

Landowner _____



WHAT IS CONSERVATION CROP ROTATION?

Conservation crop rotation is growing crops in a planned sequence on the same field, often changing crops year to year. This may include alternating high residue producing crops with low residue producing crops. It may also include using forage grasses and legumes in the rotation with annual crops.

PURPOSES

Crop rotations can be applied as part of an overall conservation management system to support one or more of the following:

- Reduce sheet and rill or wind erosion
- Improve soil quality
- Manage the balance of plant nutrients
- Increase cropping system diversity
- Manage crop consumptive use of water
- Manage saline seeps
- Manage plant pests (weeds, insects, diseases)
- Provide food for domestic livestock
- Provide food and cover for wildlife, including pollinator forage, cover and nesting.

HOW IT HELPS THE LAND

The effect the crop rotation has on the land varies with the type of crops in rotation and how the residue is managed. It can be a very cost-effective way to treat many different conservation needs on the land.

WHERE THE PRACTICE APPLIES

This practice applies to all land where annually planted crops make up at least one-third of the crop sequence. Crop rotations work best in combination with other conservation practices such as conservation tillage, terraces, strip-cropping, and grassed waterways.

WHERE TO GET HELP

For assistance in planning a conservation crop rotation, contact your local Natural Resources Conservation Service or Conservation District Office.

APPLYING THE PRACTICE

Crops in the rotation should be selected based on the resource concern targeted. Selected crops should always be adapted to the climatic region and soils. Before starting a crop rotation, soil test and correct any fertility problems, including pH, prior to planting.

Maintain a good fertility program and soil test every 3 years to adjust the fertility program as needed.

SELECTING CROPS FOR THE ROTATION

Crops need to be selected that produce sufficient quantities of biomass capable of reducing erosion to acceptable levels. Common crops for this purpose would include corn, sorghum, small grains, forage grasses and legumes. Low residue producing crops may be used in the rotation with high residue producing crops. However, residues will need to be managed with a conservation tillage method, which provides adequate cover during the erosive periods of the year. Cover and green manure crops may be used in the rotation when residues from the previous crop are limited.

Crops should be selected that produce enough plant biomass to maintain or improve soil organic matter. The type of tillage method also plays a critical role in maintaining organic matter levels. No-till/Strip-till and Mulch-till systems slow down the decomposition process of residues and allows more organic matter to develop in the soil. The **Oklahoma NRCS Soil Condition Index** is used to determine the amount of biomass needed to maintain or improve the soil organic matter content.

Where excess plant nutrients are a concern, rotating deep rooted crops, grasses or legumes with the shallow rooted crops will help recover nutrients in the soil profile. Cover or green manure crops may also be used which utilize excess nutrients. These crops can be plowed and returned to the soil so that the nutrients may be recycled for the next crop. Rotations may also be designed to add nitrogen to the soil by planting nitrogen-fixing crops (legumes) on a rotational basis. Nitrogen fixing crops should be grown immediately prior to or even interplanted with nitrogen depleting crops.

When precipitation is limited, seasonal or erratic, moisture can be conserved by maintaining crop residues on the soil surface to increase infiltration and to reduce runoff and evaporation. Using crop residues and allowing them to remain standing during winter months can trap snow.

When improving water use efficiency on deep soils is a concern; rotating deep-rooted crops with shallow

rooted crops can help utilize available water in the soil profile.

When plant pests are a concern, crops need to be alternated to break the pest lifecycle and/or allow for the use of other control methods. Affected crops or host crops may need to be removed from the rotation for the period of time needed to break the pest cycle.

When saline seeps are a concern, crops selected for their tolerance to salinity should be used. If excess subsoil moisture exists below the rooting depth of commonly grown crops, deep-rooted perennial crops need to be used to dry the soil profile. Do not fallow under these conditions.

CONSIDERATIONS

The goal of any conservation crop rotation is not only to treat resource concerns but also to provide for a good investment return. Weather conditions, pests, and marketing considerations seem to always affect year to year crop rotation decisions. These decisions may require adjustments in your scheduled rotation. Make these adjustments keeping in mind both resources and profits.

When partial removal of residues by haying or grazing occurs, enough residues shall be maintained to achieve the desired goal of the crop rotation system.

At harvest, distribute crop residues as evenly as possible over the soil surface by using combine spreaders and chopper adjustments when possible.

Leaving rows of unharvested crops standing at intervals across the field can enhance the value of crop residues for wildlife food.

Care should be taken to consider the effects of herbicides and insecticides on future crops in the rotation.

MAINTAINING THE PRACTICE

Rotations should provide for acceptable substitute crops in case of crop failure or shift in planting intentions for weather related or economic reasons. Acceptable substitutes are crops having similar properties that will accomplish the purpose of the original crop.

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