

HOW TO PLANT AND MAINTAIN SWITCHGRASS

As Nesting and Winter Cover for Pheasants
and Other Wildlife

General Characteristics of Switchgrass

Switchgrass (*Panicum virgatum*) is a tall perennial warm-season grass, which is native to eastern and central United States. Small natural stands can be found in New York. The mature grass grows 3 to 5 feet tall, is leafy, and has a stiff stem which helps keep it upright throughout the winter under average snowfall conditions. Switchgrass often will partially straighten up after being bent over by heavy snow.

Its leaves are one-fourth to one-half inch wide and 8-12 inches long. The leaves are green to bluish green in summer, yellow-green as fall approaches; and yellow-brown throughout winter. The flowering head is a wide-branching open panicle. Switchgrass spreads by tillers and short scaly rhizomes. Mature stands appear to be clumps of plants rather than continuous sod.



Twenty-three Year Old Stand of Switchgrass

The ability of switchgrass to remain standing through the winter has proved superior to any other grass tested by the Soil Conservation Service at the Plant Materials Center at Big Flats, New York. Two to three years of careful management are needed to establish a good stand of switchgrass. However, **once** established, a stand will last for **20** years and longer, with proper management.

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Switchgrass is a warm-season grass and does not begin growth until late April or early May in New York. The most vigorous growth occurs from late June through the end of August. During August, the seed heads appear, then ripen in late September. With the first hard frost, switchgrass goes dormant, and the above ground plant parts turn yellow-brown.

Cool-season plants such as quackgrass, orchardgrass, and brome grass's begin active growth much earlier in the spring and continue much later in the fall. They are very competitive with switchgrass in the spring and must be controlled to allow proper switchgrass establishment and development.

It is important to be able to recognize the young seedlings. Many plantings have been plowed down because landowners thought the seeding had failed, when actually, there was a good stand of seedlings present.

Identifying characteristics of switchgrass are:

1. A relatively stiff stem.
2. Plants grow as clumps rather than continuous sod.
3. The presence of white straight hairs on the top side of the leaf near the collar where the leaf blade joins the sheath (Fig. 1).
4. A long perennial-type root system with short numerous scaly rhizomes.
5. Widely spreading, open flower and seed-head with tiny football shaped seeds.
6. New growth starting in late April rather than late March.

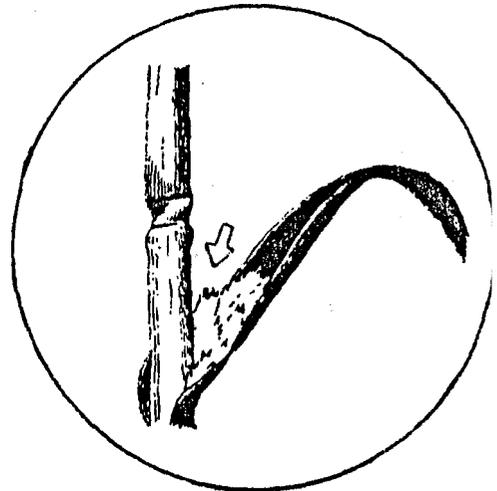


Fig. 1

Wildlife Uses

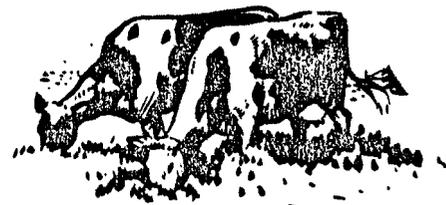
In New York, switchgrass is recommended as nesting cover and winter cover for pheasants and songbirds. It is well suited for use on shooting preserves.

Switchgrass provides good protective cover for cottontail rabbits. The young sprouts are a source of food for wild turkeys and rabbits. It may be used as nesting cover for waterfowl.

Our growing season is often too short in northern New York to mature seed; however, when mature, the seeds are readily eaten by pheasants, quail, turkeys, songbirds, and other wildlife. In the Long Island region, seed production is more dependable.

