What is Debearding?

Many grass species have seeds with “beards” (hair-like awns), and many forb species have “parchutures” (pappus) attached to seeds (e.g. fluffy seed of asters and goldenrods). These awns and pappus are adaptive and aid seed dispersal in nature. Debearding is the process of removing these hair-like appendages. The terms debearding and dehulling are sometimes used interchangeably and are sometimes used interchangeably and applied to both grass and forb seed.

Are Debearding and Dehulling Necessary?

Debearding fluffly grass and forb seed and dehulling legume seed isn’t absolutely necessary for seed to germinate and grow, at least eventually, and are impractical to do by hand except on a small scale. These techniques do provide important benefits, however, and are used routinely by commercial native seed producers. Both of these techniques improve flowability of the seed allowing it to be cleaned to greater purity and germination. Seed will flow through a seed drill more efficiently when planted, and seed that has been dried properly, moisture resistant containers, such as glass or plastic jars, or 4-mil plastic bags (Ziploc), will help protect it from collecting moisture.

Dehulling improves seed-to-soil contact necessary for timely germination. Removing the beard or pappus attached to seeds (e.g. fluffy seed of asters and goldenrods) can affect longevity of stored seed. Care should be taken to properly and thoroughly will extend viability. Overly aggressive cleaning, however, can damage seed and might damage seed during storage. Cleaning seed material stored more than a day. Dehulling or dehulling small lots of seed by hand is time consuming and dusty, but can be accomplished by rubbing fluffy seed over a small mesh screen with openings just large enough for the seed to pass through, then using air-flow to separate seed from chaff. A small gallon-sized Forsberg huller/scarifier machine is useful for de-awning small quantities of seed. This type of machine is very aggressive and only a few seconds of treatment are typically needed. Another inexpensive device is the Hoffman Mtg. hand deawner/debearder.

What is Dehulling?

Seeds of native legumes (bean family) are tightly held in small pods or hulls (e.g. prairie clover, showy tick trefoil, hoofplant, round-head bushclover). Dehulling removes seeds from these pods.

Proper storage of seed is essential to maintain viability (ability to germinate) and vigor (ability to successfully establish in the field). Seed can be kept in a cool, dry, rodent-proof place for up to a year. Longer-term storage requires a stable temperature- and humidity-controlled environment. Seed stored at 60°F stays viable twice as long as seed stored at 70°F. A good rule of thumb is that the sum of the temperature (degrees Fahrenheit) and relative humidity (RH) should not exceed 100. Examples would be storing seed at 90°F and 40% RH or 40°F and 50% RH: the addition of the two is less than 100. Relative humidity above 40% is especially detrimental to legume (oil based) seeds. Once seed has been dried properly, moisture resistant containers, such as glass or plastic jars, or 4-mil plastic bags (Ziploc), will help protect it from collecting moisture.

Other Important Factors Affecting ‘Sheelf-life’

Important factors besides temperature and humidity can affect longevity of stored seed. Non-seed ( inert) matter can harbor fungal and insect pathogens, which might damage seed during storage. Cleaning seed properly and thoroughly will extend viability. Overly aggressive cleaning, however, can damage seed and shorten longevity of stored seed. Care should be taken with deboarding or de-hulling processes not to damage or break seed.

Storage

Proper storage of seed is essential to maintain viability (ability to germinate) and vigor (ability to successfully establish in the field). Seed can be kept in a cool, dry, rodent-proof place for up to a year. Longer-term storage requires a stable temperature- and humidity-controlled environment. Seed stored at 60°F stays viable twice as long as seed stored at 70°F. A good rule of thumb is that the sum of the temperature (degrees Fahrenheit) and relative humidity (RH) should not exceed 100. Examples would be storing seed at 90°F and 40% RH or 40°F and 50% RH: the addition of the two is less than 100. Relative humidity above 40% is especially detrimental to legume (oil based) seeds. Once seed has been dried properly, moisture resistant containers, such as glass or plastic jars, or 4-mil plastic bags (Ziploc), will help protect it from collecting moisture.

Other Important Factors Affecting ‘Sheelf-life’

Important factors besides temperature and humidity can affect longevity of stored seed. Non-seed ( inert) matter can harbor fungal and insect pathogens, which might damage seed during storage. Cleaning seed properly and thoroughly will extend viability. Overly aggressive cleaning, however, can damage seed and shorten longevity of stored seed. Care should be taken with deboarding or de-hulling processes not to damage or break seed.

Storage Affects Germination

Generally, germination tends to increase slightly in some species stored up to a year after harvest as dormancy mechanisms break down. Germination then declines over the long term due to seed mortality during storage. Proper storage conditions will slow this decline.

