Efficient and Resilient Specialty Crop Production Systems

Tom Buller

K-STATE Research and Extension | Douglas County

Extension in Douglas County 100 years

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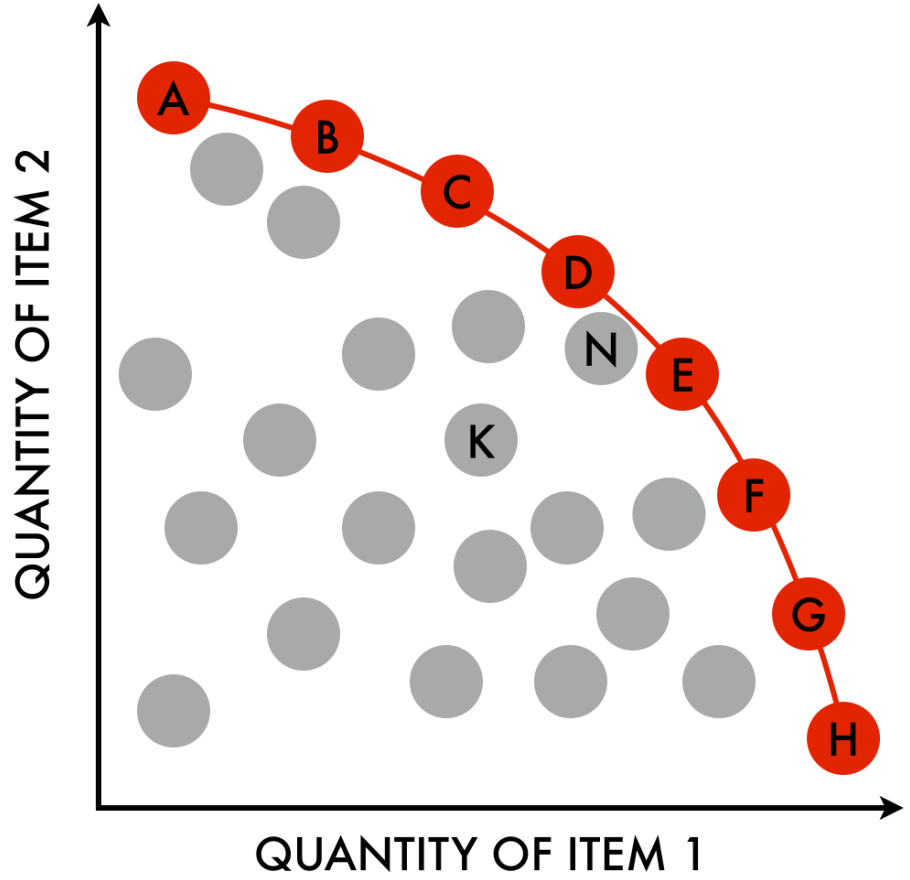
What is efficiency?



- By Njr00 (Own work) [CC BY-SA 3.0 (https://creativecommons.org/licenses/by-sa/3.0)], via Wikimedia Commons

Why efficiency?

- Scale neutral concept but scale dependent in application
- Applies everywhere across the farm

