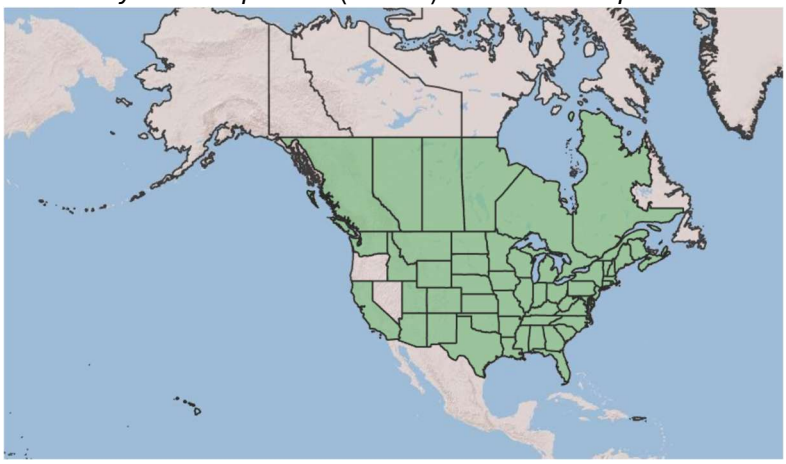
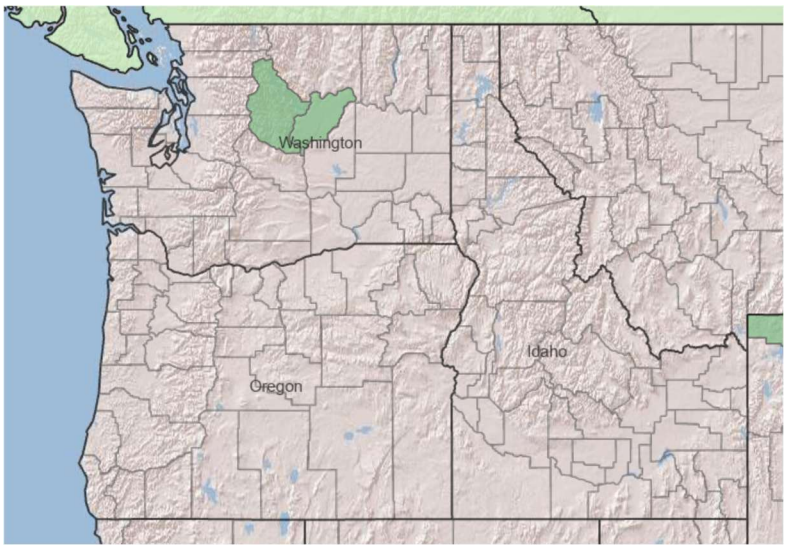
Plant Propagation Protocol for *Schizachyrium scoparium*
ESRM 412 – Native Plant Production
URL: https://courses.washington.edu/esrm412/protocols/2026/SCSC.pdf

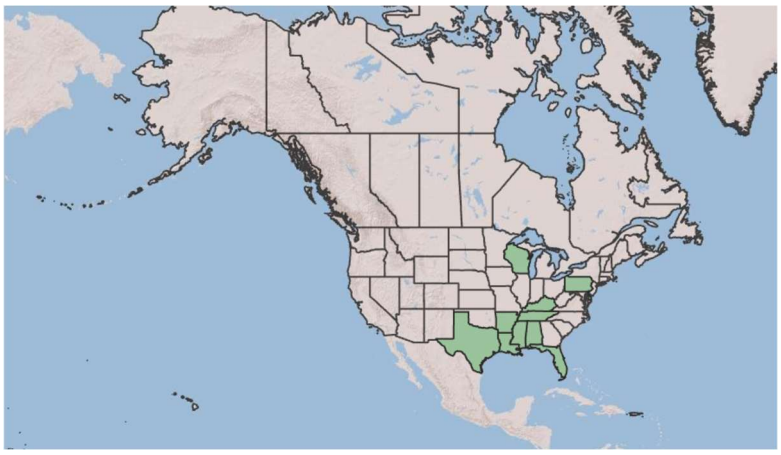
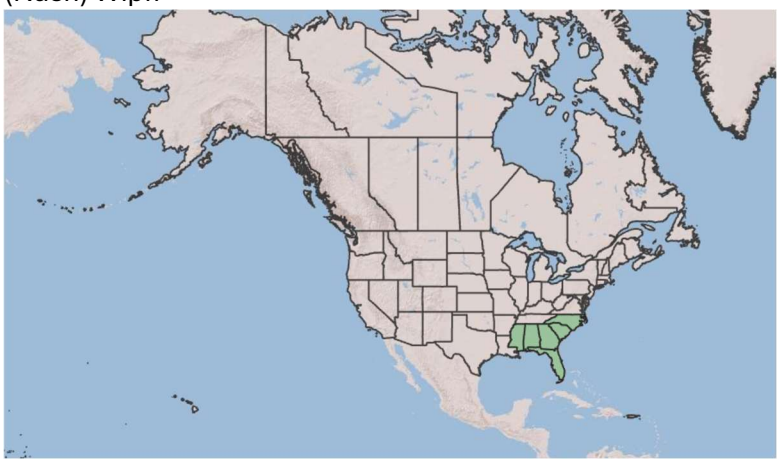
S. scoparium mature plant (left) and inflorescence (right)

