High Profits through No-Till and Planning

<u>Part 1</u>: Profit through No-Till

Patrice Gros, owner/operator
Foundation Farm
Practical Farmers of Iowa, Jan. 21st 2017

FF BY THE NUMBERS

Profit through No-Till

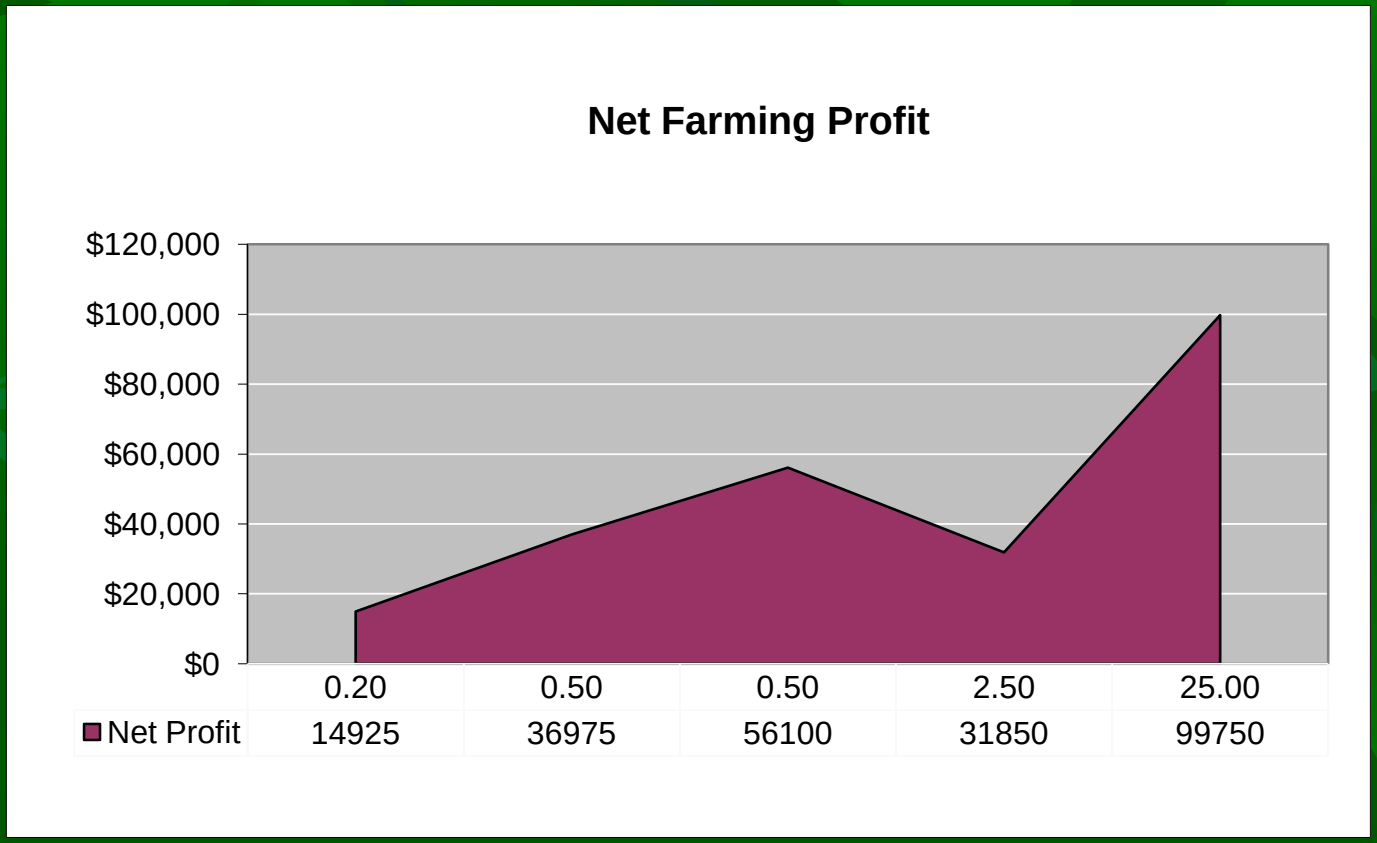
- 24,000 square feet at work (about 1/2 acre)
- 30,000 square feet in 2017
- 2015/16 sales: $80,000 from over 25 crop types.
- 2017 sales target: $105,000
- 5 high tunnels: 3 (100X17), 1 (100X30), 1 (150X24)
- 3 weekly farmers' markets, ONF Coop (Fayetteville), 3 to 5 restaurants.
- 2 to 4 trainees, Wwoofers, hourly workers, volunteers

