

Intensively managed grazing can increase profits, improve environment

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Cows from the SDSU Cottonwood Field Station graze during the summer on leased pasture at the Fort Meade National Recreation Area near Sturgis. Through a 2018 producer survey, associate professor Tong Wang of the South Dakota State University School of Management of Economics has analyzed how grazing intensity affects past and future land use, specifically converting cropland to grassland. Credit: South Dakota State University

What is good for the environment can also be profitable for livestock

producers.

"By intensively managing grazing, producers can make money converting marginally productive cropland back to [grassland](#), while at the same time reducing agriculture's impact on the environment," said South Dakota State University associate professor Tong Wang. "Grasses prevent soil erosion and their root systems penetrate the ground, increasing water infiltration and decreasing runoff and water pollution." In addition, wildlife populations benefit from grassland habitat.

Wang, fellow Ness School of Management and Economics assistant professor Hailong Jin and researchers from Texas A&M University surveyed producers in South and North Dakota and in Texas to determine how grazing intensity affects past and future land-use decisions. Analysis of the results are published in *Land Use Policy*, an international, open-access and peer-reviewed journal focused on urban and rural land use.

Analysis of the 2018 survey focused on producers with at least 100 non-feedlot cattle grazing on perennial grasslands. The researchers defined rotational grazing as rotating a livestock herd through four to 15 paddocks over a period of weeks or even months, while management-intensive grazing emphasizes shorter grazing periods and 16 or more paddocks per herd. The intensive grazing periods range from one to 15 days per paddock followed by a 20- to 100-day recovery time, depending on how quickly the forage grows back.

Overall, the researchers concluded, "lower crop prices and a stable cattle market are motivating producers to consider converting marginal cropland to grasslands." Wang said, "It's always a two-way conversion. In years when crop prices are high, more (marginal) land is converted to cropland." When crop prices decline, that trend reverses. The researchers hope to illustrate how to make agricultural production more

ecologically sustainable.

Assessing grazing intensity

Of the 874 [survey respondents](#), 315 are from South Dakota, 234 from North Dakota and 325 from Texas. Of the South Dakota respondents, 39.37% use traditional continuous grazing, 54.92% use rotational grazing and 5.71% use management-intensive grazing. Among North Dakota respondents, 29.24% opt for continuous grazing, 60.68% for rotational grazing and 9.83% for management-intensive grazing.

"Those using the higher intensity grazing management strategy were more likely to expand their grass-based production due to higher profitability," Wang said. In the last 10 years, 31.6% of the respondents who used management-intensive grazing reported increasing their grassland acres, while only 21.5% of those using rotational grazing and 15.5% of those using conventional grazing had done so.

Furthermore, during the next decade, more than half of those using the higher intensity grazing method plan to expand their grassland acres, while one-third of the rotational grazing users and slightly more than a quarter of those using conventional grazing plan to do so.

Those using management-intensive grazing are more likely to expand their grass-based agriculture by converting cropland to grassland, Wang pointed out. However, producers, in general, who have larger operations are more likely to purchase or lease more grasslands rather than to convert marginal cropland to grassland.

Helping young farmers

As expected, a producer's age makes a difference. Younger farmers are

more likely to convert marginal cropland to grassland. "It's like remodeling a house. It's so much work that the longer you plan to live there, the greater your likelihood of tackling the project," Wang said.

Furthermore, those who have greater [financial obligations](#), meaning what they owe is a greater percentage of their total assets, are more likely to expand their grasslands because of the increased costs and dwindling profits from crop production.

The survey also showed producers who view Extension and the U.S. Department of Agriculture Natural Resources Conservation Services as important to their decision making are more likely to convert cropland to grasslands as well. "SDSU Extension and NRCS provide producers information on the environmental benefits of grasslands and can guide them in choosing appropriate grass varieties, and caring for them during the first few years when plants are getting established," Wang said.

In an article on the SDSU Extension website, Wang found the estimated costs to convert cropland to grassland varies from \$70 per acre for ranches with less than 100 acres and \$10 per acre for those with more than 400 acres to convert. However, she added, government conservation programs can cover up to 50% of those costs.

"Extension and NRCS staff can help farmers with the paperwork needed to enroll in these programs and thereby increase producer usage of this grazing management system for greater environmental and ecological sustainability," Wang concluded.

More information: Tong Wang et al, Expanding grass-based agriculture on marginal land in the U.S. Great Plains: The role of management intensive grazing, *Land Use Policy* (2020). [DOI: 10.1016/j.landusepol.2020.105155](https://doi.org/10.1016/j.landusepol.2020.105155)

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