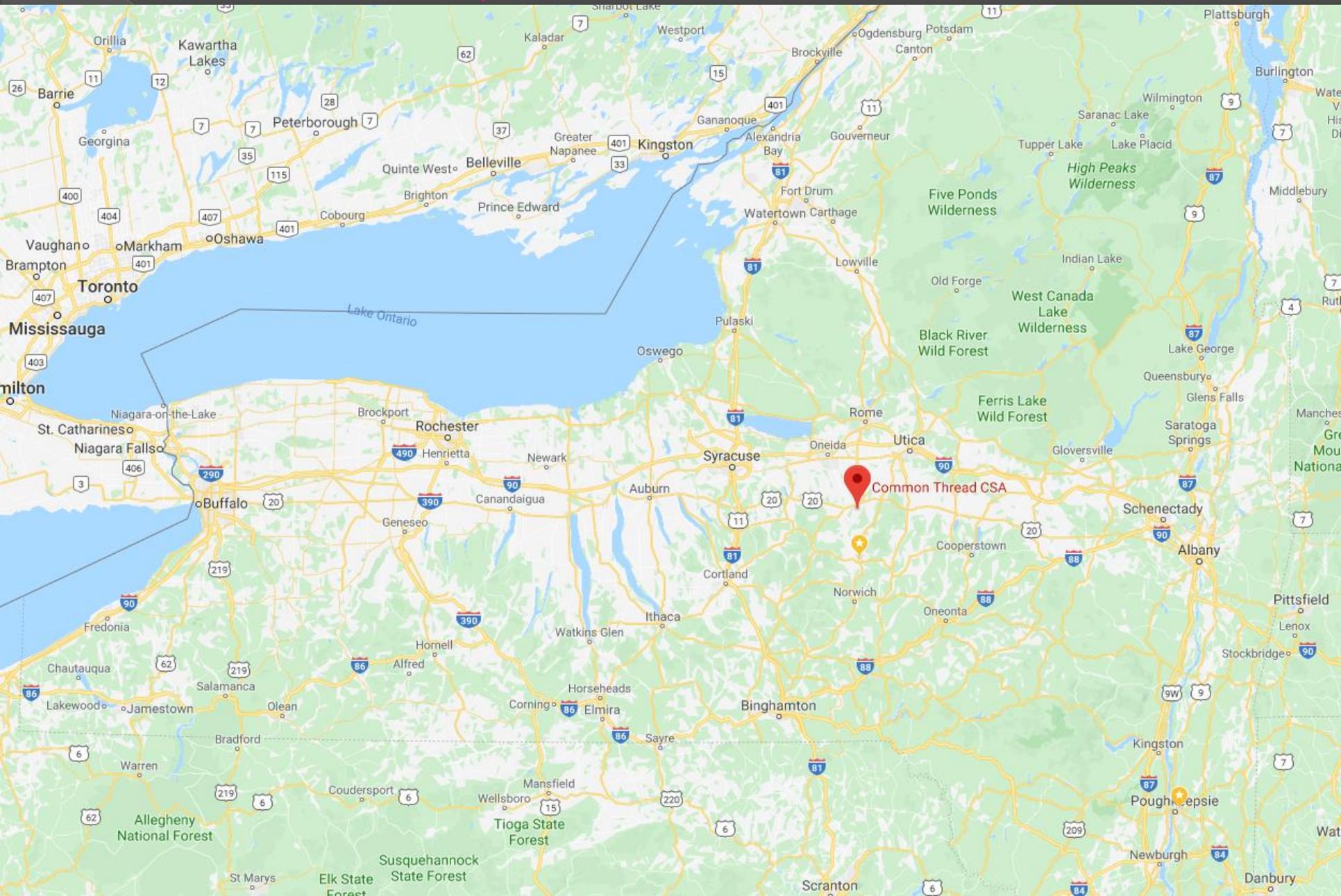


# Common Thread Farm

Wendy and Asher Burkhardt-Spiegel

Permanent Raised Bed Tillage  
System

# Madison, NY



Common Thread CSA

# Scale

- 18 acres of beds
- 12 acres of mixed vegetables planted

# Home Farm and two leases



# Market Split:

- ◉ 36% On Farm CSA
- ◉ 31% Delivered CSA shares (custom boxes)
- ◉ 13% Winter CSA (custom boxes)
- ◉ 11% Farmers Markets (2 summer, 1 winter)
- ◉ 7% Direct wholesale

# 36% On-Farm CSA Distribution:







HEAD  
LETTUCE

MINERSON

CANTON

RADISHES

BOK CHOY

SCALLOPS

GREEN ONIONS

KOHLRABI

TURNIPS

31%  
Delivered  
CSA  
Shares.  
13% Winter  
Shares.  
(All as  
custom  
boxes.)



order belongs to:

**Gramlich  
Pamela**

1 Fall Small, 1x1 each Winter Squash Butternut,  
1x1 lbs Onions Red 1 lb, 1x1 lbs Onions Yellow 1  
lb, 1x1 each Fennel Bulb, 1x1 head Cauliflower  
OR Broccoli, 1x1 bag Lettuce Mix, 1x1 head  
Garlic

[Colgate, Shaw Wellness Center - Thursday, October 24, 2019]



Lots of  
veggies  
to fill  
winter  
boxes!



