Mechanically Interseeding Cover Crops

Skip Paul, Wishing Stone Farm. Little Compton RI

skippaul@cox.net Cell: 401-835-7912

Interseeding Cover Crops in Vegetables: A solution to our failure with traditional no-till organic vegetable production on large acreage.

- Five years ago we got a grant to purchase a No-Till vegetable transplanter.

- For two years running, we had countless problems trying to keep the rolled and crimped annual rye from popping back up and starting to regrown again. Trying to avoid the standard solution of utilizing a product like Roundup, we struggled unsuccessfully to get the weeds controlled to make No-Till a workable solution on our farm without chemicals!

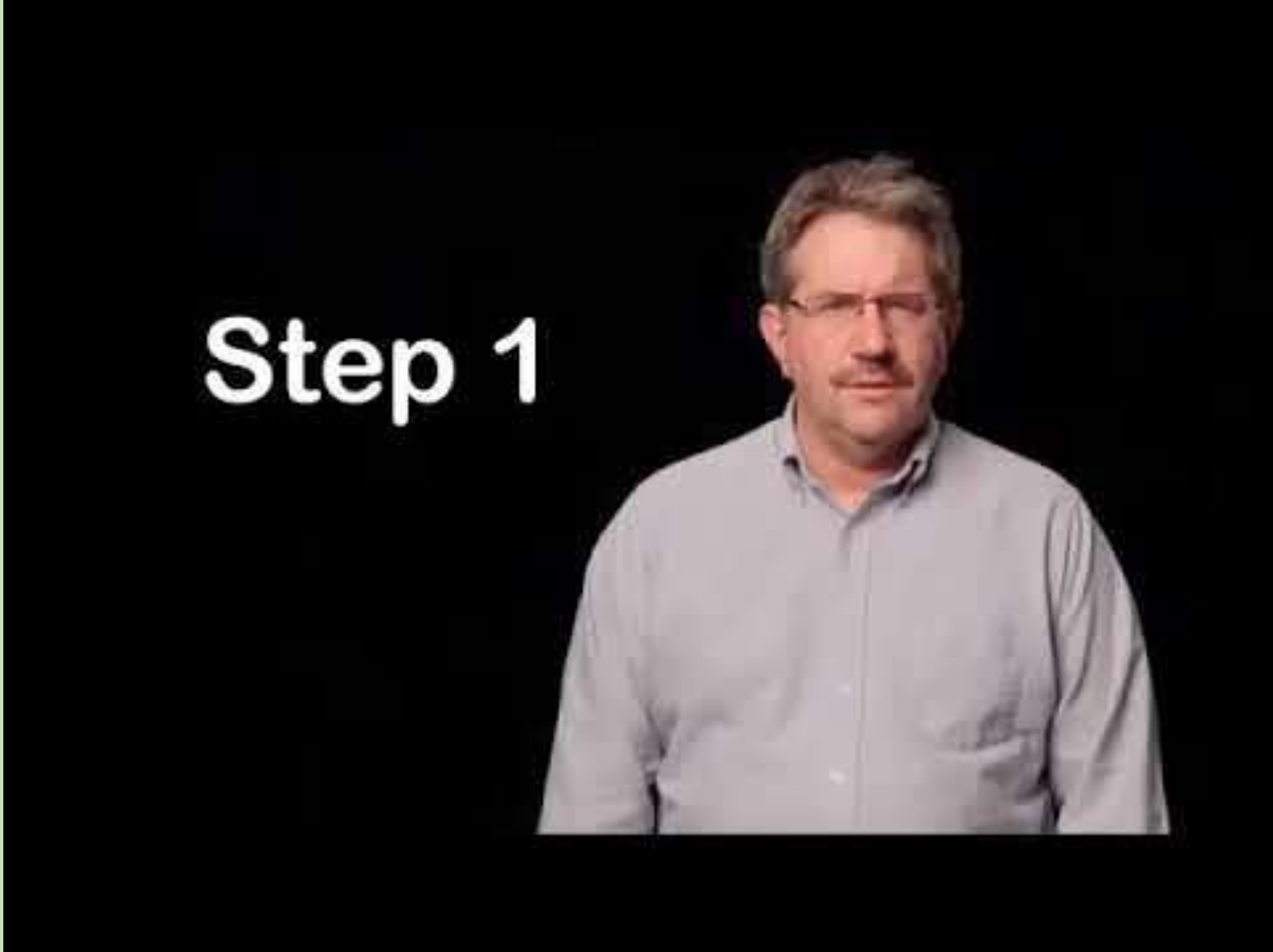
- We have been farming the same 45 acres now for over 25 years and the signs are loud and clear. We needed a better plan to renew our soils and start taking action to improve our tilth, organic matter & compaction issues.

Interseeding Cover Crops affords us 11 months of constant green cover with a brief interruption of tillage to reset the clock.

- Three years back I was invited to a No-Till conference put on by SARE just outside Philadelphia. Though the conference mostly discussed No-Till in the context of Mid-West Agra Business of Corn & Soybeans, there we small breakout sessions venturing into growers results with organic No-Till vegetable production.

- On a 'New Equipment' field trip, we were introduced to the new "Interseeder" high clearance grain drill. This specialized grain drill had, not only No-Till grain drills but the clearance over the crops was over 36". Leaving plenty of room to clear V5~v7 corn but also plenty of clearance for any number of other plants and vegetables.

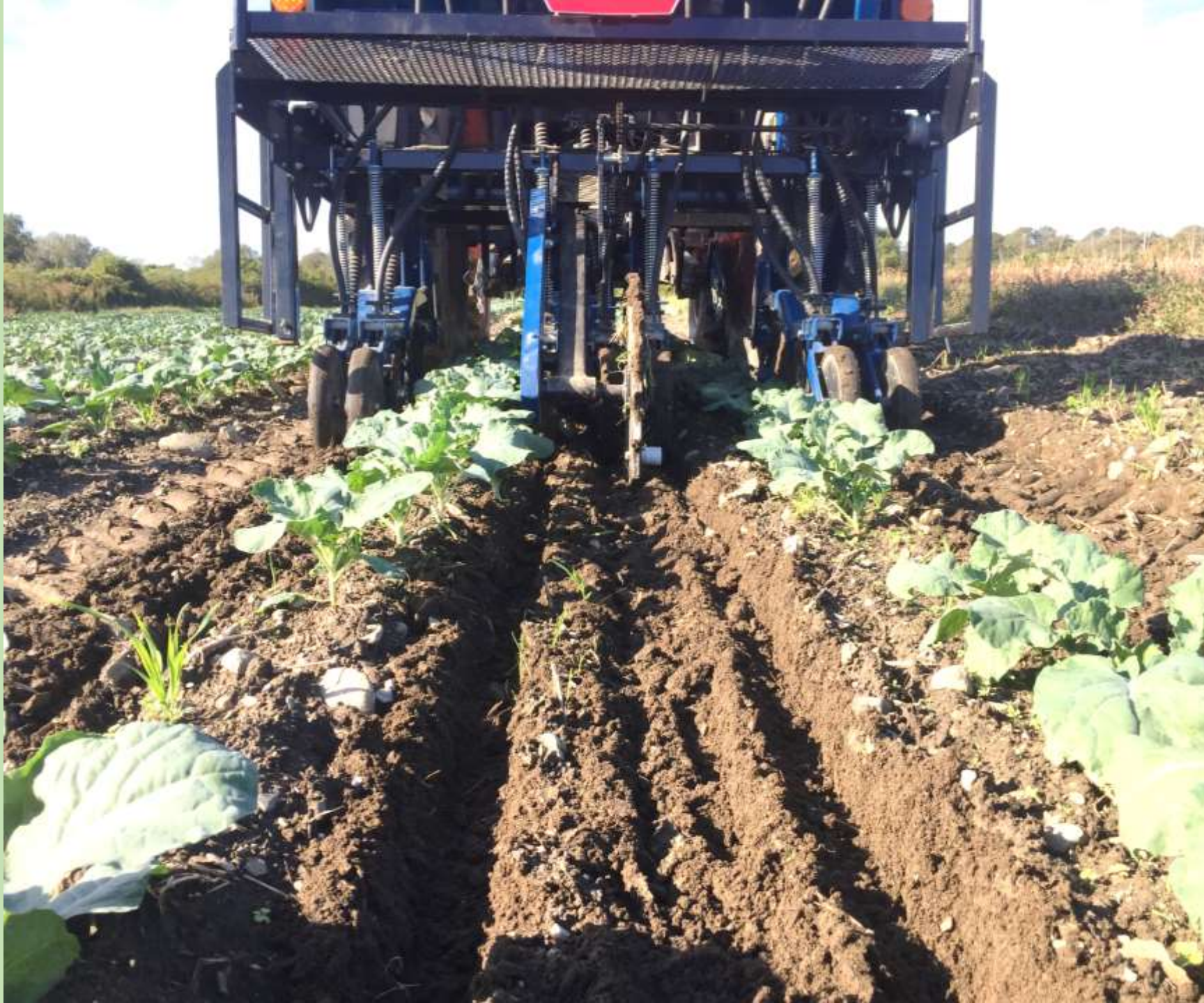
Interseeder Video



Adequate clearance with vegetable production

A limiting factor in vegetable production is the width expressed by the cash crops like broccoli, cauliflower & cabbage.

So we experimented for 2 years to see just how big we could let the cash crops get before initiating the cover crops application.



Wishing Stone Farm:

Our farm is located on a peninsula surrounded by the Ocean at the southern most tip of Rhode Island. Every three out of five years we can now predictably pick broccoli & cauliflower into the first week of December. But, We have been frustrated as to how to get cover crops on these late fall Brassica acreage. Since large acreage No-Till was not workable organically, the Interseeder seem the next best solution. Since our last two acres of Broccoli goes in by September 21st, the Interseeder now allows us to drill in a multispecies cover crop by October 15th. Giving the cover crop ample degree days to solidly establish itself. And, become a very important living winter cover that promises high biomass production and, also, a sink for unused nutrients stabilized in the plants structure and root system; now available next season and not running off into streams.

No-Till Benefits in the context of standard tillage farming

The Interseeder allows us to:

Add four months to our cover crop schedule

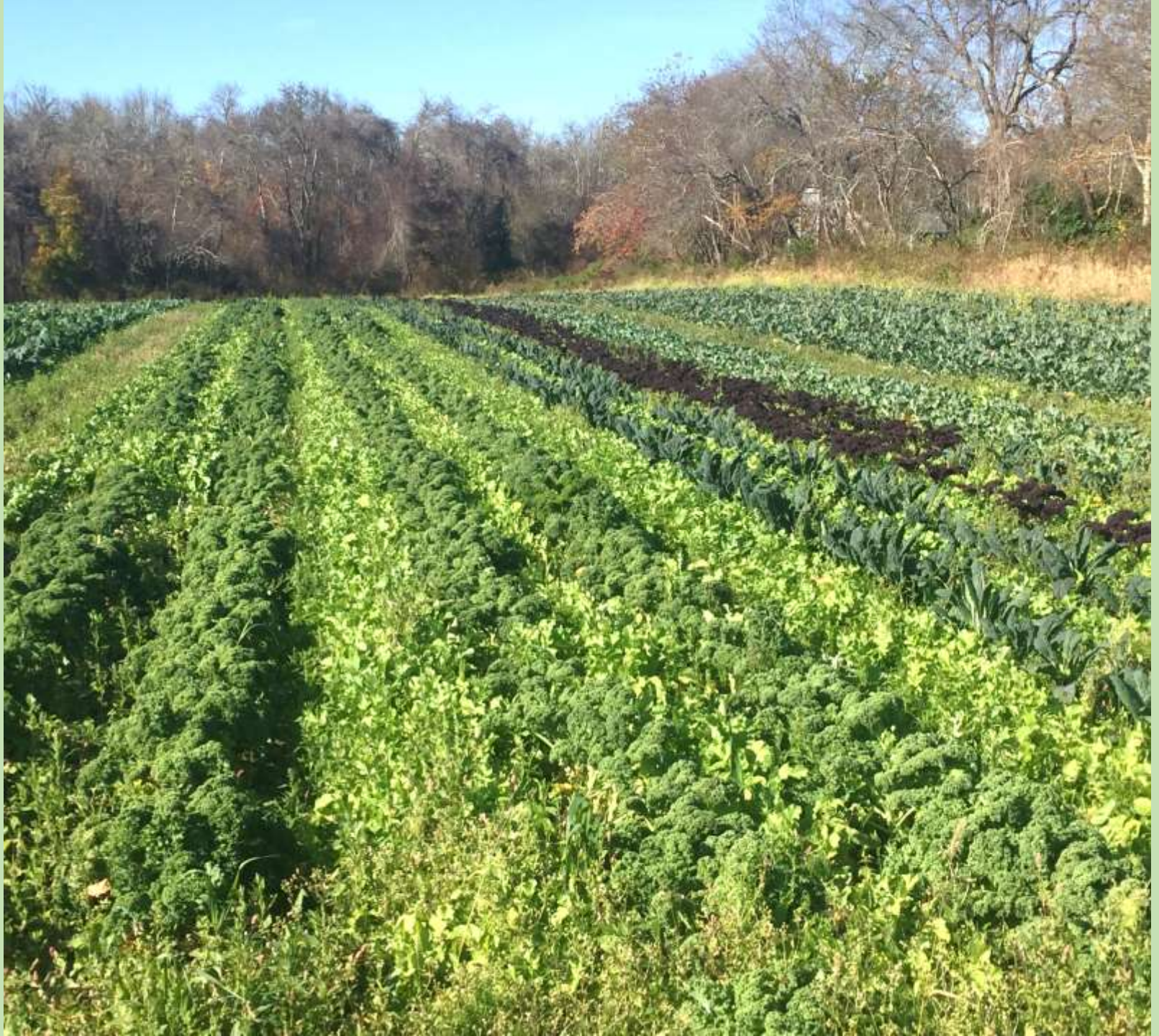
Increases our biomass production by 45%

Increases the biological active surface area of our cash crop fields by 72%

Cleans up unused water soluable fertility and retains it safely for next season.

Lowers our need for last cleanup cultivation trips over cash crops.

Helps lower the seed bank by providing soil surface occupation of benefical green covers. While growing a cash crop.



INTERSEEDER AND NRCS / CIG GRANT

This Interseeder we purchased with a CIG Grant, which is USDA/Equip grant available through NRCS and available in every state.

