



Report: The Economic Impact of Climate Change on Montana Agriculture

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Please refer to the full report for citations.

Key Findings:

- The report predicts a loss of more than 9,500 jobs and more than \$181 million dollars per year in labor earnings in Montana agricultural sectors by mid-century due to the impact of climate change.
- The report estimates that Montana grain crop yields could be reduced by 20% by mid-century due to climate change. Wheat, barley, and hay sectors of Montana agriculture are the source of about 76% of agricultural sales. The impact of climate change could result in a loss of 5,000 wheat, barley, and hay jobs and more than \$95 million in labor earnings.
- Wheat production is estimated to fall by 6% for each degree centigrade of further temperature increase. Thus, a 5° C summer temperature increase could lead to a 30% decline in wheat production.
- The report projects a 20% decline in the rangeland cattle sector in Montana by mid-century or 4,514 cattle ranching jobs and more than \$86 million in labor earnings from cow and calf operations. Western rangeland has already experienced a decline of 20% in the recent historical record as the result of climate change, and this report predicts that number will worsen.
- Some climate adaptation strategies may be easier for small-scale operations due to labor requirements and pasture sizes, but larger operations in the western United States currently have greater access to resources and support needed for climate adaptations. This could speak to a more pressing need for support systems that can help smaller operations access the resources needed to plan for and achieve climate adaptation strategies.

- Improved animal genetics, increased supplementation, and habitat control for better forage are adaptation strategies that could be effective in Montana.
- These impacts will hit Montana's rural areas and small towns most heavily, especially in eastern Montana. Population density will fall further, undermining the viability of local businesses as well as the services provided by local governments. School districts already hard-hit by shrinking enrollments will face broader consolidation and longer bussing routes for their students. The loss of commercial and government infrastructure will make these rural areas and small towns less and less attractive to those who do not continue to be employed in agriculture. Even for those farms and ranches that successfully adapt – especially small operations, given adequate access to support – the more limited off-farm income-earning opportunities, the increased isolation, and deteriorating community will partially undermine the way of life that has held them in agriculture and in place. In addition, the same climate changes that threaten farming and ranching – longer, hotter, and drier summers – are also likely to discourage new in-migrants seeking to live in ex-urban or rural areas. That, too, would contribute to undermining local economic vitality in Montana's small towns and rural areas, especially the Great Plains area of eastern Montana.