TAXONOMY	
Plant Family	
Scientific Name	Poaceae Barnhart[2,3,4,5]
Common Name	Grass family[2,3]
Species Scientific Name	
Scientific Name	*Schizachyrium scoparium* (Michx.) Nash[2,3,4,6]
Varieties	*Schizachyrium scoparium* (Michx.) Nash var. *scoparium*[2,3,4,7] *Schizachyrium scoparium* (Michx.) Nash var. *divergens* (Hack.) Gould[2,8] *Schizachyrium scoparium* (Michx.) Nash var. *stoloniferum* (Nash) Wipff [2,9]
Sub-species	No sub-species recognized[2]

Cultivar	Many cultivars recognized[10,11] including: S. scoparium 'Aldous' – 'Badlands' – 'Blaze' – 'Blue Heaven' – 'Blue Paradise Prairie Winds' – 'Camper' – 'Carousel' – 'Chameleon' – 'Cimarron' – 'Cinnamon Girl' – 'Good Vibrations' – 'Jazz' – 'Little Arrow' – 'Little Luke' – 'Pastura' – 'Prairie Blues' – 'Prairie Munchkin' – 'Purple Arrow' – 'Sandhill' – 'Seasons in the Sun' – 'Shining Star' – 'Smoke Signal' – 'Standing Ovation' – 'The Blues' – 'Twilight Zone' *Note:* Several isolated germplasms also in use[11] including: Coastal Plains Germplasm STN-176 Germplasm STN-461 Germplasm Ozark Germplasm Suther Germplasm Prairie View Indiana Germplasm OK Select Germplasm Southlow Michigan Germplasm Itasca Germplasm Southern Iowa Germplasm Northern Iowa Germplasm Northern Missouri Germplasm Central Iowa Germplasm

Common Synonym(s)	*Schizachyrium scoparium* (Michx.) Nash var. *Scoparium*[2,4,7] *Andropogon praematurus* Fernald *Andropogon scoparius* Michx. *Andropogon scoparius* Michx. var. *ducis* Fernald & Grisc. *Andropogon scoparius* Michx. var. *frequens* F.T. Hubbard *Andropogon scoparius* Michx. var. *neomexicanus* (Nash) Hitchc. *Andropogon scoparius* Michx. var. *polycladus* Scribn. & C.R. Ball *Andropogon scoparius* Michx. var. *septentrionalis* Fernald & Grisc. *Schizachyrium praematurum* (Fernald) C.F. Reed *Schizachyrium scoparium* (Michx.) Nash var. *frequens* (F.T. Hubbard) Gould *Schizachyrium scoparium* (Michx.) Nash var. *neomexicanum* (Nash) Gould *Schizachyrium scoparium* (Michx.) Nash ssp. *neomexicanum* (Nash) Gandhi & Smeins *Schizachyrium scoparium* (Michx.) Nash var. *polycladum* (Scribn. & C.R. Ball) C.F. Reed *Schizachyrium scoparium* (Michx.) Nash var. *divergens* (Hack.) Gould[2,8] *Andropogon divergens* (Hack.) Andersson ex Hitchc. *Andropogon scoparius* Michx. var. *divergens* Hack. *Andropogon scoparius* Michx. var. *virilis* Shinners *Schizachyrium scoparium* (Michx.) Nash ssp. *divergens* (Hack.) Gandhi & Smeins *Schizachyrium scoparium* (Michx.) Nash var. *virile* (Shinners) Gould *Schizachyrium scoparium* (Michx.) Nash var. *stoloniferum* (Nash) Wipff[2,9] *Andropogon stolonifer* (Nash) Hitchc. *Schizachyrium stoloniferum* Nash *Schizachyrium stoloniferum* Nash var. *wolfei* DeSelm
Common Name(s)	Little bluestem,[2,3,4,5,12] prairie beargrass,[6] Creeping bluestem (*S. s* var. *stoloniferum* only),[12] broom beardgrass,[12] Broom bluestem (*S. s*. var *scoparium* only),[3,4,12] and pinehill bluestem (*S. s*. var. *divergens* only)[12]
Species Code (as per USDA Plants database)	SCSC[2]

GENERAL INFORMATION	
Geographical range	Widely distributed across North America. In Washington primarily east of the Cascade Crest with observations in Chelan, Douglas,[2,7] Grant, and Whitman counties.[3] *Schizachyrium scoparium* (Michx.) Nash var. *Scoparium*   *Note:* Distribution maps for *S. scoparium* and *S. s*. var *scoparium* are identical in given view[2,7]

	Schizachyrium scoparium (Michx.) Nash var. *divergens* (Hack.) Gould  *Schizachyrium scoparium* (Michx.) Nash var. *stoloniferum* (Nash) Wipff  *Note:* Distribution maps adapted from USDA Plant Database[2,7,8,9]
Ecological distribution	*S. scoparium* is a facultative upland (FACU) species[2] most commonly occurs in prairies, open forests, grasslands, foothills, steep slopes, and other dry upland ecosystems.[3,4,5,6] It is also observed in plant communities along riverbanks and adjacent to hot springs.[4] *S. scoparium* is observed in the following Forest-Range Environmental Study (FRES) ecosystem types[12,13]: FRES10 White-red-jack pine, FRES11 Spruce-fir, FRES12 Longleaf-slash pine, FRES13 Loblolly-shortleaf pine, FRES14 Oak-pine, FRES15 Oak-hickory, FRES16 Oak-gum-cypress, FRES17 Elm-ash-cottonwood, FRES18 Maple-beech-birch, FRES19 Aspen-birch, FRES20 Douglas-fir,