- Seeking the optimal

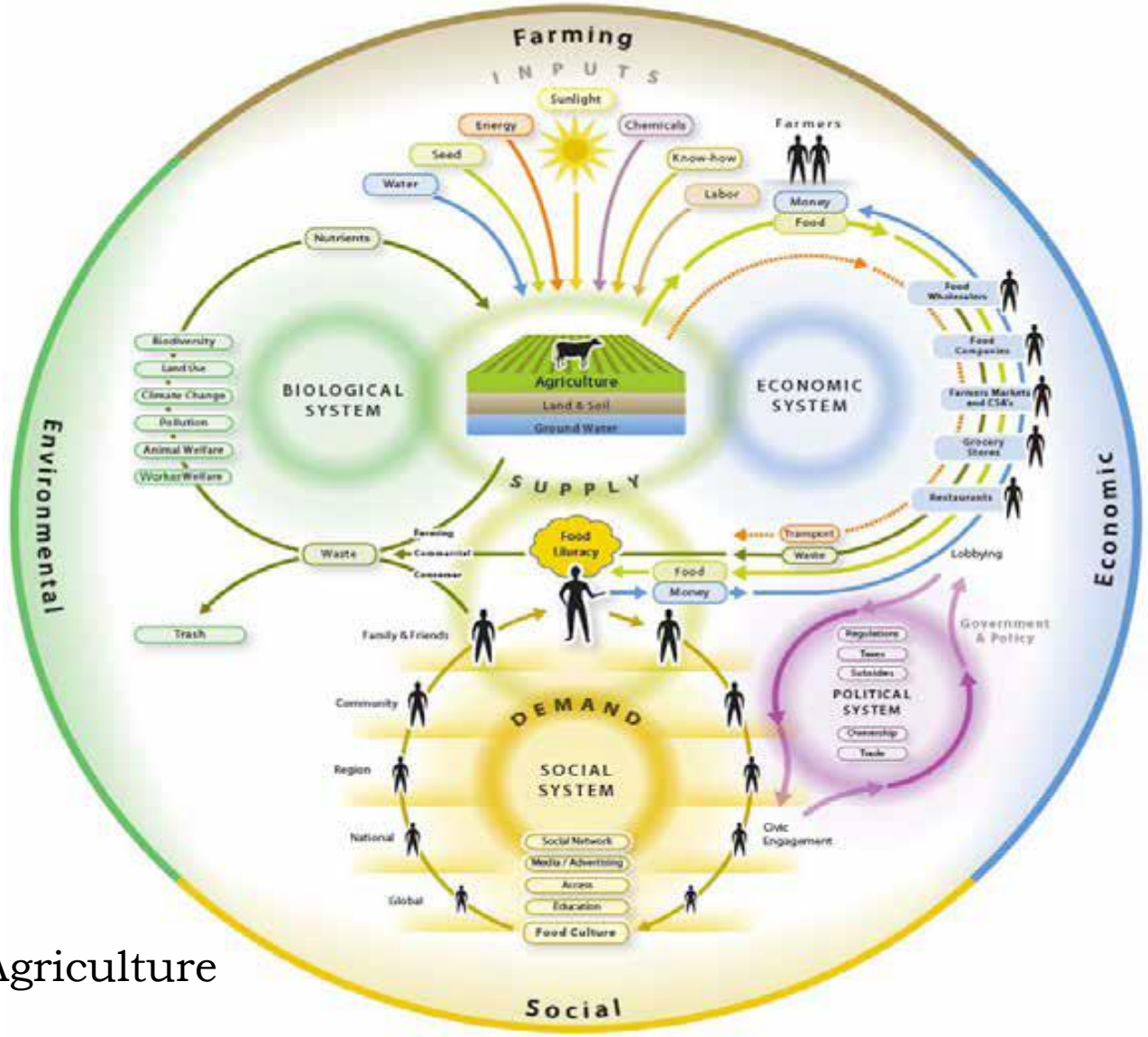
Different ways to frame efficiency

- Yield/Unit Area (lbs or bu/acre)
- Yield/Labor Time
- Value/labor time
- Value/area (bed/row/square foot/acre)

Net Income

What are systems and why do we care?

- Relational
- Holistic



https://www.sare.org/Learning-Center/Books/Systems-Research-for-Agriculture

Integrated Pest Management

- Goal to manage pests not eliminate
- Scouting critical step- figure out what is going on before its an emergency
- Multiple Layers of Defense
  - Preventive cultural practices
  - Mechanical Controls
  - Biological Treatments
  - Chemical

How to decide what systems to optimize?

- What are your challenges?

- What are limiting resources?

  (time……)

- What is your vision?

Thinking efficiency

- Ask Why?
- Prioritize
- Make Data Driven Decisions
- Eliminate Waste
- Think of the whole system
- Learn from others

Ask why 5 times

Why?

Why?

Why?

Why?

Why?

Getting Priorities in Line

- *What is important is seldom urgent and what is urgent is seldom important.*
  -Dwight Eisenhower

	Urgent	**Not Urgent**
Important	1. Do it now!	2. Decide When to Schedule it
Not Important	3. Delegate	4. Delete

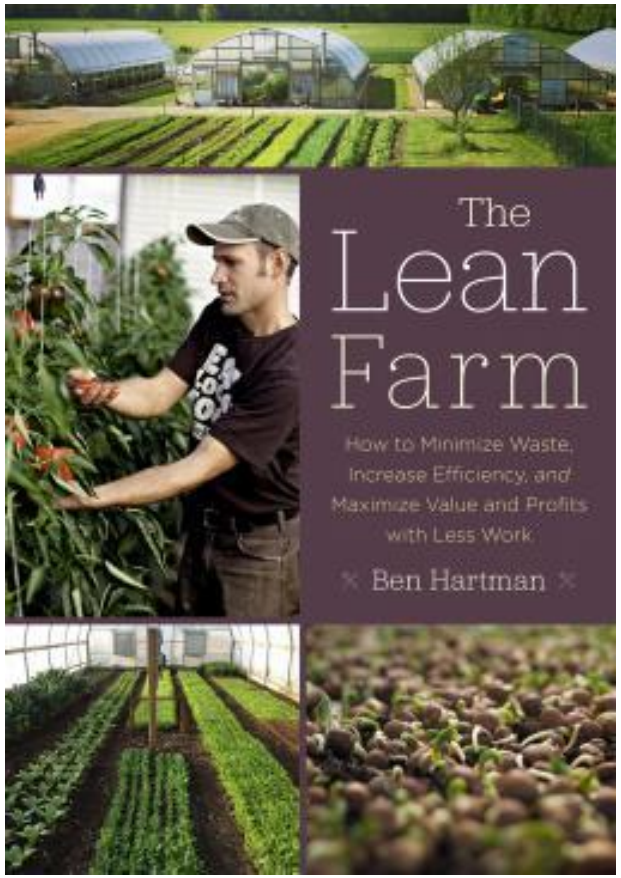
Make Data driven decisions

- Veggie Compass
  - http://www.veggiecompass.com/

- Iowa State Vegetable Production Budgets
  - https://www.extension.iastate.edu/agdm/crops/html/a1-17.html