Profit through No-Till

FF BY THE NUMBERS

- Profit Margin: 65% to 70%

	cultivated acreage	$ net profit	% Profit
PG-2005	0.2	14925	60%
FF2010	0.5	36975	67%
FF2016	0.5	56100	70%
Farm C	2.5	31850	21%
Farm D	25	99750	13%



Profit through No-Till

Total Output (Sales)	$80,000	100%

On-Farm Inputs (Expenses)		% of Sales
Labor	$10,000	12.5%
Seeds, Plants	$2,000	2.5%
Misc. Supplies	$1,500	1.9%
Mulch	$1,500	1.9%
Manure	$1,200	1.5%
Soil Amendments (Feather Meal)	$800	1.0%
Insurances	$600	0.8%
Utililities	$800	1.0%
Taxes, Fees	$500	0.6%
Total On-Farm Inputs	$18,900	23.6%

Off-Farm Inputs (Expenses)		% of Sales
Van (Gas, Maintenance, fees)	$2,000	2.5%
Marketing, commissions	$3,000	3.8%
Total Off-Farm Inputs (Expense	$5,000	6.3%

Total Inputs	$23,900	29.9%

Net Take-Home	$56,100	70.1%

Profit through No-Till

A VERY SHORT HISTORY OF NO-TILL

Masanobu Fukuoka: farmer-genius, wrote "One-Straw Revolution", "Natural Way of Farming".

Elaine Ingham: her research works exploded the field of soil microbiology.

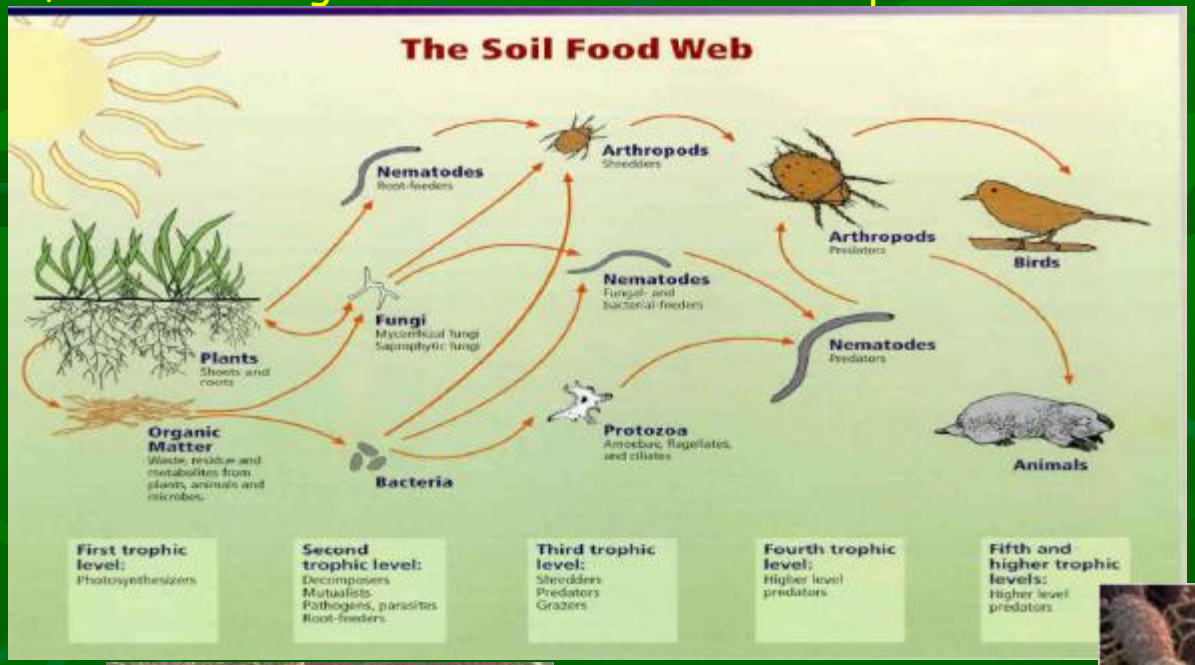
key book: "Teaming with Microbes"
Jeff Lowenfels

Profit through No-Till

BUILDING BLOCK #1: NO-TILL

Soil Life = Complexity & Interdependence = Nutrition & Balance

500,000 micro organisms could fit inside the period at the end of this sentence.



