

NON-TILLAGE OPTIONS – CONSERVATION PRACTICES FOR CROPLAND

CONTOURING AND GRASS FIELD BORDERS

On short, gentle slopes, contour farming provides good protection against erosion. Tilling and planting across the natural slope create a series of dams which hold back water until it can soak into the ground.

For all but severe storms, contour farming on fields as steep as a 9% slope will cut erosion rates in half.

Contouring has no 'out-of-pocket' expenses and it can increase yields by 5 to 10%. Fuel and machine costs decrease, when compared to land farmed up-and-down the slope.

Getting started in contouring is not difficult. Expect, that because of slope irregularities, it may not always be possible to stay on the level. When laying out your system, smooth curves at ridge tops and drainage ways and square the rows with field edges to eliminate 'point-rows'.

These adjustments should maintain a 0.5 to 1% grade along rows. A grass waterway or tile outlet terrace must then be considered to carry surface water down the slope.

Tools which make laying out contours easy include specially-designed gauges (shown), hand and stationary levels.

The full benefits of contouring are obtained if all field operations are on the contour.



This producer has started mulch tillage with contouring and terracing to solve erosion problems.



The Contour Gauge is attached to the side window of a truck or tractor. It makes contour layout easier. Drive across the field keeping the bubble centred. Your local extension person may know where one is available.



Contour strip cropping with corn and small grain reduces erosion by up to 50% when compared with up-and-down the hill farming. It also doubles the allowable slope length limit shown in the table.



Farming on the contour, compared to up-and-down the hill can cut erosion rates in half. Moving to a no-till system, as shown here, may reduce erosion by up to 90%.

▲ An important part of any contour system includes grass field borders or headlands.



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The following limits should be considered when planning for contour farming.

SLOPE LENGTH LIMITS FOR CONTOURING

LAND SLOPE (%)	MAXIMUM SLOPE LENGTH	
	(METRES)	(FEET)
1 - 2	120	(400)
3 - 5	90	(300)
6 - 8	60	(200)

On longer slopes, contouring can be effective by using it in combination with conservation tillage, terraces, strip cropping or contour buffer strips.

Erosion can be severe where headlands are farmed up-and-down the hill. Grass field borders will limit erosion and provide an area to turn farm equipment.

Yield increases through contouring should easily offset production losses from land seeded into grass field borders.

STRIP CROP FARMING

Strip crop farming refers to planting alternating strips of a row crop with a cereal crop or forage. This practice combines the soil and moisture savings of contouring with the soil building advantages of a crop rotation.

There are four kinds of strip cropping: contour, field, contour buffer and wind strip cropping. The system you choose depends on the crops that can be grown, the kind of erosion (wind or water), the topography and the soil type.

Contour Strip Cropping

Crops are arranged in bands at right angles to the natural slope of the land. In nature, slopes are seldom perfectly uniform. Therefore, compromise in the contour layout. While it is difficult to imagine, if both strip edges are on the contour, all strips will be irregular in width. Consider alternating irregular-width strips with one or more even-width strips.

Take extra time and care to plan your rotation to ensure good erosion control. Laying out contour strip cropping is complicated, so get technical assistance.



Several tools may be used in laying out contour strip cropping. They include levels or Contour Gauges and measuring tapes.

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Grass field borders allow access to each strip and are a necessary part of strip cropping systems.

Field Strip Cropping

This is the most common form of strip cropping. It maintains strips of uniform width across the slope. As with contour strip cropping, this system can reduce erosion by up to 75% when compared to up-and-down hill farming.

In laying out this type of system, refer to the recommended strip widths shown on the following table. Adjust these dimensions to blend with equipment widths, especially planters and sprayers. An even number of passes along each strip will allow field operations to start and finish at the same end of the field.

MAXIMUM STRIP WIDTHS AND SLOPE LENGTH LIMITS FOR CONTOUR AND FIELD STRIP CROPPING

LAND SLOPE (%)	STRIP WIDTH		MAXIMUM SLOPE LENGTH	
	METRES	(FEET)	METRES	(FEET)
1 - 2	40	(130)	240	(800)
3 - 5	30	(100)	180	(600)
6 - 8	30	(100)	120	(400)
9 - 12	25	(80)	75	(240)



Across slope or field strip cropping is easy to understand and manage. Terraces or grass waterways protect areas where surface run-off concentrates.

Grass field borders become an integral part of any strip cropping system. They provide access lanes to each strip, protect against erosion and offer habitat to wildlife.

Contour Buffer Strip Cropping

Permanent strips of grass or forage laid out between even-width strips of crops in regular rotation, also limits erosion.

Grass strips as narrow as four metres (13 feet), making up as little as 10% of the entire field, may reduce erosion rates by up to 55% while doubling the slope length limits for contouring.

Buffer strip locations are based on crop rotation and the severity of slope. On irregular slopes, grass strips will be of different widths to make annually-cropped strips even.

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SOIL LOSS REDUCTIONS (SHADED) AND SLOPE LENGTH LIMITS FOR CONTOUR BUFFER STRIP CROPPING

LAND SLOPE (%)	PERCENT OF FIELD IN GRASS			MAXIMUM SLOPE LENGTH	
	10%	30%	50 %	METRES	(FEET)
1 - 2	45	60	70	240	(800)
3 - 5	55	65	75	180	(600)
6 - 8	55	65	75	120	(400)
9 - 12	45	60	70	75	(240)

Wind Strip Cropping

Wind erosion can be a hazard, especially for soils on level land. For good erosion control, alternate strips should be even in width, parallel and laid out cross-wise to the prevailing winds.

This easy, do-it-yourself table recommends widths based on soil texture. See the booklet BMP for Horticulture Crops for more ideas.



A sensitive tobacco crop is protected from wind by planting alternating strips of small grain.

RECOMMENDED WIDTHS FOR WIND STRIP CROPPING

SOIL TEXTURE	STRIP WIDTH	
	METRES	(FEET)
Fine sand, fine sandy loam, clay	25	(80)
Loam, silty loam	80	(260)
Clay loam, silty clay loam	100	(330)