Ben Hartman's 10 Types of Waste

- 1. Overproduction
- 2. Waiting
- 3. Transportation
- 4. Overprocessing
- 5. Inventory
- 6. Motion
- 7. Making Defective Products
- 8. Overburdening
- 9. Uneven Production/sales
- 10. Unused Talent



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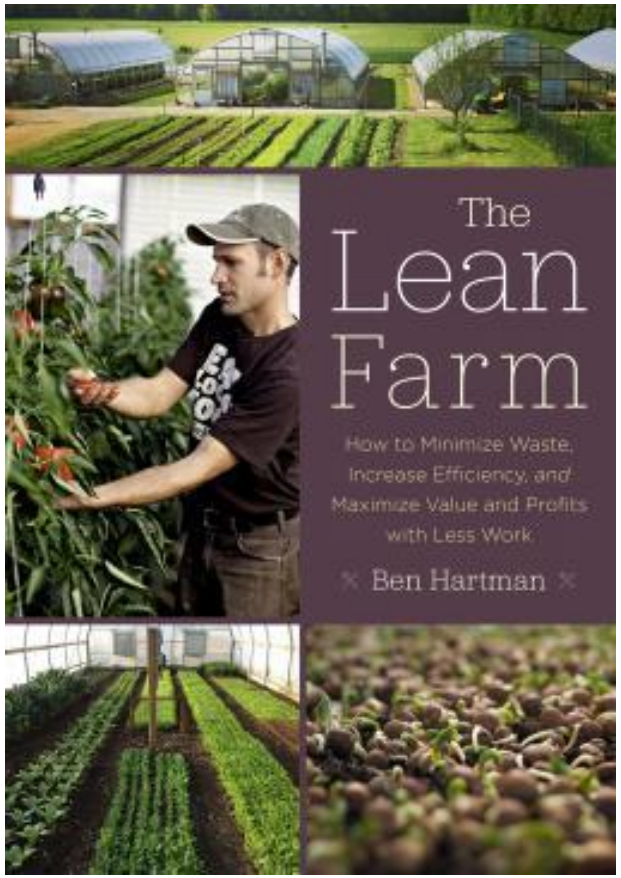

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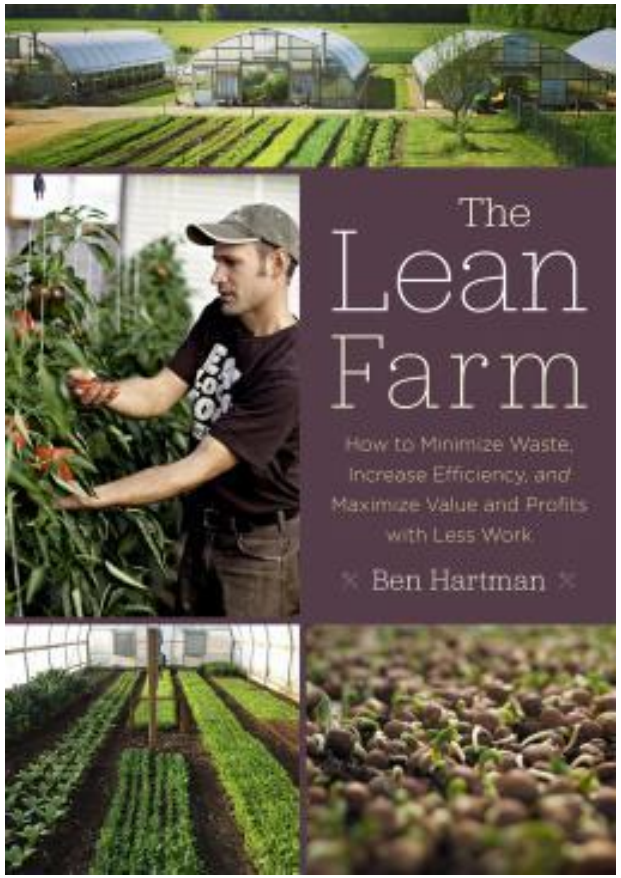

make applesauce : cait
make soup : kay
puree pumpkin : erin
cleaned center : cait
cut + hang herbs : kay + tony
Print GG flier : cait
Wood burn sign : cait

Straw : 41
(we bought 48)