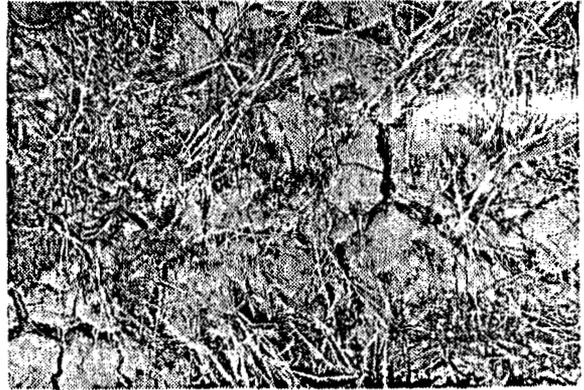
Hay and Pasture

Switchgrass can be used to boost mid-summer forage production. Switchgrass is growing vigorously when timothy and other grasses are growing very slowly. With proper management, it can be used for hay or as pasture (see page 8).



Soil Conditions Suitable for Planting

It is preferable to plant switchgrass on well or moderately well drained soils which are over 20 inches deep to bedrock. Somewhat excessive and excessively well drained soils are acceptable for planting, but are less desirable. On somewhat poorly drained soils, results are less dependable as frost heaving is a problem in addition to poor growth. Switchgrass should not be planted on poor or very poorly drained soils or on excessively well drained sands.



Frost Heaving on

Somewhat Poorly Drained Soils

Size of Plots

It is recommended that plantings for pheasant nesting and winter cover be at least 5 acres in size. Smaller plantings can be used, but make it easier for predators to locate nest.

On shooting preserves, cover plots are most effectively utilized if they are no wider than 30 feet and not over 200 feet long.

Variety and Sources of Seed

The Blackwell variety of switchgrass has shown more promise for wildlife food and cover and livestock forage, than other available strains and varieties tested in New York. Certified seed is recommended in order to obtain the variety desired.

If "Common" switchgrass seed is purchased there is no assurance of the variety, regardless of any name the seller may put on it.

The cost of certified seed ranges from \$4.00 to \$6.00 per pound of pure live seed (PLS) depending on the supply (PLS=% germination x % purity).

Some possible sources of Blackwell switchgrass seed are listed in Appendix I.

PLANTING DIRECTIONS

The establishment of switchgrass requires a closer adherence to good agronomic principles than with timothy or other cool season grasses. Establishment is relatively easy if appropriate attention is given to the following principles:

1. Firm seedbed before and after planting.
2. Appropriate seed covering.
3. Pre- and post-emergence weed control.

pH Requirements

The pH of the soil should be 5.5 or above.

Fertilizer Requirements

For establishment, apply 0-20-20 fertilizer, or equivalent, with rate of application based on a soil test, or 300 pounds per acre, in lieu of test.

Planting Dates

Seed between May 1 and June 15. If seed is not in the ground by June 15, wait until the next year to plant.

Seeding Rates:

Rates are based on pounds of **PURE LIVE SEED (PLS)** at 100 percent purity and a 100 percent germination rate. Order seed in terms of PLS. You will receive more seed than ordered because of the particular percent germination and purity of the seed lot.

| <u>Seeding Technique</u> | <u>Lbs. PLS per Acre</u> | <u>Lbs. PLS per 1,000 sq. Ft.</u> | <u>Number of PLS Seeds per sq. ft.</u> |
|------------------------------|------------------------------|---|--|
| Drilled | 8 | .18 | 70 |
| Broadcast | 10 | .23 | 90 |

Certified seed is recommended.

Order **2** to 5 lbs. extra to allow for spillage and planter **box** loss.

It is recommended that several price quotes be obtained. Request quote in PLS and ask for the (1) percent of germination, (2) percent purity, and (3) percent of weed seeds. If the germination rate is lower than 75 percent and/or the purity is lower than 98 percent, and/or the weed seed content is higher than .5 percent, the seed lot is of **low** quality.

To determine the actual pounds of seed to be planted per acre, use the following formula:

$$\text{lbs. seed to plant per acre} = \frac{\text{lbs. PLS recommended per acre}}{\text{your seeds \% germination} \times \text{\% purity}}$$

Planting Depth

In sandy loam and loam soils, seed should be planted 1/2 to 3/4 inch deep or covered with that amount of soil. In silt loams and clay loams, the depth should not exceed 1/2 inch, but should be at least 1/4 inch deep.

Advanced Site Preparation for Old Sod Fields

All competition from perennials such as quackgrass, bromegrass, golden-rod, asters, etc., **MUST** be eliminated before planting switch grass, regardless of whether it is to be planted by no-till or conventionally in a prepared seedbed.

