**Cover Crop**

**Common Species and Properties of South Dakota**

A cover crop is a crop generally grown at times when cash crops are not actively growing. Covers are planted primarily to improve soil fertility, soil quality, control weeds, improve water infiltration, break up pest and disease cycles, and reduce soil erosion. Cover crops are also used to manage water, improve water quality, provide wildlife habitat, and extend the grazing season. Many farmers have discovered the economic benefits of incorporating cover crops into their farm operation. Cover crops can be adjusted to the objective of exactly what the producer needs.

**Hayo Farms, Edmunds County**
Hayo Farms is a no-till operation which alleviates soil compaction and improves organic matter to reservoirs too boggy. In the spring, Hayo Farm's Cover Crop is planted in the fall. The field has been flooded several times to reduce weeds and control water flow. The field is irrigated using the "sand wa" method. In September, Hayo Farm covers the ground with a mix of lychee and balm mix, and hulled organic matter throughout the winter.

**Schweinert Farms, Hanson County**
Schweinert Farms is a no-till operation that grows cover crops for the purpose of efficiently using the land for forage, rotating the crop rotation, and increasing the biodiversity of the ecosystem. The farm is located in the food supply area of a large urban area, and the cover crops are planted to reduce soil erosion and improve soil health. The cover crops are also used to provide habitat for wildlife, and to reduce the need for herbicides and pesticides. A knowledgeable and skilled staff are involved in the daily care and maintenance of the farm.

**Namlen Ranch, Hamlin County**
Namlen Ranch is a sustainable enterprise that grows cover crops for hay and feed. "We're growing a lot of hay in the first few years. We're trying to use the cover crops to improve soil health and reduce erosion. We're also trying to grow hay and feed crops to improve soil health and reduce erosion. We're working with the soil health institute to learn more about soil health and improve our practices."

**Crandall Farms, Potter County**
Crandall Farms is a sustainable enterprise that grows cover crops for hay and feed. "We're growing a lot of hay in the first few years. We're trying to use the cover crops to improve soil health and reduce erosion. We're also trying to grow hay and feed crops to improve soil health and reduce erosion. We're working with the soil health institute to learn more about soil health and improve our practices.

**Smith Farms, Davison County**
Smith Farms is a sustainable enterprise that grows cover crops for hay and feed. "We're growing a lot of hay in the first few years. We're trying to use the cover crops to improve soil health and reduce erosion. We're also trying to grow hay and feed crops to improve soil health and reduce erosion. We're working with the soil health institute to learn more about soil health and improve our practices.

**Heber Farms, Spink County**
Heber Farms is a sustainable enterprise that grows cover crops for hay and feed. "We're growing a lot of hay in the first few years. We're trying to use the cover crops to improve soil health and reduce erosion. We're also trying to grow hay and feed crops to improve soil health and reduce erosion. We're working with the soil health institute to learn more about soil health and improve our practices.

**Arneson Farms, Corson County**
Arneson Farms is a sustainable enterprise that grows cover crops for hay and feed. "We're growing a lot of hay in the first few years. We're trying to use the cover crops to improve soil health and reduce erosion. We're also trying to grow hay and feed crops to improve soil health and reduce erosion. We're working with the soil health institute to learn more about soil health and improve our practices.

**Rauch Farms, Potter County**
Rauch Farms is a sustainable enterprise that grows cover crops for hay and feed. "We're growing a lot of hay in the first few years. We're trying to use the cover crops to improve soil health and reduce erosion. We're also trying to grow hay and feed crops to improve soil health and reduce erosion. We're working with the soil health institute to learn more about soil health and improve our practices.

**Steddy Farms, Davison County**
Steddy Farms is a sustainable enterprise that grows cover crops for hay and feed. "We're growing a lot of hay in the first few years. We're trying to use the cover crops to improve soil health and reduce erosion. We're also trying to grow hay and feed crops to improve soil health and reduce erosion. We're working with the soil health institute to learn more about soil health and improve our practices.

**Williams Ranch, Pennington County**
Williams Ranch is a sustainable enterprise that grows cover crops for hay and feed. "We're growing a lot of hay in the first few years. We're trying to use the cover crops to improve soil health and reduce erosion. We're also trying to grow hay and feed crops to improve soil health and reduce erosion. We're working with the soil health institute to learn more about soil health and improve our practices.

**Arnoldy Farms, Lyman County**
Arnoldy Farms is a sustainable enterprise that grows cover crops for hay and feed. "We're growing a lot of hay in the first few years. We're trying to use the cover crops to improve soil health and reduce erosion. We're also trying to grow hay and feed crops to improve soil health and reduce erosion. We're working with the soil health institute to learn more about soil health and improve our practices.

**Jorgenland & Land & Cattle Partnership, Tripp County**
Jorgenland & Land & Cattle Partnership is a sustainable enterprise that grows cover crops for hay and feed. "We're growing a lot of hay in the first few years. We're trying to use the cover crops to improve soil health and reduce erosion. We're also trying to grow hay and feed crops to improve soil health and reduce erosion. We're working with the soil health institute to learn more about soil health and improve our practices.

