LINCOLN AGRICULTURAL COMMISSION

Strategies for sustainable agricultural water conservation

Water use for agriculture is prioritized during drought; however, farmers should make efforts to conserve water.

Agricultural water includes commercial farmers and family gardens producing food.
Water use for landscaping purposes is not considered agricultural use.

Conserving water is essential whether the source is from surface water or the aquifer through a well.
Our water resources are interconnected; the aquifer replenishes rivers, lakes, and streams; and is critical to groundwater-dependent ecosystems such as natural springs, seeps, and deep-rooted plant communities. Accessing water from a well has the same ecological impact as using surface waters.

1. **Care for your soil**

Adding organic matter to the soil helps retain moisture. Good soil is essential for water conservation.
Estimates indicate that water retention capacity increases by approximately 1/2 inch per foot of soil depth for each percent of soil organic matter.

In pasture, build up organic matter in needed area using manure, compost to increase moisture retention. Test soils and apply the recommended nutrients to help plants recover from the drought, but delay fertilizer application until moisture/rain is present or imminent

2. **Use drip irrigation or water at the plant roots**.

Drip irrigation can save 20-50% water by preventing overwatering and surface evaporation. In the best scenario, the plants absorb all the irrigation water. For gardeners watering by hand, direct the water directly to the plant roots.

3. **Optimize watering times**
   Water at night or early morning. Adequate irrigation scheduling reduces the water needed to irrigate a crop by decreasing evaporation and providing water when the plants require it the most. Watering during the heat of the day wastes water even when using drip irrigation.

4. **Cover the ground**
   Mulch prevents water evaporation, keeps the soil moist, reduces run-offs, and protects from erosion. Mulch prevents weeds from robbing water from valuable crops.
   Drip irrigation under the mulch reduces water usage most effectively.
   The downside is that it can prevent rainwater from reaching the plants. Using black plastic material that is woven to allow water to penetrate is advisable over impermeable materials.

5. **Avoid overwatering**
   Invest in a soil tensiometer (about $100) to measure and monitor soil moisture to optimize watering times and amounts.

6. **Avoid overgrazing**
   Don't graze plants lower than 3-4"; this will reduce plant stress during a dry spell and help prevent erosion.
   Allow the pasture to recover to at least 6-8 inches in height, before re-grazing

7. **Reduce tilling**
   If tilling is required, leave a portion of the cover crop chopped up as mulch.
   Use no-till techniques when possible

8. **Plant a diversity of crops**
   Crop diversity has always been a critical strategy to mitigate the vagaries of weather; however, this has become more important in the face of global warming.
   Examples of observations from the drought of summer 2022:
   - Single-cut broccoli failed during the drought, but the multiple-cut variety yielded well with the rain following the drought.

- Potatoes did well in the summer drought but would have been plagued more extensively by the potato beetles in a rainy summer.
- Early corn died in the drought, but late corn yielded well.

In pasture, plant a portion of your acreage in forages that are naturally drought-tolerant, e.g., warm season grasses.

The MDAR website has excellent guidelines for various types of farming operations
https://www.mass.gov/guides/water-conservation-for-agriculture