

Sudangrass and Sorghum-Sudangrass Hybrids

Sudangrass and Sorghum-Sudangrass hybrids are heat and drought tolerant cover crops that can be used to scavenge residual N, suppress weeds, suppress certain diseases and nematodes, and build soil quality. Described below are the practices typically used by growers of these crops in the Columbia Basin. (Unless otherwise noted, sudangrass will refer to both crops.)

Uses

- *Scavenge soil nitrogen:* With its extensive root system and high production ability, sudangrass can effectively take up and store soil nitrogen. Some of this nitrogen will then be available to the following crop as the residues decompose.
- *Suppress weeds:* When seeded at high rates, sudangrass makes an effective smother crop. In addition to smothering weeds, the entire sudangrass plant contains chemical compounds that suppress many weeds. Sudangrass roots secrete sorgoleone, a chemical that inhibits weed growth. It is active at extremely low concentrations.
- *Break up compacted soil:* By mowing sudangrass when stalks reach 3–4 feet tall the root mass is increased five to eight times compared with unmowed stalks. This also forces deeper root penetration. Managed in this way, sudangrass is the best cover crop for loosening compacted soils.
- *Suppress diseases and nematodes:* Sudangrass produces the chemical dhurrin, which when incorporated, forms hydrogen cyanide that can suppress populations of root-knot and possibly other types of nematodes. Sudangrass cover crops, when incorporated green, have also been shown to suppress *Verticillium dahliae* in potato fields.
- *Improve soil quality:* Sudangrass can add large quantities of organic matter to the soil. This ability, combined with a large, penetrating

root system, and the residue's effect on soil-borne diseases and nematodes make sudangrass a good choice for improving soils.

Crop Characteristics and Requirements

Sorghum-Sudangrass hybrids (*Sorghum bicolor-Sorghum bicolor* var. *sudanese*) and Sudangrass are fast growing, warm-season annuals.

Biomass

8,000–10,000 lbs per acre is possible, usually less with cover crops. Sorghum-Sudangrass hybrids will produce more biomass than sudangrass.

Soil pH

6.0–7.0 optimum

Temperature

Sudangrass and hybrids respond well to daytime temperatures above 80°F and are very frost sensitive.

Management

Seeding Method and Rate

For a cover crop, broadcast at 40–50 lbs per acre and then harrow to cover seed, or drill at 35–40 lbs per acre.

Seeding Depth

1" optimum, or as deep as 2" to plant into moisture.

Seeding Dates

Seed when soil temperature is 60°F or greater and at least six weeks before first frost (generally May 1–Aug. 1).

Varieties and Sources

Forage varieties are used for green manures. Varieties shown to suppress root-knot nematodes (*Meloidogyne spp.*): Trudan 8 sudangrass, and Sordan 79, SS-222, and SS-333 sorghum-sudangrass hybrids. Seed is widely available.

Fertilization

Usually requires 75–100 lbs per acre of available nitrogen. Use soil tests to determine phosphorus and other fertilizer needs.

Incorporation

Flail chop and disk when still green, before first frost. Sudangrass has a high carbon to nitrogen ratio; therefore, it may be slow to decompose.

Possible Problems

With livestock: Sudangrass and sorghum-sudangrass hybrids can produce toxic levels of hydrogen cyanide and nitrate while young or just after a frost, and so should not be grazed at these times.

With nematodes: In Canada, sudangrass has been shown to harbor particularly high densities of root lesion nematodes (*Pratylenchus penetrans*), and in Florida, sting nematodes (*Belonolaimus spp.*).

Suggestions from Local Farmers

- Keep soil moist in the fall to help with cover crop decomposition; do not go into the spring with dry soil.
- If the crop experiences a frost, incorporate it as soon as possible, within 12–24 hours maximum. Otherwise, the crop's weed, nematode, and disease suppressing ability will be diminished.
- Sudangrass works well after peas because of their early harvest, but will not work after wheat in this area unless it is harvested early.
- Sudangrass works well before potatoes, mint, and beans.
- Three to four feet of growth is optimal for a late summer green manure.

Other Resources

Cover Crop Fact Sheets:

- Mustards

Dale Gies System Profile

On-farm Research Results, 1999–2001,

Dale Gies Farm

Using Green Manures in Potato Cropping Systems

***This publication and those listed above
are available online at
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