cleaning is by sieving and winnowing or processing over a small fanning mill.

We use this technique successfully on many genera of the Asteraceae including pearly everlasting (*Anaphalis* spp. DC.), arnica (*Arnica* spp. L.), balsamroot (*Balsamorhiza* spp. Nutt.), daisy (*Erigeron* spp. L.), blanket flower (*Gaillardia* spp. Foug.), golden aster (*Heterotheca* spp. Cass.), goldenrod (*Solidago* spp. L.), and aster (*Symphyotrichum* spp. Nees). We have also used it with feathery achenes of *Geum* L. spp. (Rosaceae) and *Pulsatilla* P. Mill. spp. (Ranunculaceae), winged seeds of pines (*Pinus* spp. L. [Pinaceae]) and Douglas-fir (*Pseudotsuga menziesii* (Mirbel) Franco [Pinaceae]), and grass seeds (Poaceae) such as needlegrass (*Achnatherum* spp. Beauv.), wheatgrass (*Pseudoroegneria* spp. (Nevski) A. Löve), and wildrye (*Elymus* spp. L.). It also works well with dehiscent capsules of willowherbs (*Epilobium* spp. L. [Onagraceae]) and glacier lily (*Erythronium* spp. L. [Liliaceae]).

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COLLECTING SEEDS FROM SOUTHEASTERN US WOODLAND SPECIES

Barry Glick |

ABSTRACT

In order to collect seeds from a wide range of southeastern US woodland species with diverse dispersal strategies, specially made collection bags are placed over plants. After collection, seeds are separated from debris with a strainer and further cleaned with a fanning mill. This method can be used for efficient collection of large numbers of seeds at ideal ripeness, in a nursery or in the wild.

KEY WORDS

seed dispersal, *Geranium maculatum, Jeffersonia diphylla, Viola* species, *Mitella* species, *Sanguinaria canadensis, Hepatica americana, Asarum canadense, Dicentra cucullaria, Dodecatheon* species, *Spiranthes cernua, Tipularia discolor*

NOMENCLATURE

USDA NRCS (2002)

A grower cannot be in all places at all times, especially when producing and collecting seeds from hundreds of species. Ripening seeds are a temperature dependent phenomena, and this is further complicated by each species having its own prolonged period of fruit maturation and dispersal strategy. At Sunshine Farms and Gardens, we collect seeds and grow many of the most desired southeastern US woodland species. Many of these species can be challenging to collect seeds from due to unique dispersal mechanisms of the fruits or dispersal agents or simply due to the small size of the seeds and fruits. We have come up with an efficient and effective method to address this challenge.

Southeastern woodland species are as diverse in their dispersal strategies and fruits as in their wide range of attractive flowers and growth forms. Spotted geranium (*Geranium maculatum* L. [Geraniaceae]) is a classic example of explosive dehiscence, where the seeds are spring loaded and catapulted away from the plant when the fruits mature and split along the sutures. Twinleaf (*Jeffersonia diphylla* (L.) Pers [Berberidaceae]) produces a unique seed pod that resembles a hooded pouch with a lid at the top that opens with a hinge-like attachment when mature. Similarly, several violets (*Viola* spp. L. [Violaceae]) have small pods that explode upon maturation.

Alternatively, seeds may be dispersed by an external force such as raindrops, which disseminate the tiny black seeds of

miterwort (*Mitella* spp. L. [Saxifragaceae]) from the opened saucer-shaped capsules. Ants are also important dispersal agents in woodlands and rapidly carry away the seeds of bloodroot (*Sanguinaria canadensis* L. [Papaveraceae]), Canadian wild ginger (*Asarum canadense* L. [Araceae]), American hepatica (*Hepatica nobilis* Schreb. var *obtusa* (Pursh) Steyermark [Ranunculaceae]) and Dutchman's breeches (*Dicentra cucullaria* (L.) Bernh. [Fumariaceae]).

Shooting star (*Dodecatheon* spp. L. [Primulaceae]) and Virginia bluebells (*Mertensia virginica* (L.) Pers. ex Link [Boraginaceae]) have capsules that open quickly upon maturation, while native orchids (Orchidaceae), such as nodding ladies tresses (*Spiranthes cernua* (L.) L.C. Rich) and cranefly orchid (*Tipularia discolor* (Pursh) Nutt.), have dust-like seeds that are dispersed immediately. Such small seeds and fruits can also be difficult or time consuming to collect seeds from.

In order to collect seeds from such a wide range of species, we have designed specially made collection bags that we place over our stock plants in the nursery as seeds approach maturation. The bags are made from a mill-spun polyester fiber that is rot and UV resistant and last for many years. Bags are available in 1.2 x 1.8 m (4 x 6 ft), 1.2 x 2.4 m (4 x 8 ft) and 1.2 x 3 m (4 x 10 ft) sizes from our nursery. We tie the bags over stock plants as the fruits are maturing and include a couple of marbles to help weigh them down.

After collection, seeds are passed through a metal strainer to separate seeds from debris. Finally, we run our seedlots through a fanning mill using various size screens to provide clean seeds. This year, we will collect around 6.8 million seeds from hundreds of plants in our nursery, many of them by using this method. This ensures that we capture seeds when they are ripe and protects them from loss. Our collection bags can also be used for wild collections for many other species that have rapid dispersal or present other problems for the seed collector.

Photos by Barry Glick

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