	FRES21 Ponderosa pine, FRES28 Western hardwoods, FRES29 Sagebrush, FRES30 Desert shrub, FRES31 Shinnery, FRES32 Texas savanna, FRES33 Southwestern shrubsteppe, FRES35 Pinyon-juniper, FRES36 Mountain grasslands, FRES38 Plains grasslands, FRES39 Prairie, FRES40 Desert grasslands, FRES41 Wet grasslands
Climate and elevation range	*S. scoparium* grows in a wide range of climates and elevations across its native distribution. Typically, in regions receiving 10-60 inches precipitation annually, and at mid elevations of roughly 2000-9000 ft. USDA plant hardiness zones 3 to 9.[11,12] A warm season (C4) species, it is adapted for warmer, drier growing seasons than many of our native cool season grasses.[6,14]
Local habitat and abundance	Listed as a Sensitive species in Washington State by the Washington Natural Heritage Program (WNHP)[15] Locally found in prairie systems, sagebrush steppe, and open forest ecosystems.[3,12] *S. scoparium* is commonly found in sandy to rocky well-draining soils and does not always tolerate excessive wetness.[16] The species is associated with a wide range of Kuchler plant associations including: Pacific Northwest (PNW):[12,17] K005 Mixed conifer forest, K010 Ponderosa shrub forest, K011 Western ponderosa forest, K012 Douglas-fir forest, K023 Juniper-pinyon woodland, K024 Juniper steppe woodland, K037 Mountain-mahogany-oak scrub, K055 Sagebrush steppe Outside PNW:[12] K016 Eastern ponderosa forest, K017 Black Hills pine forest, K018 Pine-Douglas-fir forest, K019 Arizona pine forest, K027 Mesquite bosques, K031 Oak-juniper woodland, K032 Transition between K031 and K037, K053 Grama-galleta steppe, K054 Grama-tobosa prairie, K057 Galleta-threeawn shrubsteppe, K058 Grama-tobosa shrubsteppe, K060 Mesquite savanna, K061 Mesquite-acacia savanna, K062 Mesquite-live oak savanna, K063 Foothills prairie, K064 Grama-needlegrass-wheatgrass, K065 Grama-buffalo grass, K066 Wheatgrass-needlegrass, K067 Wheatgrass-bluestem-needlegrass, K068 Wheatgrass-grama-buffalo grass, K069 Bluestem-grama prairie, K070 Sandsage-bluestem prairie, K071 Shinnery, K072 Sea oats prairie, K073 Northern cordgrass prairie, K074 Bluestem prairie, K075 Nebraska Sandhills prairie, K076 Blackland prairie, K077 Bluestem-sacahuista prairie,

	K079 Palmetto prairie, K081 Oak savanna, K082 Mosaic of K074 and K100, K083 Cedar glades, K084 Cross Timbers, K085 Mesquite-buffalo grass, K086 Juniper-oak savanna, K087 Mesquite-oak savanna, K088 Fayette prairie, K089 Black Belt, K090 Live oak-sea oats, K093 Great Lakes spruce-fir forest, K095 Great Lakes pine forest, K098 Northern floodplain forest, K099 Maple-basswood forest, K100 Oak-hickory forest, K101 Elm-ash forest, K102 Beech-maple forest, K103 Mixed mesophytic forest, K104 Appalachian oak forest, K106 Northern hardwoods, K107 Northern hardwoods-fir forest, K108 Northern hardwoods-spruce forest, K109 Transition between K104 and K106, K110 Northeastern oak-pine forest, K111 Oak-hickory-pine, K112 Southern mixed forest, K113 Southern floodplain forest, K114 Pocosin, K115 Sand pine scrub, K116 Subtropical pine forest
Plant strategy type / successional stage	*Schizachyrium scoparium* is an early to mid-successional species.[12] It is highly competitive under moderate nutrient conditions but can be displaced when under very low nitrogen levels. *S. scoparium* rapidly reestablishes with increased growth rates following burn events.
Plant characteristics	*S. scoparium* exhibits significant ecotypic variation across its total native range.[12] A general description of the species follows: A long-lived perennial, primarily caespitose, bunchgrass that grows in dense tufts/clumps, occasionally with short rhizomes.[3,6,12] Plants generally remain apart, separated by other species or bare ground, not forming large stands. Annual growth begins in late spring, flowering occurs in mid to late summer (July–September), and seeds mature in late summer through fall (September–November).[6,12] Reproduction is both sexual via wind pollination and asexual by tillers and rhizomes.[3,6] Seeds are moderately lightweight and bearded, allowing dispersion by wind within a few feet of parent.[11,12] Solid stems grow upright to slightly arching 40-150 cm in height. Leaves are long and narrow, and often rolled or folded, with smooth, keeled sheaths.[4,5,11,12] The inflorescence is a short 2.5-5cm raceme with paired spikelets.[6] The perfect spikelet is sessile with a long, twisted awn while its pedicellate pair is reduced to staminate or sterile.[4,11] Leaves and stems are generally a blue-green during active growth, transitioning to a reddish brown later in the season. Fibrous roots are deep growing to 5 or more feet.[12]

