United States Department of Agriculture
Natural Resources Conservation Service

Georgia
420 Wildlife Habitat Planting:
Native Warm Season Grasses for Wildlife
Implementation Requirements

NATIVE WARM SEASON GRASSES

There are many benefits of establishing a stand of native warm season grasses. In addition to being useful as a form of conservation cover or as a forage crop, native grasses are beneficial to wildlife populations.

Native grasses do not provide forage for many wildlife species; however, native grasses provide structure and cover for games birds, ground-feeding songbirds, rabbits, and other small wildlife species. Properly managed native grass fields provide nesting, protective cover, undisturbed nesting sites, insect populations for food, and open travel under a tall grass canopy.

Native grasses provide quality habitat for grassland nesting birds including bobwhite quail, eastern wild turkey, Bachman's sparrow, and many other birds. The bobwhite quail is an example of a species that will use a grass mixture habitat for shelter from predators, especially when nesting and raising young.

PURPOSE

Improve degraded wildlife habitat for the target wildlife species or guild.

Establish wildlife habitat that resembles the historic, desired, and reference native plant community.

GENERAL SPECIFICATIONS

Native grasses can be planned where wildlife habitat is identified as a primary resource concern and a plant community inventory or wildlife habitat evaluation indicates a benefit in altering the current vegetative conditions. Complete the necessary Wildlife Habitat Evaluation Guide (WHEG) to assess

current conditions. Habitat areas must be between 0.1 to 3 acres per field to allow for feasible site preparation, state biologist approval is required for acreage exceptions.

COMPETITION CONTROL BEFORE PLANTING:

Site preparation is crucial for a successful planting. Seedbed preparation should start in the spring the year prior to planting and continue into the fall. For smaller acreages organic site preparation methods such as no till smothering with black plastic, tilling and solarizing with clear plastic, continuous tilling, and smother cropping can be used. Conventional seedbed preparation with herbicide application and tillage may also be used to control competition prior to planting.

Several steps are required to get successful undesirable competition control when using herbicide to control exotic species such as Bermuda grass, Bahia grass and tall fescue. These grasses can be extremely difficult to control and is often not completely eliminated in one season and may require two seasons of herbicide treatments. It may also be necessary to control broadleaf plants that will shade out the developing NWSG. These can be controlled with pre-emergent or post emergent herbicides. Follow University of Georgia Extension recommendations for specific herbicides and make sure to follow label recommendations on rates and time of year for application.

SEEDING RATES AND MIXTURES:

A minimum of 2 native grasses species shall be planted. Seeding rates depend upon landowner objectives. Many seed vendors carry native mixes for wildlife that include native grasses and forbs or will create a custom mix. Use local or southeastern ecotypes when available. For wildlife habitat use 4-6 pure live seed (PLS) per acre (higher if broadcasting), or rates recommended by seed vendor.

Seeding rates are determined by pure live seed (PLS). Seed companies will sell seed at either a PLS rate or a bulk rate. The percent purity and percent germination are needed to make these conversions. These can be found on the bag label or directly from the company.

To calculate the required amount of seed, multiply the % purity by % germination then divide the application rate by PLS. Purity and germination will be provided on the tag or by your supplier.

(seed purity) X (germination rate) = pure live seed

(application rate) ÷ pure live seed

Example:

Pure seed: 67.62%	Germination: 64.00%
Other crop: 0.05%	Firm/Dormant: 22.00%
Weed seed: 0.42%	Total germination: 86.00
Inert: 26.23%	Noxious weed: NONE

The seed purity is 67.62% and the germination is 86%:

0.6762 X 0.86 = 0.5815 PLS.

The application rate is a total of 4 lb. PLS per acre:

4 ÷ 0.5815 = 6.87

6.87 lbs. of bulk seed is required for each acre.

To plant 2 acres:

6.87 X 2 = 13.74

Total of 13.75 or 14 lbs.

Forbs and legumes can be added to seed mixture to increase diversity, insect availability, and aesthetic value. Adding additional species provides forage and brood rearing cover for a variety of wildlife.

If planting Partridge Pea, do not plant the "Lark" variety, especially within longleaf pine or with a wildlife/pollinator mix. This variety may overtake other plantings and may kill longleaf pine. Use small flowered partridge pea or a southeastern ecotype and plant at low rate of 1 lb. per acre or less.

Adding Annuals: Nurse crops and/or native annuals can be planted with the native grasses to stabilize soil and reduce weed growth. Light rates of nurse crops such as oats, buckwheat (less than 20 lbs. per acre), and brown-top millet (less than 8 lbs. per acre) can be added to the mix and does not count toward one of the required number of species. Do not use winter wheat, winter rye, perennial rye, or introduced clovers since some of these have properties that can suppress germination of planted seeds or can out-compete planted seedlings.

Seedlings: Live plants such as native grass plugs or other containerized materials can be used when available, such as wiregrass plugs. Plant seedlings in clumps of 10-20, with each seedling approximately 2-5 feet apart, and sperate each clump by approximately 25 feet apart, with a goal of 1200-2000 plants per acre. Seedlings may require irrigation.

COMMON NATIVE WARM SEASON GRASSES PLANTED FOR WILDLIFE:

Big bluestem (*Andropogon gerardii*): a native, warm season perennial bunchgrass that grows well on most soil types. It grows best on moist, well-drained soils, but is more drought tolerant than most warm season grasses. Big bluestem grows 3 to 6 feet tall.

Indiangrass (*Sorghastrum nutans*): a native, warm season perennial bunchgrass which grows 3 to 5 feet tall. It is drought tolerant and is well adapted to medium-heavy to light, sandy textured soils.

Little bluestem (*Schizachyrium scoparium*): a native, warm season bunchgrass which grows to a height of 3 feet. It grows well on deep, shallow, sandy, fine textured, and rocky soils, and has good drought tolerance.

Switchgrass (*Panicum virgatum*): a native warm season perennial bunchgrass that can be found growing in along roadsides, edges of fields, and abandoned sites. It is used as a forage for grazing or hay, erosion control, biomass, and is beneficial for wildlife such as quail. Switchgrass is well adapted to deep soils with good water-holding capacity, including well-drained to poorly-drained soils. Lowland types may grow to a height of 6 feet on moist, fertile sites.

Avoid switchgrass varieties and cultivars have been developed for forage and biofuels (Alamo", "Kanlow", "Cave-in-Rock", "Shawnee", "Colony", "Performer", "Cimarron" or "Timber"). These varieties are aggressive, grow large, tend to take over, and will burn very hot threatening other beneficial plamys. Use southeastern and smaller ecotypes such as "Carthage", Blackwell", "Shelter", or "NB 28". Other varieties adapted for the coastal plain are "Stuart", "Miami", and "Wabasso"; however, these may not be commercially available.

See table 1 for list of additional species.

PLANTING DATES:

Spring planting: Native Warm Season Grass mixes tend to do better if planted in the spring. Planting earlier allows seedlings to develop root systems before summer drought and improves the ability of the grasses to compete with weeds. Watering may be needed if drought conditions are present to ensure successful establishment.

Recommended spring planting dates for Georgia:

Mountains	**April 1 to May 15**
Piedmont	**March 15 to May 15**
Coastal Plain	**March 1 to April 30**

Switchgrass and eastern gammagrass can have a high dormancy rate and may require stratification to break dormancy. This can be accomplished by soaking seed in a mesh sack and allow to sit overnight. Remove seeds from water and allow to drip dry. Store seed in a cool location (40-45°F). Switchgrass will need at least a two-week cooling period, and eastern gammagrass will need a six-week cooling period. Alternatively, these could be planted in the dormant season or early in the spring (4-6 weeks before the last freeze) to allow seed exposure to cold conditions for adequate time to break dormancy.

Dormant season planting: Planting in dormant season should take place in later winter (January-March) after the soil has cooled to less than 55°F. Exposure to cold conditions may increase germination, especially when the mix includes native forbs. Warm season grasses will begin to grow when the soil temperature reaches approximately 60 degree F.

Dormant planting may have risks such as soil erosion, cool season weed pressure, seed loss from heavy rain or wildlife consuming the seeds. Proper site preparation is necessary for successful dormant season planting to eliminated failures from weed pressure. Planting a nurse crop or annuals as part of the mix may reduce these risks.

ESTABLISHMENT:

The site may be broadcast seeded, no-till drilled, or hand seeded. Good seed to soil contact is important. Seed can be planted ⅛-inch to ¼-inch deep, 30% of the seed may be visible on surface. DO NOT plant seeds deeper than ¼ inch.