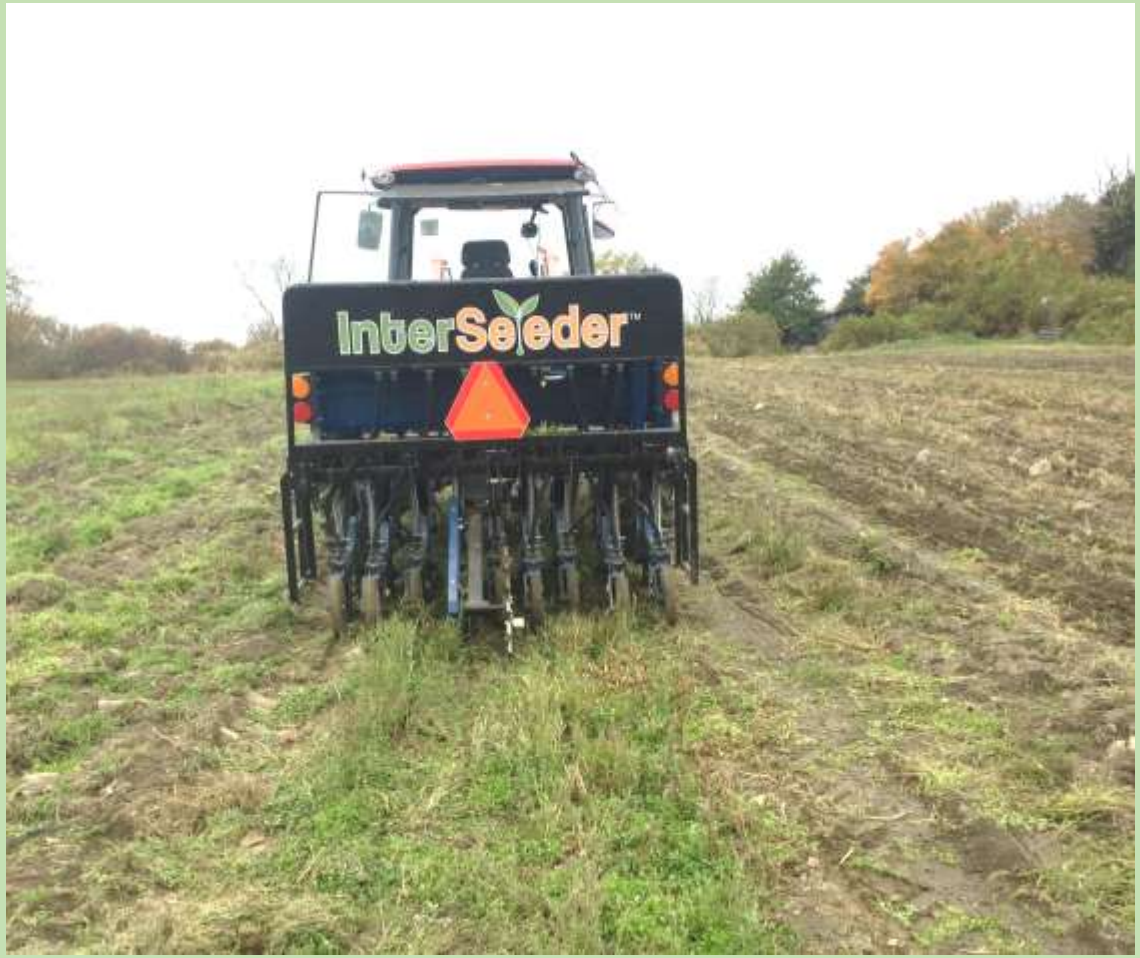
CIG is available to farmers, ranchers and aquaculture to bring equipment and ‘approved technologies that will benefit eligible industries'. Ex: Solar clam counter/sizer that keeps gas engines and possible oil spills out of estuaries.

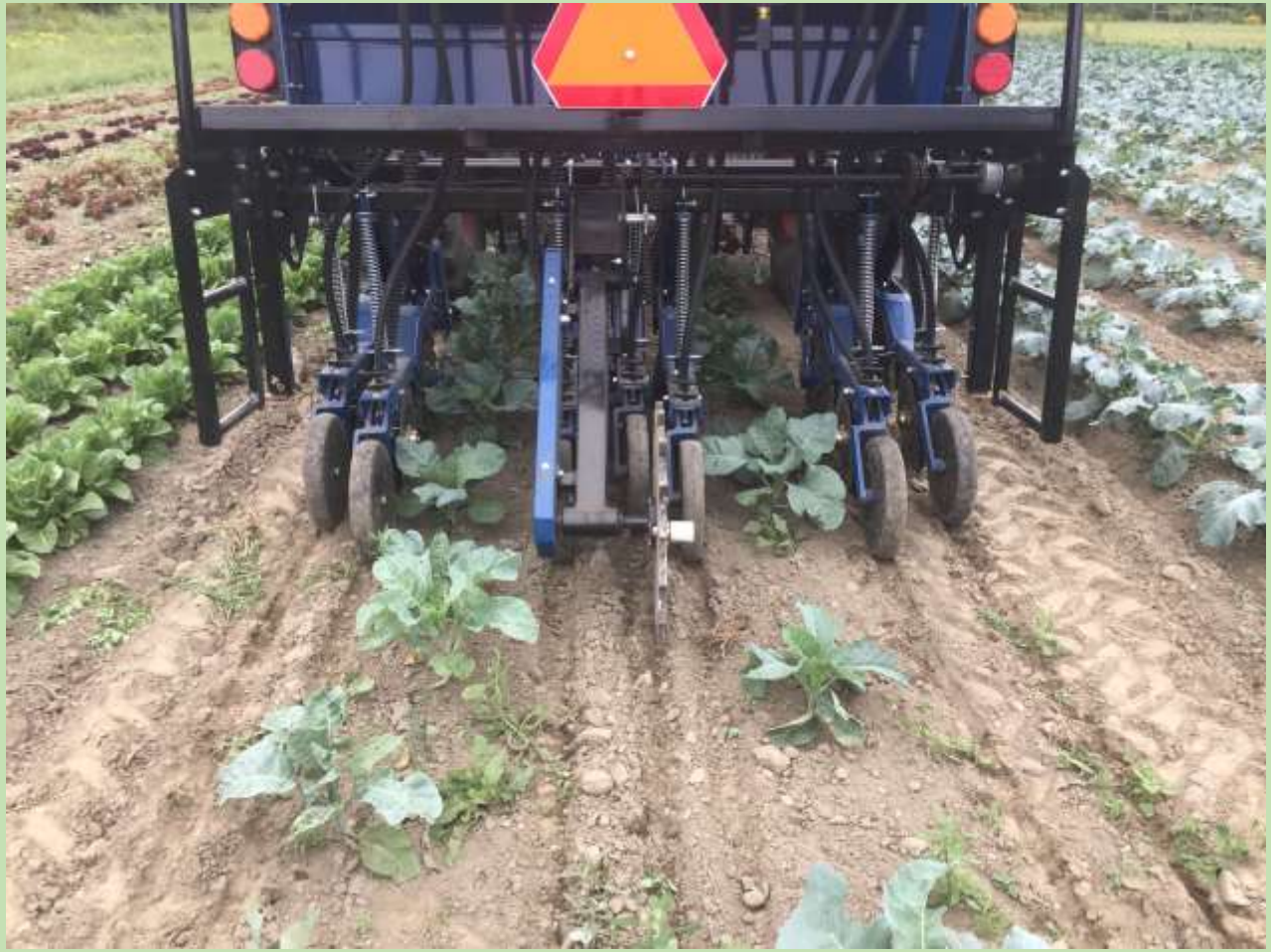
Our Interseeder came in under soil conservation, nutrient capturing technology and carbon sequestration.

The grant asks the participant to make a financial or in-kind contribution of 50% of the grant’s total costs.

Our first CIG grant funded us o be the first farm in RI to transform a Allis Chambers "G" cultivating tractor to electric-motored tractor.

Interseeder with nine drop shoes… Interseeder with #3 and #7 removed for Interseeding between cash crops.

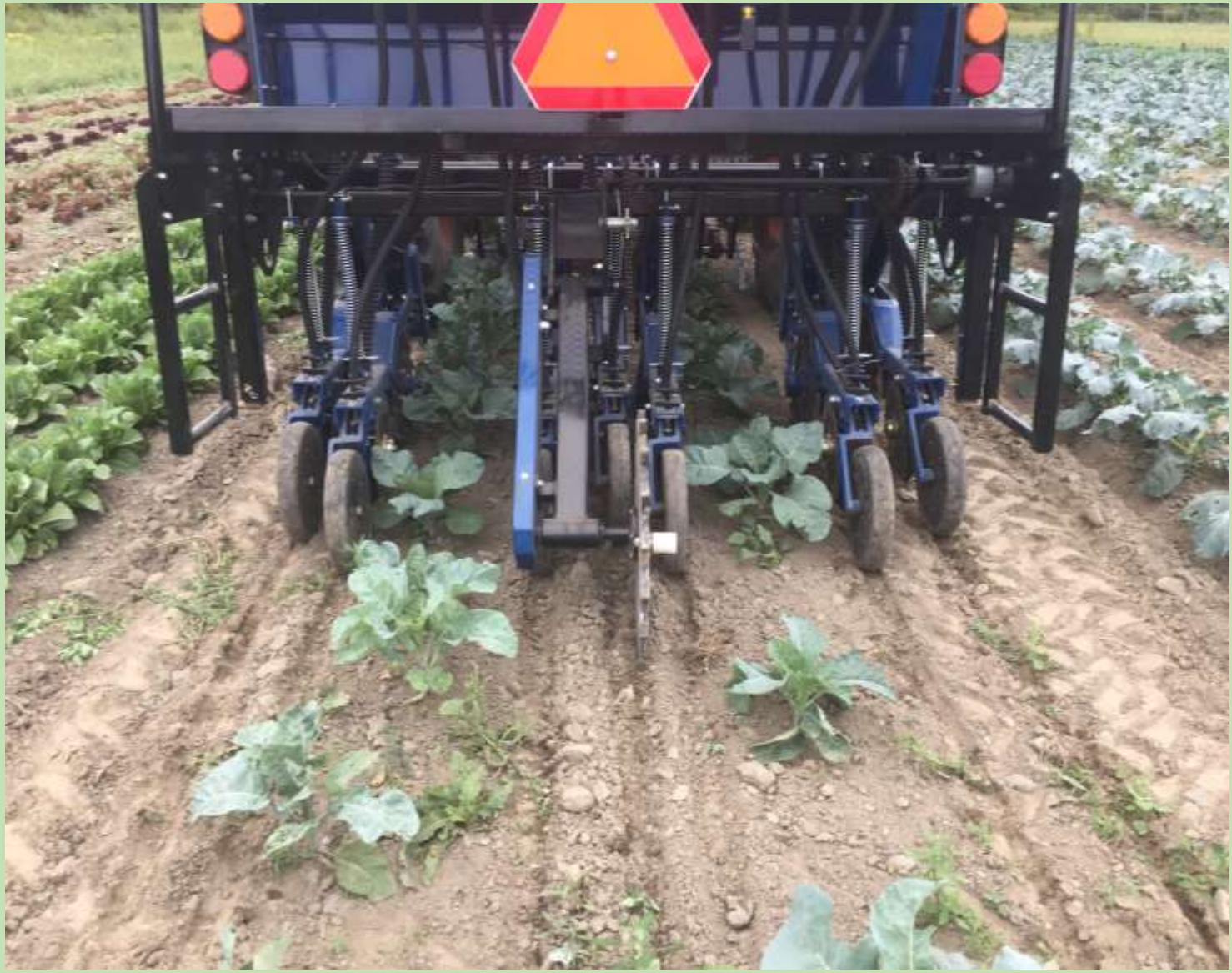


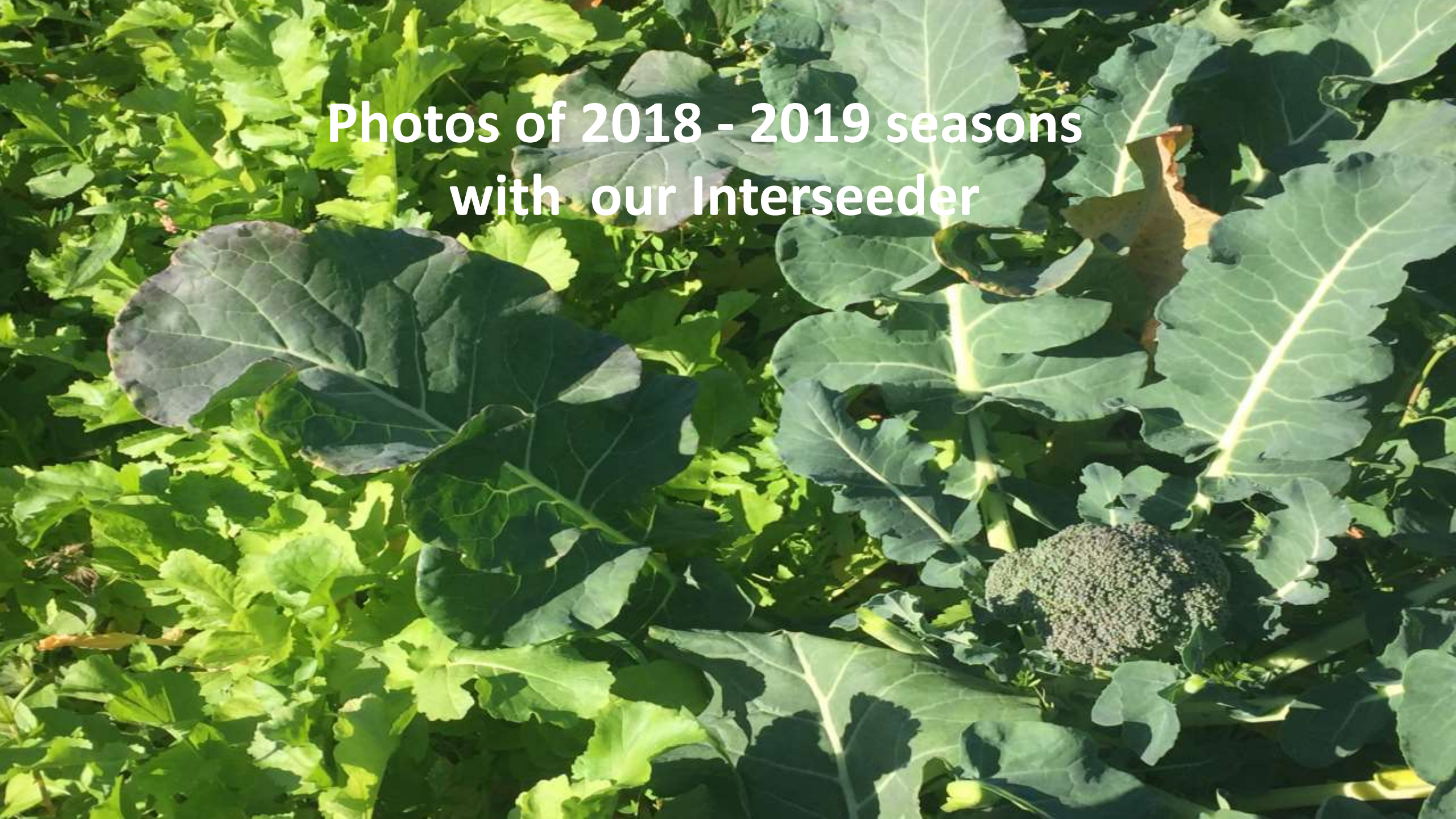


Interseeding a cover into cash crops. A way to build biology and produce an income.

