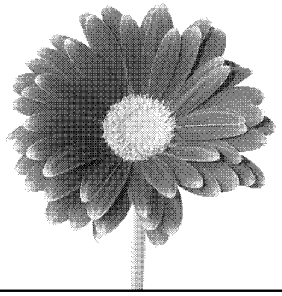
Record Keeping and Profitability Analysis



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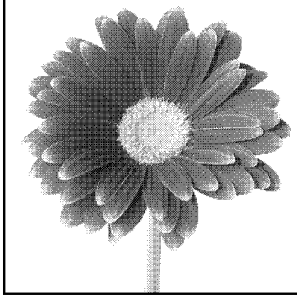
Eco-Farm Day

February 27th 2010

STEP 1: Keep Records



Step 1 - Objectives

- Understand the importance of record keeping
- Start developing your own record sheets and record keeping strategy

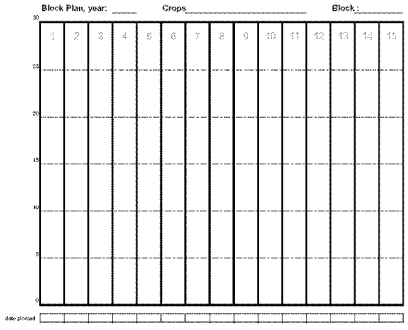
What is important to record?

- Do you keep any records? Which?
- Records needed for our analyses
  - **Field Direct Seeding (DS) and Transplanting (TP)**
    - Variety, date, spacing/seeder, bedlength, rows
  - **Field layout**
    - Crop, variety, block, bed, bedlength
  - **Yield records**
    - Varieties, planting #, dates, quantities harvested (kg, bunches, units, etc.)
  - **Sales records**

Keep records – How to do it?

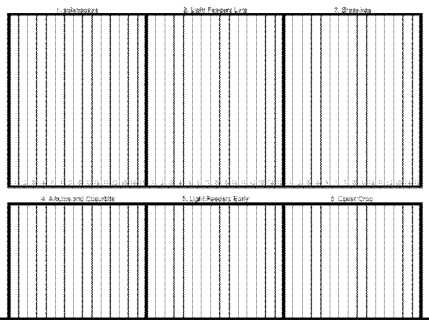
- Start now!
  - Design & print record sheets during winter
  - Where will you put them?
- Tell everyone in the team
  - How important it is
  - What you want & how to do it.

Sample record sheets – Block Plan



Sample record sheets – Field Plan

Field Plan, Year: _____ Operation: _____



Sample record sheets – Field DS & TP

Field TP and DS record sheet Block_____ Year_____

Date	Crop	Variety	DS/TP	Bed	Spacing Between	Rows	Bed#	Notes

Sample record sheets – Harvest Records

Year: Week:

Cat	Crop	Variety	Unit	Bed	Monday	Bed	Wed	Bed	Friday
leaf	Arugula	-	bunch						
leaf	Chard	-	bunch						
leaf	Kale	-	bunch						
leaf	Lettuce		head						
leaf	Lettuce		head						
leaf	Lettuce		head						
leaf	Pac Choi		bunch						
leaf	Spinach		kg						
leaf	Mesclun	-	kg						
roots	Beets	Detroit dark	bunch						
roots	Beets	Early Wonder	bunch						
roots	Beets		bunch						
roots	Carrots	Yaya	bunch						
roots	Carrots	Napoli	bunch						
roots	Carrots		bunch						
roots	Carrots		bunch						
roots	Carrots		bunch						
roots	Scallions	White	bunch						
roots	Scallions	Red	bunch						
roots	Onion-Fresh	White	bunch						
roots	Onion-Fresh	Red	bunch						
roots	Radish	Spring							

Sample record sheets – Havest Records

Harvest Record sheet - by crop Year:

Crop	Variety	Unit	Bed #	Quantities harvested and date

Sample record sheets – Market Records

Year

MARKET	
WEATHER	
DATE	

				Start	End
		Unit	price		
leaf	Arugula	Bunch	$ 2,50		
leaf	Chard	Bunch	$ 2,50		
leaf	Kale	Bunch	$ 2,50		
leaf	Lettuce	Unit	$ 2,50		
leaf	Mesclun	1/2 lbs - 2L	$ 3,50		
leaf	Mizuna	Bunch	$ 2,50		
leaf	Mustard	Bunch	$ 2,50		
leaf	Pac Choi	Bunch	$ 2,50		
leaf	Spinach	1/2 lbs - 2L	$ 3,50		
leaf	Stir fry mix	1/2 lbs - 2L	$ 3,00		
leaf	Tet Tsoi	Bunch	$ 2,50		
root	Beets	Bunch	$ 3,00		
root	Carrots	Bunch	$ 2,50		
root	Leeks (baby)	bunch	$ 3,00		
root	Onions (fresh	Bunch	$ 3,00		
root	Pearl onions	Bunch	$ 2,50		

Sample record sheets – CSA Records

CSA record sheets Date_____
CSA drop-off _____

Planned Harvest	Actual Harvest	Item #	Crop	Unit	Price	Notes

Other things you may want to record

- Pest information
  - pest, dates, observations, varieties, treatments
- Fertilisation
  - type of fertiliser, nutrient content, quantities, dates
- Soil preparation
  - machinery used, work done, date, time it took
- Variety trials
  - yield, pest, appearance, capacity to hold
- Others
  - Task flow and scheduling
  - Weather
  - Greenhouse records

Organizing your records

- Classify by crop / block
- Classify by activity
- Field maps
- Calendars

Summary

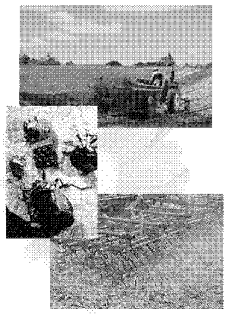
- Records are key
- Plan record keeping strategy in the winter
  - Design forms
  - Print and organize into binders/notebooks
  - Write as much as possible ahead of time
- Keep at least
  - Field planting + maps
  - Harvest records
  - Sales records

STEP 2: Analyse your records

Objectives – Step 2

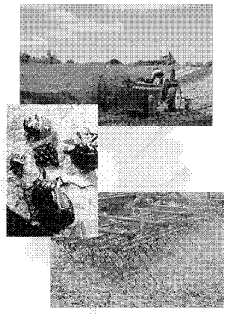
- Use techniques of profitability analysis
  - In space
  - In time
- Understand how data analysis can improve your crop planning
- Start revising your prices based on results of profitability analyses

Analysing profitability, why bother?



- To improve ourselves
  - Identify key crops where improvements needed
  - Have a benchmark to compare with
  - To harvest more while working less
  - Avoid wasting space or time

Analysing profitability, why bother?



- Variety choices
- Identify production problems
- Evaluate our prices
- Choose which crops to grow
- Compare with other farms

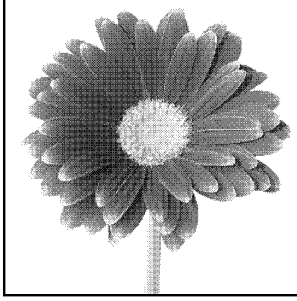
Which of these crops is the most profitable?

- Cucumbers
- Carrots
- Garlic
- Lettuce
- Tomatoes
- Squash

It depends… on what ?

