



Seeds of Success Glossary

**Denotes a required field on the SOS Field Data Form.*

Accession Number – A number representing a unique germplasm or collection and associated with a Seed Collection Reference Code or field number. This number is consecutive and never to be reused. Collections made in different growing seasons from the same population are unique accessions or collections, assigned unique seed collection reference numbers. Example: CO932-5. See also ***Seed Collection Reference Number*** for the accession number format required for SOS.

Alt. Collection Number – Alternate collection numbers are secondary identification number representing a code assigned by another institution – they are *not* required for the SOS National Office. They may represent another organization or individual involved in the collection, a batch number or other numbering system previously employed by the current institution. E.g., MSB378585, CH-101, or 2014-16.

Agency Coordinator – The SOS coordinator for the BLM, NPS, or USFWS that is the primary point of contact for a collection team for the season. You will send this person all end of year reporting data and attend the breakout session they lead during the monthly collector calls.

***Area Sampled** – In acres, the size of the area in which the collection was made. Since collections should ideally be made from the entire population, this number should be very close to the actual population size, in acres.

***Area within Subunit** - The geographic area where this collection was made. Geographic areas are physical or logical areas that transcend the geopolitical areas defined in the State, County, Subunit fields. These may include mountain ranges, river valleys, trail names, etc. e.g., Marigold Trail, Red Rocks Canyon, or Maroon Bells.

***Aspect** – The cardinal direction of the slope where the collection was made. Measure using a compass. E.g., NW.

***Associated Species** – List the scientific name for all plants found coexisting with the collected species, ideally at least five for SOS.

***Collector Code** - BLM field office or institutional code assigned to your collection team. These are assigned by the SOS National Coordinating Office. E.g., AK930, NCBG or CP2.

***Collector Name(s)** – All active participants participating in seed collection. Collectors' name should be entered as last name, first initial. Example: Dawson, C., Howard, M., Haidet, M.

***Collection Number** - The collection number is the sequential, unique, number assigned to a given collection. This number is the second part of the seed collection reference number.

***Common Name(s)** – The vernacular or trade name(s) of the collected species. Common names should be lower case, except for proper nouns within the name. E.g., blue grass, Iowa tall

grass, and creeping Jenny.

***County** – The county the collection was made.

Cut Test – A test performed by splitting seeds in half to determine the viability of a potential collection. Immature seeds are usually green, and seeds ripe for collecting are usually brown with a notable live embryo. A cut test can be used to estimate the number of healthy seeds per fruit.

***Date(s) Collected** – Enter up to two dates a collection was made from the same population. Use MM/DD/YY format. Collections made in different growing seasons from the same population are unique accessions or collections, assigned unique seed collection reference numbers (see *Recollection*). E.g., August 4, 2021 is recorded as 08/04/2021.

Date Range - If the collection dates span more than two dates, utilize this field in the web portal, which is a free text box. Enter the range of dates, or the individual dates. Use MM/DD/YY format and separate multiple dates with a comma. For example, if the collection took place on August 4th, 5th, 7th, and 9th, 2021, then enter the first two dates in the first two fields, and then “08/07/2021, 08/09/2021” in the “Date range” field.

***Ecoregion** – Ecoregions denote areas within which ecosystems (and the type, quality, and quantity of environmental resources) are generally similar. The SOS standard is to use Omernik Level III and IV Ecoregions (<https://www.epa.gov/eco-research/level-iii-and-iv-ecoregions-continental-united-states>).

***Elevation** – Distance above or below sea level. If necessary, indicate a range, e.g., 1200-1400 feet.

Estimate the number of healthy seeds per fruit – After performing a cut test, calculate the number of seeds ripe for collection per fruit.

Estimate the number of healthy fruits per plant – This number will yield an approximation of how many plants in the population need to be sampled to reach the ideal sample size of more than 10,000 healthy seeds.

Evidence of disturbance or damage – Any manipulations made to the collection site. Most collections should be made on sites falling under ‘No Damage.’

***Family** – The family to which the collection belongs.

***Genus** – The genus to which the collection belongs.

***Geology** – The mineral structure of the collection site, either a formation type or specific rock which makes up the parent material. E.g., granite, limestone, or sandstone. If you are unable to recognize the parent material, reference the soil map for the location at <https://websoilsurvey.sc.egov.usda.gov>

***GPS Datum** – GPS device setting, when using GPS with a map, make sure both tools match. The SOS standard is NAD83.

***Habitat Type** – Description of the collection site as a plant community or ecosystem. Example:

oak savanna, prairie, sagebrush steppe. Ecological site descriptions and national vegetation classifications are also accepted for this field on the SOS data form.

***Identified by** – The name and organization of the botanist or plant specialist who identified the taxa of the collection.