By introducing a drilled cover next to a cash crop at a selected adolescent stage of growth, one can start to build a substantial green living biomass that will sequester carbon from day it is planted, August~October all the way to the following spring.

This juxtaposed to mowing down a typical Brassica crop at harvest (October~November) and then trying to get a cover crop established; when the soil temperature is steeply declining and cover crop estblishment is a weak or worthless exercise.




Photos of 2018 - 2019 seasons
with our Interseeder

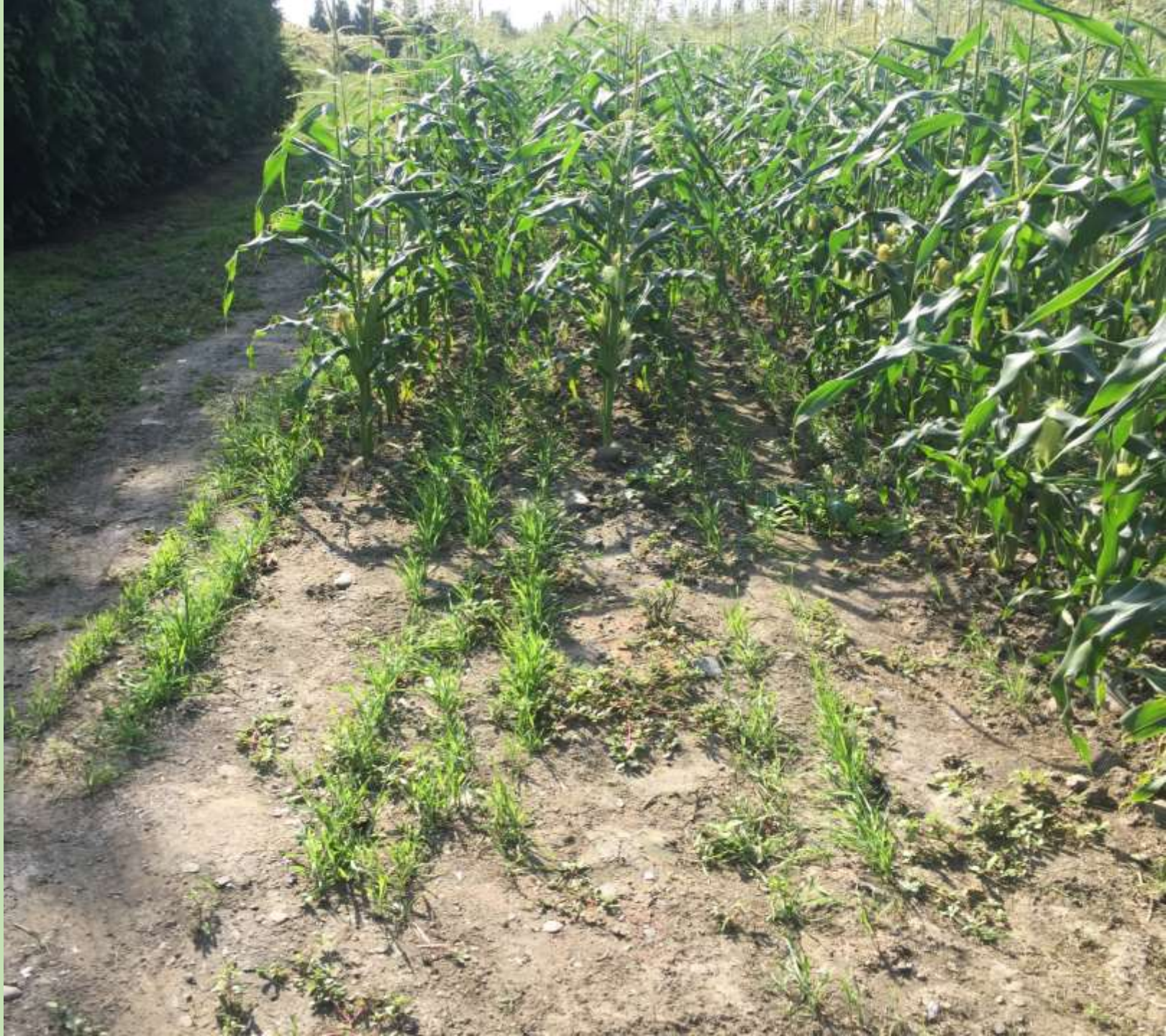
Col Walker Farm: Interseeded Sweet Corn @ V8 growth stage

Sweet Corn Interseeded with Rye and Medium Red Clover at V8 growth stage on September 12th.

This photo was taken two weeks later on September 29th.

Corn growing well without any impact on production and Rye/Clover getting a foot hold.

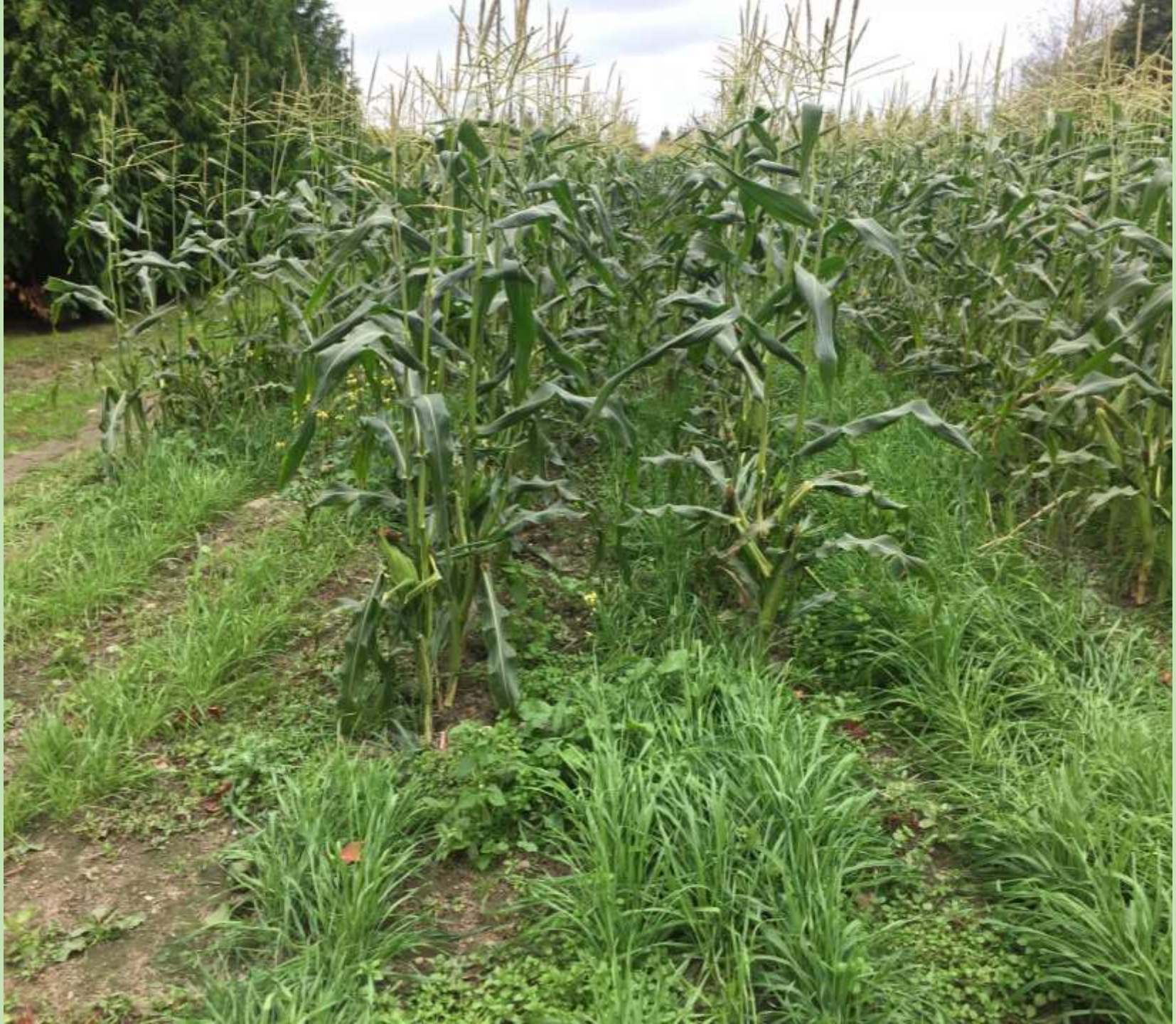
Notice Rye/Clover directly under the corn canopy is significantly behind.



Col Walker Farm: Late Fall Sweet Corn.

Sweet corn at harvest time October 10. A mixture of Annual Rye and Medium Red Clover. No reduction of yield in Sweet Corn was evident.

October 20th it was mowed down to ten inches and left a great living cover for over the winter and now ready to explode in Spring 2020.

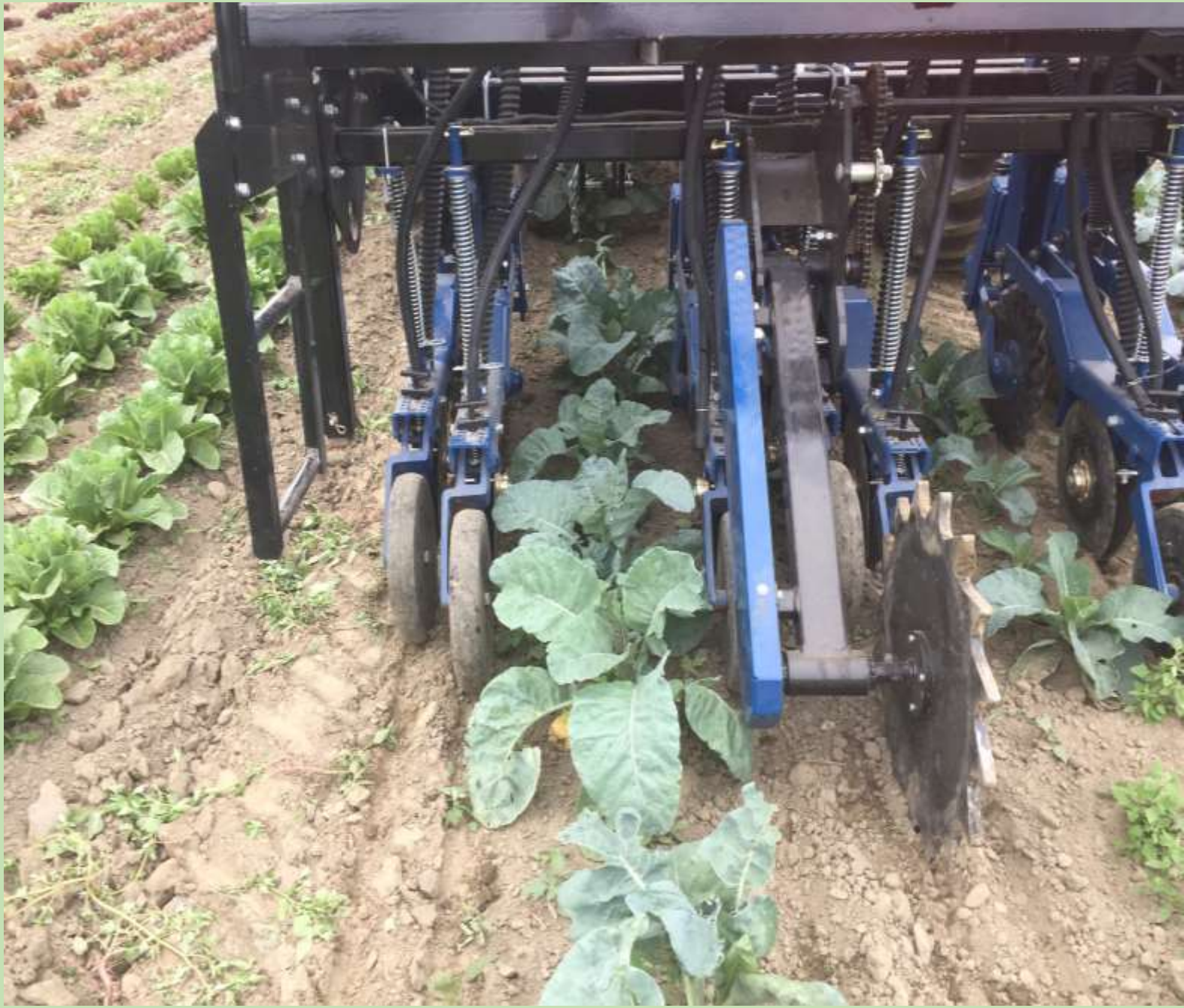


Broccoli Planted 9/3 Four weeks after transplant is the limit.

Depending on soil temperature, fertility and water. One has to decide when it is too mature to get the Interseeder through the cash crop.

We also began cataloging cultivars for how quickly they grow "up" or "outwardly". Quick outward growth seens to be a characteristic of Cauliflower and Cabbage families.

It seems longer maturing varieties like "Storage Cabbage #4" and Romanesco Cauliflower spread at a rate that was twice as fast as a typical fall Broccoli or Collard varieties.