PROPAGATION DETAILS: FROM SEED Direct Seeding in Field	
Ecotype	No single ecotype identified, seed typically sourced from native prairie populations and commercially available cultivars or germplasms
Propagation Goal	Plants, for direct establishment in field or for seed production[11,16,19,20,21,22,23]
Propagation Method	Seed
Product Type	Bareroot (field grown) plants and direct seeded populations. For seed production fields the final product is propagules (seed).[20,21,22]
Stock Type	No information available
Time to Grow	Seed is sown directly into field and established on site. Seed production typically begins in the second year with yields increasing for years 3 onward.[20,21]
Target Specifications	Established mature plants, approximately 4 ft in height with short rhizomes and a dense fibrous root system.[6,22] Field established plants should form uniform, lasting stands for effective erosion control, soil stabilization, and species conservation.[19,20,24]
Propagule Collection Instructions	Seed is collected from native populations or seed production stands by hand or using specialized machinery. In production stands the window for seed harvest generally lasts from September through October.[20] Seed is produced indeterminately and is often of uneven maturity so multiple harvests or careful timing is often required.[11,16] Seed is most often commercially harvested by bluegrass or power stripper[11,19] set to 600-800rpm at the hard dough or mature seed stages. Seed can also be collected by combine harvester once seed is mostly mature[11] or flail harvester for repeated non-destructive harvest.[16] Use low blower settings to minimize seed loss. If harvesting seed from wild populations collection by hand such will be necessary. A grass knife can speed up collection by allowing for harvest of entire seed heads.[19]
Propagule Processing/ Propagule Characteristics	Pure live seed (PLS) count may range anywhere from 225,000 – 450,000 per pound with averages closer to the lower end.[12,20,21,24] Collection yields per acre are typically 200-300 lb/acre on irrigated fields and 75-150 lb/acre in dryland fields.[11] Seed averages from production of *S. scoparium* 'Aldous' seed

	in Kansas yielded 79 pounds per acre PLS with average seed purity, germination, and dormancy of 88.89, 49 and 7.4percent, respectively.[21] Seed quality and percent pure live seed (PLS) may vary significantly year to year. Other reported averages range as much as 38-90 percent purity and only 10-47 percent germination rates.[24]
Pre-Planting Propagule Treatments	Spikelets are light, fuzzy, and awned, so seed should be debearded prior to cleaning.[11,16] This can be accomplished by running seed through a hammermill with a 3/16-inch screen at 550 rpm, and then a debearder at 200 rpm for 45 to 60 minutes.[11] Final removal of remaining stem material, chaff, and unfilled seed can be done by air separation, screening, or fanning mill (winnowing machine).[16] Hand cleaning by smaller scale application of these methods is also possible. In a protocol produced by the National Seed laboratory Dry Branch out of Georgia seed was processed by two passes through Westrup Brush Machine using medium stiff brushes and size 10 wire to separate seeds from stalks.[23] Following screening of large waste materials finer chaff was separated by aspiration at 0.02 inches of water static pressure. Seed should be air dried for several days prior to storage to 12% moisture content or lower for bulk storage or 15% or lower for bagging.[11] Storage under controlled temperature and humidity such as 50 F and 50% RH greatly improves seed longevity.[16,22] No information available for seed dormancy treatments prior to planting
Growing Area Preparation / Annual Practices for Perennial Crops	Fields should be prepared to produce a clear, weed free, and firm seedbed that allows for planting at consistent depths.[11,20,21] This may be done by disking, harrowing, cultipacking, or a combination of these methods. Soil should be firm enough for 0.25 to 0.5 seed planting depths without risk of further burial by soil settling.[16,20] If necessary, broadleaf herbicides can be used to control weed species instead of cultivation.[11,21] Soil analysis is recommended to determine necessary amendment rates[11] pH should be amended to within level 6.0 through 7.0.[16] *S. scoparium* readily cross pollinates between cultivars and ecotypes so fields grown for seed production for different

	contracts or project locations should be separated by at least 1000 feet.[20]
Establishment Phase Details	Seeding is typically done in late spring (May to June) for immediate germination and growth, or as a fall through winter dormant seeding (November to March) for growth the next year.[20] Seeding rates should be adjusted to 30-40 PLS per square foot or linear foot dependent on seeding method. [11,20,21] Rates in lb/acre are extremely variable and should be adjusted based on purity and germination rates of your own seed stock.[11,16,19,20,21] Seeding methods include broadcast seeding or drill seeding. If broadcasting, mix seed with a carrier agent such as course sand and increase seeding rate by 25 percent. [16] Seeds should be planted at depth of 0.125 to 0.5 inches maximum depth.[11,16,20,21] It is prefferable to plant too shallow than too deep. [11] Good seed to soil contact is essential for germination and can be achieved by roller packing or light dragging. [11,21] Unless required by results of soil analysis no fertilizer should be applied during year of establishment[20] Glyphosate may be used for weed control immediately after seeding to kill everything green and growing.[11] Field residue such as oat stubble improves soil moisture retention and seedling establishment.[24] Successful establishment can be highly tied to favorable seasonal conditions, especially precipitation timing and amount. This may be partially improved by irrigation, especially if growing plants for seed production.[22]
Length of Establishment Phase	No information available
Active Growth Phase	Fertilizer can be applied at a rate of 50 to 75 pounds nitrogen per acre with P and K supplementation as needed by soil analysis.[21] Irrigation will improve yields of seed crops.[21,22] Weed competition can be limited by cultivation or mowing between sown rows.[20,24] Selective herbicides may also be used if required.[20]
Length of Active Growth Phase	Entire growing season