BUILDING BLOCK #1: NO-TILL

- **Optimal microbial life**: natural soil texture and structure plus micro-biological "glue" form "aggregates" which creates an ideal ecosystem. Tilling destroys soil's natural texture, structure and micro-biome !

- **Optimal water and air content**: soil in its un-tilled, natural state optimizes water and air availability to plants and micro-organisms. Tilling cuts moisture and air capacity in half leading to heavier irrigation and repeated tilling.

- **Optimal nutrient availability**: undisturbed soil structure and biology optimizes nutrient accumulation/release, hence can reduce, and even eliminate the need for fertilizers.

Note: plants are capable of producing "exudates" which attract specific micro-organisms (bacteria) which in turn can feed the plants throughout the extensive rhizosphere (root area). Rhizosphere can be vastly extended by fungal networks.

Tilling leads to more fertilizing; organic or conventional.

NO-TILL PROFIT SOURCES

- **No Machine**

No expense for machine, parking structure, tools, no loan-related expense, no depreciation expense, no fuel expense, no regular maintenance expense, no property tax expense, no repair expense, no catastrophic accident related expenses.

No labor expenses related to : machine set-up, machine usage, machine break-down, machine regular upkeep.

- **Optimum Fertility; No Fertilizer**

Fertility grows exponentially with OMC going from 1.5% to 8.5% over 10 years. Yields doubled from $3/squ. foot/year to $6.5

No expense for fertilizer, no lab/consultant expense for analyzing soil needs, no labor expense to apply fertilizer

- **Less Water**

Low expense for water, low expense to retain, catch or ferry water

- **Less Soil Work**

Less/no labor expense for soil aeration, bed forming, soil preparation for seeding/planting

NO-TILL PROFIT SOURCES

2016 Soil Test

DIVISION OF AGRICULTURE
RESEARCH & EXTENSION
University of Arkansas System

Cooperative Extension Service
Soil Testing And Research Laboratory
Marianna, AR 72360
http://soiltest.uark.edu

The University of Arkansas is an equal opportunity/affirmative action institution.

PATRICE GROS	Client ID:	4792537461
10 WOOLDRIDGE		
EUREKA SPRINGS	AR	72632

Date Processed:	3/14/2016
Field ID:	FIELD 1
Acres:	1
Lime Applied in the last 4 years:	No
Leveled in past 4 years:	No
Irrigation:	Unknown
County:	Carroll
Lab Number:	48278
Sample Number:	3151928

Nutrient Availability Index

Nutrient	Concentration		Soil Test Level (Mehlich 3)
	ppm	lb/acre	
P	191	382	Above Optimum
K	271	542	Above Optimum
Ca	2739	5478	--
Mg	395	790	--
SO4-S	13	26	--
Zn	25	50	Above Optimum
Fe	122	244	--
Mn	210	420	--
Cu	8.9	17.8	--

2. Soil Properties

Property	Value	Units
Soil pH (1:2 soil-water)	7.2	--
Soil EC (1:2 soil-water)		umhos/cm
Soil Estimated CEC	19.71	cmolc/kg
Organic Matter (Loss on Ignition)	8.6	%
Estimated Soil Texture	Silty Clay Loam - Clay Loam	

Estimated Base Saturation (%)				
Total	Ca	Mg	K	Na
89.85	69.48	16.70	3.53	0.15

BUILDING BLOCK #2: NO-COMPACTION
(From Machine, Man, or Weather)

- No-compaction is the essential companion of no-till.
- **Passive anti-compaction techniques:** low/no machine impact (=No-Till), no machine/human impact (Permanent Beds/Paths System), dense plantings, cover-crops, mulch, row covers, tunnels.
- **Active anti-compaction agents:** a healthy soil life (micro and macro), decaying root systems (cash and cover crops), weather related effects (freeze).

BUILDING BLOCK #3: ORGANIC MATTER

Organic Matter is food for soil life: rabbit manure (25#/100 squ.feet/yearly), mulch, cover crops (clover, oat, buckwheat, daikon), crop residues, grass clippings (from mowing paths).

