



Conservation Crop Rotation Fact Sheet

Applicable to conservation practice - 328

USDA Natural Resources Conservation Service - North Dakota

May 2003



What is conservation crop rotation?

Crop rotation simply means growing different crops in a recurring sequence on the same piece of land. This may include alternating production from a high residue producing crop (such as small grains or corn harvested for grain) with a low residue producing crop (like dry edible beans, potatoes or summerfallow). It may also involve a grass – legume hay crop in the rotation.

How it helps the land

The effect a crop rotation will have on the land varies with the capability of the soils; the type of crops grown; how the crops are grown; and how the crop residue is managed. Crop residue increases soil moisture, which increases crop yields and residue production; therefore a crop residue management system that retains a high level of residue can tend to be self-perpetuating. High residue crops such as small grains or corn for grain are often the key to a good rotation.

Good stands are needed to produce high yields, increase profit, return more organic matter to the soil, manage moisture, improve or maintain tilth, and to effectively control wind and water erosion. Alternating grasses and broadleaf; and warm season and cool season crops help break up pest cycles. Rotations can also benefit wildlife by providing a variety of food and cover.

Planning considerations

- Crop selection, including varieties, will influence the amount of residue produced.
- Crops can be generally categorized into high and low residue producing groups.

High Residue Crops	Low Residue Crops
Small grains Corn for Grain Forages	Edible beans Soybeans Corn for silage Sunflowers Flax, canola, peas All root crops

- High residue crops generally provide more erosion protection, sequester more carbon, improve soil organic matter, improve soil moisture conservation, and improve or maintain soil tilth.
- Crops can also be categorized by growth into following groups:

Cool Season Grass	Warm Season Grass	Cool Season Broadleaf	Warm Season Broadleaf
Spring wheat Winter wheat Barley Durum Oats Winter rye	Corn Sorghum Sudangrass Millet	Field peas Lentils Canola Mustard Crambe Flax Sugarbeets	Alfalfa Buckwheat Chickpea Edible beans Potato Safflower Sunflower Soybean

- Develop a crop rotation that has the intensity to use the soil water that is stored, and has adequate diversity to reduce weed, insect, and disease pressure, spread workload, and improve the production of each crop in the rotation. For more information on developing a good crop rotation visit: www.dakotalakes.com and read “The Power Behind Crop Rotations”, and www.ag.ndsu.nodak.edu/dickinso/agronomy/agronomy_research.htm to obtain a copy of a worksheet to compute crop rotation intensity and diversity.
- Weather conditions, unexpected herbicide carryover, and marketing considerations may affect year to year cropping decisions. These conditions may require a change in your scheduled rotation. A simple adjustment to rotations can often be made by following these guidelines:
 - Crop substitution is permitted only if an equal or more soil-conserving crop is planted. In addition, any requirements for crop residue cover must also be met when planting the substitute crop and in following years.
 - Small grains and hay can always be used to replace any row crop or low-residue crop.
 - Corn harvested for grain with residues left in the field can always be used to replace soybeans or any other low-residue producing crop.
 - For crop rotations that include hay, maintaining the existing hay stand for additional years can lengthen the rotation.
 - Crop sequences may not be lengthened with additional years of annual crops without working with NRCS prior to planting the crop. In areas where summer fallow is practiced, the decision to plant a crop or fallow is made based on soil moisture at planting time. Fields should be fallow only when soil moisture is not adequate to produce a crop. A fallow year is often included as a part of the crop rotation in these areas,

Other planning considerations unique to your situation:

- _____
- _____
- _____
- _____

To apply this practice

Rotations should be used on cropland where wind and water erosion is a problem. Crop rotations work best with other conservation practices such as conservation tillage, field windbreaks, contouring, and grassed waterways.

To reach the planned level of erosion reduction, you must follow the crop sequence shown in your conservation plan. This practice is considered applied when the most soil conserving crop has been planted at least once in each specified field, or when it is clear the specified crop ratio is currently in place for all affected fields or treatment units. The most soil-conserving crop is the crop with the lowest overall erosion potential. It will be identified in your plan.

Maintaining the practice

After the most soil-conserving crop is established, it must be rotated with the other crops according to the planned rotation.

Where to get help

Your local NRCS office can assist you in the selection of a conservation cropping rotation that will control erosion and fit into your farming operation.

NOTES:

