

Definition

A crop rotation is a sequence of different crops grown in a recurrent sequence over a given number of years.

Purposes

Apply conservation crop rotation as part of a cropland management system to support one or more of the following purposes:

- Reduce sheet and rill erosion.
- Maintain or improve soil organic matter content.
- Manage the balance of plant nutrients.
- Manage plant pests (weeds, insects, and diseases).
- Provide food for domestic livestock.
- Provide food and cover for wildlife.

All conservation crop rotations will meet the soil loss objective for sheet and rill erosion

Utilize RUSLE2 to document that the predicted soil loss over the planned rotation meets the soil loss objective.

To maintain or improve soil organic matter content

Utilize RUSLE2 to document that the Soil Conditioning Index for the planned rotation is greater than or equal zero.

To manage the balance of plant nutrients

Sequence crops to provide nutrient balance benefits over rotation. For example:

- Alfalfa sequence will utilize accumulated manure P & K applied to corn sequence (reference PSU Agronomy Guide Figure 1.2-6).
- Utilize cover crops after summer harvested crops such as corn silage and small grains to scavenge soil N mineralized after harvest
- Follow legume crops such as soybeans and alfalfa with a non-legume crop and credit residual legume N to its nutrient budget

To manage plant pests

Rotate crops to disrupt pest lifecycles. Examples provided below.

- Design rotation to disrupt disease lifecycles
Fusarium species causing head blight in wheat (grass family) also causes stalk and ear rots on corn (grass family). Wheat planted no-till immediately after corn silage harvest is likely to have a higher incidence of head blight than tilled wheat or following a non-grass crop.
- Design rotation to disrupt weed lifecycles. Adding winter annual grain to a rotation can help control or suppress difficult perennial weeds in a rotation of summer annual crops. Perennial weeds, such as tree-of-heaven and hemp dogbane invade and thrive in summer annual no-till rotations. Winter grain harvest in July suppresses or controls these difficult weeds. If needed, the rotation provides an herbicide application window in late summer or fall.
- Design rotation to disrupt insect pest lifecycles. Adult corn rootworm beetles (CRW) lay their eggs in cornfields during summer. These eggs overwinter and hatch the following spring. If corn is planted in that field, the CRW larva will eat the roots of small corn plants to following year unless an insecticide application at planting or GMO seed was planted as a control measure. Alternating corn with other crops on an annual basis eliminates the need for the CRW insecticide or biotechnology control measure

To provide food for domestic livestock

Select crops to balance the feed supply with livestock needs. Calculate this balance as needed using appropriate procedures. Private consultants, Cooperative Extension and others may provide these calculations.

To provide food and cover for wildlife

Select crop to provide food and/or cover targeted wildlife species. Document with appropriate wildlife habitat evaluation tool.

Regulatory conditions met by rotation and/or supporting practices

The jobsheet column headed “**Conditions met by rotation +/- supporting practices**” can be used to document whether the planned cropland system for the acres included on the jobsheet includes sufficient planning to meet three conditions required for Pennsylvania’s Chapter 102.4(a) Agricultural Erosion & Sedimentation regulations.

Providing information in this column is a convenient way to communicate to the client whether the conservation plan contains planning that may meet a written Ag E&S plan requirements.

These conditions are:

1. The cropping system meets T over the rotation
2. Fields within 100 feet of a river or stream have 25% cover (living or dead plant material) throughout the year or additional BMPs
3. Gullies are treated to eliminate concentrated flow erosion

Field Office Technical Guide Section III contains further information for addressing near-stream cropland.

Abbreviations in this table may be used as needed to complete jobsheet specification tables when document the sequence of crops in rotation			
Crop	Abbr.	Crop	Abbr.
Corn grain	Cg	Winter wheat	Ww
Corn silage	Cs	Winter barley	Wb
Alfalfa	Alf	Rye grain	Ryegr
Alfalfa + Grass mix	Alfgr	Spring oats	Oat
Grass hay	Gr	Cover crop	Cc
Soybean	Sb	Annual ryegrass	Arg
Soybean double crop	sbdc	Tobacco	tob

Conservation Crop Rotation specification

PA328

Client name:		Date:	
Tract(s) and Field(s):		Acres:	
Purpose of the crop rotation (check all that apply)			
<input type="checkbox"/>	Reduce sheet and rill erosion	<input type="checkbox"/>	Manage the balance of plant nutrients
<input type="checkbox"/>	Maintain or improve soil organic matter content	<input type="checkbox"/>	Manage plant pests (weeds, insects, and diseases).
		<input type="checkbox"/>	Provide food for domestic livestock
		<input type="checkbox"/>	Provide food and cover for wildlife

Sequence of crops to be grown – using abbreviations for crops and tillage in rotation, complete the cropping sequence table below specifying year and season planted (example 2011 – fall – NT – ryec)

Field #	Acres	RUSLE2 Rotation file name	Season & Year	Conditions met by rotation +/-or supporting practices ¹								
												<input type="checkbox"/> Meets T <input type="checkbox"/> Near stream (25% or BMP) <input type="checkbox"/> All gullies treated
												<input type="checkbox"/> Meets T <input type="checkbox"/> Near stream (25% or BMP) <input type="checkbox"/> All gullies treated
												<input type="checkbox"/> Meets T <input type="checkbox"/> Near stream (25% or BMP) <input type="checkbox"/> All gullies treated

¹A check mark indicates conservation plan addresses these PA Ag E&S plan requirements for this land unit.

RUSLE2 Rotation file name	Length of rotation (years)	Description (Do not use abbreviations in this section. Provide enough detail to communicate rotation to producer.)

KEY to abbreviations

Tillage	Crop	Crop
NT		
MT		
CT		

