Traditional cool season grasses used for forage production in Virginia have little value to bobwhite quail, rabbits, and other early successional wildlife species. These same cool season grasses have poor forage production during summer months. Native warm season grasses have good forage production during summer months. To maintain the stand, producers must maintain a high residual grazing height. These grasses are naturally taller and erect, and provide better habitat for quail and other early successional wildlife species.

**PRODUCTION POTENTIAL**

Recent grazing trials at the University of Tennessee demonstrated the potential of native warm season grasses. Cattle averaged 2 pounds of gain per head per day for 70 days of rotational grazing during the summer months. The cattle were introduced to the pasture at a 18-24-inch height and removed from the pasture when the grass was grazed down to 12 to 15 inches. Their results were similar to the findings of other trials conducted over the last 30 years in Pennsylvania, West Virginia, and Virginia.

**SPECIES**

The native warm season grasses with the greatest utility for forage production are Indiangrass, big bluestem, little bluestem, switchgrass, and eastern gamagrass. Indiangrass and big bluestem have similar seasonal growth patterns and can be mixed together. Switchgrass and eastern gamagrass each have different rates of establishment and different seasonal growth patterns from each other. They are best established and managed as single species stands.

**CULTIVARS AND ECOTYPES**

Each species has cultivars and ecotypes that are adapted to Virginia. Many of the cultivars have been developed in the southern part of the Midwest, but have been tested and proven in the Southeast. Cultivars and ecotypes from the Central Great Plains and Northern Great Plains will not survive in Virginia. Certain species and cultivars are better suited for lowland poorly drained sites versus upland well drained sites.

**Indiangrass**
The best adapted released cultivar is Cheyenne, a selection from Oklahoma. Suther source-identified germplasm is an ecotype from the Suther Prairie in Cabarrus County, North Carolina. Seed companies in the East have developed their own ecotypes of Indiangrass.

**Big Bluestem**
The best adapted released cultivar is Niagara, a selection from New York. Suther source-identified germplasm is an ecotype from the Suther Prairie in Cabarrus County, North Carolina. Seed companies in the East have developed their own ecotypes of big bluestem.

**Little Bluestem**
The best adapted released cultivar is Cimarron, a selection from Oklahoma. Suther source-identified germplasm is an ecotype from the Suther Prairie in Cabarrus County, North Carolina. Seed companies in the East have developed their own ecotypes of big bluestem.

**Switchgrass**
The best adapted released cultivars are Carthage, a selection from North Carolina, and Shelter, a selection from West Virginia, North Carolina. Seed companies in the East have developed their own ecotypes of switchgrass.

**Eastern Gamagrass**
There are three cultivars of eastern gamagrass with potential in Virginia. Highlander is a cultivar from Tennessee. Verl and Iuka IV are cultivars from Oklahoma.
SITE PREPARATION

An existing stand of cool season grasses and legumes must be thoroughly killed before sowing seeds of native warm season grasses. At the very least it takes two applications of herbicides, one in the fall and one in the spring to kill the cool season species. The warm season grasses may be established without tillage with a no-till grass drill if one is available. If the seed must be sown with conventional equipment the seedbed must be tilled thoroughly and packed firmly before sowing the seed with a drill or by broadcasting it.

Site preparation without herbicides will require a couple years of tillage and sowing annual cover crops (millets in the summer and small grains in the winter) until the perennial cool season grasses and legumes do not germinate or sprout.

ESTABLISHMENT

Indiangrass, big bluestem, and switchgrass may either be drilled shallow at ¼” depth or broadcast onto a firm seedbed. Broadcast seedings must be packed after the seed is sown. Eastern gamagrass has a large seed and is commonly sown with a corn planter at a depth of 1 to 1½”.

Switchgrass and eastern gamagrass have smooth seeds and may be sown without any additives. Indiangrass, big bluestem, and little bluestem must be sown with a drill equipped with a chaffy seed box that can handle the hairy seeds OR mixed with an inert carrier such as pelletized lime and either drilled or broadcast.

Seed mixtures and rates:

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Seeds per Pound</th>
<th>Seeding Rate Drilled (Amount of Pure Live Seed per Acre)</th>
<th>Seeds per Square Foot</th>
<th>Seeding Rate Broadcast (Amount of pure Live Seed per Acre)</th>
<th>Seeds per Square Foot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Big Bluestem</td>
<td>165,000</td>
<td>4</td>
<td>16</td>
<td>5</td>
<td>24</td>
</tr>
<tr>
<td>Indiangrass</td>
<td>175,000</td>
<td>4</td>
<td>16</td>
<td>5</td>
<td>24</td>
</tr>
<tr>
<td>Little Bluestem</td>
<td>260,000</td>
<td>2</td>
<td>12</td>
<td>3</td>
<td>18</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>10</td>
<td>44</td>
<td>13</td>
<td>66</td>
</tr>
</tbody>
</table>

Switchgrass seed is sown at 6 pounds of pure live seed per acre when drilled and 9 pounds of pure live seed when broadcast. Eastern gamagrass is sown at 10 pounds of pure live seed per acre with a corn planter on a 30- to 36-inch row spacing.

Spring oats may be sown at 1 bushel per acre as a nurse crop to control erosion and provide early season grazing.

Seed must be sown before the average date of the last frost locally for optimum germination and growth: April 15 for the Piedmont and May 1 for the Mountains. Seed of eastern gamagrass will germinate best if it is pre-chilled commercially for 2 to 3 months. It may be pre-chilled naturally by sowing it between December 1 and January 31.

MANAGEMENT

The native grasses should not be grazed during the establishment year. If a nurse crop of oats is established, the oats may be grazed, but the cattle should be removed from the stand to prevent grazing the native grass. Annual broadleaf weeds may be controlled either by applying a broadleaf herbicide or by mowing over the top of the native grass plants.

Grazing the second year should begin when the plants are 18-24 inches high and the cattle should be removed when the plants are 10 to 15 inches high. A grazing height of 12 to 15 inches should be maintained over the winter.

Most native warm season grasses do not respond well to high rates of fertilizer. Fertilization of more than 60 pounds of nitrogen per acre usually does not increase yield. Fertilization should be delayed until the grass is 12 inches high.

Eastern gamagrass will respond to fertilization of up to 300 pounds of nitrogen per acre annually. With a rotational grazing scheme, apply 50 pounds of nitrogen per acre when the cattle are removed from the pasture.

Rotational grazing will suppress weeds, but will not entirely control them. In a pure grass stand, herbaceous broadleaf weeds can be controlled with herbicides designed for their control. Trees and shrubs require herbicides designed specifically for the control of woody plants.

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