravel remove fruit pulp and abrade seed coats. Wet tumbling of seed aids imbibition, leaches water-soluble germination inhibitors, and may partially substitute for cold stratification for some shrub seed lots.

KEY WORDS

Oleaceae, *Forestiera pubescens* var. *pubescens*, New Mexico olive, Platanaceae, *Platanus wrightii*, Arizona sycamore, Grossulariaceae, *Ribes aureum*, *Ribes cereum*, Solanaceae, *Lycium torreyii*, wolfberry, Cornaceae, *Cornus sericea* ssp. *sericea*, redosier dogwood

NOMENCLATURE

USDA NRCS (2002)

At the Los Lunas Plant Materials Center in New Mexico, we use small hobby-size rock tumblers to accomplish a number of seed cleaning and seed conditioning treatments. The principal application of the tumbler has been the maceration of dried or hydrated fruit pulp. We commonly use it to remove pulp from dried New Mexico olive (*Forestiera pubescens* Nutt. var. *pubescens* [Oleaceae]) fruits. The fruits are collected in late summer or fall after the pulp has dehydrated and adheres tenaciously to seeds. A wet tumbling procedure employing pea gravel/crushed stone and water in a rubber-lined tumbler vessel allows the rehydration of the pulp and the slow abrasion of pulp from seeds. The amount of water is minimized so that the gravel and fruit makes a slurry. This method is not quick, but the tumbler can be run overnight and checked the following day. After a course of tumbling, the contents are dumped into a sieve and the pulp is washed off, leaving clean seeds. The tumbling process is repeated until clean seeds are achieved (Figure 1).

Another cleaning application involves removal of fine hairs attached to achenes of Arizona sycamore (*Platanus wrightii* S. Wats. [Platanaceae]). The dry fruiting heads are crushed under water to partially liberate the achenes while preventing dust and fine hairs from becoming airborne (Figure 2). A slurry of achenes with pea gravel is tumbled and the hairs detach over