No-till Seeding: Specialty warm-season grass drills are needed to for planting if the seed is not de-bearded or contains harvest chaff. Some of these drills have features that compensate for the light fluffy seed and insure accurate seed depth placement. Specialty drills are recommended for sites that have not been conventionally tilled or large conventional tilled sites. Drills can also be used in sites prepared via herbicides only (to avoid disturbing competing weed seed) such as when planting between rows of pine trees. Seeds can be no-tilled directly though the thatch. On firm cultivated seed beds, roll with roller, or drive across it with truck/tractor tires to firm the seed.

Conventional Seed Drill: De-bearded seed and seed with the chaff removed can be drilled with conventional drills in some mixes. Use caution with conventional drill and ensure proper seeding rate and planting depth. Switchgrass may work well with a conventional drill because it has a hard, smooth seed coat.

Broadcast Seeding: Conventionally tilled sites can be mechanically (broadcast spreader) or manually (push seeder, hand crank seeder, or by hand) broadcast seeded. The site surface will need to be culti-packed or rolled prior to seeding and then again after seeding to press the seed into the soil. When broadcast seeding, it is beneficial to broadcast at a half rate and seed over the area twice with the second pass at a right angle to the first pass to insure equal coverage. Mix the seed with a damp carrier such as pelletized lime, cat litter, sawdust, sand, rice hulls, cracked corn, etc. in order to facilitate good seed coverage. The more the seed is diluted, the better it will be distributed. Roll the site with roller, or drive across it with truck/tractor tires to firm the seed into the soil (if soil is wet, wait until it dries to roll).

PLANTING NATIVE GRASSES BETWEEN PINES:

Planting between rows of newly planted pines can be done with conventional and no-till seed drill. Seedbed between the rows will have to be prepared to remove weed competition as described above. If using a harrow, allow two feet on either side of the row as a buffer protecting the planted pine. For example, if the rows are 12 ft apart, the maximum size harrow would be 8 ft.

OPERATION AND MAINTENANCE:

Native warm season grasses emerge in late spring and grow slowly in the seeding year. The first and second years of growth, the grasses are establishing deep roots and may show little above ground growth. Herbicide treatments may be necessary to control broadleaf weeds or other grasses. Use University of Georgia Extension recommendations for specific herbicides for native grasses.

First year: Mow when undesirable vegetation reaches 12”-18” tall, to no less than 6” high. This allows light to reach the native grasses, prevents annual weed seed development, and avoids smothering the desirable species. Mow several times as needed over the growing season if competition continues to be a problem.

Second Year: Mow no lower than 6” in early spring. Postponing mowing until early spring provides winter cover for wildlife. If weeds remain a problem in the second year, mow again in late spring or early summer. If you mow too late in the fall, you may destroy the seed heads of natives that feed birds in winter. However, if annual weeds are still predominant, it is better to prevent them from going to seed during the initial establishment.

Established Stand:

Prescribed burning: Rotational burning best supports wildlife habitat by reducing vegetation build up. When possible, burn 1/3-1/2 of the stand each year, patchy burns are okay. Burning removes thatch build-up, suppresses invasive woody growth, and invigorates the stand.

Dormant season burns – Burning in late winter or early spring will stimulate new growth before the grasses begin spring green-up and won’t disrupt wildlife nesting.

Growing season burns – Burning in the warmer months can be more difficult due to leaf moisture and may increase the amount of smoke. Growing season burning is effective in reducing woody encroachment, promotes forb establishment, and can improve habitat.

Disking: Disking is effective at removing litter build up and setting back succession. Disking can be accomplished by disking the entire field every 3 years or disking 1/3 of the field each year. Disking should be completed in the winter (November to mid-February). Do not disk in sensitive habitats.

Herbicides: It may be necessary to control undesirable or excessive broadleaf plants or other grasses in native grass stands. Some herbicides can selectively target some problematic species in NWSG plantings, but some problematic species that cannot be controlled without killing planted native grasses or forbs. Follow University of Georgia Extension recommendations for specific native grass herbicides and make sure to follow label recommendations.