A few box share examples:









100ml 100ml



# Summer Farmers Market



# Winter Farmers Market



# Direct Wholesale



# Non-certified, organic methods

- ◉ Important elements to understand tillage decisions:
  - > Crop rotation
  - > Cover crops
  - > No herbicides

# Crop Rotation

- 5 Years
  - > Brassicas
  - > Nightshades & Alliums
  - > “Mixed”
    - Lettuce, spinach, beets, chard, escarole...
  - > Cucurbits & Carrots
  - > Cover crop
- Rotational sections consist of 10 6-foot beds (150/225/300 feet long)

4 Sections; 10 6' beds x 300'





# Permanent Raised Bed Tillage System

- ◉ Why?
- ◉ How?
- ◉ Integrating Cover Crops

# Why Raised Beds?

- Move from Hudson Valley, anticipating:
  - > Cooler climate
  - > Wetter climate
  - > Shorter growing season
  - > Heavier soils
- Hoping raised beds would compensate for those factors

# Why Raised Beds?

- ◉ Design Criteria:
  - > “Bed-at-a-time” tillage system
  - > Not use a rototiller?
  - > Maintain beds in same location?
  - > Residue tolerance

# Bed-at-a-Time Tillage

- ◉ Home farm rotational sections without drive lanes
- ◉ Lots of short-cycle crops
- ◉ Planting different numbers of beds...
- ◉ Every week from April to September

# No Rototiller?

- ◉ Very rocky leased field
- ◉ Doesn't bury large quantities of residue thoroughly
- ◉ Low ground speed
- ◉ Easy to overwork soil

# Maintain beds in same location?

- ◉ Reduce field layout time in spring
  - > Limited acreage
  - > Looking for precise number of beds
- ◉ Maintain edges of rotational units
- ◉ Restrict tire compaction to same zone

# Residue tolerance

- Many tillage systems struggle with mature rye and vetch levels of residue
  - > Minimum requirement: mow and incorporate rye and vetch without clogging
  - > Ideally short time from lots of residue to planting (definitely not achieving this!)

# Permanent Raised Bed Tillage System

- How?

- > Beds remain “legible” at every stage of the process



# Feel your way through mowing a cover crop















# Permanent Raised Beds: Cast of Characters

- Tractors
  - > All on 72" tire centers
  - > Widest tire is 13.6
- Implements all set up for 72" bed

# 90 HP Kubota



# 90 HP NH TD95D



# 40 HP Ford 3610



# Order of operations

- ◉ Manage cover crops
- ◉ (Spread compost)
- ◉ Chisel plow
- ◉ Disc bed
- ◉ Time!
- ◉ Disc bed
- ◉ Perfecta
- ◉ Fertilize

# 72" Heavy Duty Flail Mower







# 72" Center-to-Center Compost Spreader



# 72" Chisel Plow









# 72" Disc Bedder















# 7' Modified Perfecta Field Cultivator





# Cone Spreader



# Fast Forward to get back to Cover Crop:

- ◉ Planting
- ◉ Cultivation
- ◉ Harvest
- ◉ Mow
- ◉ Discbed (time! Discbed again)
- ◉ Perfecta
- ◉ Spin on cover crop seed
- ◉ Perfect to incorporate...



# Lessons Learned

- ◉ Needed to modify equipment
  - > Control for lateral soil movement
    - Hilling discs & side panels on Perfecta
    - Hilling discs on chisel plow
    - One-sided furrowing shovels on cultivating tractors
  - > Stabilizing coulters for side-hills
  - > Residue cutting coulters on chisel plow
  - > Undercutter on Perfecta because always follow same track

# Lessons Learned, Pros

- ◉ We can (mostly) follow beds from one season to the next
- ◉ Compacted soil in tire tracks tills up cloddy, but stays out of the way
- ◉ Ready beds can be planted during wet periods
- ◉ Crops grow through excessively wet periods
- ◉ System tolerates residue

# Lessons Learned, Cons

- ◉ The process is long when lots of residue is present
  - > Can handle lots of residue, but time for break down is long
  - > Can partially substitute many disc bedder passes for time, but time yields better beds
- ◉ Scale limitation
  - > Multi bed equipment but...
  - > How much traction can one get from a 13.6" tire?

# More of the Story

- Planting
- Cultivating
- Spraying
- Harvesting

# 5 Row Planet Jr. on 9" spacing





# Water Wheel with 3 18" rows





# Cultivating Tractors & Tools

- ◉ Ford 1710 offset, high-clearance
- ◉ IH 274 offset, high-clearance
- ◉ (Allis Chalmers G)







INTERNATIONAL

DIESEL 274



# Track Sweeps for a raised bed:





5-136

WASCO

WASCO  
V136













# 5 bed one-sided spray rig





# Bed Lifter







Sometimes you need a disc harrow...

