Alternative Systems for Processing Vegetables

A.J. Bussan
University of Wisconsin-Madison
Department of Horticulture





Alternative Thinking

- Improvement in soil quality
 - Organic matter
 - Nutrient mineralization
 - Water holding capacity
 - Soil structure water infiltration
 - Biological activity of soils
- Alternative nutrient sources
 - Green manures or cover crops
 - Soil amendments

Role in Vegetable Systems

- Opportunity
 - Shortened growing season
 - -65 80 d crops
 - Late planting, early harvest
- Cover crops
 - Annual covers
 - Perennial covers
- Organic production systems











No cover





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2 applications of Roundup

Preplant disking

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Perennial Cover Crop Biomass

	Fall Growth (10/18)		Spring Growth (5/17)		
	biomass	N	biomass	N	
	ton/a	lb/a	ton/a	lb/a	
No cover crop	0.00	0.00	1.08	29.25	
Hairy vetch	1.58	127.08	0.48	45.19	
Alfalfa	0.92	67.47	1.46	120.66	
Red Clover	1.26	92.64	1.28	101.23	
Sweet/Yellow Clover	0.94	68.37	1.39	120.05	
Alsike Clover	0.84	59.51	0.95	79.80	
LSD (0.05)	0.31	1.32	0.27	1.45	

Sweet Corn Yield

	Yield (ton/a)		
Cover crop	0 N	150 lb N	
No cover crop	1.82	8.36	
Hairy vetch	6.87	8.88	
Alfalfa	6.45	8.08	
Red Clover	7.31	8.81	
Sweet/Yellow Clover	8.09	8.57	
Alsike Clover	7.14	7.85	
Sweet/Yellow Clover	8.09	8.57	

Summary

- Yields of snap beans unacceptable
 - Growing cover crop in vegetable under story
 - Take advantage of crop resources
- Perennial cover survived snaps, tillage, glyphosate and in some cases corn
- Save cost of 100 to 140 lb N/a
 - 20 to 30 units N to optimize yield



Sweet Corn Yield Response to Fertilizer Source

	N rate	(lb/a)	P rate	Corn ` (to	Yield n/a)	Cost (\$/a)
N source	1/2 x	1 x	(lb/a)	1/2 x	1x	1x rate
Commercial	75	150	25	7.9	9.3	\$75
OMRI Fert.	80	152	25	8.8	9.9	\$450
Manure	80	155	205	7.3	7.3	\$250



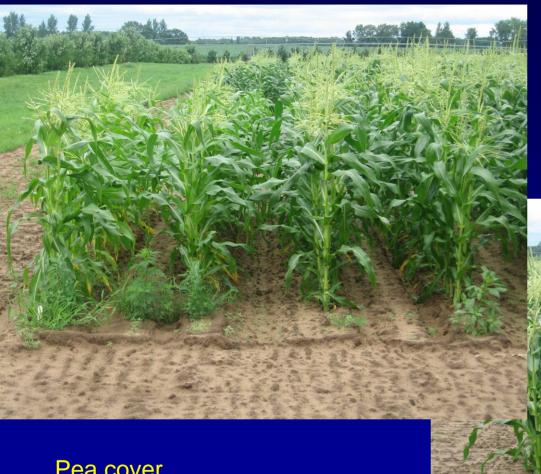


Sweet Corn Yield Response to Integrated Fertility Program

Fertilizer*

Cover crop (lb N/A)	Manure lb/a	OMRI 11-0-0 lb/a	Total N lb/a	Total P lb/a	Corn Yield ton/a	Fertilizer Cost \$/a
Rye	1250	0	42	55	4.9	63
Rye	1250	950	147	55	10.1	368
Pea (60)	1250	0	102	55	6.4	63
Pea (60)	1250	600	168	55	9.5	263
Alfalfa (100)	1250	0	142	55	8.62	63

^{*}all plots received OMRI approved 5-5-5 starter fertilizer



Pea Cover, P based manure, OMRI Fertilizers

Pea cover, P based manure



Summary

 OMRI approved fertilizer programs yielded similar to conventional fertilizers

Manure alone resulted in reduced N yield

 Combinations of cover crops with manure maintained yield at reduced management costs

Future

Potential of cropping systems

Optimize inputs to maximize crop yield

Value of the system – long term benefits