

Increasing temperatures usually lead to an earlier last spring frost and a later first fall frost. This longer growing season may provide new opportunities for crops and varieties.

However, even with rising springtime temperatures and a longer growing season, frost events can occasionally still occur late into the spring.

Key Climate Change Impacts:

Warmer spring temperatures cause crops to produce buds, blossoms, and vegetation earlier

Late frost events in springtime

Frost events can devastate entire crops, reduce yields, reduce produce quality, and cause damage to perennial or biennial crops that is carried into the future

Frost Types

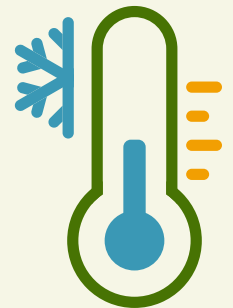
Advection frosts: cold air moving in with strong winds

- More difficult to predict
- Could happen more often with more frequent and more intense storms

Radiative frosts: occur during clear, cold, and calm nights

- Easier to adapt to and prepare for

Key Adaptation Strategy



Strategies for frost protection can be divided into two categories:

1. ACTIVE METHODS

- **Physical barriers:** cover plants overnight to retain heat
- **Water barriers:** use irrigation/sprinklers to continuously cover entire crop for cold temperature duration
- **Air movement:** mix air via helicopter rotor wash, large ground-mounted fans, or propane fan-heaters to keep temperatures from dropping rapidly
- **Fog or smoke:** expensive and challenging, but can be effective

Passive methods tend to be more effective and economical but might limit adoption of new crops and varieties.

2. PASSIVE METHODS

- **Site selection**
 - **Plant near trees and buildings:** physically shelter plants from direct cold winds
 - **Avoid overly stagnant areas:** airflow reduces the settling of cold air
 - **Plant on slopes:** radiative cold air will pool in valleys
 - **Plant near water:** air over larger bodies of water tends to be warmer, cools slowly
 - **Plant in ideal soil types:** avoid sandy soil which will lose water quickly and enable frost to form
- **Adapted crops and varieties:** certain crops exhibit key growth stages outside of critical frost periods
- **Planting date:** keep 5-10 year climate trends in mind when planning for future
- **Soil management:** proper soil moisture, tillage, and mulch