Bantam Rooster

KANSAS SENIOR FARMERS' MARKET NUTRITION PROGRAM
Checks Accepted Here
If paying by check, please make payable to:
Griggs Bros Farms
Sweet Onions
$1.00/Each
(tax included)
Tomatoes
$2.00/LB.
(tax included)
WELCOME
WASH BEFORE EATING
Welcome
TOMATOES
Product of USA
Grown in the American Heartland
Red Onions
$ 1.00 ea

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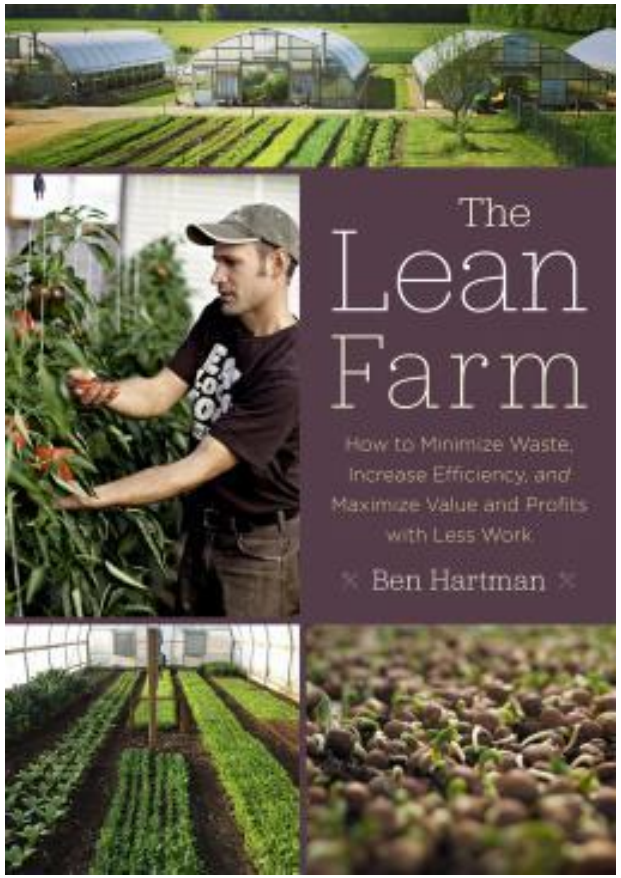

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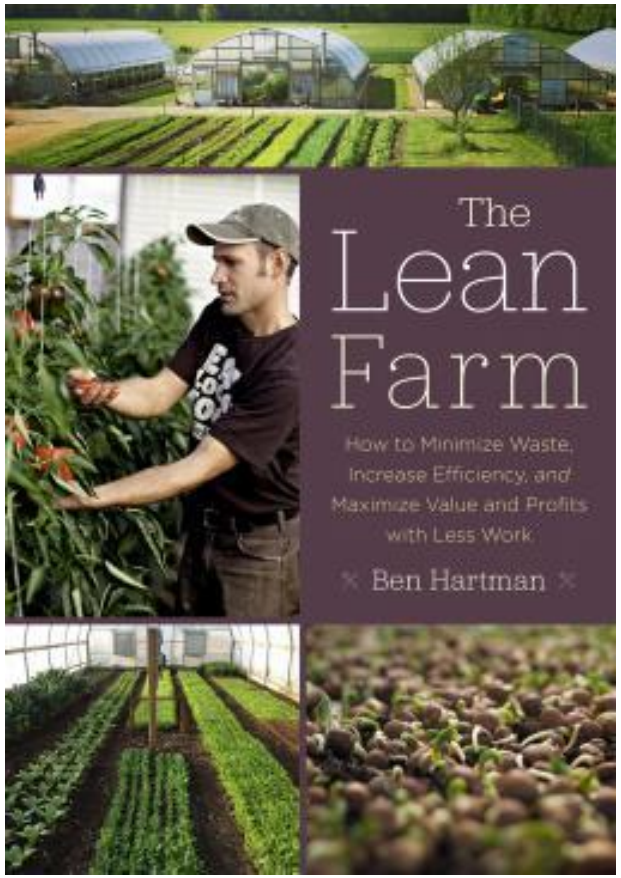