Hardening Phase	No explicit information available, plants are exposed to outdoor conditions throughout entirety of propagation timeline.
Length of Hardening Phase	No information available
Harvesting, Storage and Shipping	If producing for seed, *S scoparium* can be harvested and stored as previously described in "Propagation Collection Instructions" an "Pre-Planting Propagule Treatments" sections. No information given for harvest of bareroot plants
Length of Storage	Harvested seeds can be stored up to 7 months under controlled conditions.[22] No information given for storage of bareroot plants
Guidelines for Outplanting / Performance on Typical Sites (	No information available for outplanting and performance of field grown stock When grown for seed production harvest can be expected in 2 years with up to 200-300 lbs per acre harvest depending on site conditions and management practices. [11,20,21]
Other Comments	A permit is likely required for the collection of seeds or other vegetative material from wild populations on public land. Those wishing to gather propagation materials should check with the appropriate agencies before collection. Always obtain necessary permissions from landowners prior to accessing private property.

PROPAGATION DETAILS: FROM SEED – Rapid Container Production

All information adapted from ***Kujawski JL, Davis KM. Propagation protocol for production of Container (plug) Schizachyrium scoparium (Michx.) Nash plants Container plugs***[25] unless otherwise noted

Ecotype	Seeds collected from Cumberland Gap National Historical Park, Kentucky , at 1150 feet elevation, along Kentucky Portal. [25] Seeds collected at Shenandoah National Park, Virginia, at 2500 feet elevation, Skyline Drive. [25]
Propagation Goal	Plants
Propagation Method	Seed
Product Type	Container (plug)

Stock Type	No single container type identified, 1+0
Time to Grow	14-16 weeks[25]
Target Specifications	Height maintained at 8-10 inches by repeat cutting, multiple stems per plug. Roots should be firm and completely fill plug cavities. [25]
Propagule Collection Instructions	Initial seed stock should be collected from wild in October through November. Following establishment of production fields seeds are harvested by combine. [25]
Propagule Processing/Propagule Characteristics	Roughly 1,000,000 seeds per Kg. Seeds tested at 38% average germination rate with rates of 18-40 plugs possible per gram of seed sown. [25]
Pre-Planting Propagule Treatments	Pass seeds through debearder to remove hairy pappus and then through a 2 screen clipper to remove any remaining empty seed and chaff material. [25] Seeds are stored in bags placed in cooler maintained at 40 Fahrenheit and 35% relative humidity. [25] No dormancy treatment is required, but moderate germination improvements are seen with 3-4 weeks of cold moist stratification at 40 F. Covering seeds with clear plastic and exposing them to light significantly increases germination success. [25]
Growing Area Preparation / Annual Practices for Perennial Crops	Growing area is a greenhouse with 12-14 hours of daylight extended by high-pressure sodium (HPS) grow lights. Temperatures should be maintained at 75-80 F during the day with a night drop to 65-68 F. [25] Seeds are initially sown into 392 plug trays with Fafard Germinating Mix media and later transplanted to 72 plug trays or Ropak multipots filed with 2:1 Sunshine #5 and Compro supplemented by 80 day Nutricote Total 18-6-8 SR. [25] *Note:* Nutricote application rate per media volume is not specified.
Establishment Phase Details	Sow into first set of plugs from late winter in December, January, or February. Seeds are sown into 392 plug trays by hand at a heavy rate to compensate for low observed germination rates. *Lightly* cover with germination mux and water well. Once seedlings have germinated plugs should be

	uppotted to 72 plug trays or Ropak multipots prior to active growth. [25] *Note:* Covering with clear plastic after sowing significantly increases germination time from 4-5 weeks and 7+ weeks for 50% and 100% target germination respectively to 10 days and 2 weeks. [25] Keep moist at all times but avoid over-watering. [25]
Length of Establishment Phase	10 days until 50% target seedling count germination (see details above) [25]
Active Growth Phase	Active growth begins as light levels naturally increase in greenhouse. Cut plants back to 6-8 inches repeatedly to encourage increased root and stem development over height. Plants are fertilized as necessary with Technigro 16-17-17 Plus at a rate of 100 ppm. This was found to be required every 1-2 weeks. [25]
Length of Active Growth Phase	Length not specified. Active growth phase lasts entire time from establishment until hardening, variable depending on sowing and desired outplanting dates. [25]
Hardening Phase	Reduce greenhouse temperatures or move plugs outside 2-3 weeks prior to desired outplanting date. Completely stop fertilization and reduce water application. [25]
Length of Hardening Phase	2-3 weeks[25]
Harvesting, Storage and Shipping	Plugs are out-planting ready following hardening phase. [25]
Length of Storage	Product is not intended for storage
Guidelines for Outplanting / Performance on Typical Sites	No information provided
Other Comments	Production is often hindered by extremely low germination rates of seed making it difficult to produce large numbers of plugs efficiently.[25] Improved production may be found in the following extended season protocol. A permit is likely required for the collection of seeds or other vegetative material from wild populations on public land. Those wishing to gather propagation materials should check with the appropriate agencies before collection. Always obtain necessary permissions from landowners prior to accessing private property.[25]

PROPAGATION DETAILS: FROM SEED – Extended Full-Season Production

All information adapted from ***Blessman G, Flood RM, Horvath DJ. Propagation protocol for production of Container (plug) Schizachyrium scoparium (Michx.) Nash plants 1+0 container plugs***[26] unless otherwise noted

Ecotype	Seed collected in central Illinois at 650 ft elevation[26]
Propagation Goal	Plants
Propagation Method	Seed
Product Type	Container (plug)
Stock Type	1+0 Container plugs[26]
Time to Grow	11 months[26]
Target Specifications	Herbaceous perennials with firm root plug[26]
Propagule Collection Instructions	Seed was collected by combine harvester once reaching maturity. Seeds are ready to harvest once they have lost their 'soft, creamy center,' usually around September 30. [26]
Propagule Processing/Propagule Characteristics	Seed size and purity varies yearly and should be reassed each season. [26]
Pre-Planting Propagule Treatments	Alternate running through debearder and Crippen with increasingly smaller screen sizes to separate seed from chaff. Seed sizes change depending on growing year, but it is suggested to begin with the Debearder using a middle screen size and brush at ¼ inch. The Crippen can be set using top screen of 12, middle 8, solid bottom, and then working smaller to further separate. [26] No information provided for storage of seed Cold-damp stratify seed for 3-4 months in vermiculite prior to sowing. Temperature should be maintained at 34-36 Fahrenheit. [26]
Growing Area Preparation / Annual Practices for Perennial Crops	Growth should take place in a fully controlled greenhouse. Potential containers include Multipot #3, #4, and #6 (6, 9, and 6 cubic inch cells) filled with sterile Pro-Mix PGX media. 8 ounces of seed will sow 64 flats of the #6 Multipot, or 24 flats of the others. Mix in vermiculite and perlite at a 10:1 ratio, *do not* add fertilizer. Broadcast seeds onto flats by hand aiming for an

	average 3-5 seeds per cell and lightly cover with media (1 seed width deep). Press seeds into media and water in by hand. [26]
Establishment Phase Details	Establishment should take place at 70-80 F daytime and 65-75 F nighttime temperatures. Media is kept consistently damp by regular hand watering using a gentle hose setting. [26]
Length of Establishment Phase	75% germination is expected within 1 to 2 weeks[26]
Active Growth Phase	Following germination slowly decrease temperatures in greenhouse. Water each morning by soaking for 20-30 minutes then let dry throughout the day. Begin fertilizing with 50 ppm increasing to 200 ppm Rapid Grow or Peter's liquid fertilizer weekly once true leaves have developed. Rinse any fertilizer off of leaves with hose. Once plants reach 8-10 inches prune back ½ to 3-4 inches. [26]
Length of Active Growth Phase	7 months[26]
Hardening Phase	Flats will be moved out to a hoop house in early spring (late January through February). Prior to the move slowly decrease greenhouse temperatures to 55-60 F during the day and fertilization rates to 50 ppm. Continue to prune plants as needed. [26]
Length of Hardening Phase	1 month[26]
Harvesting, Storage and Shipping	Harvest plugs from plats in October through November after foliage has died back to base. Ship immediately or remove dead foliage and store plugs in plastic bags at 40-50 degrees Fahrenheit. Plants may be shipped during storage if receiver can match storage conditions. [26]
Length of Storage	Up to 4-6 months[26]
Guidelines for Outplanting / Performance on Typical Sites	No guidelines or performance notes provided
Other Comments	A permit is likely required for the collection of seeds or other vegetative material from wild populations on public land. Those wishing to gather propagation materials should check with the appropriate agencies before collection. Always obtain necessary permissions from landowners prior to accessing private property.
PROPAGATION DETAILS: VEGETATIVE	
Ecotype	No ecotype specified

Propagation Goal	Plants
Propagation Method	Vegetative – Crown division[21]
Product Type	Propagules (division)
Stock Type	No information available
Time to Grow	No information available
Target Specifications	Established plants with health root systems to be replanted in the field or used for genetic studies[21]
Propagule Collection Instructions	Mature plants are excavated from established populations growing in the field[21] No timing information available
Propagule Processing/Propagule Characteristics	Divide plant into clonal propagules, each with a healthy root system. Propagules may consist of rhizome divisions, tillers, or crown divisions. [21]
Pre-Planting Propagule Treatments	No information available
Growing Area Preparation / Annual Practices for Perennial Crops	Site conditions should meet those for outplanting or field production of bareroot plants and those intended for seed production.[19,20]
Establishment Phase Details	Replant divisions following division[21]
Length of Establishment Phase	Not specified
Active Growth Phase	Plants resume normal growth, no additional information available[21]
Length of Active Growth Phase	No information available
Hardening Phase	No information available
Length of Hardening Phase	No information available
Harvesting, Storage and Shipping	Propagules are intended to be replanted immediately after division
Length of Storage	No information available

