Sorghums (Sorghum bicolor) are summer annual grasses characterized by rapid growth in the late spring and summer. Those grown for forage in the United States include grain sorghum, grass sorghums, and sudangrass (S. bicolor; formerly S. sudanense). All can survive considerable drought stress and provide a valuable addition to year-round forage systems where summer production of quality forage is often a problem.

Optimum temperature for growth ranges between 75 and 85° F with the minimum at about 60° F. For this reason, sorghums are rarely grown in highly elevated areas or areas where temperatures are consistently below 75° F.

In Oregon, forage sorghums are most suited to southwestern Oregon, the Columbia River basin, and the Snake River Valley basin. They may also be used with some success in the Willamette Valley, but cool temperatures at night will reduce production, as with corn for silage.

Primary use

Sorghums can be used for grazing, green chop, or silage. The sorghums are coarse, erect grasses ranging in height from 2 feet to 15 feet. Forage (or cane) sorghums are characterized by abundant juice, which may be sweet or almost tasteless.

Cattle, sheep, and horses can use sorghum for maintenance, growth, and fattening, although the sorghum is used by dairy cattle and none by beef cattle. For dairy operations, sorghum is often used as green chop. Feedlot rations of 50 to 65% sorghum forage have been used successfully.

In Oregon, later maturing sorghum varieties may not reach maturity before a killing frost. Do not graze or harvest sorghum regrowth after frost; it produces hydrocyanic (HCN) or prussic acid, which is poisonous to livestock. Frosted sorghums, however, can be harvested and ensiled with minimal adverse effects on their chemical composition.

Varieties

Piper is a sudangrass variety that is low in HCN; it has been used in Oregon for many years.

Since the mid 1950s, various sorghum hybrids have been available. These are often called sorghum-sudangrass hybrids. These hybrids are generally produced by crossing a male-fertile sudangrass parent with a male-sterile female parent of sudangrass, forage sorghum, or grain sorghum.

Commercially available hybrids are low in HCN. These are usually hybrid crosses of sudangrass that do not contain sorghum in the cross. The sudan-sorghum

<table>
<thead>
<tr>
<th>Use</th>
<th>Precipitation</th>
<th>Companion Seeding Rate</th>
<th>Companion Species</th>
<th>Seeding Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green chop or silage</td>
<td>30-60 in.</td>
<td>30-50</td>
<td>None</td>
<td>10-30 lbs/A</td>
</tr>
<tr>
<td>Pasture</td>
<td>30-40 in.</td>
<td>30-70</td>
<td>None</td>
<td>10-30 lbs/A</td>
</tr>
</tbody>
</table>
hybrids, like sudangrass, can be cut or grazed twice in one season. Also available are taller types (8 to 10 feet) that are harvested once for green chop or silage.

Establishment

Good seed germination of sorghums requires warm soil temperatures (above 55° F). Cool soil temperatures will result in much poorer germination. So plant seed in late spring or early summer, usually after the time when corn is first planted. Cool temperatures in the fall will reduce production also; you will have to compromise between soil temperature and length of growing season.

A well-prepared, firm, moist seedbed is best, although good stands have been made using stubble or reduced tillage planting machinery. Drill seed from 3/4 to 1 1/2 inch deep, depending on soil moisture and texture. Row spacing has little effect on yield, but wider rows will result in plants with large stems and reduce forage quality.

Some compaction of the seedbed is desirable to improve soil/seed contact, especially where soil moisture is marginal. Broadcast seedings can also be made with seeding rates somewhat higher than those for drilled plantings. Cover seed after seeding by disking or using a harrow or drag.

Fertilization and pH requirements

Sorghums will grow on low-fertility soils or moderately acid soils, but they grow best when adequately fertilized in soils ranging from pH 5.7 to 7.0. Moderate amounts of soil salinity will not reduce yields significantly. Generally, the summer annual grasses are fertilized with 30 to 60 lbs of P and 60 to 120 lbs of K per acre.

Yield responses, however, have not been demonstrated on soils with medium amounts of P or K. Linear yield response to N fertilization has been demonstrated up to 200 lbs N per acre. Split applications of N are essential for uniform growth and balanced plant nutrition.

For specific fertilizer recommendations based on soil test data, consult OSU Fertilize Guide 10 for field corn.

Management

Damage from harvesting equipment can reduce the regrowth ability of sorghums. So consider harrow method and planting design to assure maximum yield. By the same token, do not green-chop your field when the soil is very wet.

In grazing applications, allow plants to reach 30 inches, then grazed down to 10 inches. This is because the regrowth of summer annual grasses depends not only on the amount of photosynthetic area left on the stubble, but also on the presence of regrowth areas or meristems. You can preserve these regrowth areas by not grazing too closely. Rotational grazing of this kind will result in higher production and higher forage quality.

Hydrocyanic or prussic acid poisoning

Sorghums and sudangrasses are plants that produce cyanogenic glucosides. This plant product decomposes under certain conditions to form toxic hydrocyanic (HCN) or prussic acid. Normally, the intact glucoside is present, and this is not harmful. However, wilting and frost damage cause the formation of HCN.

For this reason, do not graze regrowth following stress from drought, frost, or a killing freeze. For more information on this potential problem, consult Extension Circular 950, Preventing Prussic Acid Poisoning of Livestock.