CSA Today
FOXY
Organic

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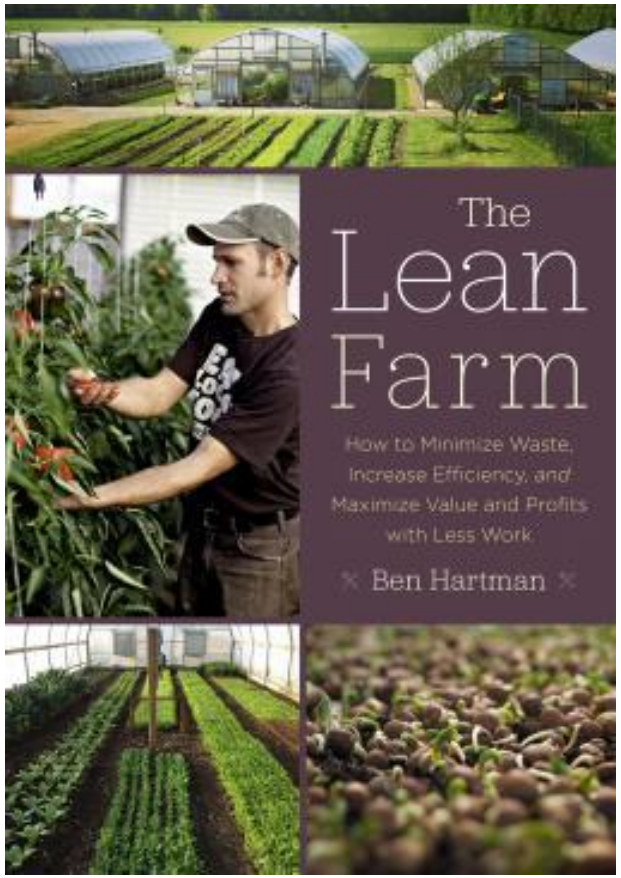

BEAUREGAURD
SWEET POTATOES
$2.00/lb.

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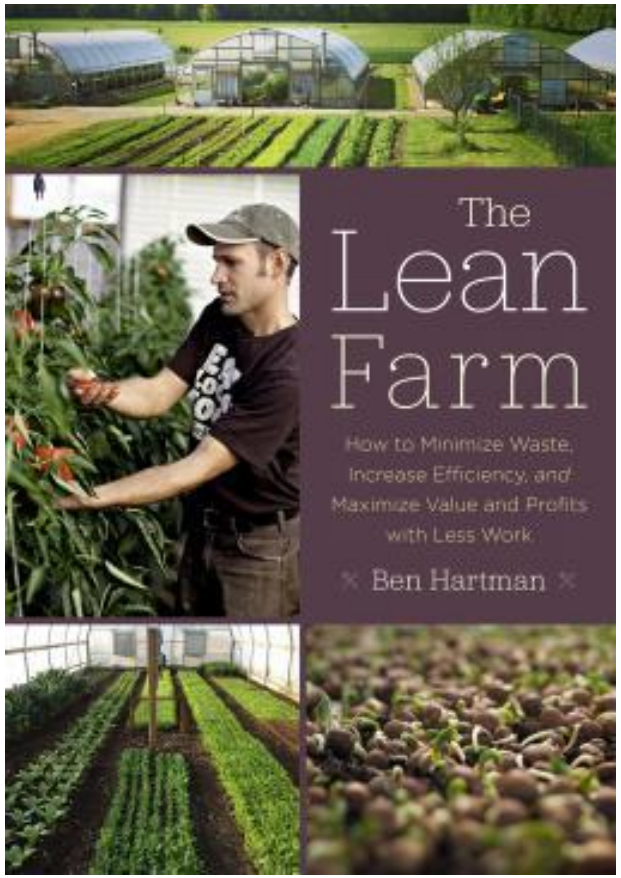
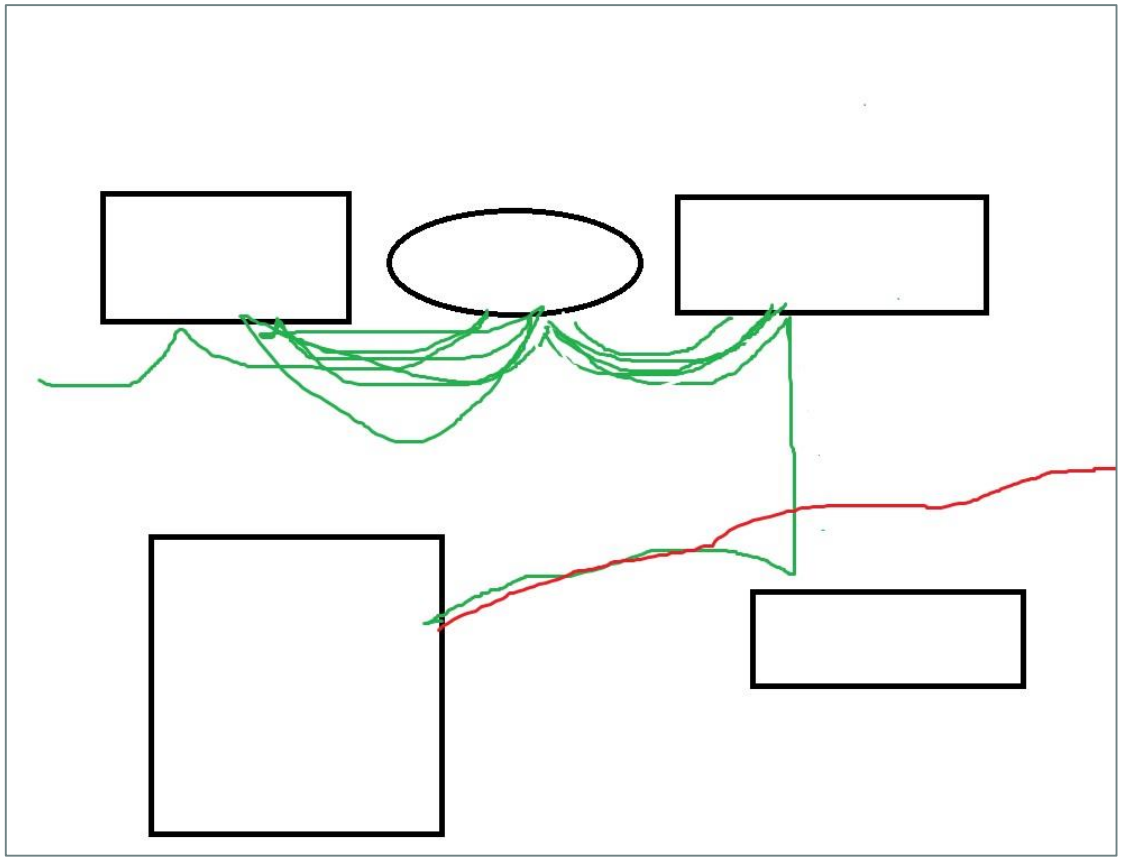


