

NATIVE SEED COLLECTION AND STORAGE

TECHNICAL GUIDANCE DOCUMENT

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INTRODUCTION

Seed collection as part of a plant community restoration project encourages the use of local seed sources and can help reduce project costs. To plan for seed collection, develop a list of potential seed sources for individual species and note when each species will likely be ready for collection. Other important considerations for seed collection include the methods and equipment to be used for collection and how seed will be cleaned and stored.



Collection of wet meadow grass seed in Murry County

APPLICATION

Where to Collect - Seed should only be collected where there are large populations and good seed supplies. Permits are needed to collect from most public land. Seed should not be collected from state or federally listed species without special approval. When focusing on the collection of “local” seed for a project, investigate whether the site is a remnant population or if it was planted (and if planted, where the seed originated from). Collect seed from as close to the restoration site as possible and from multiple sites to promote genetic diversity. Many landowners will grant permission to collect seed along their roadsides or other non-agricultural lands.

How much to collect - The amount of seed to collect will vary somewhat by the species being collected and how much that species relies on seed dispersal to regenerate the population. As a general rule, it is recommended to collect only between $\frac{1}{4}$ and $\frac{1}{2}$ of the seed from the population of any particular site. Another consideration is that the germination potential of wild collected seed can vary significantly by species and tends to be lower than seed produced in production fields. As a result, it is helpful to collect about thirty-percent more seed than would be purchased for most species. It is helpful to calculate how many seeds per square foot are needed for individual species, and then calculate how many seeds are needed for the entire project area (43,560 square feet are in one acre). As species have different amounts of chaff that is harvested during collection it is good to have a rough estimate of how much actual seed will result from the collection.

When to collect - It is helpful to watch species over time to determine when seed should be collected. Even from a single species, seed may not ripen all at one time, so more than one collection might be needed. Seed tends to be ripe when seed capsules and seed are turning dark in color, when seed pods are opening, when wind-born seeds appear fluffy, and when seeds are turning hard. Do not collect green seed—it may not be mature.

Harvesting Equipment - Equipment for collecting seeds includes gloves, paper bags or feed bags, pruning shears, and boxes for transport. Seed strippers, combines, or other specialized equipment can be used for collecting from large patches of seed. Seed strippers use rotating brushes on ATVs or tractors and work well for grasses and some forbs when they are in large patches. Specialized heads (such as a rice head) are sometimes used on combines rather than grain heads to better manage the variety of species to be collected. Be sure that areas are free of invasive species when using mechanical harvesters. Specialized tools are available for collecting fruits such as blueberry, huckleberry, and bearberry and large tarps are often used for the collection of tree seeds.

Harvesting Techniques - For most species of grass, the seedheads can be stripped by hand. This works particularly well for species that have a spike-like inflorescence such as blue lobelia or cardinal flower. In some cases, it may be most effective to clip off entire seedheads for plants that have large seed heads such as sunflowers, ironweed, and Joe-pye weed, or for species with tough seed heads such as blazingstar. For species with pods it is often best to separate the seed after the pods have been dried. It is most efficient to attach the collection bag to a belt to keep both hands free for collection.

Although it seems contrary to common sense, don't be selective when harvesting seed. To collect a good representation of a species' genetics, it is important to collect seed from plants that bloom at different times, from plants of different heights, and from plants that have varying amounts of seed production.

Drying Seeds - The most common method of drying is to spread the seed on a dry floor, or elevated screens, canvas, or tarps in a room that has good air circulation. Stir the seed a couple of times per day to ensure that it is drying uniformly. Dry seed as quickly as possible to prevent the development of mold. For large quantities of seed, grain drying bins, fans, or other methods to circulate air can be used.



Ripening manna grass seed

Cleaning Seeds - A variety of equipment can be used for seed cleaning including threshers, leaf mulchers, and hammer mills for breaking apart seed pods, blenders for separating fleshy seed, or different-sized screens and fans to separate chaff from the seed. Methods using air or water are sometimes used to separate lighter, non-viable seed. The degree of cleaning needed depends on the type of seeding that will be conducted. If seed will be hand-dispersed, very little cleaning may be needed other than breaking apart seed heads. Many broadcast seeders can use seed that contains a relatively high percentage of chaff. Native seed drills require a higher degree of cleaning to work effectively.

Storing Seeds – In some cases it is possible to spread seed directly after collection but in most cases seed will require storage before seeding. After seed cleaning and drying is completed (drying takes around three days) seed may need to be stored until the site is ready. Store seed in a cool, dry location (ideally around 50 degrees F and under 50% humidity). Seed should not be frozen unless freezing is used for a short time period to control insects. Mild insecticides are sometimes also used for this purpose. Storing seed in brown paper bags will minimize light reaching the seed and allow for some air flow. Storage for seed of herbaceous species in plastic bags may hold too much moisture, leading to mold. Plastic bags are sometimes used to store dried tree and shrub seed to maintain a constant humidity.



Giant bur-reed seed

Fleshy seeds, or seed of submergent plants, should be planted as soon as possible to prevent drying. If this is not possible the seed should be mixed with moist sand or sphagnum moss and refrigerated. Labels should be included on each bag of seed and include the date of collection, species, location and the collector. The amount of time that seed can be stored varies by species. It is recommended to use seed within a year after collection as some species can lose thirty to fifty percent of germination potential during that time period.

OTHER CONSIDERATIONS

It is common to combine locally-collected seed with seed that is purchased. Testing seed viability and purity will allow an estimate of how much seed can be expected to germinate at the site.

COSTS

The costs for hand collection of seed tends to be low, with staff time making up most of the cost. The use of specialized combines adds fuel and maintenance costs. Seed cleaning also requires mechanical equipment and additional staff time.

ADDITIONAL REFERENCES

BWSR Native Vegetation Establishment and Enhancement Guidelines
http://www.bwsr.state.mn.us/native_vegetation/seeding_guidelines.pdf

Going Native, A prairie restoration handbook for Minnesota Landowners, Fuge

Harvesting, Propagating, and Planting Wetland Plants, Hoag, C.J.