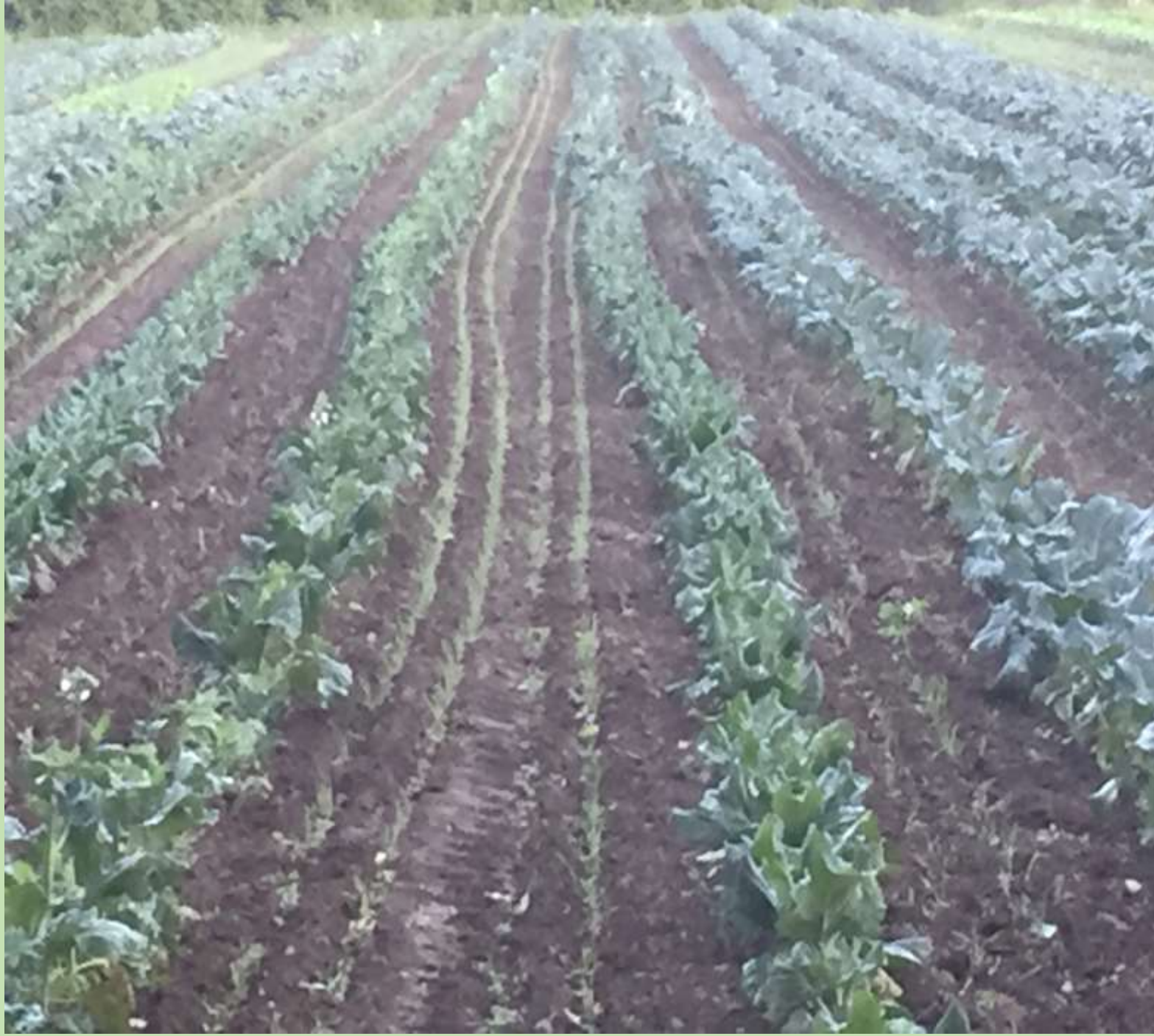


Drilled lines between Rows

Our interseeder setup had two drills in the tire tracks and three drills in the center between rows that were 34" a part; and then the outside of the other tire track had another two drills.

So the four lines in the photo above are showing the two contiguous tractor wheel tracks.

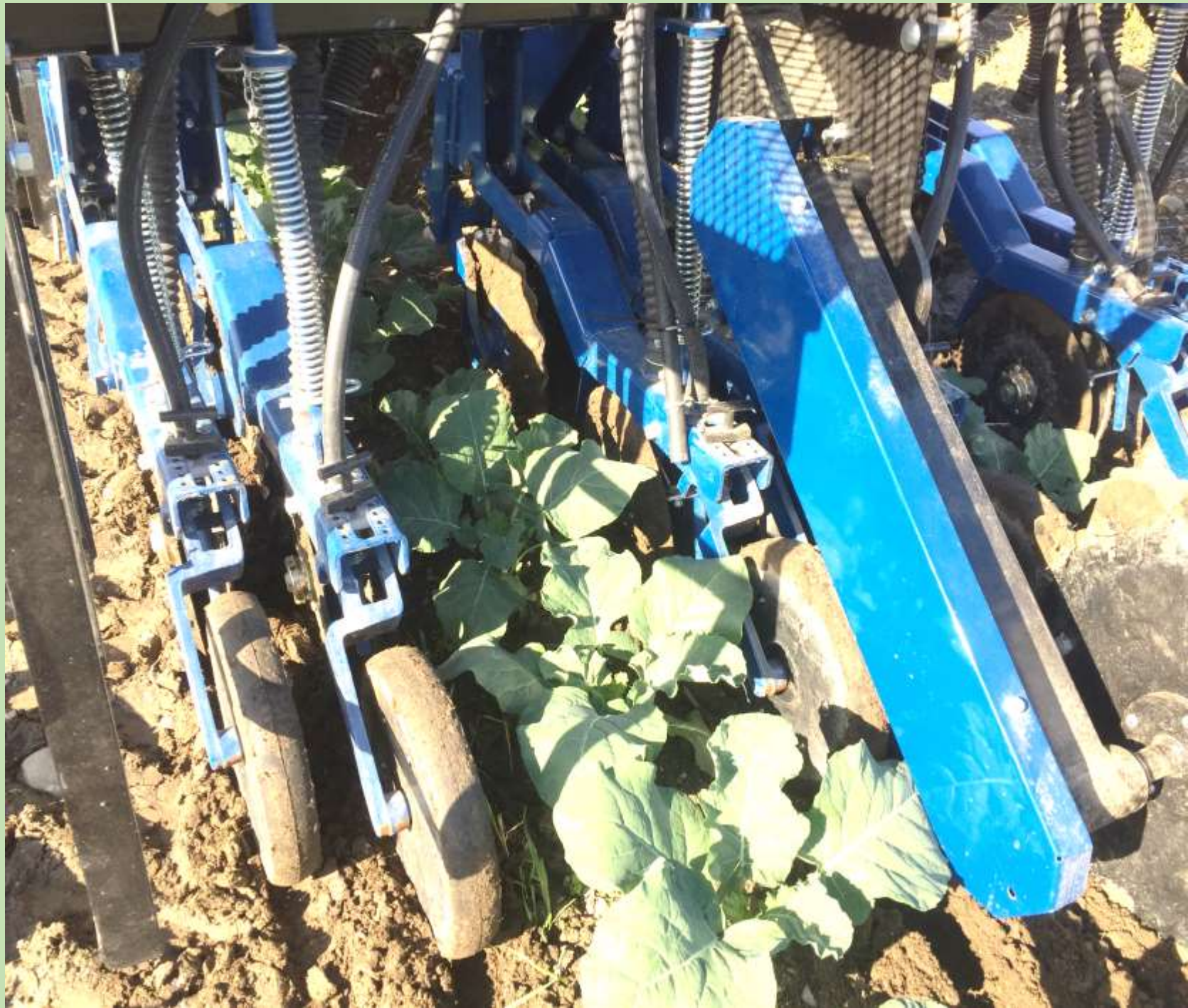
One can see that the wheel tracks with a firmer soil compaction from the wheels actually germinated faster than the central cultivated area. This due to better soil contact and access to moisture. Fall soil moisture is a big problem in our coastal climate.



16" clearance between center gang and inside outer tire area gang.

This was summer 2018. We were too cautious worrying that introducing the covers too early would steal nutrients from the cash crop.

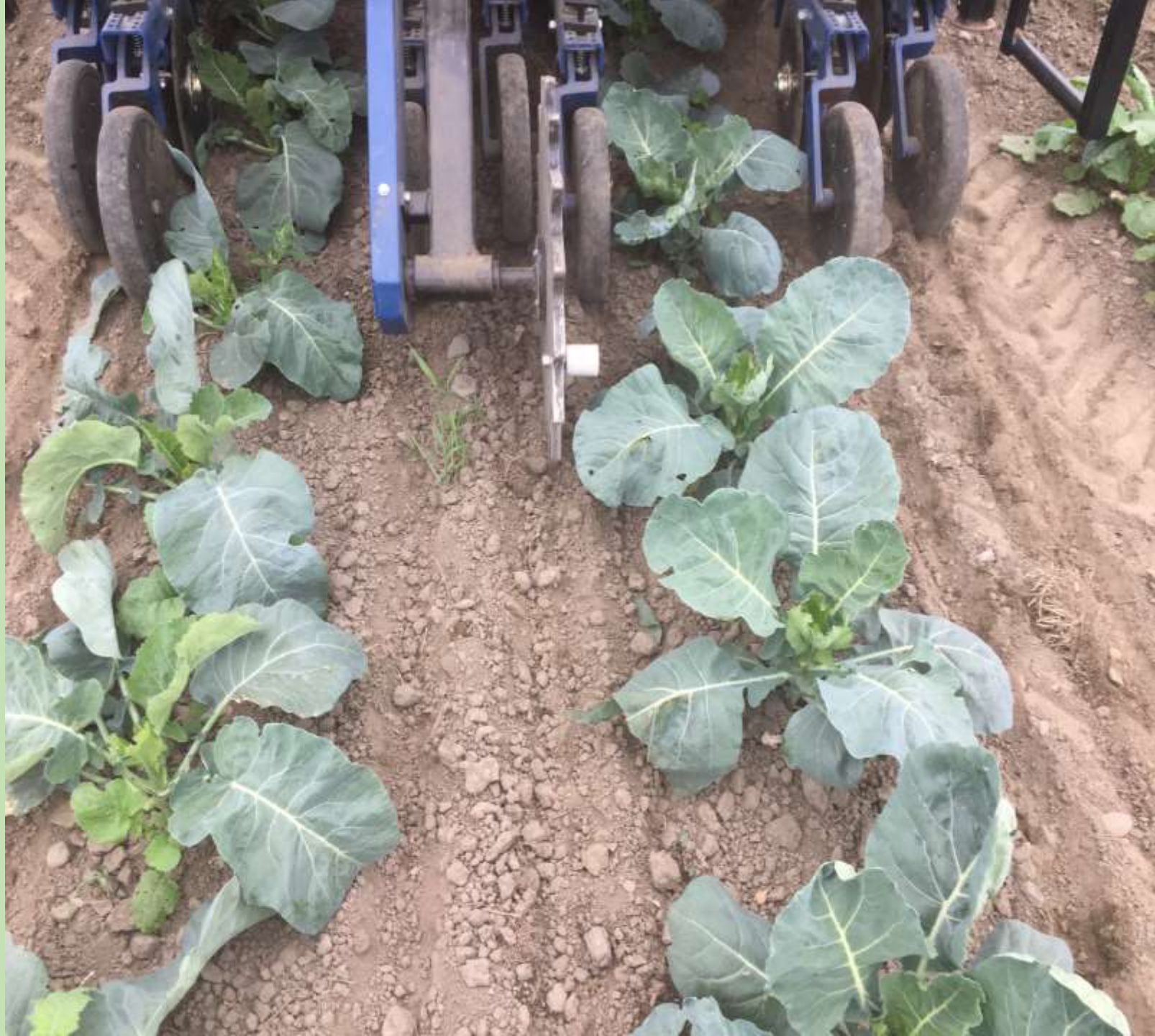
In 2019, we went through the crops two weeks earlier than this and had no loss of cash crop nutrients for the full expression of it normal growth...



Cauilflower planted 9/3/18

Cauliflower and Cabbage spread out quickly at three weeks post-transplant.

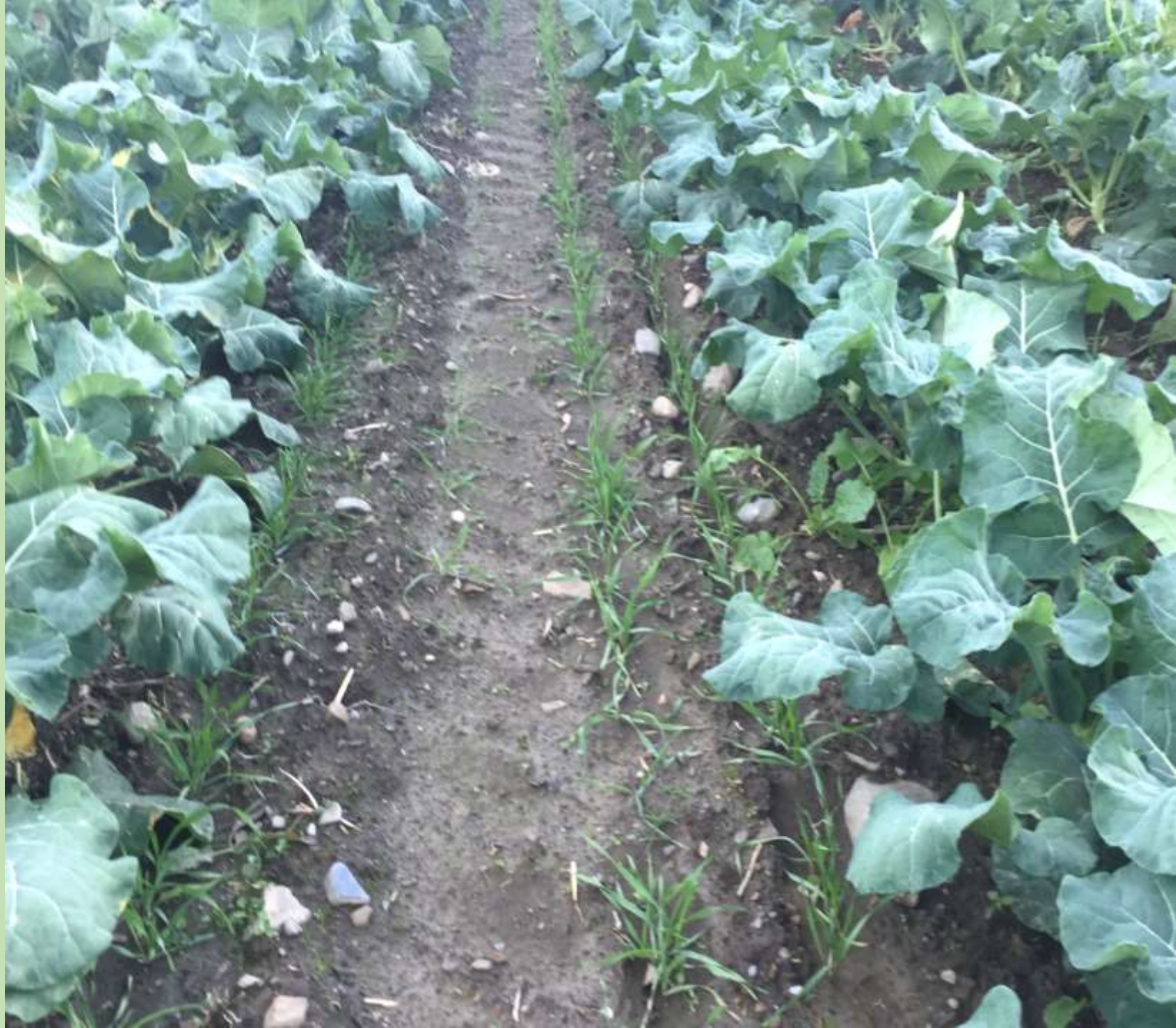
So this is too late!



