Homegrown is best; cover crops for nitrogen and soil health in high tunnels

Judson Reid

Cornell Cooperative Extension

New England Fruit and Vegetable Conference 2022



Home Grown-today's message:

High tunnel soils need some love

Winter cover crops can scavenge and fix nitrogen, improve soil health

Row cover and seeding date are the keys to maximizing biomass/N

Earlier dates favor the growth of peas, later dates, grains

This system isn't perfect

No winter greens

Pest concerns

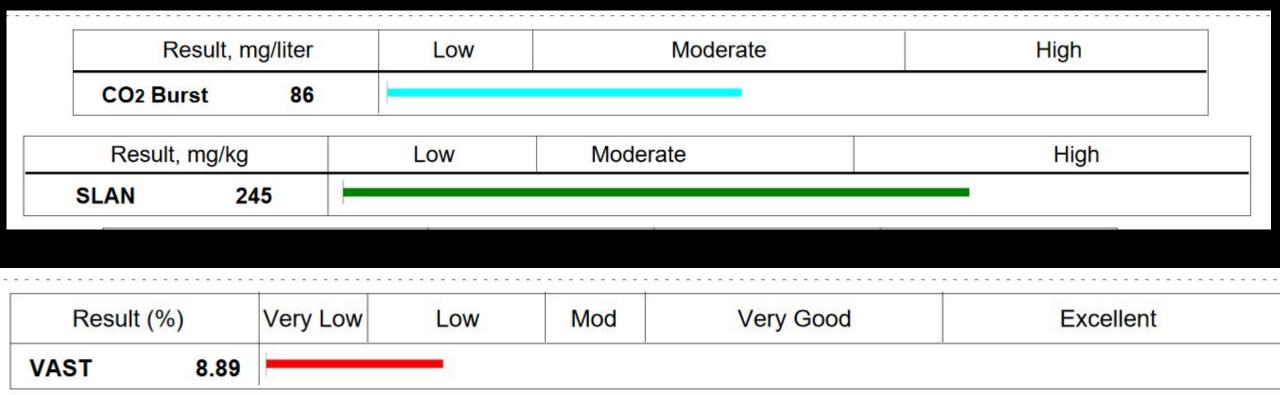
Additional tillage

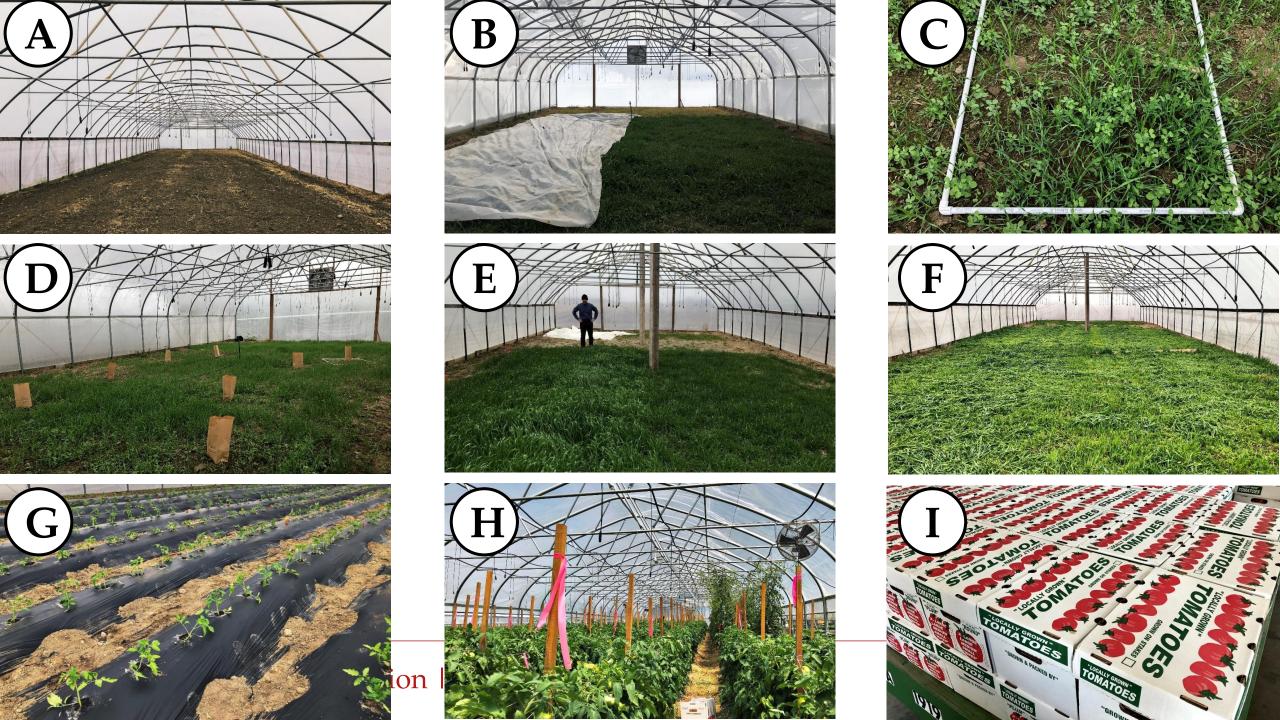
Too much of a good thing is not a good thing.