Minimize Moves

- Spaghetti Diagrams



Evaluating and Demonstrating Weed Control Options for Direct Seeded Fall Vegetable Crops
K STATE

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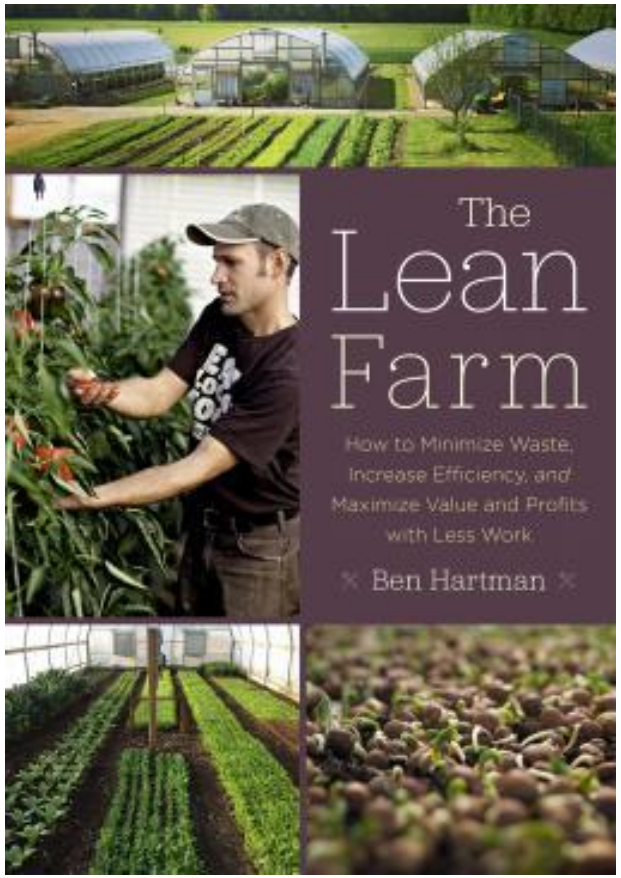

When you can avoid loses?

NAP

- Non-Insured Crop Disaster Assistance
- Need Actual Production History (APH)
- Verified Production Records

- Whole Farm Revenue Insurance
  - The go to form of crop insurance for diversified operations
  - Also great for operations that don't grow traditional commodities
  - Records must be kept to verify production levels

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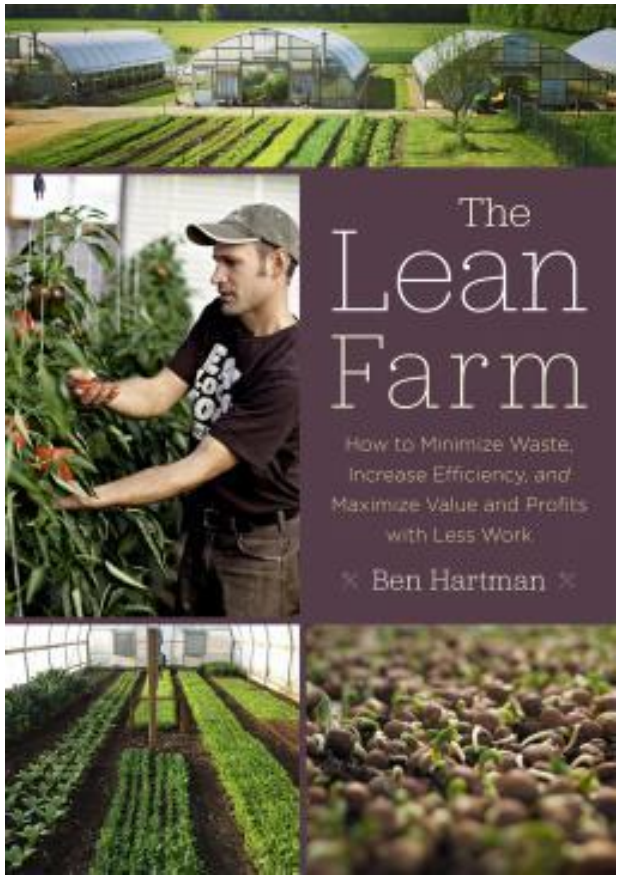