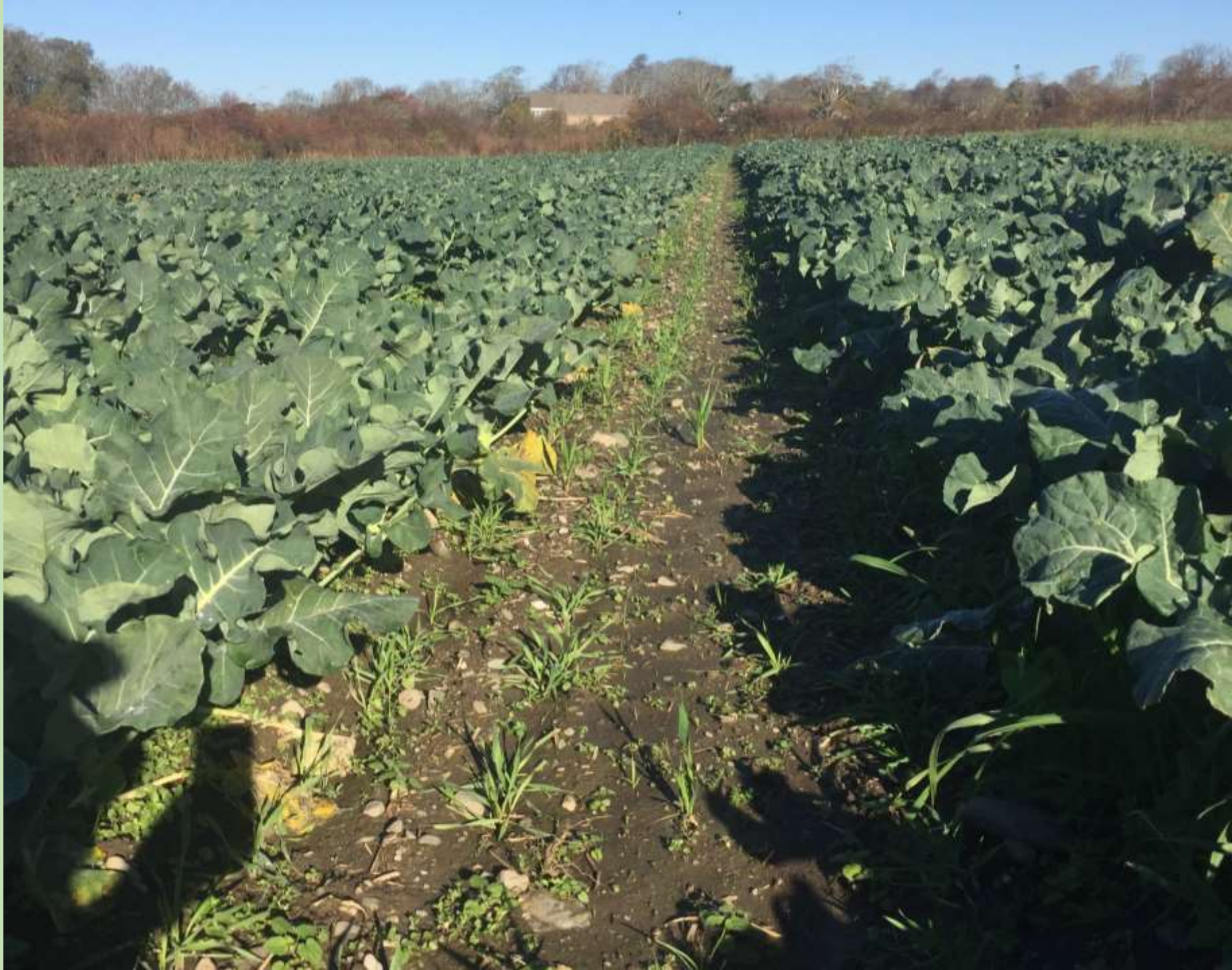
Broccoli Transplanted 9/3/18

Now at 5 weeks post transplant rye and vetch coming in good. Vetch, typically last to show itself, is none the less there at the desired amount of 20lbs to the acre.

Shading from the broccoli cash crop starting to slow the growth of the interseeded cover but no reduction in broccoli's maturity date is evident.



Same field two weeks later



2018 Winter Season

- **We unfortunately don't have late fall photos of our 2018 season of cover crops for the following spring.**

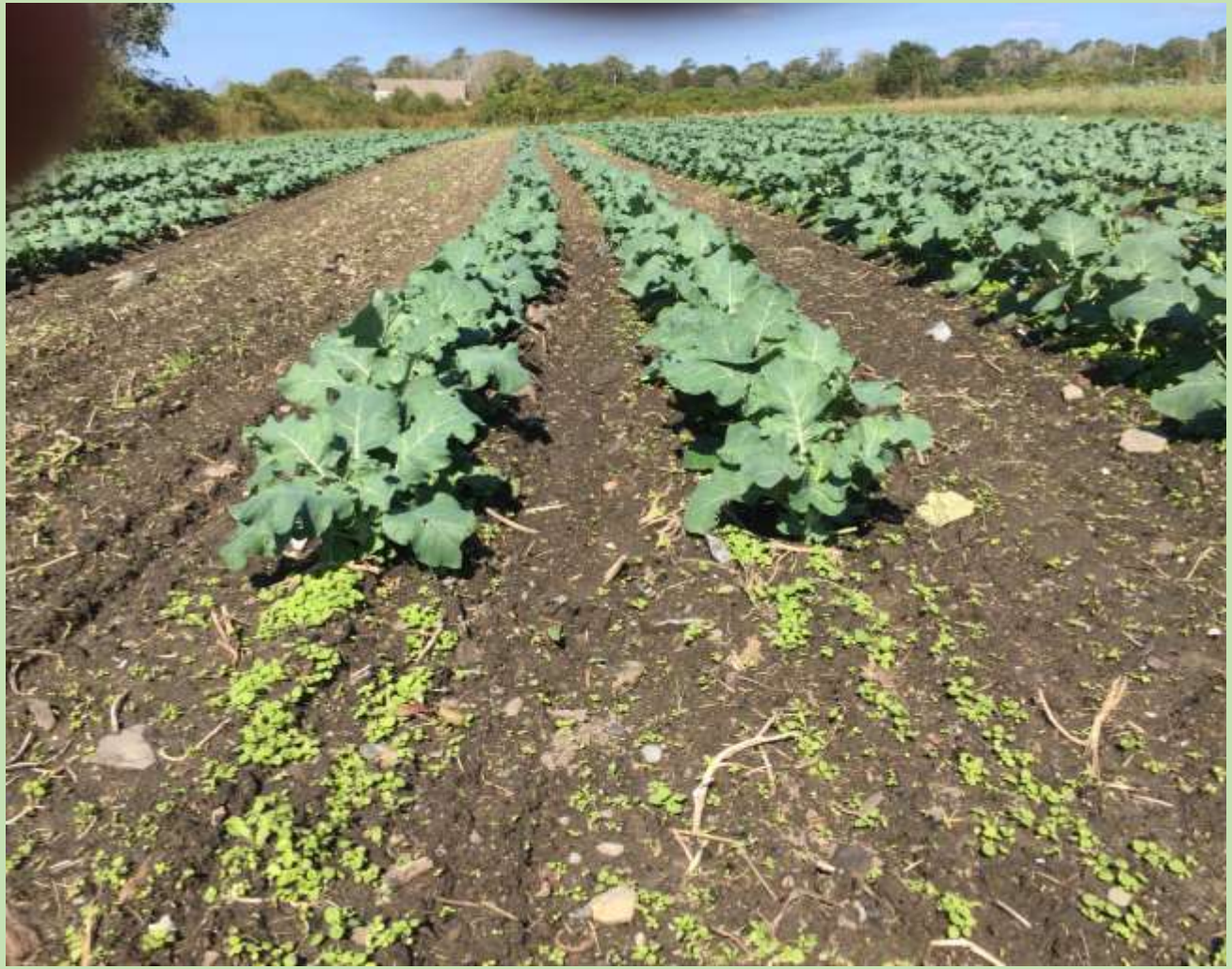
- **A beef producer using the fields next to our interseeding experiment neglected to feed his herd for two weeks in December 2018 so 275 hungry cows decimated the cover crops for the 2019 spring season.**

2019 Season with the Interseeder

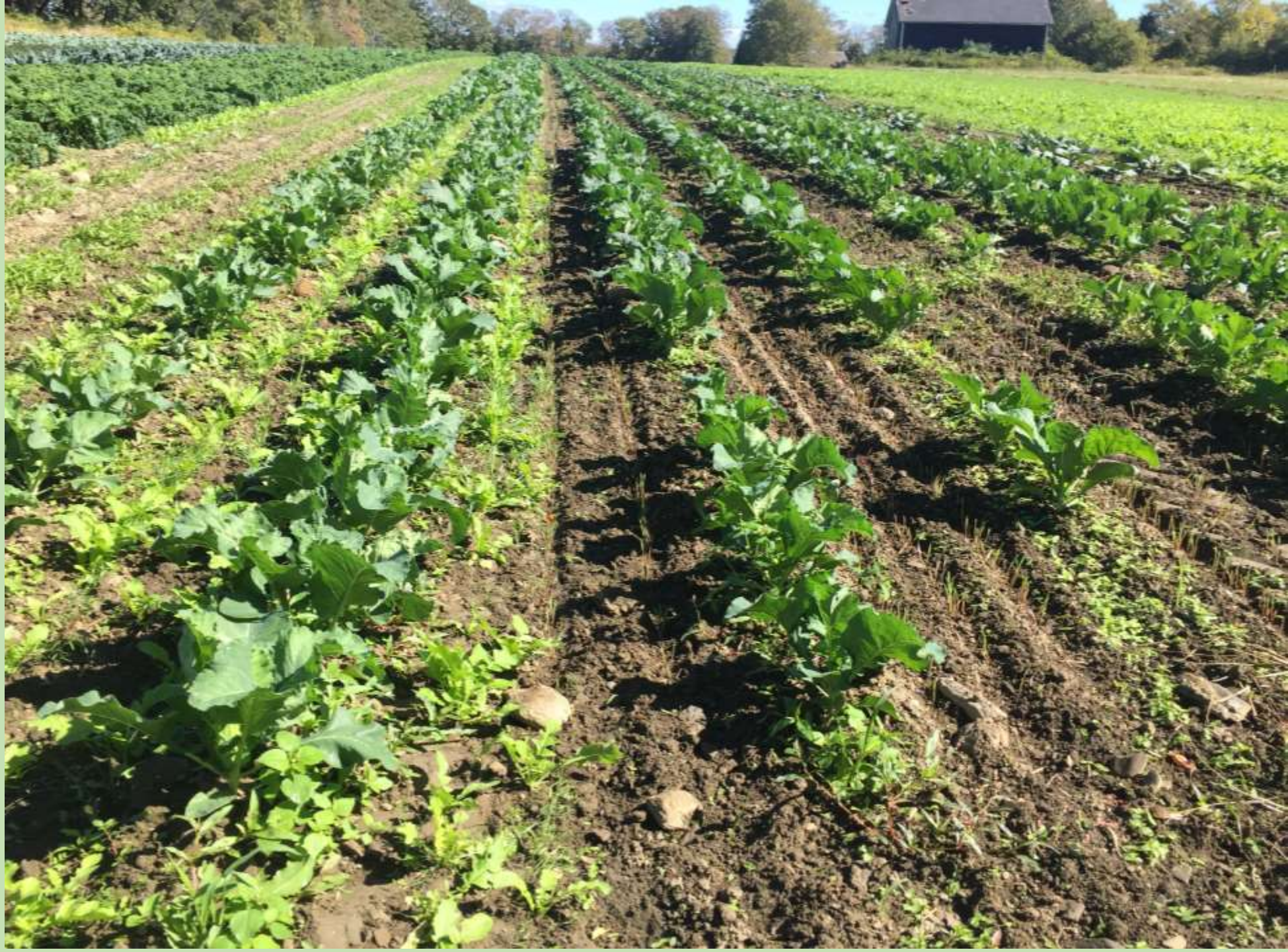
- **In 2019 we expanded our seed choices to push the envelope to see how much the undersown cover crops might compete with the initial cash crops.**

Ham Field

This field we experimented with Tillage Radish and Annual Rye.

