

Section V
Conservation Effects for Decisionmaking
Case Study 4

Contour Strips for a Dairy Farm
Madison County, Farm #4

stripcropping will be the focus of this analysis.

Resource setting

This is a dairy farm in southern Madison County. It is an 80 cow dairy with a 21,500 lbs. rolling herd average, 795 lbs. milkfat. The herd is fairly young, with a 4.5 year herd average for milking animals. Crops grown are:

Corn silage:	25 acres
Corn grain :	75 acres
Hay (mixed):	100 acres

Total tillable	200 acres.

The major soil associations are Lordstown and Mardin, on C and D slopes. Almost all the land on the farm is highly erodible, with significant soil movement before the installation of several practices.

Practices installed

Contour strips, conservation tillage, diversion ditches, set-aside with CRP(5 acres), pond, drainage, barnyard practices (with an LTC), forest management. The effect of contour

Resource problem

The farm can be thought of in terms of two sites with physical resource problems, and the entire farm as one managerial resource problem.

Physical resource problems

a) Site 1 - This field was once three fields in continuous corn, conventionally tilled up and down the slope. At the base of the field was a short (20 foot) flat area along which runs a perennial stream. Soil movement had caused a buildup along the base of the field. This caused difficulty in working that stretch (never dried completely), the yields in the field were declining (both from soil erosion and from deposition of material on crops at base of field), and ephemeral gullies in the field were causing machinery repair bills to mount. Also, the stream was being ruined as more and more soil was deposited.

b) Site 2 - This field is behind the barn and so shaped as to channel water from the entire breadth of the field into the barnyard and indeed, into the barn itself. This in itself was completely unacceptable, though erosion and

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ephemeral gullies were also a concern. Erosion here was leading to sedimentation of ditches and plugging of culverts, causing flooding. The barn itself and a stream running past the barn were both being damaged, from buckling concrete to nutrient outflow.

Managerial Resource Problem

The primary concern here was time. The farmer believed that in order to keep his cash flow constant during the recent history of poor milk prices, he had to put on more cows and spend more time in the barn working to increase his herd average. Consequently, he needed to find a way to complete his field duties on a more timely basis, allowing him to put up better quality forage and grain with less time spent in production activities. Timeliness would also allow him to increase yields.

Solution

Install contour strips, use conservation tillage, install diversion and barnyard practices.

Effects of Selected Practice (Stripcropping)

a) Site 1 - The sedimentation and deposition previously found on this field

has been eliminated. The stream is clear, yields have stabilized, and ephemeral gullies are almost nonexistent.

Some other benefits that were unexpected occurred. First, the field is easier to work, since it now comprises several fields together. There is only one slightly irregular piece at both the top and bottom, instead of three at each before. This saves time. The elimination of the sedimentation layer at the base of the hill, in addition to increasing yields, has made that section easier to work since he no longer has to concern himself with wet spots.

Spray seems to hold better on the field as soil movement has decreased, for more effective pest control. Since he does not have to worry about ephemeral gullies, he can chisel the field, saving even more time. This will be developed further under managerial benefits.

b) Site 2 - Contour stripping the field has dramatically decreased water movement. The small amount of water that is still extant can be easily controlled with a diversion ditch. Repairs to the barn have dropped, the stream flowing past the barn is clear and free of animal waste and sediment. The expected benefits of erosion reduction, yield stabilization, and ephemeral gully elimination were all achieved.

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c) Managerial benefits. Stripcropping the farm has allowed the farmer to move to minimum tillage, since ephemeral gullies do not have to be plowed out in stripped fields. Chiseling itself is a major benefit to the farmer, in terms of time savings and timeliness of production activities, but will not be developed here. The farmer chisels even coming out of sod. By spraying in the Fall and Spring, he can safely chisel and get good weed control. He wants to eliminate spraying altogether and thinks that with minimum tillage, strips and a field cultivator, he can.

Other benefits specifically from the strips center around time spent performing a particular operation. For example, the farmer scouts the corn while doing the haying, since the strips are only 100 ft. wide. He said that he never had the time to do any scouting before and his increase in yields proves the value of it. Also, if he only has time to put up a few acres of hay at night, he can go out and just chop that much. He no longer has to worry about a whole field being down and vulnerable to the elements.

Production Activities

See crop budgets. Farmer 4 went from a conventional system to a chisel disk

operation. Harvest operation costs were unchanged, but pre-harvest costs decreased \$16.00 per acre. Nearly all of this decrease was in the switch to chisel/disk with some of the difference in a minor change in spray operations. No accounting for the stabilized yield on non-erosive fields is possible with this crop budget, but it is to be expected that this will result in a stream of future benefits that could be discounted to present value in an FSALT format.

The chisel/disk operation showed such an improvement over the conventional tillage for the following reasons:

- a) Labor cost is lower. In these crop budgets, labor cost is a function of time spent during an activity. Therefore, the only way for labor cost to decrease is for the time spent on the activity to decrease.
- b) Operating costs are lower. These are costs of fuel, repairs, oil, etc.
- c) Ownership costs are lower. These are fixed costs of debt repayment, taxes, etc.

General Comments

Farmer 4 likes the fact that with strips, he does not have to lose the outer two rows of corn when he comes to chop the field. With strips, he does not lose these rows.

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Other farmers, though, have stated that while this is true, the yield from these outer rows is much less than inner rows.

Farmer 4 also likes the fact that with strips, there is no dead furrow. He only uses a conventional plow on new seeding of hay. He does not plow coming out of sod - sprays in Fall and Spring, and in Spring, field can easily be chiseled.

Farmer 4 would like to eliminate spraying altogether. While this would save chemical usage (approximately \$11.00), it is not clear that this will represent overall savings once the extra cost of using a field cultivator (as he desires) is considered. Farmer 4, however, is more concerned with DEC regulations and may decide, if the proposed change is anywhere close to breakeven, to go ahead and make the change.