Infraspecific Rank – The term preceding the infraspecific epithet. E.g., ssp. (subspecies), var. (variety), or subvar. (subvariety).

Infraspecific Epithet – The taxonomic designation below the species level to which the collection belongs, part of the scientific name. Example: *multiflora* in *Brickellia longifolia* var. *multiflora*.

***Landform** – Description of local topography. E.g., mountain, hill, alluvial fan, flat, etc. A selection of landforms and their definitions is available on blm.gov/sos.

***Landowner** – This should reflect the public agency or municipality that is responsible for the land on which the collection was made. Omit private individuals' names. You **MUST** keep written permission on file in your office if a collection was made on private land or land other than BLM. E.g., USFWS.

***Land Use** – How the land is used by humans. E.g., mining, recreation, grazing, conservation.

***Latitude** – Direction from the equator (N/S), degree, minute, and second.

***Location Details** – The locality of the collection site, including driving and hiking directions from some recognizable point to the collection site. Be detailed enough that someone can retrace the location details and find the population using cardinal directions, mileage, and permanent landmarks. E.g., Starting at the intersection of Fifth St and Cole Ave, head SW on Fifth St towards Albert St. and turn right onto Albert St. In 6 miles slight right east onto Coffee Pot Rd E. In 5.4 miles turn S (right) to Coffee Pot Recreation area and continue for 3 miles. The population primarily lines the road just after the cattle guard and is off to the right when facing the lake.

***Longitude** – Direction from the Prime Meridian (E/W), degree, minute, and second.

Long-term storage portion - The first 3,00 seeds from any SOS collections are stored in long-term storage conditions for conservation purposes with the USDA-ARS.

***NRCS PLANTS Code** – A code system for recording plant names in the United States is used in the USDA NRCS PLANTS Database. Plant species "symbols," as they're called, are comprised of the first two letters of the genus, followed by the first two letters of the species, the first single letter of the variety name (if present), and sometimes a tie-breaking number. See <http://plants.usda.gov/> and query the scientific name to find the unique code.

***Modifying Factors** – Any event that has altered the collection site, such as burning, grazing, or seeding. If a modifying factor results in a cultivated population, the population can no longer be considered for collection. However, naturally occurring populations within a seeded area may be considered as suitable collection populations.

Native Plant Materials Development Process – The interagency process developed by the

BLM which works to develop a reliable, stable crop of high-quality native seeds and seedlings from wild collected species for restoration, rehabilitation, and reclamation.

Natural Dispersal Stage – The point in the population’s growing cycle where seeds would be distributed without human interference. The best stage at which to collect seed.

***Non-BLM Permission Filed** – Permission is needed to collect on all private and public lands. Written permission should be kept on file for all collections. Indicate “yes” that permission is filed.

***No. Plants Found** – Total number of plants living at the collection site; this number includes those plants whose seeds are not ripe for collection on the day of collection.

***No. Plants Sampled** – Number of plants seed was collected from. There should be a minimum of 50 plants sampled, and the number should be exact, *not* an average or range.

Operational Collection – A seed collection made following the SOS Protocol that is over 80,000 estimated PLS (weight can vary). The purpose of these collections is for restoration, particularly for increasing through a grow-out.

Organization – On the collection form, this refers to the federal agency associated with the team organization and seed use. E.g. BLM, NPS, USFWS, DOI.

Photograph Reference – Use the following naming convention to document each of the three digital images taken with for every collection: PLANTS Code_Collection Number_Letter. Example: Photos for Chicago Botanic Garden’s collection of *Symphyotrichum lanceolatum* are named SYLA6_CBG-419_A.jpg, SYLA6_CBG-419_B.jpg, SYLA6_CBG-419_C.jpg.

Plant Habit – The way the collected species grows. E.g., tree, shrub, forb, succulent, or grass/grasslike.

***Plant Height** – Distance from the ground to the top of the plant in feet and inches. This number should be an average of the population.

PLS – Pure live seed. The number of viable seeds in a collection.

Population – A group of individuals living within the same collection site, continuous in range and generally uniform in appearance; one accession or collection. Geographic features such as roads, ridges, and rivers inhibit gene flow between populations, and thus are useful indicators of separate populations.

Readiness of Population – The ripeness of the population on collection day; collections should be made when the population is closest to natural dispersal stage.

Recollection – A seed collection made from a population that has previously been collected from following the SOS Protocol.

***Seed Collection Reference Number** – Collector code, BLM field office or institutional code, followed by collection number, a consecutive and chronological number representing the unique collection or accession, never to be reused. See *Accession*

Number. Example: CA170-42, OR110-347 or CBG-2481.

***Seed Collected From** – Choose from the following: plant, ground, both. The best collections are made from plants.

Seed Transfer Zones – There are many different seed transfer zones, all which are used to determine the where seeds can be moved and sourced within a region. All SOS collections in the lower 48 have a Provisional Seed Zone associated with them. Depending on the geographic area and species, there may be additional zones to narrow the area based on additional further research.

