

Accommodating to a Changing Climate: One Farmer's Experience

Jim Kinsel

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 2015.
- Rent 2 farms in Pennington, Mercer County (Piedmont, red shale silt loam soils) and own 2 farms in Chesterfield, Burlington County (Inner Coastal Plain, Glauconitic fine sandy loams/loams).

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 weather. We have not recently had 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 on some crops.
- 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.

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!



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.

Jones Engineering Power Bedder



special 'no panning' blades on front rotor do not smear the soil



The contra rotating rear rotor grades the soil leaving the fine tilth on the top of bed while leaving a rough tilled soil underlying. This produces a structured bed creating correct drainage and even germination



Jones Engineering Power Bedder



Coping Strategies

TECHNOLOGIES

Whatever gets the job done faster allows the fieldwork to stay on schedule while working around rain events. This is especially 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.

Helpful EQUIPMENT we use

IMANTS ROTARY SPADER

Performs multiple tillage operations at the same time. Allows for rapid turnover of fields. We have used this implement to incorporate a mature stand of rye and vetch starting in the morning, and ending the day with a watermelon crop planted into plastic mulch!

Imants spader incorporating a fumigation cruciferous crop



Imants Rotary Spader

Relatively benign tillage. Does not pulverize soil structure. Two tillage components. Digging spades mounted to a horizontally rotating axle perform the primary tillage and break the soil into chunks which are then tossed up onto the frame of the unit where they are broken up from impact. This spading action also excels at mixing residues or amendments evenly throughout the soil profile.

Back of unit is comprised of a rotary spring tine harrow that excels at preparing a seed bed in the top 2 " only.

In illustration of the gentle action of this implement, I have run over wild turkey eggs and baby bunnies without harm.

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.

2 acres of Haygrove multibay tunnels



2 acres of Haygrove multibay tunnels



Peach trees inside a tunnel