Guidelines for Outplanting / Performance on Typical Sites	This method of propagation is *highly time intensive* and should only be used if production of plugs or bareroot plants is not possible or exact clones are required.[21]
Other Comments	NOT SUITABLE FOR LARGE SCALE PRODUCTION A permit is likely required for the collection of seeds or other vegetative material from wild populations on public land. Those wishing to gather propagation materials should check with the appropriate agencies before collection. Always obtain necessary permissions from landowners prior to accessing private property.
INFORMATION SOURCES	
References	1. Zika P. 2023. Little Bluestem (Schizachyrium scoparium). 2023. https://www.inaturalist.org/observations/183602551, CC BY-NC 4.0 2. USDA NRCS National Plant Data Team. USDA PLANTS Database. Schizachyrium scoparium (Michx.) Nash Plant Profile. [accessed 2026 Apr 25]. https://plants.sc.egov.usda.gov/plant-profile/SCSC 3. Herbarium B, University of Washington. Schizachyrium scoparium - Burke Herbarium Image Collection. Burkeherbarium.org. [accessed 2026 Apr 25]. https://burkeherbarium.org/imagecollection/taxon.php?Taxon=Schizachyrium%20scoparium 4. Hitchcock CL, Cronquist A. Flora of the pacific northwest: An illustrated manual. 2nd ed. Giblin DE, Legler BS, Zika PF, Olmstead RG, editors. University of Washington Press; 2018. 5. Hitchcock L, Cronquist A, Ownbey M, Thompson JW. Vascular plants of the pacific northwest: Volume 1: Vascular cryptogams, gymnosperms, and monocotyledons. University of Washington Press; 1969. 6. Stubbendieck J, Hatch SL. North American Range Plants. 4th ed. University of Nebraska Press; 1992. 7. (USDA NRCS National Plant Data Team. Schizachyrium scoparium (Michx.) Nash var. scoparium Plant Profile.

USDA PLANTS Database. [accessed 2026 Apr 25]. https://plants.sc.egov.usda.gov/plant-profile/scscd)

8. USDA NRCS National Plant Data Team. Schizachyrium scoparium (Michx.) Nash var. divergens (Hack.) Gould Plant Profile. USDA PLANTS Database. [accessed 2026 Apr 25]. https://plants.sc.egov.usda.gov/plant-profile/SCSCD

9. (USDA NRCS National Plant Data Team. Schizachyrium scoparium (Michx.) Nash var. stoloniferum (Nash) Wipff Plant Profile. USDA PLANTS Database. [accessed 2026 Apr 25]. https://plants.sc.egov.usda.gov/plant-profile/scscd)

10. Meyer MH. Little Bluestem cultivar information and growth at the Minnesota landscape arboretum, Chaska, MN. Umn.edu. [accessed 2026 Apr 25]. https://grasses.cfans.umn.edu/sites/grasses.umn.edu/files/202201/Little%20Bluestem%20cultivar%20chart_0.pdf

11. Tober D, Jensen. N. Plant guide for little bluestem (Schizachyrium scoparium). USDA Natural Resources Conservation Service, Plant Materials Center, Bismarck, North Dakota 58501; 2013. https://plants.sc.egov.usda.gov/DocumentLibrary/plantguide/pdf/pg_scsc.pdf

12. Steinberg PD. Schizachyrium scoparium. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory; 2002. https://www.fs.usda.gov/database/feis/plants/graminoid/schsco/all.html

13. Garrison GA et al. Vegetation and environmental features of forest and range ecosystems. Agric. Handb. 475. Washington, DC: U.S. Department of Agriculture, Forest Service.; 1977. https://research.fs.usda.gov/download/treesearch/33507.pdf

14. Narem DM, Meyer MH. 1.2 growth. In: Gardening with Native Grasses in Cold Climates. University of Minnesota Libraries Publishing; 2020.

15. Miller JED, Wessel S, Fertig W. 2024 Washington vascular plant species of conservation concern. Dnr.wa.gov. 2024 July 3 [accessed 2026 April 25]. https://dnr.wa.gov/sites/default/files/2025-03/amp_nh_vascular_ets.pdf

16. Brakie M. Plant Guide for pinehill bluestem (Schizachyrium scoparium var. divergens). USDA-Natural Resources Conservation Service, East Texas Plant Materials Center. Nacogdoches, TX. 75964.; 2016. https://plants.sc.egov.usda.gov/DocumentLibrary/plantguide/pdf/pg_scscd.pdf

17. Mcarthur ED, Ott JE. Potential natural vegetation in the 17 conterminous Western United States. Usda.gov. [accessed 2026 April 25]. https://www.fs.usda.gov/rm/pubs_int/int_gtr338/int_gtr338_016_028.pdf

18. Cornelius DR. Revegetation in the tall grass prairie region. American Society of Agronomy. 1944;36 (5):393–400.

19. Hoover MM. Farmers' Bulletin No. 1812: Native and Adapted Grasses for Conservation of Soil and Moisture in the Great Plains and Western States. U.S. Dept. of Agriculture; 1939.

