

RACQUETS, HOPPERS, AND FELT BOARDS— LOW-TECH DEVICES FOR PROCESSING SEEDS

Scott Jensen |

ABSTRACT

In Utah, racquets and hoppers are used to collect small lots of long-leaf hawksbeard (*Crepis acuminata* Nutt. [Asteraceae]) and pale mountain dandelion (*Agoseris glauca* (Pursh) Raf. [Asteraceae]). These seedlots are often contaminated with squirreltail (*Elymus elymoides* (Raf.) Swezey [Poaceae]) and cheatgrass (*Bromus tectorum* L. [Poaceae]). We toss the mixed seeds at a large piece of plush felt—the composite seeds fall to a collection container but the appendages on the grasses stick to the felt.

KEY WORDS

seed cleaning, Asteraceae, *Crepis acuminata*, long-leaf hawksbeard, *Agoseris glauca*, mountain dandelion, Poaceae, *Elymus elymoides*, squirreltail, *Bromus tectorum*, cheatgrass

NOMENCLATURE

USDA NRCS (2002)

At the USDA Forest Service Shrub Sciences Laboratory, we collect the small-seeded composites (Asteraceae) long-leaf hawksbeard (*Crepis acuminata* Nutt.) and pale mountain dandelion (*Agoseris glauca* (Pursh) Raf.) by hand or with racquets and hoppers. Badminton racquets have a tight weave and are ideal for collecting lightweight seeds. Tennis racquets can be used on shrub species. In either case, we construct a hopper using cordura cloth sown onto a round frame (Figure 1). The cloth is attached to the frame so that the center has a drop down and seeds are not blown out of the hopper. When target species are in the open and higher in stature than surrounding vegetation, I find the racquet and hopper the fastest collection method. If the wind is blowing, I'll hand pick individual plants, immediately placing the seeds from each head into a bag.

Of course, some disparity in ripening time occurs among plants in a population. Because you may not be able to return to the site repeatedly to maximize a collection, we have experimented with collecting heads prior to full ripening. On the same day at the same site, long-leaf hawksbeard collected early (seed heads not open) had 40% viability while those collected with open heads yielded 61% viability. The effect of storage on viability of these 2 lots is unknown, but it is apparent that



Figure 1. Collecting Asteraceae seeds with badminton racquet and a hopper made from cordura cloth sown onto a round frame.



Figure 2. When tossed at a piece of felt, desired Asteraceae seeds fall into a collection pan but unwanted grass seeds, with their prickly appendages, are caught on the felt.

Photos by Scott Jensen

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

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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.