How Cover Crops Can Improve Net Profitability in Crop Share Arrangements

Information for Landowners

Rob Myers, Ph.D., & Olivia Caillouet, Ph.D.
University of Missouri Center for Regenerative Agriculture

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Introduction

Cover crops are plants used to protect and improve the soil, particularly when no cash crops are being grown. Common examples of cover crops are crimson clover, hairy vetch, cereal rye, and radishes, sometimes grown alone and sometimes in mixes with other cover crops. These cover crops are now used on over 150,000 farms in the U.S. on a total of over 18 million acres (2022 US Census of Agriculture).

Many benefits have been documented for cover crops, including increased soil health, reduced soil erosion, improved rainfall infiltration (getting rain into the soil), increased soil organic matter, enhanced weed control, and less soil compaction. Additionally, cover crops do have an impact on the profitability of cropping systems.

Impact on profitability over time

One of the key things to know about the profitability of using cover crops is that it is not the same in year one as it is in later years. A major analysis of farmer cover crop data in the national USDA-SARE Cover Crop Economics report showed that on average it takes about three years of cover cropping to break even. In year one or two of cover crop use, there will be a modest reduction in net profit, and after three years, cover cropping will regularly boost net profit.

There are two reasons that cover crop profitability changes over time, with the first being that cover crop yield impacts gradually increase as soil health improves and the farmer gains experience with cover cropping. Second, as soil health starts to improve, it becomes possible to cut back some on fertilizer rates on select fields, and there maybe be savings on herbicide costs or other pesticide and equipment inputs.

Resiliency

Weather conditions are always affecting crop production, sometimes positively and sometimes negatively. Excess rainfall and prolonged droughts can drive down crop yields, sometimes dramatically so. Federal crop insurance has been a way to help manage risk from weather, and the good news is that cover crops can also serve as a risk mitigation strategy for challenging weather. In the major drought year of 2012, yield data from hundreds of farms showed that cover crops improved corn yields on average by 9.6% and soybean yields on average by 11.6% (2019 USDA-SARE Cover Crop Economics Report). This happened because cover crops have several ways they improve moisture availability during droughts, such as helping rain soak into the soil and doing a better job holding the soil moisture.

In wet springs, cover crops can also be beneficial by helping excess moisture out of the soil and improving the internal drainage capacity of the soil. Effective cover crop management can aid farmers in hitting ideal planting windows which maximize profitability. One weather situation where cover crops can create a challenge is in excessively dry springs. In those situations, it is important to spray terminate or otherwise kill the cover crop plants early in the spring so as to limit their water uptake. Like with any crop management, paying attention to soil moisture levels and weather forecasts are helpful in preventing field management issues.

Is cover crop seed costly?

Both farmers and landowners who have not used cover crops before may be concerned about the cost of purchasing cover crop seeds. Seed cost for cover crops have a wide range, with legumes like clovers and vetches generally costing more than grass or Brassica (mustard family) cover crops. At the low end, some farmers find that they can get by with spending only $10 to $15 an acre on cover crops. The median price for cover crop seed is typically $20 to $25 an acre. Farmers who use cover crop mixes with legumes may have somewhat higher seed costs.

While the price of cover crop seed may seem to be a hurdle, this cost can be viewed as an investment in the farm that will pay both short term and long term dividends, not unlike the way that purchasing fertilizer, agriculture lime, installing drain tile, or other investments are evaluated.

Ways to fund a transition to cover cropping

Fortunately, there are more options than ever for getting public and private sector funding to ease the transition to cover cropping. Many USDA-backed climate-smart projects, such as the Farmers for Soil Health project, are providing payments for using cover crops. Federal funding from the USDA Natural Resources Conservation Service (NRCS) is another example of a cost-share program to pay for the cost of cover crop seed and seeding expenses through the Environmental Quality Incentives Program (EQIP). EQIP rates vary by state but are often in the range of $40 to $55 an acre for cover cropping, sometimes more for special situations such as individuals farming less than 10 years. EQIP contracts for cover crop planting generally last three years, enough time to get to the point where cover crops are paying for themselves.

Generally, these payments go to the farm operator, eliminating burden on the landowner to pay for half the cost of the cover crop seed that might otherwise occur in a crop share arrangement where field expenses are split. Some state programs exist for cover crop incentives and recently the private sector has also started incentivizing cover crops.

Most private company payments for cover crops are provided as soil carbon payments, but they may be promoted more broadly as regenerative agriculture programs. While soil carbon payments are typically at a lower rate per acre than EQIP payments, the $5 to $10 per acre that may be available from these programs can sometimes be added on top of the federal payments; check the rules with the relevant program to see how they apply.

Figure 1. Spring grass cover crop emerging through corn stubble. *Photo Credit*: SARE

Examples of ways that cover crops can improve net profit more quickly

It is important to note that there are ways that cover crops can pay off more quickly than three years. For example, receiving significant cover crop incentive payments can immediately make cover crops a net positive for cash flow.

Even without incentive payments, there are other management scenarios where cover crops start to pay within a year or two. The most common is cover crop grazing which, once fencing and watering investments have been paid for, can provide a positive net return in the range of $50 an acre of more. Cover crops can also ease the transition to no-till or strip-till, and the combination of less tillage passes with cover crops can be profitable very quickly because of less labor, fuel, and equipment costs.

Additional resources

For cover crop economics:

1. USDA-SARE Cover Crop Economics report
2. Soil Health Institute economic case studies

For cover crop species selection and management:

3. Center for Regenerative Agriculture cover crops
4. Farmers for Soil Health website
5. Regional cover crop council information (search for “regional cover crop council” with Midwest, Northeast, Southern, or Western)

Center for Regenerative Agriculture
University of Missouri

FarmersforSoilHealth.com

Farmers for Soil Health is a collaborative initiative led by the Soy Checkoff, Pork Checkoff, and National Corn Growers Association in partnership with state commodity groups and conservation organizations.