

# Climate Change and LIVESTOCK in the U.S. Caribbean

## Climate Projections for Puerto Rico and the US Virgin Islands



Increasing temperatures



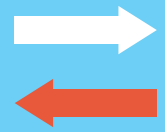
Extreme rainfall events (>3in. in less than 24hrs)



Frequent and prolonged droughts

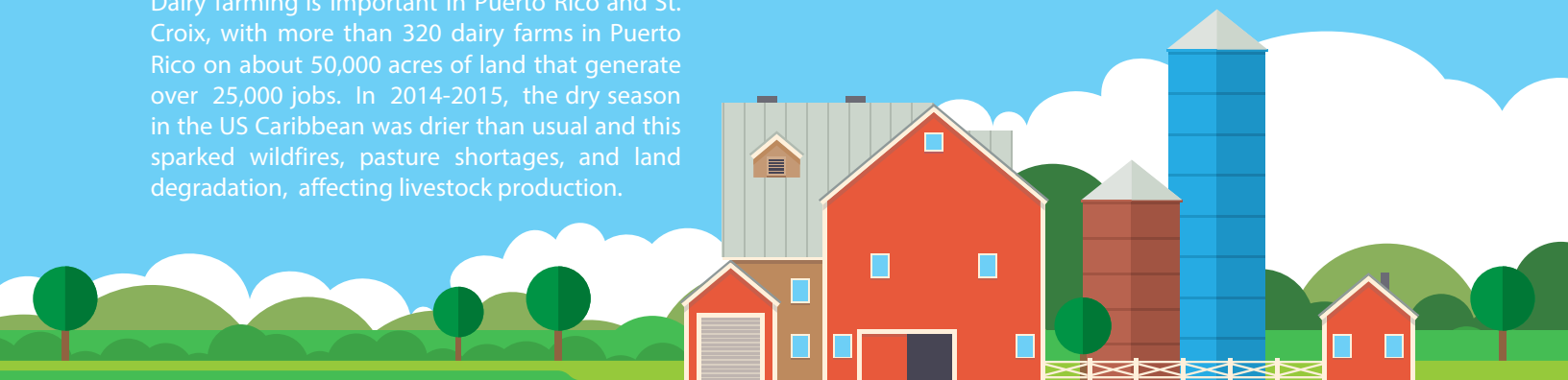


Increasing intensity of extreme weather events such as heat waves & hurricanes



Shifts in timing of "rainy" and "dry" seasons

Dairy farming is important in Puerto Rico and St. Croix, with more than 320 dairy farms in Puerto Rico on about 50,000 acres of land that generate over 25,000 jobs. In 2014-2015, the dry season in the US Caribbean was drier than usual and this sparked wildfires, pasture shortages, and land degradation, affecting livestock production.



### Principal dairy breeds in the US Caribbean



Pardo Suizo



Jersey



Holstein

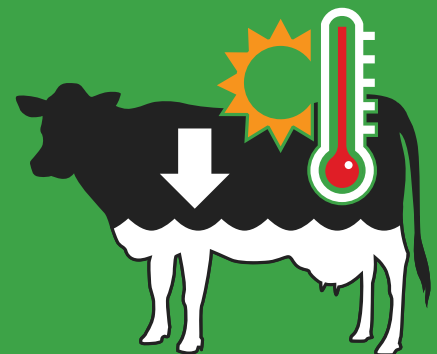
### Common beef cattle breeds:

Brahma, Charbray, Senepol, Angus, Brangus, Charolais

The US Virgin Islands are known worldwide for developing the heat tolerant **Senepol breed**, which is also more resistant to disease and parasites.

### Climate Effects on Livestock and Dairy

- Heat stress increases animal body temperatures, sweating, and panting, and thus reduces animal feed intake, productivity and may
- In dairy cows, heat stress reduces: the amount of milk produced, milk fat and protein content, and fertility rates.
- Increasing temperatures can increase water demands to meet animal needs and grow forage .
- Changes in rainfall distributions lead to changes in diseases sensitive to moisture and relative humidity.
- Increased costs of animal housing (i.e. cooling systems)
- Warming increases proliferation and survival of parasites and disease pathogens.



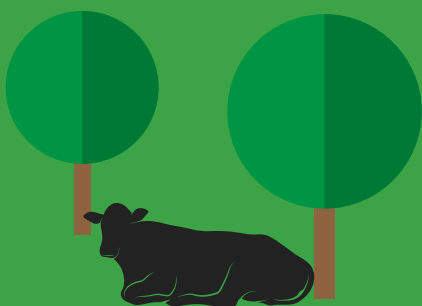
Heat stress caused by high temperatures reduces milk production and fertility rates

# Adaptive Strategies for Climate Resilience in the Livestock Sector



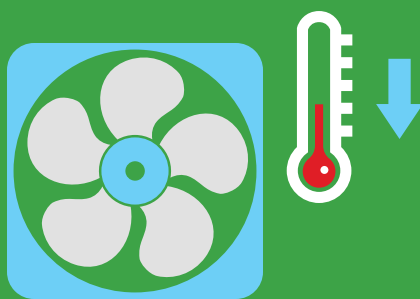
## Adaptive Strategies

### Silvopasture Techniques



Silvopasture combines trees with forage and livestock production. The trees are managed for high-value sawlogs, and provide shade and shelter for livestock and forage, reducing stress and sometimes increasing forage production.

### Modifying Facilities



Modify facilities to reduce heat stress on animals: use of shade trees, adding natural and artificial ventilation, fog and sprinkler systems.

### Breed Selection



Selection of drought and heat resistant breeds, like the bald Puerto Rican cow (Holstein Pelona) and the Senepol.

#### ADAPTA EDUCATIONAL VIDEO: "Cattle & Dairy Farming in the Tropics"

Go to our website and watch this video that focuses on adaptation practices for tropical dairy producers. The ADAPTA project documents local successes in sustainable land management practices that tropical farmers, ranchers and landowners could use to build climate resilience.

## Opportunities for the livestock industry in the US Caribbean

- Demand exceeds production (highly import dependent).
- Develop local livestock co-ops to minimize risk exposure of individual producers.
- Develop incentive or payment system for ranching ecosystem services such as control of invasive species, fire hazard reduction, carbon sequestration and pollination of nearby farms.
- Development of infrastructure and markets for new, local livestock products.
- Develop labeling system to identify and incentivize consumption of local products.

### USDA Caribbean Climate Hub (Centro Climático del Caribe)

Find resources & tools in our website: [caribbeanclimatehub.org](http://caribbeanclimatehub.org)  
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