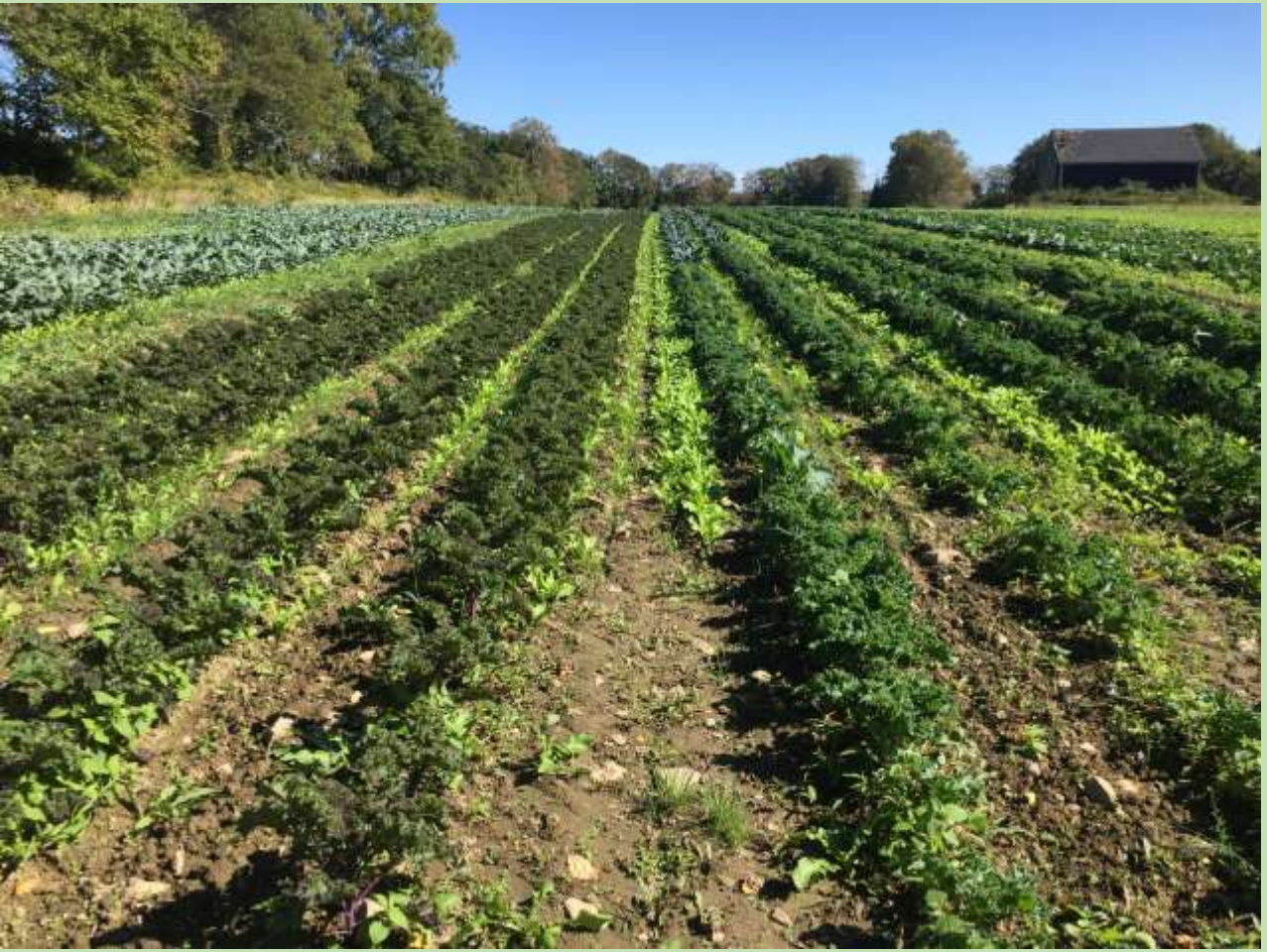


Ham Field

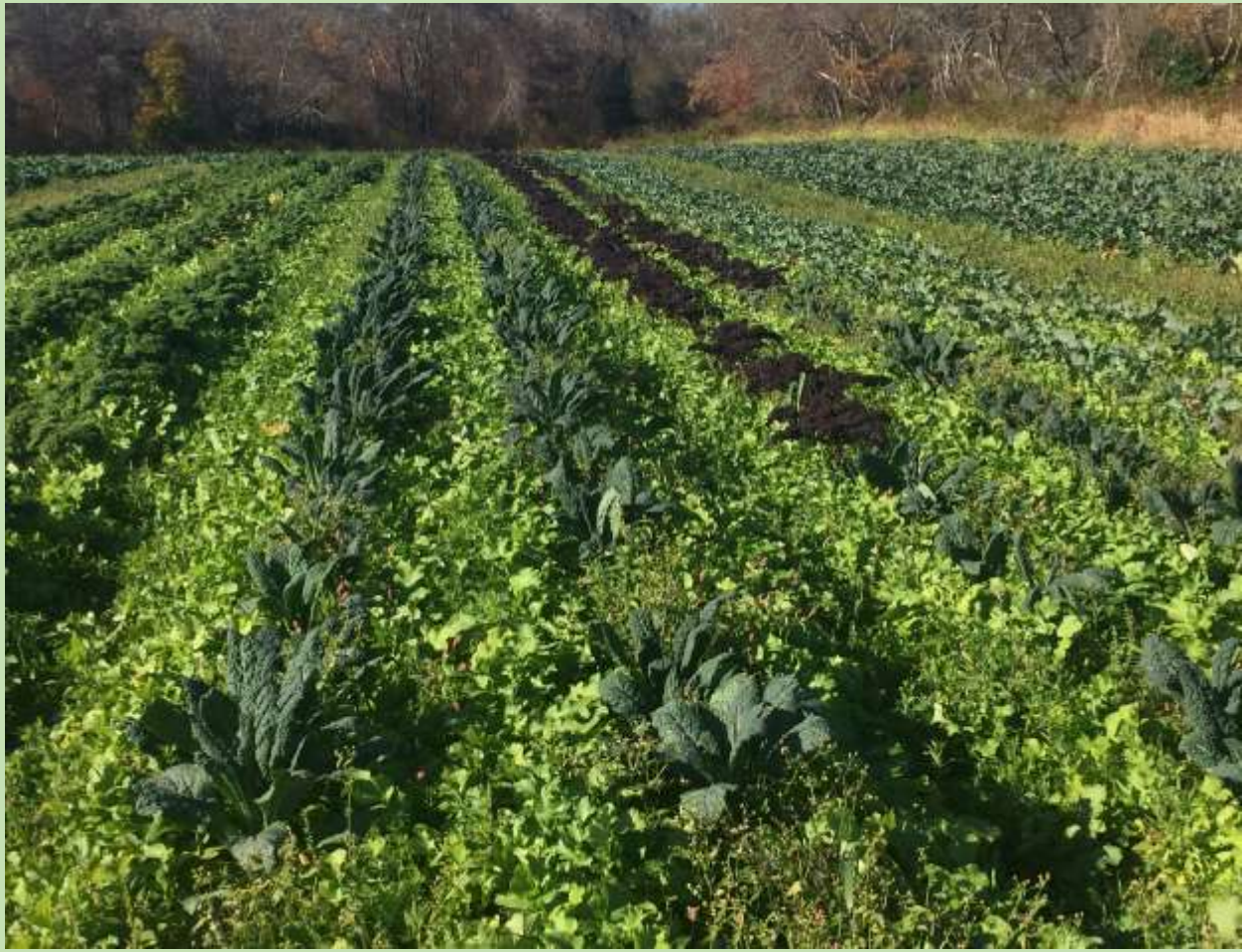


Ham Field

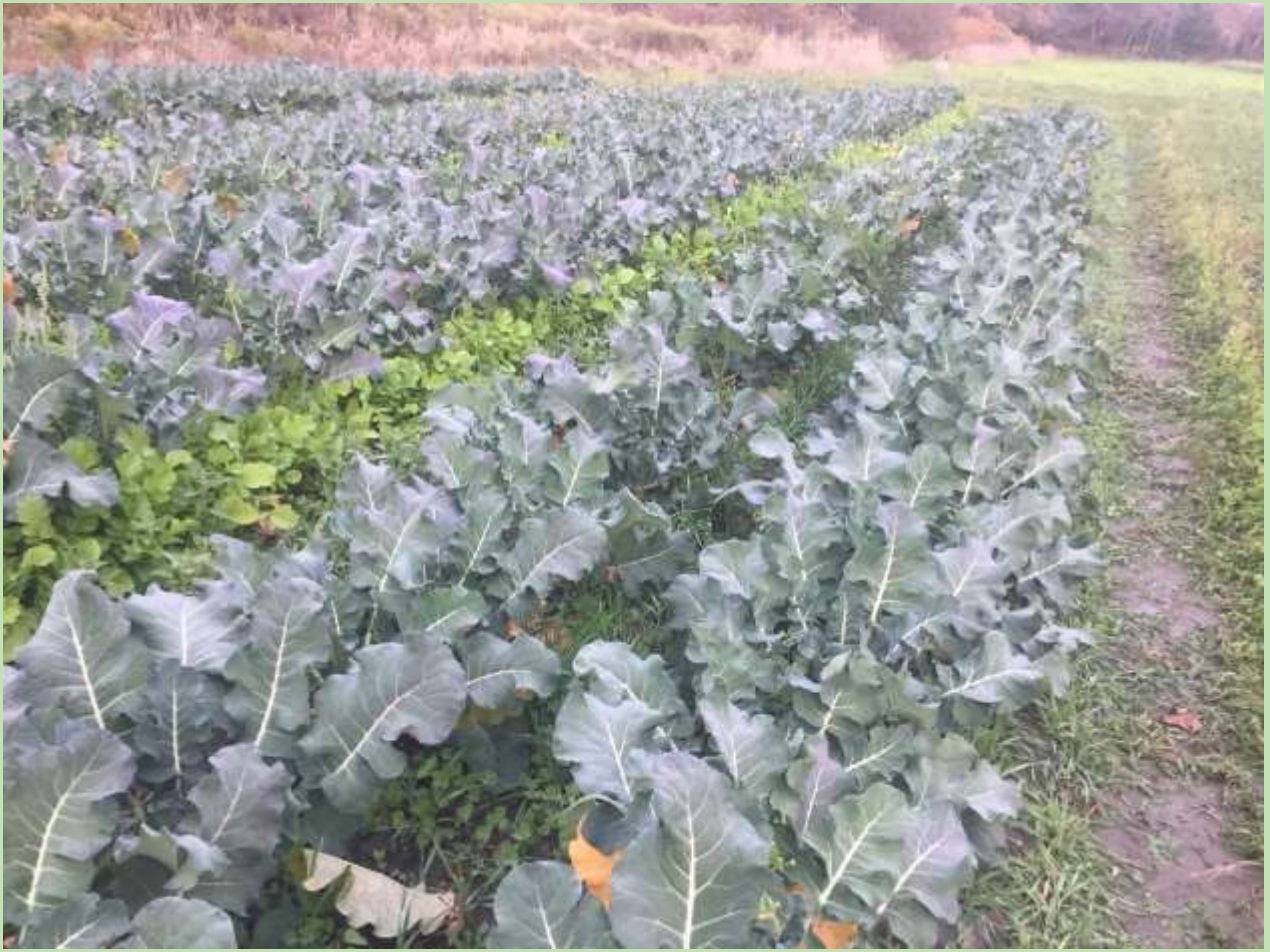
Kale with rye, clover, tillage radish



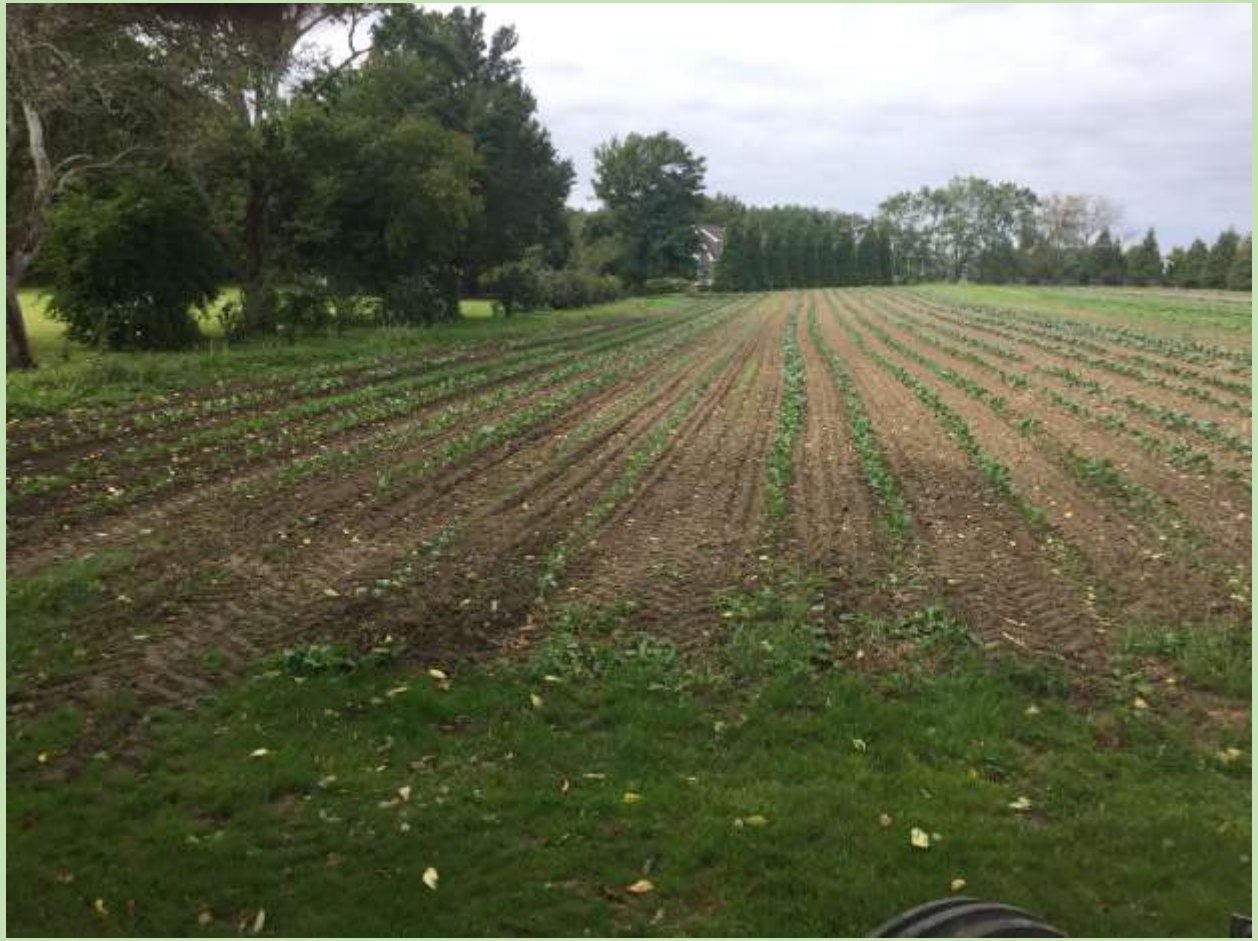
Lacinto kale with rye, vetch, tillage radish