20. USDA. PLANTING GUIDE Schizachyrium scoparium, Michx. Usda.gov. 2000 [accessed 2026 Apr 25]. https://www.nrcs.usda.gov/plantmaterials/mopmcpgscscnomo.pdf

21. Release Brochure for Aldous little bluestem (Schizachyrium scoparium). USDA-Natural Resources Conservation Service, Manhattan PMC Manhattan, KS 66502.; 2011. https://www.nrcs.usda.gov/plantmaterials/kspmcrb10762.pdf

22. Esquivel RG. Propagation protocol for production of Bareroot (field grown) Schizachyrium scoparium (Michx.) Nash. plants. US Department of Agriculture, Forest Service, National Center for Reforestation, Nurseries, and Genetic Resources. - James E. "Bud" Smith Plant Materials Center Knox City, Texas.; 2001. https://rngr.net/npn/propagation/protocols/poaceae-schizachyrium-506/?searchterm=Schizachyrium%20scoparium

23. Barbour JR. Propagation protocol for production of Propagules (seeds, cuttings, poles, etc.) Schizachyrium scoparium seeds. US Department of Agriculture, Forest Service, National Center for Reforestation, Nurseries, and Genetic Resources - National Seed Laboratory Dry Branch,

	Georgia.; 2007. https://rngr.net/npn/propagation/protocols/poaceae-schizachyrium-3120/?searchterm=Schizachyrium%20scoparium 24. Cornelius DR. Revegetation in the tall grass prairie region. American Society of Agronomy. 1944;36 (5):393–400. 25. Kujawski JL, Davis KM. Propagation protocol for production of Container (plug) Schizachyrium scoparium (Michx.) Nash plants Container plugs. US Department of Agriculture, Forest Service, National Center for Reforestation, Nurseries, and Genetic Resources - Norman A. Berg National Plant Materials Center Beltsville, Maryland; 2001. https://rngr.net/npn/propagation/protocols/poaceae-schizachyrium-384/?searchterm=Schizachyrium%20scoparium 26. Blessman G, Flood RM, Horvath DJ. Propagation protocol for production of Container (plug) Schizachyrium scoparium (Michx.) Nash plants 1+0 container plugs. US Department of Agriculture, Forest Service, National Center for Reforestation, Nurseries, and Genetic Resources.; Illinois Department of Natural Resources - Mason State Nursery Topeka, Illinois.; 2001. https://rngr.net/npn/propagation/protocols/poaceae-schizachyrium-282/?searchterm=Schizachyrium%20scoparium
Other Sources Consulted	Brockway D, Outcalt K, Tomczak D, Johnson EE. 2005. Restoration of Longleaf pine ecosystems. 2005 [accessed 2026 Apr 25];083. https://permanent.fdlp.gov/websites/www.srs.fs.usda.gov/pubs/gtr/gtr_srs083.pdf Hawkins SM, Robacker CD. 2019. Micropropagation of Little Bluestem (Schizachyrium scoparium L.). HortScience. 2019;54(2):348–352. http://dx.doi.org/10.21273/hortsci13721-18. Gustafson DJ et al. 2018. Seed Sourcing for Longleaf Pine Herbaceous Understory Restoration: Little Bluestem (Schizachyrium scoparium) and Hairy Lespedeza (Lespedeza hirta) Restoration Genetics. Natural Areas Journal. 2018;38(5):380. http://dx.doi.org/10.3375/043.038.0507.

	Reardon PO, Huss DL. 1965. Effects of fertilization on A little Bluestem community. Journal of Range Management. 1965;18(5):238. http://dx.doi.org/10.2307/3895488. Anderson RC, Liberta AE. 1989. Growth of little Bluestem (Schizachyrium scoparium) (Poaceae) in fumigated and nonfumigated soils under various inorganic nutrient conditions. American Journal of Botany. 1989;76(1):95. http://dx.doi.org/10.2307/2444778. Johnson E, Hagan AH, Hiesl P. 2023. Seed Source for Restoration: Little Bluestem (Schizachyrium scoparium (Michx.) Nash) and the Carolina Sandhills. Ecologies. 2023;4(2):344–354. http://dx.doi.org/10.3390/ecologies4020022. Williams DG, Briske DD. 1991. Size and ecological significance of the physiological individual in the bunchgrass Schizachyrium scoparium. Oikos (Copenhagen, Denmark). 1991;62(1):41. http://dx.doi.org/10.2307/3545444. *Note: If possessing the resources and need for tissue cultured specimens detailed propagation information can be found at the following:* Chen CH, Boe AA. 1988. Big bluestem (Andropogon gerardii Vitman), little bluestem (Schizachyrium scoparium (Michx.) Nash), and Indiangrass (Sorghastrum nutans (l.) Nash). Y.P.S. Bajaj (ed.). Biotechnology in agriculture and forestry 6. Crops II. Springer-Verlag, Berlin, Germany. 1988:444–457. Hawkins SM, Robacker CD. 2019. Micropropagation of Little Bluestem (Schizachyrium scoparium L.). HortScience. 2019;54(2):348–352. http://dx.doi.org/10.21273/hortsci13721-18.
Protocol Author	Andrew Eisenhauer
Date Protocol Created	4/28/2026

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