

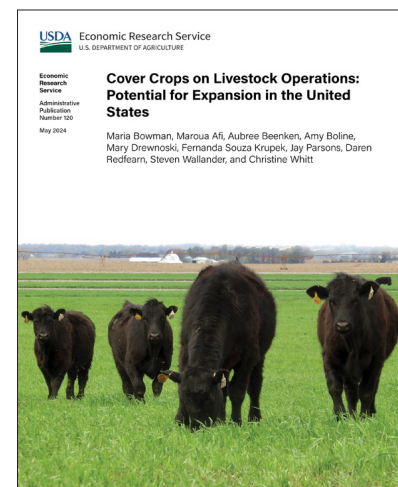


Cover Crops on Livestock Operations: Potential for Expansion in the United States

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What Is the Issue?

Cover crops provide seasonal, living cover during a period when a crop might not otherwise be grown (e.g., late fall, winter, and early spring). While cover crops can provide multiple environmental and economic benefits both on and off the farm, the net benefits of cover crops vary by region, crop/livestock system, and operation. This report looks at how incorporating cover crops into an integrated crop-livestock system with cattle, such as by grazing or harvesting the cover crops for forage, might improve the profitability of cover cropping and livestock production. We summarize the literature on the profitability of using cover crops for forage, present new findings from census and survey data on the prevalence of cover crop use and grazing/harvesting on cattle operations, and examine the potential for increased adoption.



What Did the Study Find?

A literature review of the economic and agronomic potential for integrating cover crops into cattle operations found that:

- Most studies find that integrated livestock cover-crop systems tend to be more profitable than livestock systems without cover crops because the forage value of cover crops is greater than the costs of cover cropping.
- The profitability of cover crops in an integrated livestock system primarily varies with the choice of cover crop species and management practices, the amount of cover crop forage being consumed by livestock, and the agronomic effect of the cover crop on the cash crop.
- The profitability of cover crops in an integrated livestock system also varies with the fixed costs of the grazing/harvesting system, the size of the farming operation, producer experience, and regional variability in production systems, soils, and climate. These factors can also be barriers to the adoption of cover crops in livestock operations.

A statistical analysis of data from the USDA's 2017 Census of Agriculture revealed that cover crop adoption rates vary by region and livestock operation type.

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- Despite the literature review finding that integrated livestock-cover crop systems tend to be profitable, overall adoption of cover crops by cattle operations with cropland is relatively low and similar to all farms with harvested cropland (14 percent versus 12 percent in 2017). This may reflect barriers to adoption or a lack of knowledge or technical expertise about how to implement such systems.
- Dairy and feedlot operations with cropland are more than twice as likely to grow cover crops as operations with cattle and cropland overall (33 percent of dairy operations and 27 percent of feedlot operations in 2017 versus 14 percent of cattle operations with cropland overall).
- The share of feedlot operations reporting cover cropping grew from 21 percent to 27 percent between 2012 and 2017.

Data from the Agricultural Resource Management Survey provide additional insights into how cover crops are managed.

- Grazing and harvesting cover crops for forage is common in cattle operations with cover crops. In 2021, 72 percent of dairy operations and 89 percent of cow-calf operations with cover crops reported harvesting or grazing at least some of their cover crop acreage.
- Dairy farms in the Northern Crescent region (comprised of Northeast and Great Lake States) are more likely to report growing cover crops that are not harvested for forage or other on-farm use. This could be related to climate, or regional policies, regulations, or programs that incentivize growing cover crops for water quality benefits.
- Grazing or harvesting for forage to terminate (kill) the cover crop is relatively rare. These two termination practices accounted for 13 percent of cover crop acreage on corn, soybean, sorghum, cotton, and barley fields.

There is potential to expand the use of cover crops in livestock systems in the United States, but there are also barriers.

- Regions such as the Eastern Uplands (which is characterized by small farms that are mostly part-time cattle, tobacco, and poultry farms and includes all of WV and parts of KY, TN, VA, NC, GA, AL, OK, MO, and AK) and central/eastern Texas and Louisiana have potential to expand cover cropping in livestock systems.
- In other regions, the feasibility to expand such systems is limited (such as much of the western United States) due to water and cropland availability.
- On dairy and cow-calf operations, on average, less than half of cropland is being cover cropped, and harvested cover crop acreage accounts for 26 percent and 18 percent of total cropland acreage on cow-calf and dairy operations with cover crops, respectively. This may indicate the potential to expand grazed or harvested cover crops on operations that are already cover cropping if a portion of total cropland acreage is not being cover cropped and/or if acreage that is already cover cropped is not being used for forage.

How Was the Study Conducted?

The authors conducted a literature review to examine the profitability of integrating cover crop and livestock systems, the forage benefit and livestock performance on cover crops, and the regional factors affecting the adoption of cover crop and livestock systems. The authors used operation-level and county-level data from the 2012 and 2017 Census of Agriculture to estimate cover crop adoption rates on cattle operations with cropland (including dairies, cow-calf operations, stocking/backgrounding operations, and feedlots) and identify regions with the potential to adopt integrated cover crop and livestock systems. The authors used data from the Agricultural Resource Management Survey (ARMS) to estimate the prevalence of grazed, harvested, and unharvested cover crops on dairy and cow-calf operations, as well as termination practices for cover crops. ARMS is a national survey of farming operations and production practices conducted by USDA's National Agricultural Statistics Service (NASS) and Economic Research Service (ERS). Operation-level data on cover crop acreage are based on the ARMS Cost and Returns Report (Phase 3) from the 2018–2021 survey years, and field-level data on termination practices come from ARMS Production Practice and Cost (Phase 2) field-level data.