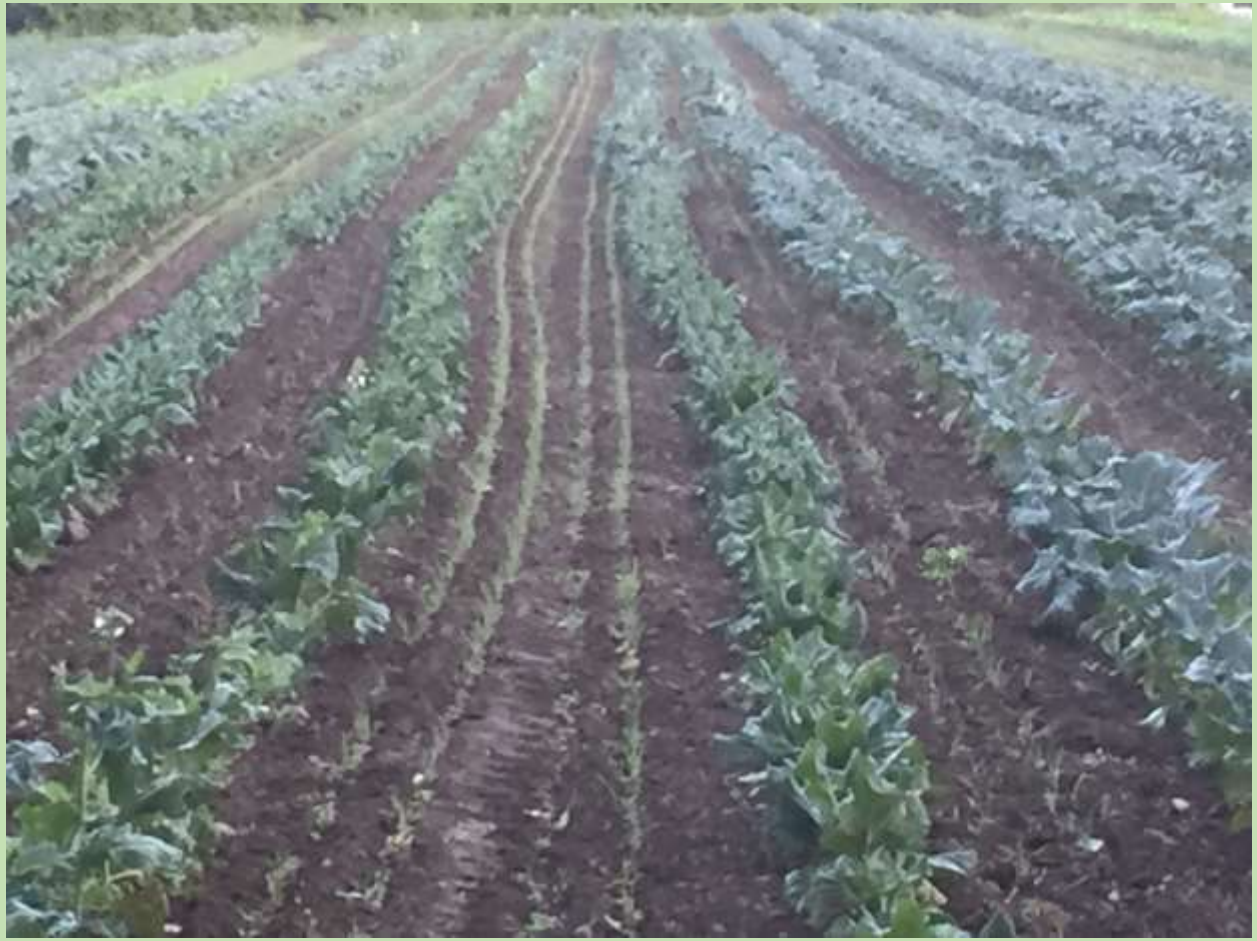


Ham Field



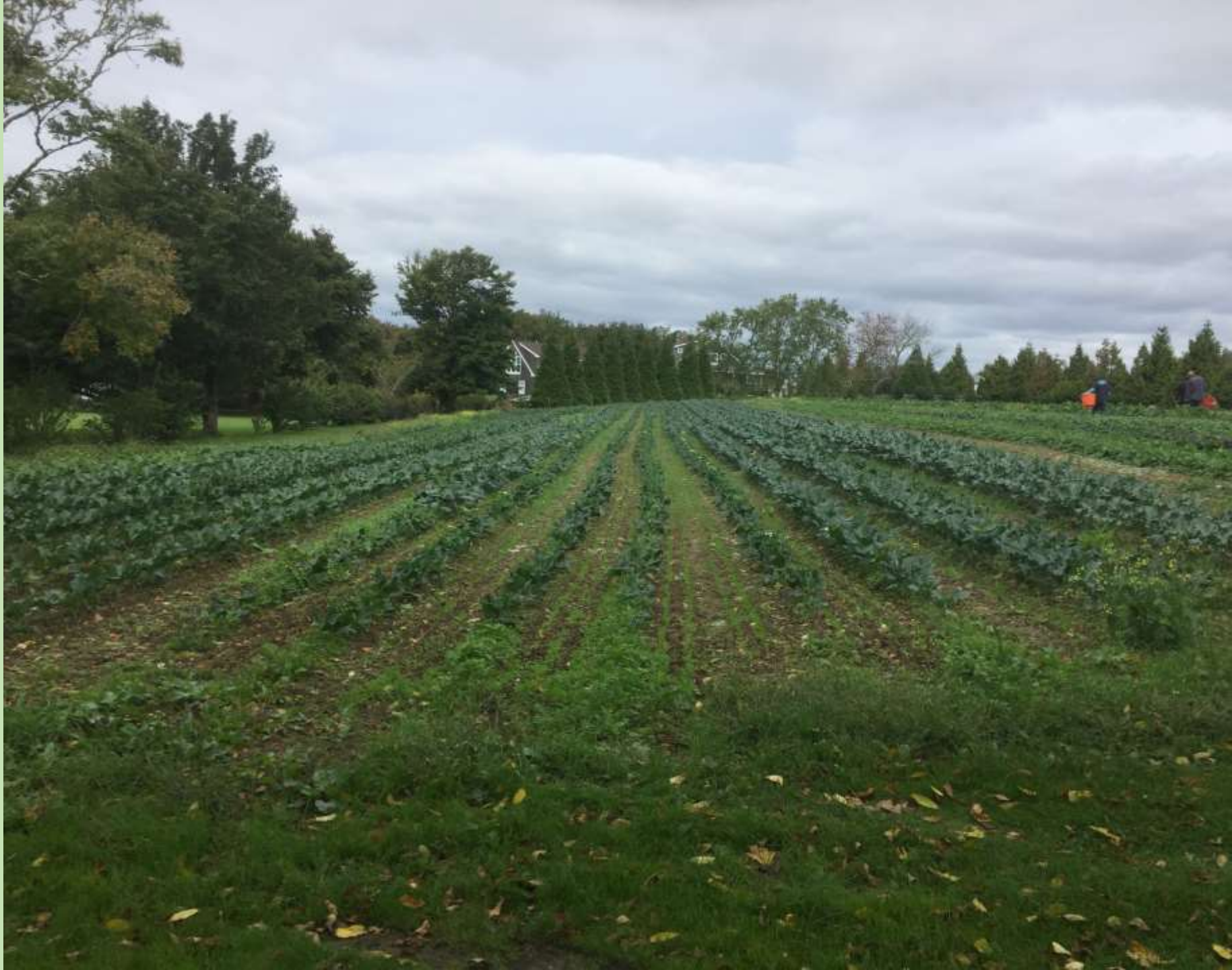
Briggs Field





Briggs Field

Rye and clover

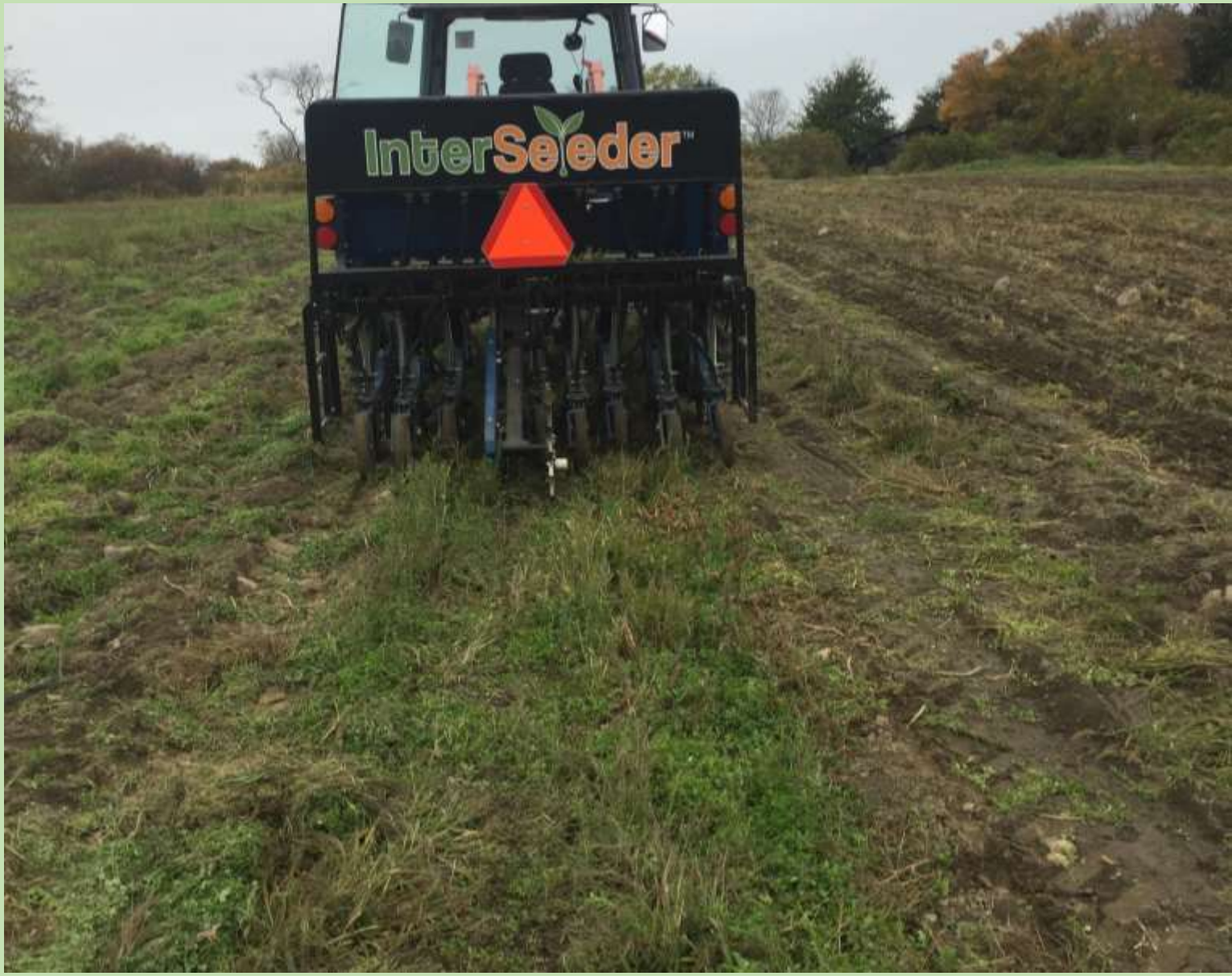


Interseeder as No~Till Grain Drill.

By reinstalling the drills removed for working between cash crops now the Interseeder can be utilized as a No~Till Grain Drill.

Here we drilling in a Rye/Vetch mix over a weedy nasty spray row between two fields of dug potatoes! The No~Till grain drilling aspect of the Interseeder saved us multiple extra trips over many fields that would have traditionally required multiple harrowing operations with another tractor operation to spread the cover crop.

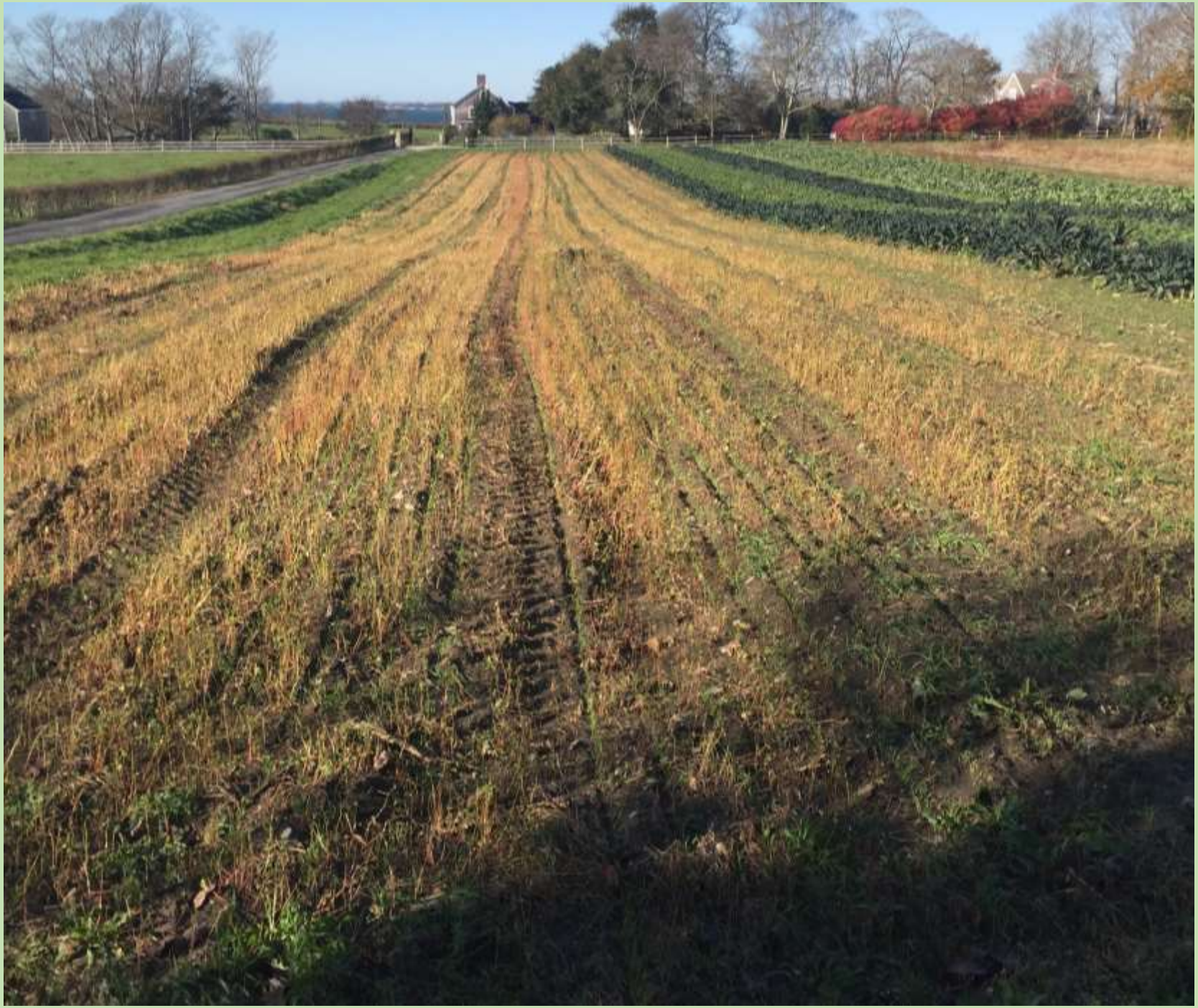
In October and November, with the solar heat units in the soil quickly dimishing, a single pass operation with the Interseeder gets the cover crop placed at the right depth and gets the crop off to an important timely start!



