

Adaptation to Climate Change and Heat Stress in the Israeli Milk Sector

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Ayal Kimhi, Ram Fishman, Gaby Adin, Yaniv Lavon

Abstract

While methodological advancements and larger and more detailed data sets have improved the understanding of how extreme weather affects agricultural production, knowledge gaps persist about under-studied sectors and their potential for adaptation. We use daily data on milk production of 130,000 cows over 12 years in Israel, and survey data on adaptation measures, to estimate the contemporaneous and delayed impacts of humid heat on milk yield. Results show that humid heat exerts nonlinear negative effects reaching up to a 10% decrease in milk production on extreme days, and effects that persist for up to 10 days after direct exposure to humid heat. Moreover, the adoption of cooling equipment, shifts in birth timing or changes in feeding practices are associated with only limited reduction in the impacts of extreme heat. Given the technological advancement of the Israeli dairy system, long history of exposure to heat, and the climatic diversity of the country, these results suggest that common adaptation strategies may hold limited potential to avert the impacts of climate change on the dairy industry worldwide, an industry that is both nutritionally and economically important.