

Accommodating for a Changing Climate: One Farm's Experience

Sherry Dudas

Honey Brook Organic Farm

Pennington and Chesterfield, NJ

Farm history

- Farming organically on 4 farms, having started in 1991 and expanding over time to 110 acres of vegetable and fruit crops.
- Market as a CSA, with close to 4000 shares at our peak in 2016.
- Rent 2 farms in Pennington, Mercer County and own 2 farms in Chesterfield, Burlington County.

OBSERVED FEATURES & IMPACTS OF CHANGING CLIMATE

- Unpredictable/variable weather patterns throughout the season that seem to lock in for periods of time.
- Warmer falls and springs potentially permit a longer growing season, but not always reliably.
- Wet weather is more of a concern for us than dry. No longer have severe droughts like those experienced in 1999 and early 2000's.
- Record-breaking summer temperatures can affect crop quality as well as yield by impacting pollination in some crops.

OBSERVED FEATURES & IMPACTS OF CHANGING CLIMATE

- It doesn't take a hurricane to have an agricultural impact. ½ inch of rain every other day for a week will keep farm equipment out of the field as effectively as a more serious weather event.
- Warmer winters allow lower die-off of pest insects; more precipitation makes pesticide use harder and more applications add to costs.
- CSA customers will notice poorer-quality produce and will not rejoin in future seasons.

Coping Strategies

STRUCTURAL

- Choose your farm soils carefully. Level fields of well drained soils with good moisture holding capacity. Buffers the impacts of wet and dry periods.
- Maintain these soils in good tilth and provide subsurface drainage when beneficial. Increases or additions of OM improve water holding capacity and soil structure which improves drainage. Gypsum applications loosen tight soils, improving drainage.
- Establish grassed waterways, water diversions & contours where necessary to get excess water out of the field safely.

Contoured cut flower planting at Pennington farm



Coping Strategies

MANAGEMENT

IMPROVING THE CROP ENVIRONMENT

- Raised beds – ameliorate wet feet conditions after heavy rainfall.
- Protected culture – more later.
- White and reflective plastic mulches can reduce soil temperatures for later plantings of heat sensitive crops.

RISK REDUCTION

- Prepare fields in the fall for spring planting.
- During the season, plan ahead and strike when field conditions are suitable. Try to stay ahead of unpredictable weather conditions.

Coping Strategies

TECHNOLOGIES

Whatever gets the job done faster allows the fieldwork to stay on schedule while working around rain events. Important in the spring, when soil moisture levels are already elevated and fields recover more slowly from precipitation. Narrow windows of opportunity can prevail in the spring.

Protected Culture

- Greenhouses and high tunnels provide conditions for earliness as well as protection from damaging weather extremes, i.e. hail, rainfall, moderately strong winds & cold temperatures.
- They can also shelter the crop from conditions that promote disease or insect damage.

2 acres of Haygrove multibay tunnels



2 acres of Haygrove multibay tunnels



Peach trees inside a tunnel



Carbon Sequestration

Retaining carbon in the soil will not only improve the resilience of the soil but also is a partial solution to a primary cause of climate change.

- Cover crops
- Compost applications
- Biochar
- Partially broken down wood chip and Nitrogen fixing cover crop system

This is what 22 tons of
Biochar looks like!



Involving Customers in Funding On-Farm Adaptations to Climate Change

- With the help of a consultant, we are creating a carbon mitigation bank where customers can purchase carbon credits from us to offset carbon emissions from airline travel
- We will use proceeds to purchase biochar, purchase and plant more fruit & nut trees, explore interseeding raised beds with plants that are useful to wildplant foragers

Involving Customers in Funding On-Farm Adaptations to Climate Change

- Increase the number of trees used to buffer the farm from neighbors - increased protection from wind erosion, pesticide contamination
- Involve customers in helping to plant and maintain the trees
- One farmer involved in a similar mitigation bank marketed his sweet corn as “low carbon input” corn and was able to receive a premium on his corn!

Just like it was years ago for Integrated Pest Management (IPM) marketing, it remains to be seen if the public will financially support farmers working to reduce carbon emissions on farms.

My limited experience is indicating that climate science is not well understood by customers, so this type of education and marketing will have to be a group effort of farmers, scientists, ag marketers, etc.