Mow: Mowing is not recommended for NWSG except to control competing vegetation during the first and possibly second growing season. Mowing can encourage the development of undesirable plant species and inhibits native plant growth. Cutting and raking or haying to remove thatch build-up and invasive woody growth are viable alternatives to disking or burning.

Producer _____ **Project or Contract** _____

Location _____ **County** _____

Farm # _____ **Tract#** _____

Description of Work:

The Practice Purpose(s):

☐ Improve degraded wildlife habitat for the targeted wildlife species.

☐ Establish wildlife habitat that resembles the historic, desired, and referenced native plant community.

	Field ____	Field ____
Site Prep Method[1]		
Method of Establishment[2]		
Acres		
Planting Dates		

[1] Chemical application, conventional tillage, organic, combination

[2] Broadcast, no-till seeding, conventional seed drill

Field ____				
Species	Kind of stock[1]	PLS[2] Rate or Total number of live plants	Total PLS per acre[3] or distance between plants within rows or clumps	% of seed mix or distance between rows clumps

[1] Plug or seed

[2] Pure Live Seed

[3] Total=[PLS/(% germination X % purity)] X acres

Field ____				
Species	Kind of stock[1]	PLS[2] Rate or Total number of live plants	Total PLS per acre[3] or distance between plants within rows or clumps	% of seed mix or distance between rows or clumps

Control Treatments

Identify control treatments for noxious, invasive, undesirable and competing plant and animal species necessary to restore the site to the target conditions (e.g., plan to evaluate monthly during the 1st year; plan to apply control again when woody regrowth or encroachment occupies 15% of the field):

Management actions needed to ensure an adequate stand:

Operation and Maintenance:

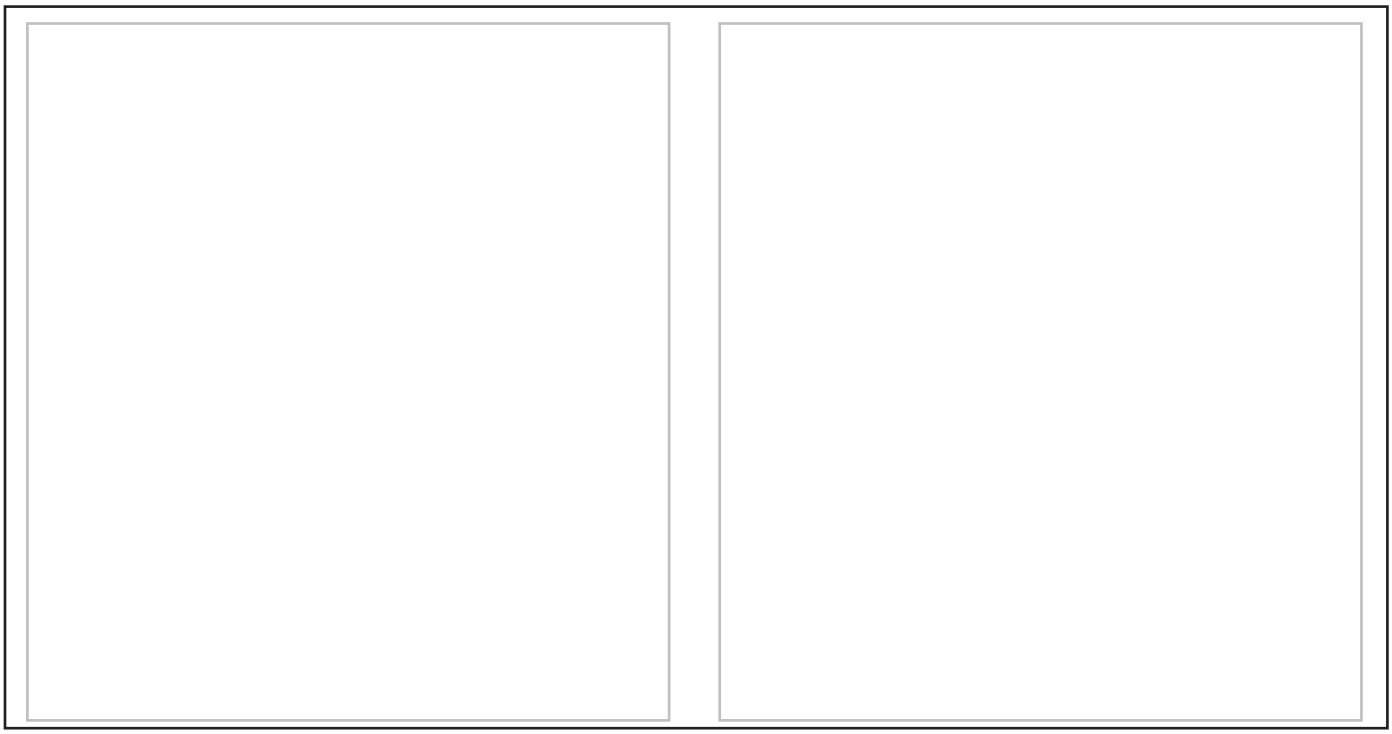
- ☐ A post establishment assessment shall be conducted to determine if objectives have been met.
- ☐ Maintenance will be conducted annually. Adaptive management may be applied to improve habitat conditions.
- ☐ Maintenance practices and activities shall not disturb cover during the reproductive period for the desired species. Exceptions should be considered for periodic burning or mowing when necessary to maintain the health of the plant community. Control noxious weeds and other invasive species.
- ☐ Control of noxious\invasive weeds shall be done on a "spot" basis to protect forbs that benefit native pollinators and other wildlife.
- ☐ Mowing once a year is needed to reduce competition from weeds in an herbaceous planting. Breaking up the plot into three or more sections and practicing rotational mowing is preferred to maintain species diversity and wildlife habitat.