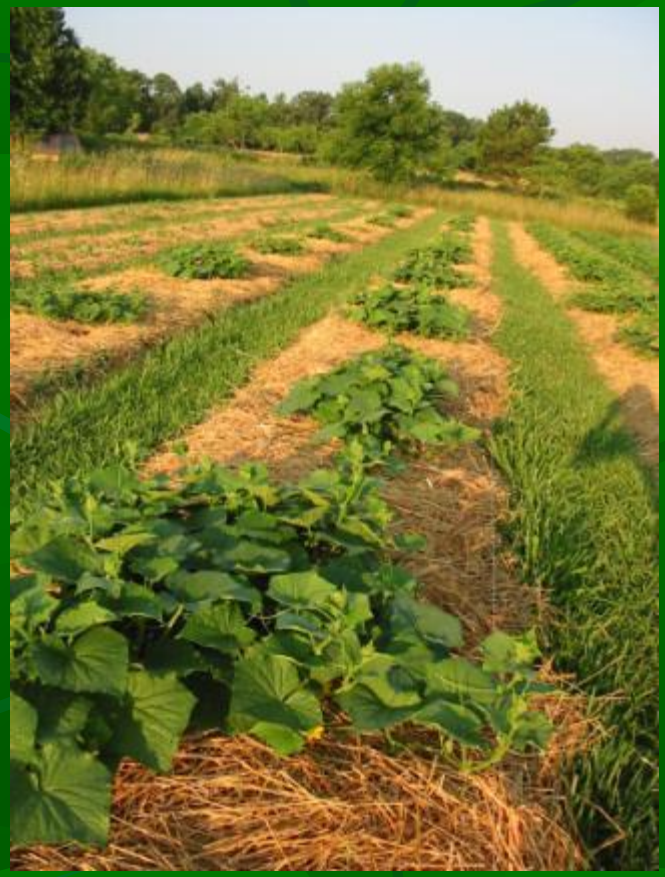
Organic matter is the sum of live (micro organisms) and dead matter. Total Organic matter inputs are less than 5 % of sales. Goal is to reach zero.

OM PROFIT SOURCES:

- **High Yields, No Fertilizer Costs**
- **Less Water**
- **No-Compost/Composting = No Compost Expenses (Equipment, Labor, or Acquisition)**

BUILDING BLOCK #4: MULCH

- **Source of organic matter:** 600 square bales digested by soil life each year, i.e. 1 bale/50 sqf.
- **Maintains high soil moisture level:** optimizes soil life, reduces irrigation needs.
- **Minimizes weeds:** reduces or eliminates cultivation
- **Protects against compaction:** Mulch can be: any grain straw, pine needles, leaves, wood chips, sand, but not hay, not fresh saw-dust, not plastic.



MULCH PROFIT SOURCES

- **No/Less Weeding Expenses (Equipment, Labor)**
- **Less Water**
- **High Yields, No Fertilizer**

BUILDING BLOCK #5: PERMANENT BEDS/PATHS

- Easy, any-day, mud-free access
- Beds are trampling-free (no compaction)
- Concentrated inputs (organic matter)
- In-bed "shoulder" composting system.

PERMANENT BEDS PROFIT SOURCES

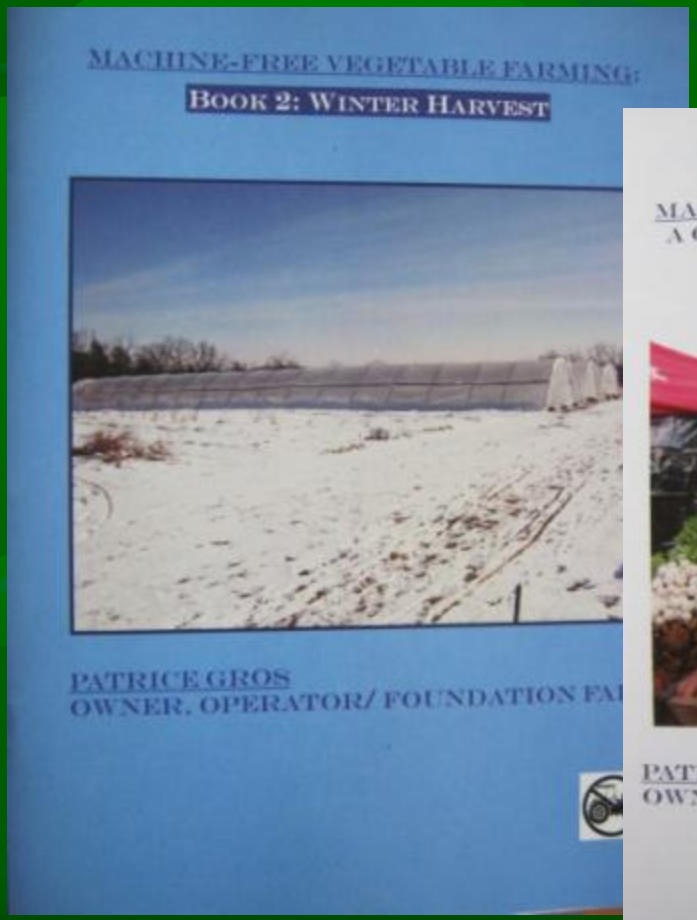
- **No Bed Shaping, Field Prep**
- **High Yields**
- **No-Composting (in bed-composting shoulders**

