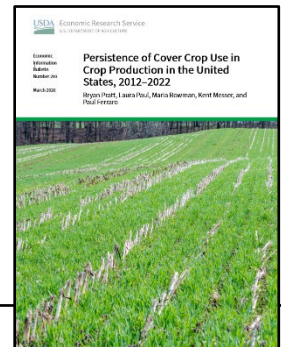


A report summary from the Economic Research Service

Persistence of Cover Crop Use in Crop Production in the United States, 2012–2022

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Key Points

- Using four data sources (explained in detail below), cover crop use ranges from well below 1 percent to more than 10 percent of crop fields or operations included in the samples or administrative records in this study. Cover crop use varies based on year, relevant population, and definition of cover cropping.
- Cover crop use increased over time in all four data sources, but the rate of increase differed by source.
- The trend of increasing cover cropping levels over time generally masks the large turnover of fields and operations into and out of cover crops. Across three of the four data sources, a majority of fields or operations with cover crops in one year no longer report cover crops over a subsequent 5-year period and the majority of fields or operations with cover crops at the end of the 5-year period were not adopters at the beginning of that period.
- Across two of three data sources with annual statistics, no more than 54 percent of fields with cover crops in a given year report cover crops again in the following year.
- Four data sources were used to report cover crop use and persistence measures in the United States: (1) the USDA, National Agricultural Statistics Service's (NASS) Census of Agriculture, (2) the USDA, Farm Service Agency's (FSA) Crop Acreage Reporting Database (CARD), (3) an in-person "windshield" survey conducted by the Indiana Conservation Partnership, and (4) the USDA Agricultural Resource Management Survey (ARMS).

Why Does This Matter?

USDA funding for cover crops and producer adoption of this practice has risen substantially in the past two decades. This report examines the use and persistence of cover cropping within operations and fields over time, with a focus on the practical challenges of measurement in existing data sources. While the USDA, Natural Resources Conservation Service (NRCS) provides a definition of cover cropping in its practice standards, what producers and observers consider to be cover cropping varies considerably along with the benefits of the practice. From a practical perspective, this range of definitions and outcomes leads to

measurement challenges. The existing literature on cover crop use predominantly measures cover crop use in aggregate trends and levels. However, the existing literature does not generally address whether a field or operation that uses cover crops in a given crop year continues to use cover crops in subsequent crop years. Understanding persistence is important for three reasons: many benefits of cover crops vary with the frequency of use; aggregate trends may mask nuanced trends in adoption with implications for future aggregate trends; and estimates of persistence are necessary to fully understand the impacts of USDA conservation programs, including targeting, cost-effectiveness, and long-term environmental outcomes.

A Few More Details

Data Sources

The field- and operation-level data sources used in this report are linked as longitudinal data panels and represent producer-reported USDA, FSA administrative data (CARD), producer-reported survey data (Census of Agriculture and ARMS), and professionally observed survey data (Indiana windshield survey), providing a range of methodologies and definitions. Each data source is national, except for the Indiana windshield survey which is conducted at the State level. With respect to ARMS, this report uses the crop history table from the Phase 2 survey. The crop history table represents a retrospective panel provided at a single point in time, such that the 2021 corn survey, for example, includes data from 2017–21, and the data for each Phase 2 survey are unaffiliated with data in other Phase 2 surveys. This report uses the 2015 and 2019 cotton, 2016 and 2021 corn, and 2018 soybeans surveys.

Each of these sources allow us to measure cover crop use within a field or operation over time.

- While CARD is a highly accurate source for commodity plantings, cover crop use appears to be underreported in USDA, FSA administrative data during the period of this research. Reported levels of cover cropping are substantially lower within CARD compared to all other sources. However, the FSA administrative data allow tracking of more fields with cover crops than any other source.
- Both CARD and the windshield survey showed that among fields with reported cover crops in 2014, between 29 and 40 percent of fields did not report cover crops again in the period 2015–19. Under a different measurement framework, ARMS respondents reported much higher rates of persistence. Among fields reporting cover crops in the oldest year of each survey’s historical crop table, between 6 and 16 percent of fields report either 0 or 1 year of cover crops in the subsequent 3 years of data (the comparable measure of 0 or 1 year of persistence would be between 47 and 61 percent of fields for CARD and the windshield survey).
- In CARD and the windshield survey, between 4 percent and 24 percent of the fields with cover crops in 2014 report cover crops again in every year from 2015 through 2019. In ARMS, between 57 and 76 percent of fields with cover crops in the oldest year report cover crops in all years of reported data.
- In CARD and the windshield survey, among fields with reported cover crops in 2014, between 33 and 54 percent of fields report cover crops in 2015. Within ARMS, the comparable figure is between 63 and 86 percent.
- The Census of Agriculture measures cover crop use at the operation level rather than at field level, but it provides similar estimates to CARD and the windshield survey. Among operations reporting cover crops in 2012, 48 percent report cover crops again in 2017 and 27 percent report cover crops again in 2022.
- There is substantial variation in both use and persistence across regions in the Census of Agriculture and CARD, with persistence highest in the Northern Crescent. Persistence has also risen in the Heartland over time in the Census of Agriculture, from 43 percent between 2012 and 2017 to 48 percent between 2017 and 2022.
- There is no evidence of economically significant differences in persistence across crop rotations or livestock affiliation.

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