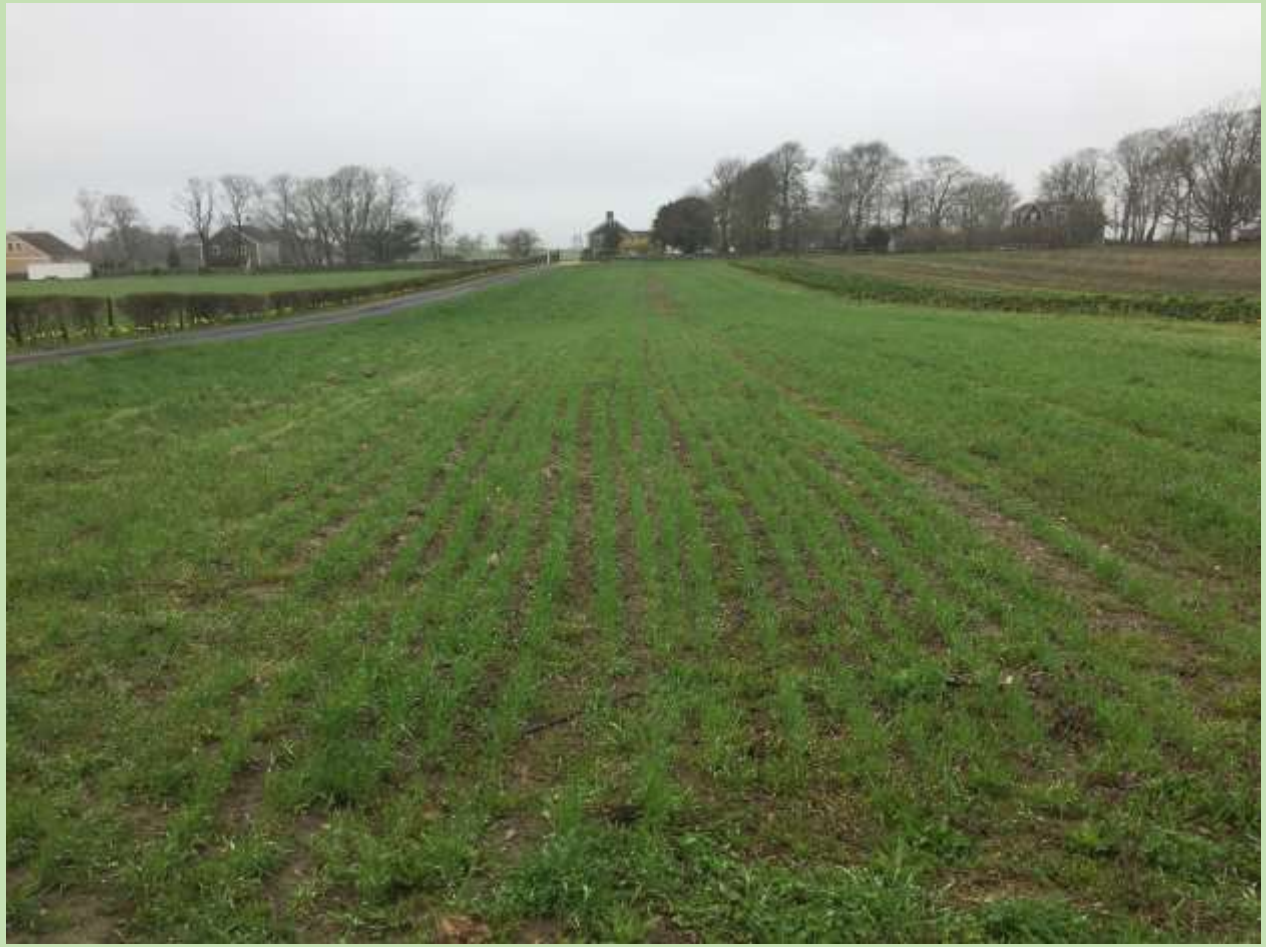
Interseeder as (again) No-Till Grain Drill.

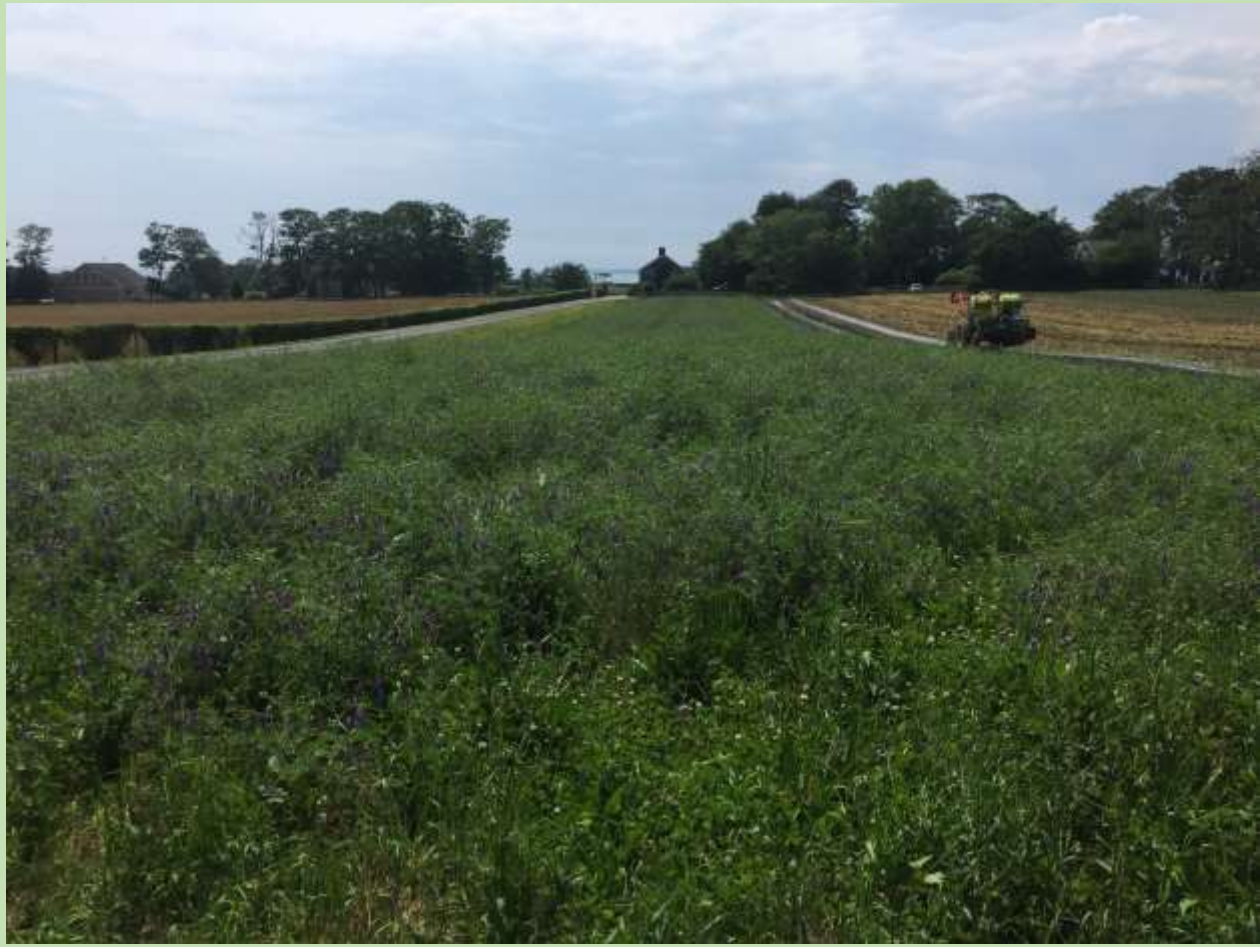
A field of August seeded Buckwheat that was killed by an early October Frost 2018.

Here we used the Interseeder with all nine drills intact and were able to drill in a rye, vetch and medium red clover mix. In one pass over the field. On October 10th.



On the left is the same field three weeks later, 11/2/18. On the right is the same field 7/12/19. After mowing down the vetch/rye, the clover came into play and we built a tremendous volume of biomass with only one extra pass of the Interseeder (the year before) acting as a No-Till Grain Drill.

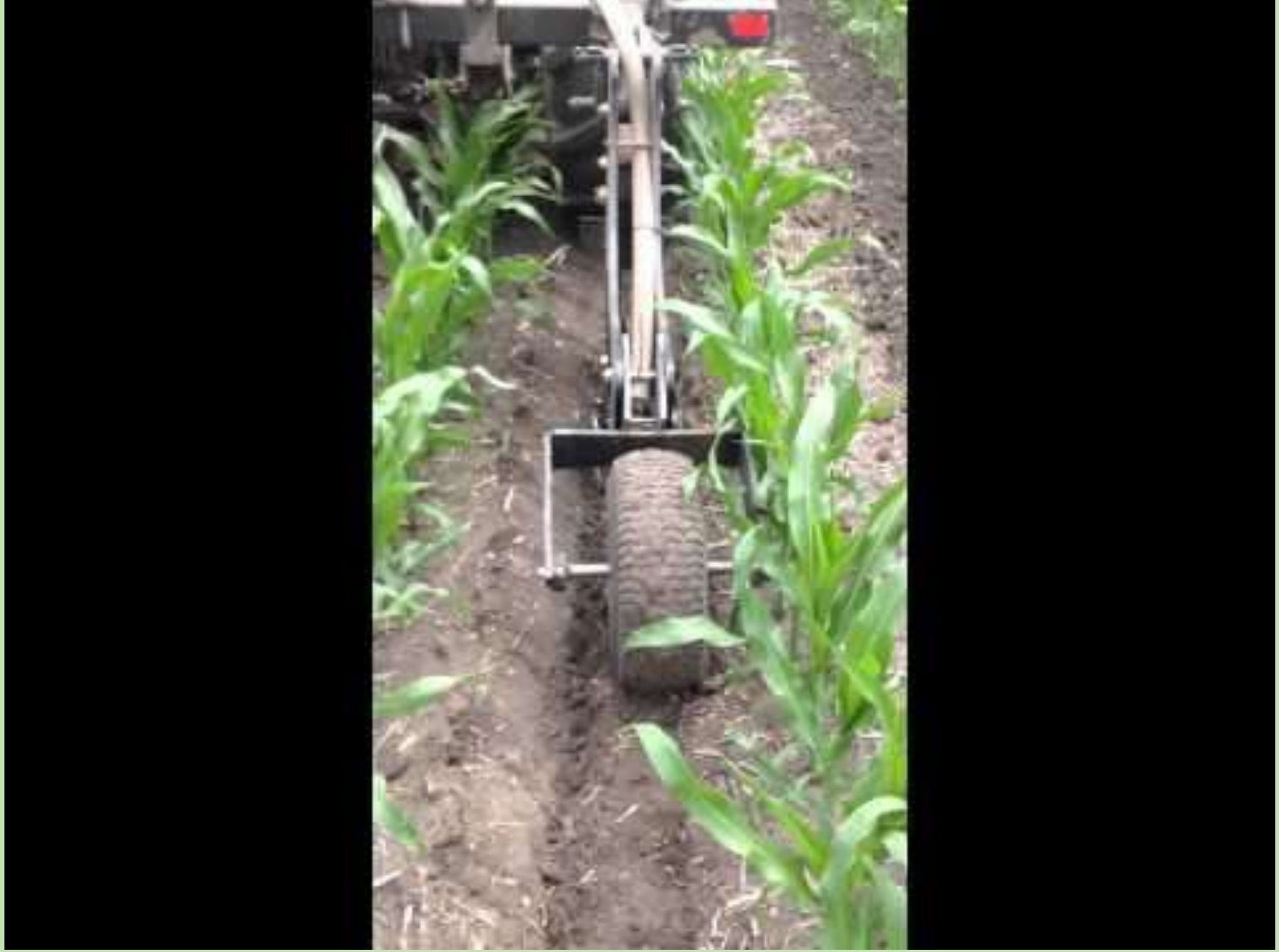




Conclusion

The Interseeder has helped us achieve our goals of building organic matter, preventing winter wind erosion, banking unutilized nutrients for the next season and, most importantly, keeping an expansive living mulch growing in our fields eleven months out of the year.

It is not a pure "No-Till" play and requires some tillage, but the gains biologically and in terms of building organic matter are unmatched by any methods we have utilized in the last 30 years!



Hartmann Interseeder video

Keith Hartmann's Setup

www.Yetter.com salesman: Andy Thompson.

Yetter tool: Strip Freshener.... $1300 each. Universal mount to 3"

Square tool bar...

Gandy four drop unit.... $900... Total investment $4800

.

The Interseeder we bought was $14,985.

Cover Crop Goals for 2020

In 2020 we will be working with more "winter kill cultivars" in conjunction with our late fall Brassicas.

Keith Hartmann is recommending annual rye grass (18#p/a) with Bayou Kale(2#p/a) as a great winter kill blend to have as a spring starting point for "No-Till" organic acreage.

What Keith particularly likes about Bayou Kale is its long growing season, which takes it well into November and December; it doesn’t winter kill until night time temperatures are in the low teens. In other words, the “biomass engines” are cranking long after the cash crop has been removed!

Seed Companies

Bayou Kale is available from: Saddle Butte Ag.: Tangent, OR

Tel:541-928-0102

Another seed company worthy of investigation is:

Green Cover Seed: Bladen, NE Tel: 402-469-6784

They have an enormous catalog of Cover Crop cultivars and a deep knowledge of how they can fit your seasonal needs. Over 35 brassica winter kill cultivars to work with alone!