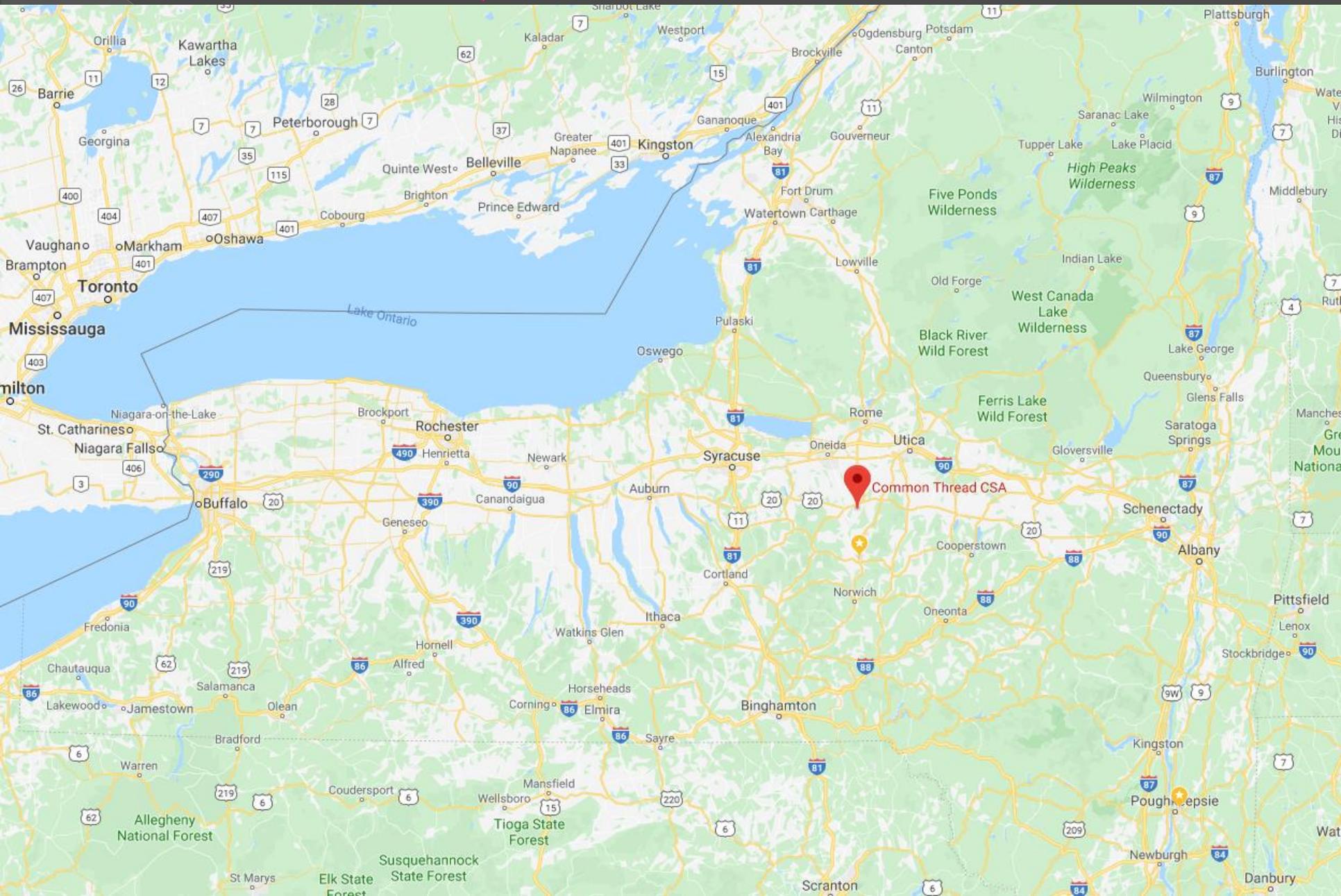


Common Thread Farm

Wendy and Asher Burkhardt-Spiegel

Permanent Raised Bed Tillage
System

Madison, NY



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

WINLONDON

CANTON

RADISHES

BOK CHOY

SCALLOPS

GREEN ONIONS

KOHLEBI

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:









Handwritten label on a white bucket, possibly indicating plant variety or date.

