Hi Everyone,

Happy February! I hope everyone has been staying warm this week. Our Update From the Field this month is about extreme weather.

If you have any questions or comments, or would like the full article, please email us at stephanie-mcmillan@uiowa.edu or kelsey-strandberg@uiowa.edu.

Very Best,
Steph & Kelsey

Mapping Vulnerability of Farming Communities to Winter Storms in Iowa

Zhang, Yiyi, and Bingqing Liang. "Mapping Vulnerability of Farming Communities to Winter Storms in Iowa." AGUFM 2019 (2019): NH23B-1014.

Driven by unusually warm air in the Arctic, severe winter weather moves down south to mid-latitude areas, reflecting the complexity in the ways that climate change may affect local weather extremes. Food and agriculture have been identified central to global efforts to adapt to climate change. However, research is notably lacking in understanding the vulnerability of farming communities to winter storms that are recognized as one of catastrophic events leading to agricultural damage and loss. This study focuses on mapping the interplay of social and physical factors (e.g. building age, farm-related income, education level, access to farming facilities) that differentiate Iowa farming communities with unequal vulnerability. Semi-structured interview was used in this study to identify the determinants of vulnerability of farming communities to winter storms. Incorporating spatial analysis and factor analysis, this study quantified the effects of physical factors on the sensitivity and exposure of winter storms, and prioritized primary livelihood capitals that determine the adaptive capacity to winter storms. Current results have demonstrated the vulnerability patterns of farming communities to winter storms shaped under varying societal-physical environments and weather conditions. This research shows implications in livelihood pathways to transforming adaptations to vulnerability reduction.

Does shelter design matter? A note on the effect of two shelter types on shelter use by cattle during winter

Fogsgaard, Katrine Kop, Maja Bertelsen, and Janne Winther Christensen. "Does shelter design matter? A note on the effect of two shelter types on shelter use by cattle during winter." Journal of Veterinary Behavior 34 (2019): 18-21.

Little is known about the effect of shelter design on sheltering behavior in out-wintered cattle. In this pilot study, we explored the effects of two different shelter designs (rectangular: 50 m2 vs. hexagonal 53 m2 with three separate compartments) on shelter use by cattle. Two shelters of each type were included in the study, and shelter use by 67 Aberdeen Angus cattle in four groups was recorded in a crossover study, ensuring that all groups were tested with both shelter types. Shelter use (i.e., number of cattle standing or lying inside each shelter) was recorded by use of infrared trail cameras. Rectangular shelters were used significantly more than hexagonal shelters ($P < 0.001$). The proportion of animals in the shelters that were lying down did not differ between the shelter types. Cold, windy, and wet conditions increased sheltering behavior. In this study, cattle preferred rectangular shelters over hexagonal shelters possibly because they prefer to shelter together as a group. Further studies on optimal shelter design are required.

Keep Your Barns Safe and Standing this Winter

https://www.dairyherd.com/news/dairy-production/keep-your-barns-safe-and-standing-winter

Mother Nature has been cruel to some dairy producers this season, blanketing parts of the country with several feet of snow. Unfortunately, it sounds as if she won't be letting up on the snow fall anytime soon.

Significant snow accumulation could spell disaster for dairies that are ill prepared to handle large snow loads. Wet, heavy snow can easily cause even the strongest freestall barn to collapse if it is not removed in time.

Curt Gooch and Sam Steinberg, biological and environmental engineers at Cornell University provide these three tips to help keep your barns safe this winter.