- **Provisional Seed Zone** – An area defined by annual temperature and aridity, which is used as a general guideline to determine where seeds can be moved and sourced within a region. Source: Bower et al. Provisional Seed Zones (<https://www.fs.usda.gov/wwetac/seedzoneGISdata.php>)
- **Eastern States Seed Zone** – Seed transfer zones specific to eastern states. Eastern States Seed Transfer Zones created by Carolyn Pike et al. (Pike, Carolyn; Potter, Kevin M; Berrang, Paul; Crane, Barbara; Baggs, Joanne; Leites, Laura; Luther, Tom. 2020. New Seed-Collection Zones for the Eastern United States: The Eastern Seed Zone Forum. *Journal of Forestry*. 9(2): 271-. <https://doi.org/10.1093/jofore/fvaa013>.)
- **Desert Southwest Seed Zone** – Seed transfer zones specific to the desert southwest. Shyrock et al. Desert Southwest Provisional Seed Zones. Source: <https://www.fs.usda.gov/wwetac/seedzoneGISdata.php>
- **Empirical Seed Zones** - Includes Climate Matched, Common Garden, and Landscape Genetic Seed Zones for specific species: Basin wildrye (*Leymus cinereus*), Blue grama (*Bouteloua gracilis*), Blue wildrye (*Elymus glaucus*), Bluebunch wheatgrass (*Pseudoroegneria spicata*), Bottlebrush Squirreltail (*Elymus elymoides*), Desert globemallow (*Sphaeralcea ambigua*), Hoary tansyaster (*Machaeranthera canescens*), Indian ricegrass (*Achnatherum hymenoides*), James' galleta (*Pleuraphis jamesii*), Mountain Brome (*Bromus carinatus*), Mtn. Big Sagebrush (*Artemisia tridentata* ssp vaseyana), Nevada ephedra (*Ephedra nevadensis*), Oceanspray (*Holodiscus discolor*), Prairie junegrass (*Koeleria macrantha*), Rocky Mountain beeplant (*Cleome serrulata*), Rushy milkvetch (*Astragalus lonchocarpus*), Sand dropseed (*Sporobolus cryptandrus*), Sandberg's bluegrass (*Poa secunda*), Showy goldeneye (*Helioomeris multiflora*), Small-leaf globemallow (*Sphaeralcea parvifolia*), Sulfur-flower buckwheat (*Eriogonum umbellatum*), Tapertip onion (*Allium acuminatum*), Thurber's needlegrass (*Achnatherum thurberianum*), WY Big Sagebrush/Big Sagebrush (*Artemisia tridentata* ssp wyomingensis and ssp tridentata), Yellow spiderflower/Yellow beeplant (*Cleome lutea*). Source: <https://www.fs.usda.gov/wwetac/seedzoneGISdata.php>

Short-term storage portion – The seed remaining in a collection after the long-term storage portion has been removed. These seeds are kept in short-term storage conditions by the Bend Seed Extractory or other facility until requested. The original collecting team has right of first use or can make seed available for other SOS partners for native plant materials development projects.

***Slope** – The degree of steepness at the collection site; record a number representing the degree of slope 0-90 measured with a clinometer. E.g., 30 degrees.

***Soil Color** – Refer to the Munsell Soil Color Chart and document color using the code and descriptive name. E.g., 7.5 YR 3/3 “dark brown”.

***Soil Texture** – Describes the soil at the collection site with the following terms: clay, silt, and sand etc. Soil texture is best estimated by rolling a sample of soil between your finger and thumb.

***Source Used** – The source used to obtain the lat/long coordinates for the collection site. E.g., gps, map, other.

***Species** – The species to which the collection belongs.

Standard Collection – A seed collection made following the SOS Protocol that is under 80,000 PLS. All SOS collections are for restoration purposes.

***State** – The state in which the collection was made.

Sub-Populations – A cluster of individuals that are divided from the main population either physically or in appearance.

***Subspecies** – See *Infraspecific Rank*.

***Subunit** – The descriptive name of the area given to it by the landowner or land manager. This may include the city, town, village, park, forest, or refuge in which the material was collected. E.g., Blue Mountains, Antelope Island State Park, Ridgecrest Field Office, Phoenix.

***Variety** – See *Infraspecific Rank*.

Viability Equation – The equation used to determine whether only collecting 20% of the healthy seeds available on a given day will result in a collection greater than 10,000 seeds.
$$(\# \text{ of viable seeds per fruit}) * (\# \text{ fruits per plant}) * (\# \text{ of plants in the population}) * 0.2$$
$$=$$
$$>10,000 \text{ seeds}$$