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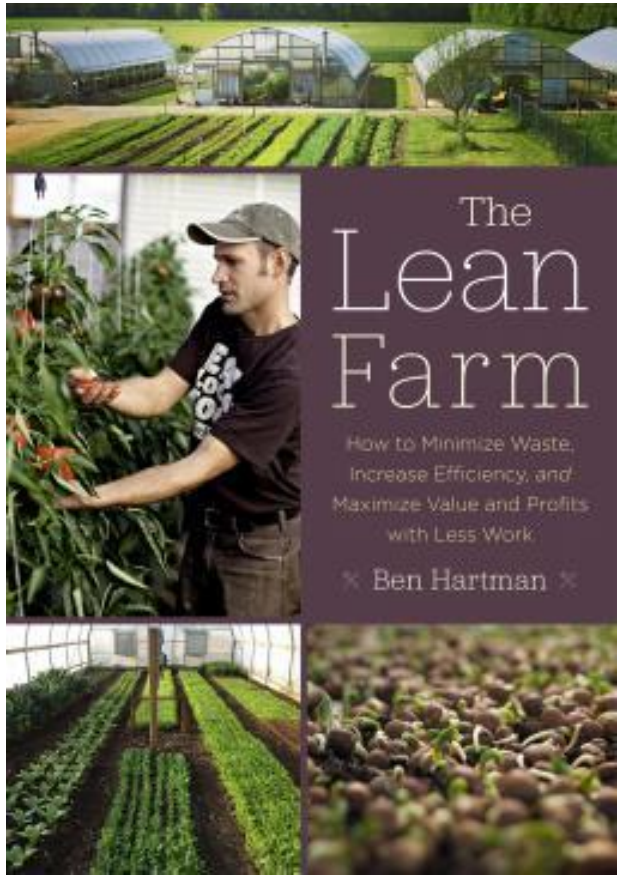

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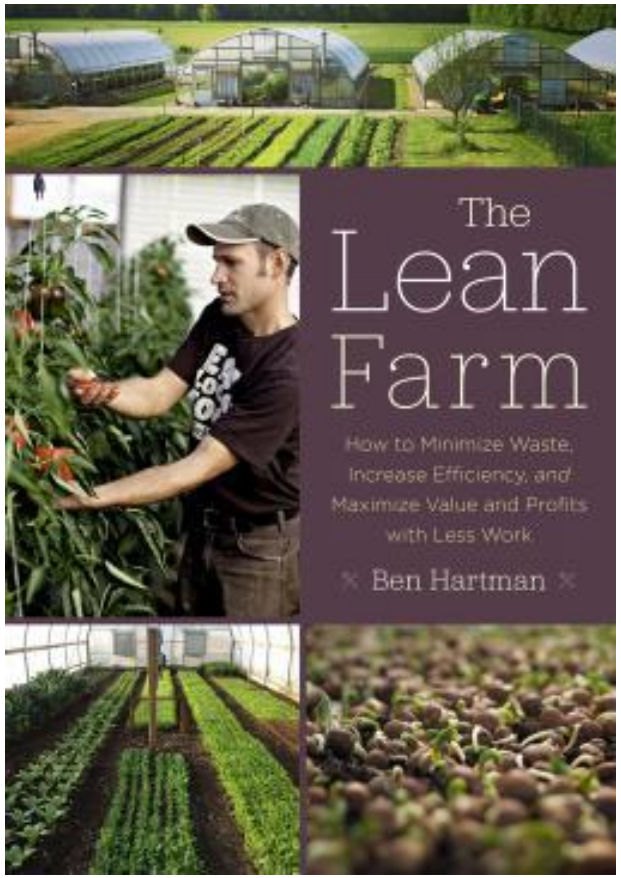

Unused talent?

http://www.kansassbdc.net.

