

Climate change mitigation not the primary motivator in regenerative ranching

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Regenerative ranching, a holistic approach to managing grazing lands, enhances ranchers' adaptive capacity and socioeconomic well-being while also providing an opportunity to mitigate climate change, a new

study from Oregon State University has found.

Regenerative ranching practices rebuild ecological processes, allowing ranchers to reduce reliance on products such as chemical herbicides, pesticides and fertilizers, which are significant sources of greenhouse gas emissions.

While some science suggests that regenerative ranching can result in [climate](#) change mitigation through carbon drawdown into soils, that is not usually the driving factor behind ranchers' decision to adopt the practice, said the study's lead author, Hannah Gosnell, an OSU geographer who studies the human dimensions of climate change.

Understanding what motivates ranchers to adopt carbon-friendly practices will play an important role in efforts to expand the use of managed grazing systems to reduce climate change impacts, said Gosnell, a professor in Oregon State's College of Earth, Ocean, and Atmospheric Sciences.

"What we found is that ranchers manage regeneratively for all these other benefits, and if there's some measureable soil carbon sequestration and it contributes to [climate change mitigation](#), then that's icing on the cake," she said.

The findings were just published in *The Royal Society Interface Focus* journal as part of a special issue on carbon dioxide removal. Co-authors are Susan Charnley of the U.S. Forest Service and Paige Stanley of the University of California, Berkeley.

More than a third of the Earth's ice-free land surface is used for livestock grazing. Livestock production, while important to livelihoods across the world, is a significant source of greenhouse gas emissions, a key contributor to climate change, Gosnell said.

Regenerative ranching is drawing increased interest as a potential climate change solution. Previous studies have suggested that these practices boost soil carbon sequestration, a process by which carbon dioxide from the atmosphere is transferred into and stored in soil through vegetation, and increase resilience to drought, which help ranchers both mitigate and adapt to the effects of [climate change](#), Gosnell said.

To better understand ranchers' motivations and interest in regenerative agriculture practices, Gosnell interviewed ranchers in the United States and Australia about the perceived benefits and challenges of adopting the practices.

She and her colleagues found that the transition to regenerative ranching is often difficult because the practices require a thorough understanding of the fundamental ecosystem processes involved. They also found that offering incentives such as cash payments are not the most promising way to convince ranchers to make the switch, since the practice requires a paradigm shift in thinking along with a new set of practices.

"It's hard to transition to regenerative ranching because it requires such a deep commitment," Gosnell said. "If you want ranchers to make the switch, paying them is likely not motivation enough."

The most common benefit of regenerative agriculture mentioned by the ranchers interviewed was the increase in deep ground cover, which increases soil carbon sequestration and leads to increased forage for livestock and greater resilience to stressors such as droughts, floods or freezing temperatures. Because ranchers using regenerative practices were not dependent on expensive chemicals, they also were less vulnerable to financial shocks and stressors, which in turn increased their resilience, Gosnell said.

Improved water retention, increased soil fertility and other benefits from regenerative ranching motivate ranchers to continue using the approach once they adopt it, through a process of self-amplifying positive feedbacks, she said.

"As a result of their new practices, ranchers see less bare ground, more native perennials, more biodiversity and more forage for their cattle, all without use of chemicals," she said. "This inspires them to continue with regenerative practices, which then leads to more ecological improvement, better economic returns and more positive feedback for the rancher."

There are few opportunities for ranchers to be paid through carbon markets, a trading program where those who emit carbon purchase "offsets" or credits from an entity that is reducing its carbon footprint or increasing carbon sequestration. Also, because the approach takes tremendous dedication, cash incentives alone may not suffice, Gosnell said.

"Putting a price on [carbon](#) and incentivizing practices with payments is probably necessary, but certainly not sufficient for the approach to scale up," Gosnell said. "A broader shift in practices will likely require a 'bottom-up' approach involving networks of like-minded individuals contributing to cultural change within agriculture and the cultivation of new markets for regenerative products."

Research, outreach and education is also needed to help ranchers develop a deep understanding of the ecological processes that makes the switch to regenerative ranching effective, she said.

"This is a low-cost, low-tech, natural climate solution, and it can be a really effective and important one," she said. "But it is hard for ranchers to transition to because it requires a deep understanding of fundamental

[ecological processes](#) and adoption of a new set of management tools."

More information: Hannah Gosnell et al, Climate change mitigation as a co-benefit of regenerative ranching: insights from Australia and the United States, *Interface Focus* (2020). [DOI: 10.1098/rsfs.2020.0027](https://doi.org/10.1098/rsfs.2020.0027)

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