BUILDING BLOCK #6: DRIP IRRIGATION

BUILDING BLOCK #7: ORGANIC POLYCULTURE

Profit through No-Till

My farming/gardening books are available for $10 each or $25 for all 3.



High Profits through No-Till and Planning

<u>Part 2</u>: Profit through Planning

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Profit through Planning

Strategy #1: Profit through No-Till

The no-till method is a huge source of excess profitability through the reduction or elimination of typical conventional and organic farming tasks:

- No tilling
- Less/no fertilizing
- Less/no cultivating
- No composting
- Less watering

Strategy #2: Profit through Smart Marketing

- No (little) wholesale pricing (farmers markets, CSA, farm stand, PYO)
- No long distance selling
- No expensive warehousing
- Small is beautiful: small enough to fit your retail market

Strategy #3: Profit through Planning

PRODUCTIVITY MEASURE

Need for a way to appraise the impact of each crop on the farm bottom line based on TIME and YIELD:

- Time: the amount of time a crop occupies the soil
- Yield: the amount of sales in $ for that crop

PM: Sales / Time / Surface
Sales / Month / Square foot

Example 1: Basil (2015)

Basil is planted June 1st on a 100' by 4' bed (400 square feet), produced a total sold harvest of $1,680 from July 1st till October 15th (first frost)

PM/basil = $1,680/ 5 months/ 400 squ. feet
= 84 cents per square foot per month

PRODUCTIVITY MEASURE

Example 2 : cucumber (2016)

A 125 foot bed (500 square feet) planted on April 15 produced $892 till the last cucumber was harvested on July 31st (3.5 months)

PM/cucumber= $892/500/3.5 = 51 cents /square foot/month

PRODUCTIVITY RESULTS

Year 2016

2016 Actual

	mo	sq. f	sq.f. X mo	sales	$/sq.f./mo	% sales	
ht dill	2.5	100	250	$310	$1.24	0%	
ht celery	8	200	1600	$1,789	$1.12	2%	
ht lettuce	3	900	2700	$2,846	$1.05	4%	
ht kale	6.5	300	1950	$2,053	$1.05	3%	
fall cilantro	3	600	1800	$1,819	$1.01	2%	
lettuce	1.5	4500	6750	$6,359	$0.94	8%	
eggplant	6	400	2400	$2,184	$0.91	3%	
ht bok-choi	4	300	1200	$1,084	$0.90	1%	
basil	4	200	800	$681	$0.85	1%	
ht lettuce	3	300	900	$747	$0.83	1%	
pepper	6	800	4800	$3,910	$0.81	5%	30%
ht turnip	4	500	2000	$1,391	$0.70	2%	
kale	7	500	3500	$2,409	$0.69	3%	
ht ginger	7	200	1400	$931	$0.67	1%	
hh chard-2015	6.5	400	2600	$1,699	$0.65	2%	
spring jap. turnip	3	600	1800	$1,114	$0.62	1%	
ht arugula	3.5	400	1400	$855	$0.61	1%	
arugula	2	2500	5000	$2,852	$0.57	4%	
ht parsley	9	200	1800	$990	$0.55	1%	
ht cilantro	3	600	1800	$980	$0.54	1%	
chard	6	1000	6000	$3,263	$0.54	4%	
spring spinach	3	600	1800	$922	$0.51	1%	
ht spinach	4	300	1200	$602	$0.50	1%	52%
cuke	3.5	1100	3850	$1,855	$0.48	2%	
cabage	3	1800	5400	$2,360	$0.44	3%	
hh tomato	6	3400	20400	$8,591	$0.42	11%	
leek	4	1100	4400	$1,832	$0.42	2%	
sweet potato	3.5	1800	6300	$2,559	$0.41	3%	
spring bean	2	1000	2000	$800	$0.40	1%	74%
ht spinach	4	200	800	$312	$0.39	0%	
onion	3	2500	7500	$2,920	$0.39	4%	
spring beet	3	500	1500	$576	$0.38	1%	
scallion	3	1200	3600	$1,381	$0.38	2%	
ht carrot	4	200	800	$300	$0.38	0%	
fall bokchoi	5	1000	5000	$1,863	$0.37	2%	
ht pea	4	300	1200	$427	$0.36	1%	
ht scallion	6	300	1800	$627	$0.35	1%	
early kale	3	600	1800	$534	$0.30	1%	
dill	3	600	1800	$532	$0.30	1%	87%
squash	3.5	2400	8400	$2,476	$0.29	3%	
ht leek	6	200	1200	$334	$0.28	0%	
winter squash	4	1800	7200	$819	$0.11	1%	
garlic	7	1200	8400	$477	$0.06	1%	
ht kale	3	630		$1,263		2%	
ht collard	3	250		$201		0%	
ht chard	3	600		$470		1%	
misc.				$4,931		6%	
			148800	$80,230	$0.54	100%	
		max. sq.f.mo:	288000				
		% of max. useage:	52%				