Red label on a white bucket, partially obscured.

Summer Farmers Market



Winter Farmers Market



Direct Wholesale



Non-certified, organic methods

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

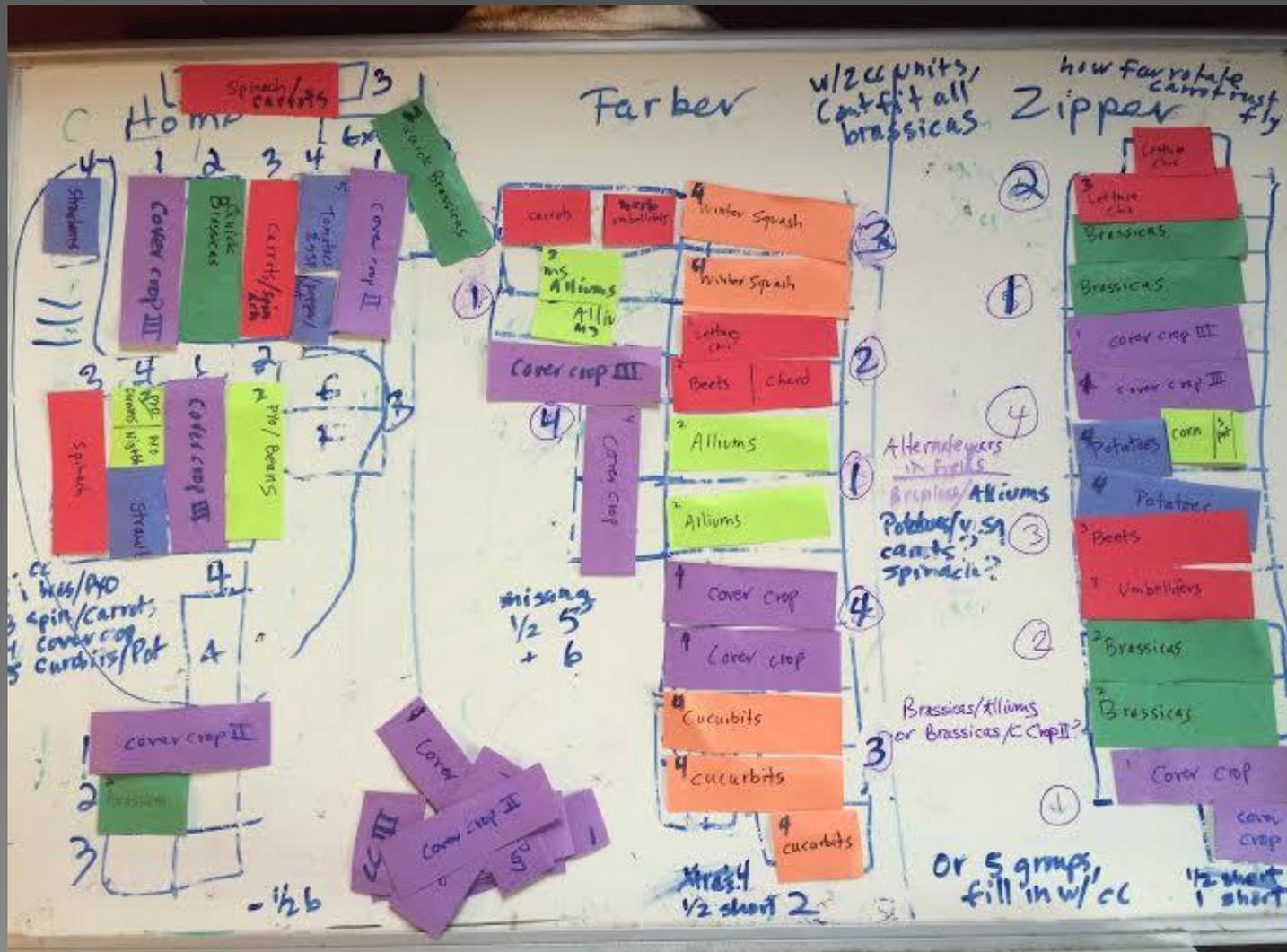
Crop Rotation

- 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'



It can get complicated!



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)









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...