Element	lbs/acre*	Very Low	Low	Optimum	High	Very High
Phosphorus (P)	642					
Potassium (K)	333					L L
Calcium (Ca)	33,807					
Magnesium (Mg)	3,977	1				

Element	Value	Element	Value	Element	Value
Soil pH	7.5	Zinc (Zn), lbs/acre	33	% OM	19.4
Iron (Fe), lbs/acre	10	Aluminum (Al), lbs/acre	9		
Manganese (Mn), lbs/acre	62	Soluble Salts, mmhos/cm	3.2		

Measures of soil health beyond chemistry







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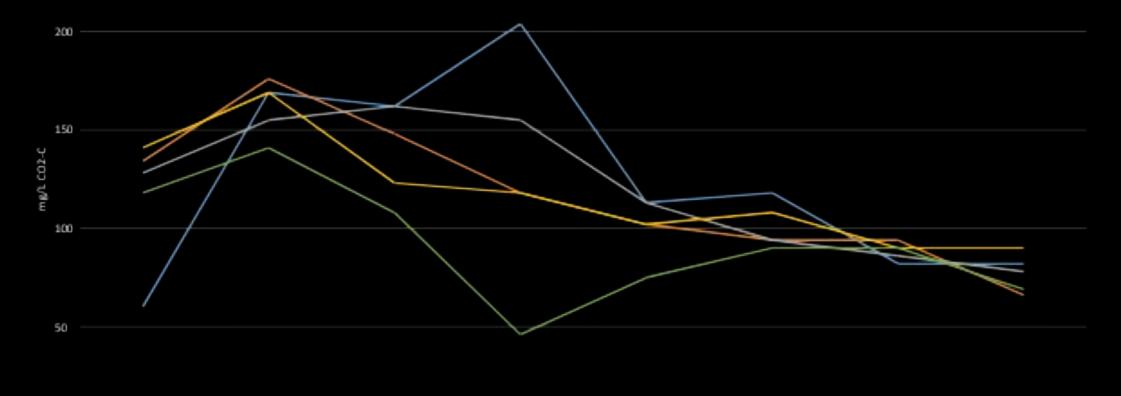
Farmer data- tomato wholesale price













Tomato/Greens Rotation

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	Greens			Baskets			Tomatoes		Greens			
Potential R	evenu	e=195	30									
Risks of Thr	ips, M	lites, A	phids									
No soil imp	rovem	ent										

Tomato/Cover Crop Rotation

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
	Cover crops			Baske	Baskets Tomatoes				Cover Crops					
Potential Revenue=13130														
Thrips/Mite	e risk v	with b	askets											
Cover crops improve soil tilth, biology, and reduce fertilizer demand														

Cucumber/Greens/Cover Crop Rotation

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	7.4
	Greens			Cover crop			Cucumber			Greens			
Potential Ro	evenu	e=1390	00										
Aphid risks													
Moderate soil health contribution													

Cover Crop/Greens/Cucumber Rotation

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	Cover cro	рр		Greens			Cucumber			Cover cr	op	
Potential Ro												
Aphid Risk												
Excellent so	il buil	ding										

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This work was funded by a USDA Specialty Crop Block Grant, administered by the New York Farm Viability Institute and a USDA NRCS Conservation Innovation Grant.