CERTIFICATION OF PRACTICE

Description of the vegetation at the time of checkout (e.g. percentage of desirable species, height, and condition).

Plant Species	Percentage of Species	Height and Condition

Photos (preferable before/after) as necessary to determine success of treatment.



Certification:

Prepared by: _____

Title:_____Date:_____

Approved by: _____

Title:_____Date:_____

Meets NRCS Standards and Specifications? **YES** **NO**

Certification by:_____Date:_____

Table 1: Native Warm Season Grasses List*

Common Name	Scientific name	region	wetland Indicator Status	moisture needs	sunlight needs
Bentgrass, Upland	*Agrostis perennans*	All	FACU	moderate to high	part shade
Big Bluestem	*Andropogon gerardii*	All	FAC	moist to dry	full sun
Bushy Bluestem	*Andropogon glomeratus*	CP	FACW	moist to wet	full sun
Little Bluestem	*Schizachyrium scoparium (Andropogon scoparius)*	All	FACU	dry to moist	full sun
Splitbeard Bluestem,	*Andropogon ternarius*	P, CP	FACU	dry	sun to part shade
Pineywoods Dropseed	*Sporobolus junceus*	CP	na	dry	part shade
Eastern Gamagrass	*Tripsacum dactyloides*	All	FAC	moist to wet	full sun
Lopsided Indiangrass	*Sorghastrum secundum*	CP	FACU	dry	full sun
Slender Indiangrass	*Sorghastrum elliotii*	All	na	low	sun to part shade
Yellow Indiangrass	*Sorghastrum nutans*	All	FACU	dry to wet	full sun
Purple Lovegrass	*Eragrostis spectabilis*	All	FACU	dry to wet	full sun
Muhly Grass	*Muhlenbergia capillaris*	P, CP	FACU	moist to wet	full sun
Beaked Panicum	*Panicum anceps*	All	FAC	moist to wet	part shade
Red Top Panicum	*Panicum rigidulum*	All	FACW	high	full sun
Purple Top	*Tridens flavus*	All	FACU	dry	full sun
Switchgrass	*Panicum virgatum*	M.P	FAC	moist to dry	full sun
Toochache Grass	*Ctenium aromaticum*	CP	FACW	moist to wet	part shade
Wiregrass	*Aristida stricta*	CP	FAC	dry to wet	part sun

*Additional species may available, contact State Biologist for assistance.

Example Native Grass Mixes for Wildlife:

1.5 lbs PLS/ac Big Bluestem
1.5 lbs PLS/ac Indiangrass
1.5 lb PLS/ac Little Bluestem
0.5 lb PLS/ac Switchgrass
1.0 lb PLS/ac native forbs
Total 6 lbs PSL per acre

3.0 lbs PLS/ac Little Bluestem
0.5 lbs PLS/ac Indiangrass
1.0 lb PLS/ac native forbs
Total 6 lbs PSL per acre