Think of the whole system

Worksheet 3 Greenhouse Costs

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Two types of greenhouse operations are portrayed: one for growing bedding plants and one for growing in-ground tomatoes. Both greenhouses are 21' x 96' hoop houses with two layers of plastic that are inflated. Each has a furnace, exhaust fan, intake shutters, and automatic controls. The longer-lived structure and equipment costs are totaled and divided by their useful life (20 years). Annual costs of heating fuel, electricity, and 5-year plastic covers are listed separately. Overhead expenses from Worksheet 1 (12.5% of total overhead) are added in after the annual expense subtotal. The bedding-plant greenhouse is more involved and listed first. The bedding-plant greenhouse benches hold 1000 flats (1020 size), and two flats can occupy the same bench space during the course of the bedding-plant season (one cycling of inventory). Worksheet 2 lists costs for plastic containers, soil, and the labor to fill the containers, as shown under *Production costs per flat*. Other production costs per flat are listed, with optional categories like thinning and fertilizing left blank for simplicity. The total cost per flat is a very useful number and will be used in the Crop Enterprise Budgets when crops are raised from transplants.

Bedding Plants, March 1st Start-up

Structure cost: 21' x 96', 2-layer poly-covered hoop house		
Frame cost $2400, installation $1004 (80 hrs), wood $300		3704.00
Furnace $2000, fans $800, installation $377 (30 hrs)		3177.00
Benches $500, plumbing $400, irrigation $400		1300.00
Total structure cost		8181.00
divide by # years of useful life		20
Annual structure cost		**409.05**
Other annual expenses:		
Poly cost $600, installation $100 (8 hrs), /5 years		140.00
Electricity	5 x $15/month	75.00
Fuel for heat	300 gallons @ $3/gallon	900.00
Watering labor	2 hrs x 50 times = 100 hrs	1255.00
Subtotal annual expenses		2370.00
Farm overhead allocation from Worksheet 1		2397.00
Total annual expenses *with overhead allotment:*		**5176.05**

Greenhouse 1020 capacity: 1000 x 2 — 2000 one cycling of bench space

Total annual expense/total flats =

Greenhouse annual c

Production costs per

Cost of plastic flat, soil

Cost of seed in flat

Labor to seed flat:12 fl

If needed:subtotal/# of fl

Labor: transplant to on

2nd plastic flat, soil, la

Subtotal for transplant

Labor moving: 60 flats/

Labor to thin: 100 flats/

Fertilizer cost:$0.02/fla

Fertilizer labor: $0.05/f

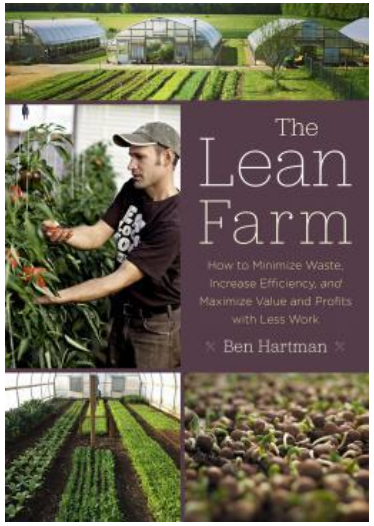
Total cost per flat:

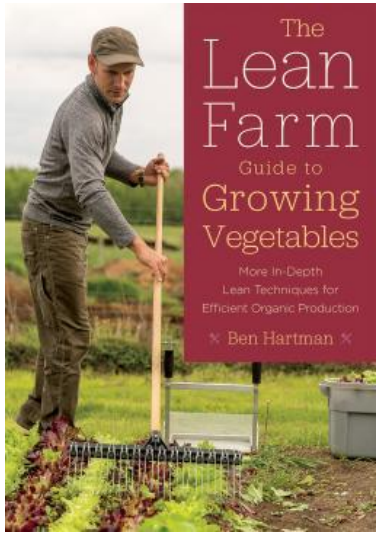
https://www.rainfloirrigation.com/

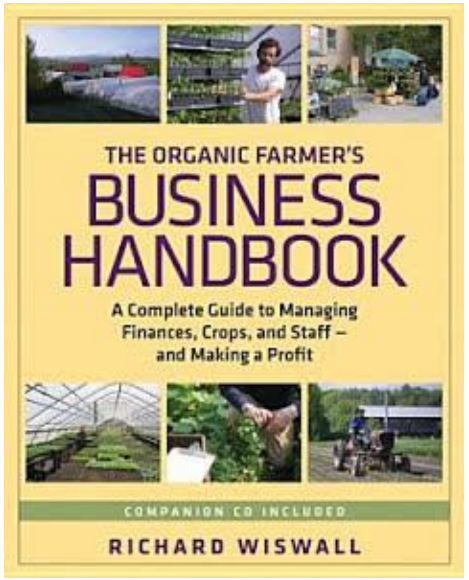
Quick Cut Greens Harvester (Official)
Watch later
Share

https://paperpot.co/

Learn From Others







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What's the least efficient part of your operation?

Questions?

Tom Buller

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