Storage

Proper storage of seed is essential to maintain viability (ability to germinate) and vigor (ability to successfully establish in the field). Seed can be kept in a cool, dry, rodent-proof place for up to a year. Longer-term storage requires a stable temperature- and humidity-controlled environment. Seed stored at 60°F stays viable twice as long as seed stored at 70°F. A good rule of thumb is that the sum of the temperature (degrees Fahrenheit) and relative humidity (RH) should not exceed 100. Examples would be storing seed at 90°F and 40% RH or 40°F and 50% RH: the addition of the two is less than 100. Relative humidity above 40% is especially detrimental to legume (oil based) seeds. Once seed has been dried properly, moisture resistant containers, such as glass or plastic jars, or 4-mil plastic bags (Ziploc), will help protect it from collecting moisture.

Other Important Factors Affecting ‘Sheelf-life’

Important factors besides temperature and humidity can affect longevity of stored seed. Non-seed ( inert) matter can harbor fungal and insect pathogens, which might damage seed during storage. Cleaning seed properly and thoroughly will extend viability. Overly aggressive cleaning, however, can damage seed and shorten longevity of stored seed. Care should be taken with deboarding or de-hulling processes not to damage or break seed.

Storage Affects Germination

Generally, germination tends to increase slightly in some species stored up to a year after harvest as dormancy mechanisms break down. Germination then declines over the long term due to seed mortality during storage. Proper storage conditions will slow this decline.

Storage

Proper storage of seed is essential to maintain viability (ability to germinate) and vigor (ability to successfully establish in the field). Seed can be kept in a cool, dry, rodent-proof place for up to a year. Longer-term storage requires a stable temperature- and humidity-controlled environment. Seed stored at 60°F stays viable twice as long as seed stored at 70°F. A good rule of thumb is that the sum of the temperature (degrees Fahrenheit) and relative humidity (RH) should not exceed 100. Examples would be storing seed at 90°F and 40% RH or 40°F and 50% RH: the addition of the two is less than 100. Relative humidity above 40% is especially detrimental to legume (oil based) seeds. Once seed has been dried properly, moisture resistant containers, such as glass or plastic jars, or 4-mil plastic bags (Ziploc), will help protect it from collecting moisture.

Other Important Factors Affecting ‘Sheelf-life’

Important factors besides temperature and humidity can affect longevity of stored seed. Non-seed ( inert) matter can harbor fungal and insect pathogens, which might damage seed during storage. Cleaning seed properly and thoroughly will extend viability. Overly aggressive cleaning, however, can damage seed and shorten longevity of stored seed. Care should be taken with deboarding or de-hulling processes not to damage or break seed.

Storage Affects Germination

Generally, germination tends to increase slightly in some species stored up to a year after harvest as dormancy mechanisms break down. Germination then declines over the long term due to seed mortality during storage. Proper storage conditions will slow this decline.

Storage

Proper storage of seed is essential to maintain viability (ability to germinate) and vigor (ability to successfully establish in the field). Seed can be kept in a cool, dry, rodent-proof place for up to a year. Longer-term storage requires a stable temperature- and humidity-controlled environment. Seed stored at 60°F stays viable twice as long as seed stored at 70°F. A good rule of thumb is that the sum of the temperature (degrees Fahrenheit) and relative humidity (RH) should not exceed 100. Examples would be storing seed at 90°F and 40% RH or 40°F and 50% RH: the addition of the two is less than 100. Relative humidity above 40% is especially detrimental to legume (oil based) seeds. Once seed has been dried properly, moisture resistant containers, such as glass or plastic jars, or 4-mil plastic bags (Ziploc), will help protect it from collecting moisture.
Some Simple and Effective Cleaning Techniques

Simple techniques are available to effectively clean modest amounts of seed. Proper cleaning will remove much of the inert material and dust, and also remove empty, non-viable seed. These cleaning techniques involve various ways of threshing (knocking seed free of seedheads) and sorting seed using screens and airflow. Material should be properly dried before further cleaning.

Threshing — Stomp method
Species with large, coarse seed heads that tend to hold the seed tightly can be threshed by stomp- ing on seed heads. This method is very effective on species of wild indigo (Baptisia), rattlesnake master (Eryngium), compassplant and rosebud (Silphium), sunflowers (Helianthus), black-eyed Susan and sweet coneflower (Rudbeckia), golden Alexander (Zizia). Using large plastic tubs, place about a 2-in. layer of bulk material in the bottom and stomp on it with waffle-type boots. Toe kicks to the corners of the tub help break up any stubborn seed heads. Stomped ma-erial is then screened through a coarse ½-in. or ¼-in. screen into a second tub. Continue in batches, return- ing any intact seed heads remaining to the stomping tub. Pale purple coneflower (Echinacea) tends to be stubborn and may require machine threshing, unless it’s collected late in the season after seed heads naturally begin to break apart.