A year's advanced site preparation with a row crop is recommended as follows:

- Chemically treat perennial weeds and/or grasses with chemicals appropriate for the species present. (See current "Cornell Recommends for Field Crops, Minimum Tillage Forage Seeding - Chemical Weed Control -Sod Seeding")
- Plow, disk and plant field to a row crop with appropriate weed control. Corn or beans are the preferable row crop. Corn is a better wildlife food.
- Plant switchgrass in the spring of the second year by conventional or no-till techniques described later.

If a row crop cannot be planted the year ahead, chemically treat the site as described above, and wait before planting for specified period for chemical dissipation as per the chemical label. For no-till planting, excess plant residue (over 6 inches of growth), must be removed by burning, grazing, or chopping and removing the residue. A split application of herbicide is recommended with part applied in the fall and the remainder of the treatment in the spring.

If vegetation control is left until spring, timing of all needed treatment is more critical. Chemicals must be applied early (but with 6" minimum green growth if using Roundup), and the required time for chemical dissipation will push planting to the end of the acceptable time.

Conventional Tillage Establishment

This technique should be used only when soil erosion will not be a problem. Generally, following row crops:

- If persistent perennial weeds exist, treat chemically as per "Cornell Recommends."
- Apply lime if needed.
- Plow and disk or roto-till.
- Apply fertilizer if seed will be broadcast.
- Harrow field.
- Cultipack.
- Drill seed and fertilizer or broadcast seed 1/.
- Cultipack again.
- Apply Atrazine 2/ prior to seeding or within 36 hours of planting, at the rate of 1 to 1-1/4 lbs. per acre (active ingredients).

- 1/ When broadcasting, subdivide field and seed into small seeding units. Thoroughly mix the very small switchgrass seed with moist-coarse sawdust to facilitate uniform application.
- 2/ Atrazine is registered for nonselective weed control on non-crop land which includes wildlife land.

No-till Establishment

This technique is recommended for steeper slopes where erosion may be a problem, but may be used on flat land also.

No-till can be used in grain stubble fields, overgrazed pasture, or idle fields where perennial weeds and grasses have been, or will be, eliminated and residue is not too heavy.

If initial pH is less than 5.5 or phosphorous analysis is in the low range, apply needed lime and fertilizer and delay planting until next year.



No-till Planting In Corn Residue

- Chemically treat perennial weeds and/or grasses with appropriate chemicals.
- Wait for chemical dissipation as specified on the label.
- Band fertilizer through drill during planting if possible, otherwise, broadcast on surface.
- Plant with no-till drill.
- Apply Atrazine prior to planting or within 36 hours.

Evaluating the Stand

It is important to remember that switchgrass germinates and grows slow initially. Do not become discouraged by early results. Stands which appear poor at the end of the first growing season usually develop into good stands the second year. In September, if there are 1 to 3 or more seedlings per square foot, the stand is adequate. Be sure you have properly identified the seedlings.

First Season Management

- Weed Control -

Attention needs to be given to controlling weeds the year of planting. Mow as needed to prevent weeds from overtopping the switchgrass. Mow to a height that will knock the weeds back but will not cut the switchgrass.

Broadleaf weeds can be controlled with 2,4-D and/or Banvel, without hurting the switchgrass. Allow weeds to reach 6-8 inches before spraying.

If quackgrass still persists, a fall application of Paraquat may be applied, or in the spring, Paraquat and Atrazine can be applied for control of quackgrass and other emerging grasses.

- Fertilize -

If the field is fairly weed-free in late June, apply 50 pounds of nitrogen per acre. If any significant weed problem exists, delay fertilizing, correct the weed problem, and fertilize the second year.

Second Year Management

Control any significant growth of weeds and/or **cool season grasses**.

Apply 50 pounds of nitrogen per acre in mid to late June.

Management of Established Stands

With a little management, healthy, vigorous, dense stands will resist invasion of weeds and hardwoods and can be maintained **for over 20 years**.

- Fertilize in late June with 300 pounds of 15-10-10 fertilizer or its equivalent every 3 to 4 years. Fertilizer can be applied most easily on the mowed portion of the plot if mowing (described later) is used as a weed control technique.
- Maintain pH of 5.5 or higher.

- Weed and Brush Control -

The plot should be burned or mowed every 3 to 4 years to control weeds and shrub invasion.