**Bainbridge Farm, Davison County**
Bainbridge Farm is a sustainable enterprise that grows cover crops for hay and feed. "We're growing a lot of hay in the first few years. We're trying to use the cover crops to improve soil health and reduce erosion. We're also trying to grow hay and feed crops to improve soil health and reduce erosion. We're working with the soil health institute to learn more about soil health and improve our practices.
Considerations when using cover crops:
- What is the primary purpose of the cover crop?
  Refer to the USDA NRCS SD Cover Crops Table 1.
- What crop type will the following cash crop be?
  The majority of the cover crop mix should be an alternate crop type.
- Do you include warm season species or not?
- If planting later than about August 10, do not include warm seasons.
- Would you like any species to overwinter?
  Cereal grains most consistently overwinter i.e. rye, winter wheat, triticale, etc.
- What is the primary purpose of the cover crop?
  Graze, Building Organic Matter, or Compaction, etc.
- Review the “half life” of previously applied herbicides.
  Herbicides break down by microbes, sunlight, OM level, pH, etc.
- For overwinter cover crops, refer to NRCS Cover Crop Termination Guidelines
  Termination, Considerations, and Definitions.
- Seeding Timing Options
  Drill after small grain/silage/com/cereal; aerial interseeding, or full season.
- See the Seed Supplier List on the SD No Till Association website at www.sdnotill.com.

Cover Crops

Flax
(Linum usitatissimum)
Cool Season, broadleaf
- Annual
- High C:N ratio
- Medium water use
- Fair salinity tolerance
- Seeding depth: 1/4 – 1 1/4 inch
- Benefits from arbuscular mycorrhizal associations
- Flowers attract pollinators

Radish
(Raphanus sativus)
Cool Season, broadleaf
- Annual
- Good for grazing
- High water use
- Poor salinity tolerance
- Seeding depth: 1/4 – 3/8 inch
- Crude protein: 20-30%
- C:N ratio: low 9 – 20
- Does not form arbuscular mycorrhizal associations
- Rated ‘very good’ at scavenging nitrogen from the soil
- Flowers attract pollinators

Turnip
(Brassica rapa L. var. rapa)
Cool Season, broadleaf
- Good for grazing
- Good Cold Tolerance
- Good for grazing
- Poor salinity tolerance
- Seeding depth: 1/4 – 3/8 inch
- Crude protein: tops 16%, root 12-14%
- Low C:N ratio
- Does not form arbuscular mycorrhizal associations
- Rated ‘good’ at scavenging nitrogen from the soil
- Flowers attract pollinators

Annual Ryegrass
( Lolium multiflorum)
Cool Season, grass
- Good at Increasing Organic Matter
- Seeding rate is much less than cereal rye
- Deep rooted – Good at scavenging nutrients from the soil profile
- Desirable for grazing but often less biomass than other grasses
- Has been used in aerial seeding into a standing crop
- Can overwinter with spring control difficulty
- Cross-pollinate freely, and many different types have developed
- It does not withstand hot, dry weather or severe winters

Cereal Rye
(Elymus ciliaris)
Cool Season, grass
- Winter annual
- Very good rating to Increase Organic Matter
- High water use
- Good salinity tolerance
- Seeding depth: 1/4 – 1/8 inches
- Crude protein: straw 4%, grain 14%
- Medium C:N ratio
- Forms arbuscular mycorrhizal associations
- Assist in weed control for subsequent crops
- Rated ‘very good’ at scavenging nitrogen from the soil

Cereal Peas
( Vicia unguiculata)
Warm Season, broadleaf
- Annual
- Legume (N-fixation)
- Resembles or looks like soybean
- Good for grazing
- Low water use/shallow rooted
- Fair salinity tolerance
- Seeding depth: 1/2 – 1 inch
- Crude grain protein and leaves 19-30% – stems 11-17%
- Low C:N ratio
- Forms arbuscular mycorrhizal associations
- Attracts pollinators

Field Pea
(Pisum sativum anense)
Cool Season, broadleaf
- Annual
- Legume (N fixation)
- Good for grazing
- Low water use
- Poor salinity tolerance
- Seeding depth: 1 – 3 inches
- Crude protein: hay 19%, grain 24%, silage 15%
- Low C:N ratio
- Forms arbuscular mycorrhizal associations
- Flowers attract pollinators

Pearl Millet
(Sorghum bicolor)
Warm Season, grass
- Annual
- Excellent for Increasing Organic Matter
- Good for grazing
- Low salt tolerance
- Seeding depth: 1/2 – 1 inch
- Crude protein: hay 15%
- Forms arbuscular mycorrhizal associations
- Potential for accumulating toxic levels of nitrate, especially on the lower 6” of the stalks

Sorghum-Sudangrass
(Sorghum sudangrass)
Warm Season, grass
- Annual
- Good for silage, grazing or hayed
- Excellent for increasing Organic Matter
- High tonnage potential
- Fair salinity tolerance
- Seeding depth: 1 inch
- Crude protein: hay 7-11%, silage 6-17%
- Medium C:N ratio
- Forms arbuscular mycorrhizal associations
- Rated ‘excellent’ at nutrient scavenging
- Stress conditions that limit growth (e.g., drought, frost) can contribute to prussic acid accumulation in leaves

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