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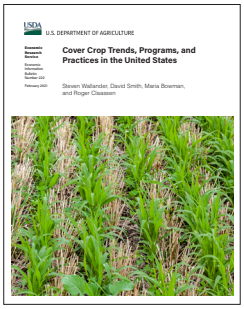

Cover Crop Trends, Programs, and Practices in the United States

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What Is the Issue?

Farmers grow cover crops for a variety of production and soil health benefits that do not include the sale or direct use of the crop. This distinguishes cover crops from both cash crops, which are harvested and sold, and forage crops, which are grazed by livestock or harvested for hay or silage. Well-managed cover crops provide a living, seasonal coverage of soil between commodity or forage crops. Depending upon the field, soil, climate, and weather, cover crops can result in a variety of onfarm benefits: reduced soil erosion and compaction, improved water infiltration and storage within the soil profile, greater weed and pest suppression, and better nutrient cycling and soil stability to support machine operations. Cover crops can also provide public environmental benefits: less runoff of sediments and nutrients into waterways, reduced flooding in watersheds, and greater soil carbon sequestration. As the understanding of links between soil health and these environmental benefits has grown, USDA and many States have increased financial assistance for cover crops through working lands conservation programs. This report summarizes unique, nationally representative data available on cover crop adoption rates, crop type, and management choices, and the links between cover crop use and other conservation practices.

What Did the Study Find?

U.S. farmers are rapidly expanding the adoption of cover crops.

- In 2017, farmers reported planting 15.4 million acres of cover crops, a 50-percent increase compared to the 10.3 million acres reported in 2012.
- Field-level surveys of corn, cotton, soybean, and wheat fields reveal the use of cover crops; and rates of expanded adoption are highest on fields that include corn silage in the rotation and lowest on fields that include wheat.

Financial incentives provided by Federal, State, and private organizations to encourage cover crops are one driver of increased cover crop adoption.

- In 2018, about one-third of the acreage planted with a cover crop received a financial assistance payment from either Federal, State, or other programs that support cover crop adoption.
- In fiscal year 2018, USDA's Environmental Quality Incentives Program (EQIP) obligated $155 million in planned payments toward cover crops on about 2 million acres.

This is about 20 times the level of financial support for cover crops through EQIP in 2005, driven primarily by an increase in acres enrolled in a cover crop practice.

- Between 2011 and 2015, the total acreage enrolled in USDA's Conservation Stewardship Program (CSP) through contracts, including cover crop practices and enhancement, increased from about 350,000 acres to more than 2 million acres.
- A variety of incentive programs administered by at least 22 States supported more than 1 million acres of cover crops in 2018.
- In 2018, financial assistance for cover crops across a variety of Federal and State programs, excluding CSP, ranged from $12 per acre to $92 per acre.

Farmers use a variety of cover crops and diverse strategies to manage them.

- Fields in cotton and corn silage are much more likely to use cover crops compared to fields in corn-for-grain or soybeans.
- The most common cover crops are rye (cereal rye or annual ryegrass) and winter wheat. (Note Summary figure).
- To prepare for the planting of cash crops, most cover crops are terminated with herbicide or tillage.

Cover crops are often part of a suite of conservation practices that comprise a farmer's soil health management system. Other conservation practices, such as no-till farming and a written nutrient management plan, are more common on fields with cover crops than on fields without cover crops.

- No-till planting is two to three times more likely on fields with cover crops.
- Testing for nutrients and soil organic matter and the use of written nutrient management plans are all more likely on fields with a cover crop.

How Was the Study Conducted?

We estimate cover crop adoption rates using data from the 2012 and 2017 Census of Agriculture and the Agricultural Resource Management Survey (ARMS), a national survey of farming operations and production practices conducted by USDA's National Agricultural Statistics Service (NASS) and Economic Research Service (ERS). The field-level data are based on the Production Practice and Cost Report (Phase 2) ARMS that is conducted periodically for corn (2010 and 2016), cotton (2015), wheat (2017), and soybeans (2018). Field-level data on cover crop adoption and management are obtained from a series of questions that ask farmers about what crops they grew during the 4 years prior to the survey, whether the crop was a cover crop, and what tillage and termination practices were used. To capture potential relationships between cover cropping and other management practices, we also use field-level survey data to estimate the extent to which different tillage practices, conservation cropping, soil testing, and other practices are associated with the use of cover crops on surveyed fields.

We use data obtained from the USDA, Natural Resources Conservation Service (NRCS) ProTracts database and other online NRCS resources to estimate the magnitude of Federal financial incentives for cover crops and trends in these incentives provided through EQIP and CSP. Information on State-level programs and financial incentives for cover crops was compiled from various sources, including publicly available documents and conservation program reporting, and personal communication with State departments of agriculture and conservation districts.