Profit through Planning

The YES Formula

Y= Yield (Profit) as Sales ($) per Square Foot per Month
E= Efficiency of Work/Rotation (Land usage as a % of S)
S= Total Cultivated Surface Available in Square Feet X Months

	Y	E	S	Total Sales
2016-actual	.54 $/mo	52%	288,000 squ-f	$80,000
2017-plan	.54 $/mo	55%	349,000 squ-f	$104,000
Factors at play	Crop Mix Markets Experience Weather Insects/Diseases	Labor Planning Season Ext. Tunnels	Land Size Capital Labor Farmer's Will	

FOUNDATION FARM SCHOOL - 2017

- 03/01 TO 10/31 (7 Months, 3 Seasons).
- 3 Weekly Mornings of Supervised Field Work: M/W/F.
- Up to 3 Trainees, "Wannabe-Farmers".
- Wednesday Class.
- Camp or stay in cabin
- Patrice's email: mamakapa@yahoo.com
- Info at www.foundationfarm.com

I thank you and please support us by:

1- Shopping at your local farmer's markets and/or thru a CSA (farm subscription program).

2- Cooking at home with fresh food for your family, neighbors and friends.

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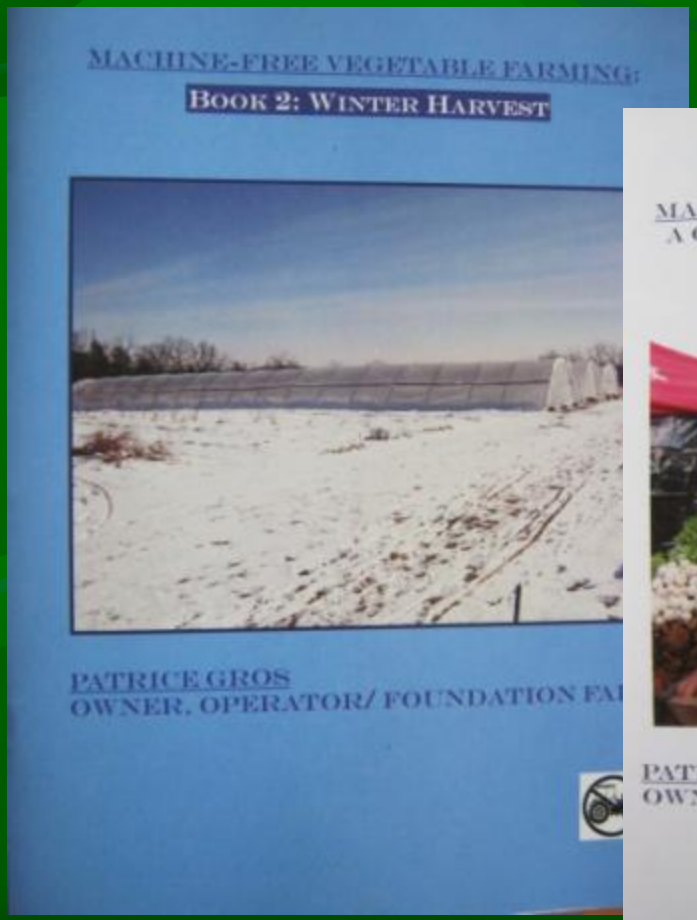

New Directions

Nature as Master and Provider:

- 2017: No manure, No cover-crop, no rotation
- Permaculture models
- Edible forestry
- Zero input
- Minimized intervention

- Still highly profitable!