How does the changing climate impact dairy operations, and what can dairy farmers do to adapt?

**Elements of dairy that are changing**

Increased heat stress in dairy livestock can reduce feedintake, milk production, and livestock fertility. For a Southern Pennsylvania farm, average annual losses in milk production from excess heat were projected to be 1% to 2% by mid-century, and as much as 7% by 2100. Increasing the cooling capacity of existing barns, and using modeled temperature projections when planning new structures can avoid losses.

Risk of soil erosion, compaction, and nutrient loss will increase. Increased rainfall amounts and storm intensities could increase field nutrient losses as much as 40% by mid-century and 87% by 2100. The use of winter cover crops and double crops can maintain ground cover for most of the year, which can increase crop uptake, and reduce leaching and surface run-off. Routing water away from manure containment structures will remain important.

Pasture production will likely change. Summer production might decrease due to more heat and drought stress, while cool season winter pasture production may see increases due to warmer and wetter winters. In the Northeast, opportunities to extend the grazing season will increase.

Control of weeds, invasives, and pests may become more challenging. Warmer winters will likely allow more southern weeds and pests to survive and thrive.

**Changes in our climate**

- Average temperatures are going up. Temperatures could increase 3 – 6 °F by mid-century (2041-2070).
- More days with temperatures > 95 °F increase animal heat stress.
- More rainfall, especially in winter and spring.
- More heavy downpours are increasing runoff and flooding.
- The growing season is getting longer.

Climate projections from the 2014 National Climate Assessment