Threshing — Screen Method
Many species have seeds that shake free of a capsule or open pod. This method can be effective for drying seedheads of Culver’s root (Veronicastrum), cardinal flower and great blue lobelia (Lobelia), shootingstars (Dodecatheon), mints (Pycnanthemum, Monarda), and gentians (Gentiana). Either hold dry seedheads upside down against the inside of a tub or place in a bag and shake or beat gently to free seed. This method has the advantage of minimising the amount of chaff and inert material in the seed.

Grading or Sizing
Grading sorts desired seed, or “crop” seed by size. Any given species’ seed will contain a range of seed sizes. Avoid intentionally grading seed intended for restoration plantings, since selection for seed size can happen in one generation, i.e., large seeds will give rise to plants with large seeds, and may reduce genetic variability. Large rosebud seed, for example, may not go through a ½ inch screen, but smaller rosebud seed will. Using a ½ inch screen in this case would not be advisable.

Screens
Screens are used for sort- ing by shape and size and are essential for cleaning. Any kind of mesh can be made into a ready-made screen including kitchen sieves, colanders, window screens, hardware cloth, decorative grating are just a few ideas. Commercially available screens are made in a wide range of pore sizes and shapes for specific purposes. Handheld pan- type screens are handy for small batches. Homemade screens of hardware cloth, available in ¼, ½ and 1 inch mesh attached to wood frames are effective for rough cleaning. Depending on the application, screens are classified as scalping, grading or sizing, and sifting, as described below.

Scalping
Scalping removes objects larger, longer, and wider than the desired crop seed. Screens used for scalping have pores larger than the seed. Most compassplant seeds will fall through a ½ inch mesh, for example, which scalps off larger bits of leaves, stems, and bracts. Scalping material through a much larger screen first, and then one closer to seed size is often more efficient, al- lowing material to flow more freely through each screen.

Grading
Grading sorts desired seed, or “crop” seed by size. Any given species’ seed will contain a range of seed sizes. Avoid intentionally grading seed intended for restoration plantings, since selection for seed size can happen in one generation, i.e., large seeds will give rise to plants with large seeds, and may reduce genetic variability. Large rosebud seed, for example, may not go through a ½ inch screen, but smaller rosebud seed will. Using a ½ inch screen in this case would not be advisable.

Airflow — Sifting
Sifting is the final screen- ing step. Use a screen with pores just smaller than the seed to allow dust, broken seeds, etc. to fall through and yet retain desired seed on screen. For example, most compassplant seeds won’t fall through a ¼ inch screen, but smaller bits of plant material will, especially the “straw.” This series of screening processes is effective in concentrating desired seed and removing most inert material. Not all seeds will be viable, however, even if they otherwise look normal. Some seeds will be “tight” in weight due to immaturity, underdevelopment or from being eaten from the inside by seed predators. These seeds will not be removed by simple screening. This “tight” seed is removed with airflow, either by winnowing or aspiration.

Airflow — Aspirating
Aspirating uses vertically moving air to separate heavy from light particles. Winnowing seed in a gentle breeze can be very effective in removing chaff and light seed. To achieve more control, place a tarp on the floor and an ordinary box fan at one end of the tarp. Pour seed gently in front of the fan. Heavier seeds fall closer to the fan than light seed or empty seed. Fine-tune the process by experiment- ing with fan speed and distance from fan. Once you find the most effective combination, continue to pour the seed in front of the fan in a consistent manner. The seed should now be laying somewhat fanned out on the tarp, with the heavier seed nearer to the fan and light or empty seed further away. Using a thumbnail, push down on the seed coats closest to the fan at first, repeating this test as you gradually move away from the fan. Heavy seed will feel firm and resist being crushed with gentle, downward pressure; empty seeds, on the other hand, will offer little resistance and crush easily. Make a determination where the heavy seed ends and the light or empty seed begins, and draw a line through the pile of seed at this point. Clean, heavy seed can then be swept up and stored for planting, while the rest is discarded.

Winnowing
Winnowing uses horizontally moving air to separate heavy from light particles. Winnowing seed in a gentle breeze can be very effective in removing chaff and light seed. To achieve more control, place a tarp on the floor and an ordinary box fan at one end of the tarp. Pour seed gently in front of the fan. Heavier seeds fall closer to the fan than light seed or empty seed. Fine-tune the process by experiment- ing with fan speed and distance from fan. Once you find the most effective combination, continue to pour the seed in front of the fan in a consistent manner. The seed should now be laying somewhat fanned out on the tarp, with the heavier seed nearer to the fan and light or empty seed further away. Using a thumbnail, push down on the seed coats closest to the fan at first, repeating this test as you gradually move away from the fan. Heavy seed will feel firm and resist being crushed with gentle, downward pressure; empty seeds, on the other hand, will offer little resistance and crush easily. Make a determination where the heavy seed ends and the light or empty seed begins, and draw a line through the pile of seed at this point. Clean, heavy seed can then be swept up and stored for planting, while the rest is discarded.