Burning:

- Burning is preferable as it also speeds growth, increases plant vigor, and suppresses cool season plants. The first burn should be during the spring of the fourth year. Burn when the first switchgrass shoots are 1-4" tall, which is normally late April to mid-May, but after any chance of a hard frost. The ground should be moist and the old switchgrass dry. A fast burn in the direction of the wind is desired to produce less heat on the switchgrass growth points near the ground. Slow backfires are more injurious to the plants than fast fires. A 10-12 mph wind is best, over 15 mph is too windy.

Burn only 1/2 of the plot, if possible, so as to retain undisturbed nesting cover. Create a firebreak along the edge of the area to be retained by mowing and removing the residue. Backfire along this firebreak. A firebreak, at least 50 feet wide, should be created, particularly along the downwind side of the plot, as switchgrass will burn rapidly with a large flame. Respect this fire and ~~do not~~ allow children or any adults who can't move **fast**, to assist with the burn.

Have adequate fire fighting equipment ready to **use**, and notify the local fire chief before burning. Obtain a permit for open burning, if needed.

Mowing:

- If mowing is used for shrub control, mow in the fall or spring until April 15 while switchgrass is dormant, and before pheasant incubation starts. Spring mowing is preferable, as fall mowing eliminates winter cover. Mow only 1/4 to 1/3 of the plot in one year to retain adequate cover for wildlife. Cut to a height of 3 to 4 inches,

Hay 'Production or Pasture

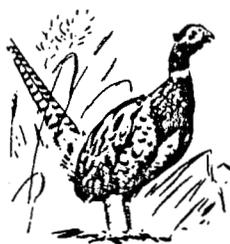
Switchgrass can be pastured or harvested as forage or mulch, without adversely affecting wildlife values if it is cut after July 20, and cut or grazed no closer than 8 inches above the ground. The growth points of switchgrass are located in the plant 6 to 8 inches above the ground. If these are removed by close cutting, plant growth will be retarded. New shoots must develop from the base. These are less vigorous and fewer in number.

Do not cut or graze after September 1. This allows regrowth for wildlife cover, and carbohydrate storage in the roots prior to frost.

Livestock **MUST** be removed when they have grazed the switchgrass to an effective height of not less than 8 inches above the ground,

It should NOT be used as livestock grazing or forage if **Atrazine** has been applied within 120 days.

With grazing or harvesting, the plot should be fertilized annually as per a soil test. In lieu of a test, apply 300 pounds per acre of 15-10-10 or equivalent.



APPENDIX I - Some Possible Sources of
Blackwell Switchgrass Seed 1/

It is strongly suggested that quotes be obtained from several sources.

1. Arkansas Valley Seeds Inc., **Box 270, Rocky Ford, CO 81067**
(303) 254-7469 (RW)
2. Arrow Seed Co., Inc., **Box 722, Broken Bow, NE 68822**
(308) 872-6826
3. Cenex Seed Co., P.O. **Box 1061, Grand Island, NE 68801**
(308) 384-1111 (R)
4. Ernest Crownvetch Farms, R.D. 5, **Box 806, Meadville, PA 16335**
(814) 425-7276 (RW)
5. Globe Seed & Feed Co., P.O. **Box 445, Twin Falls, ID 83301**
(208) 733-1373 (RW)
6. Horizon Seeds, **Box 81823, Lincoln, NE 68503**
(402) 475-1232 (RW)
7. Mangelsdorf Seed Co., P.O. **Box 327, 4500 Swan Ave., St. Louis, MO 63166** (314) 535-6700 (R)
8. Tom Munger Seed Co., **Box 975, Enid, OK 73702**
(405) 237-7812 (RW)
9. Ohio Seed Co., P.O. **Box 87, W. Jefferson, OH 43162**
(614) 879-8366 (W)
10. Sharp Bros. Seed Co., Healy KS 67850
(316) 398-2231 (RW)
11. Stanford Seed Co. R.R. 1, **Box 320, Denver, PA 17517**
(215) 267-3805 (RW)
12. Stock Seed Farms, Inc., Rt. 1, **Box 112, Murdock, NE**
(402) 867-3771 (RW)

(R) Retail (W) Wholesale (RW) Retail and Wholesale

1/ This Listing may not be complete and does not indicate Soil Conservation Service endorsement of the company or its products.