- Yields
- Price of the crop
- Field space that is used
- Time it takes to harvest
- Inputs and costs of production

Profitability in space



Profitability in space

- For farms that use all of their land
- For farms who want to do more green manures
- For everyone who wants to work less
  - Have more time for our other projects
  - If you double your profitability in space…
    - Half of the plants
    - Half of the weeding
    - Half of the carrying around…

Formula

Yield ÷ bedlength * unit price = $ / bedfoot

- Example:
  - 2084 kg tomatoes ÷ 1015 bedfoot * 4$/kg = 8,21$ / bedfoot
  - With adequate record keeping, I can compare between varieties
    - New Girl: 9,13$
    - Cherokee Purple : 5,02$

Exercice: Carrot

- Harvest of the day : 160 lbs
- Row harvested : 120 ft
- Rows per bed: 3 rows
- Price: 1,00$ / lb

160 lbs ÷ (120 ft ÷ 3) * 1.00$ = 4$ / bedfoot

Yield ÷ (bedlength ÷ nb rows) * unit price = $ / bedfoot

What do I need for the calculation?

- Yield estimates and records
  - For the whole year
  - For a harvest day
- Records about production data
  - Length of the bed harvested
  - Length of row / nb rows per bed
- Price of the crop
  - Same units as for yield data

How do I use the data? 2 options

1. Establish a target for the farm
   - 40 000$ per acre = 4,59 per bedfoot
   - Do I meet my objective with crop x?
2. Classify crops according to their profitability in space
   - Why is Crop Y at the bottom of the list?
   - What can I do about it?

Farm profitability target

- What is your gross sales target?
  - 50 000$
- How much land do you have available for vegetables?
  - Remove roads, buildings, green manures, etc.
  - 2 acres
- How much land would you like to be cultivating ?
  - 1,5 acres
- Minimum profitability needed: 50 000/2 = $25 000/ac
- Desired profitability level: 50 000/1.5 = $33 333/ac

Farm profitability target

- $33 333/ac
  - What does it mean per bedfoot or bedmeter?
- How wide are your beds?
  - 5 ft, 1 bedfoot = 5 ft²
  - 1 ac = 43563 ft²
  - 33 333$ / 43563 ft² * 5 ft² = 3.82$ / bedfoot

Target		bed spacing from center to center					
per acre	per ha	4 ft	5 ft	6 ft	1,2 m	1,5 m	1,8 m
		per bedfoot			per bed meter		
10 000,00 $	24 709,66 $	0,92 $	1,15 $	1,38 $	2,97 $	3,71 $	4,45 $
20 000,00 $	49 419,32 $	1,84 $	2,30 $	2,75 $	5,93 $	7,41 $	8,90 $
30 000,00 $	74 128,98 $	2,75 $	3,44 $	4,13 $	8,90 $	11,12 $	13,34 $
40 000,00 $	98 838,65 $	3,67 $	4,59 $	5,51 $	11,86 $	14,83 $	17,79 $
50 000,00 $	123 548,31 $	4,59 $	5,74 $	6,89 $	14,83 $	18,53 $	22,24 $
60 000,00 $	148 257,97 $	5,51 $	6,89 $	8,26 $	17,79 $	22,24 $	26,69 $
70 000,00 $	172 967,63 $	6,43 $	8,03 $	9,64 $	20,76 $	25,95 $	31,13 $
80 000,00 $	197 677,29 $	7,35 $	9,18 $	11,02 $	23,72 $	29,65 $	35,58 $
90 000,00 $	222 386,95 $	8,26 $	10,33 $	12,40 $	26,69 $	33,36 $	40,03 $
100 000,00 $	247 096,61 $	9,18 $	11,48 $	13,77 $	29,65 $	37,06 $	44,48 $

Exercice: Carrot
My Target : 5$ per bedfoot

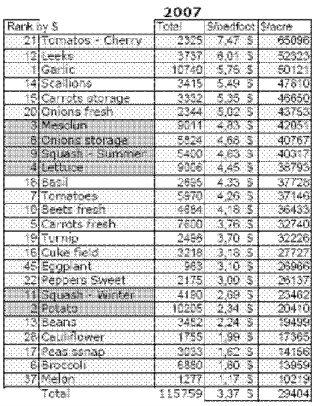
- Harvest of the day : 160 lbs
- Row harvested : 120 ft
- Rows per bed: 3 rows
- Price: 1,00$ / lb

160 lbs ÷ (120 ft ÷ 3) * 1.00$ = 4$ / bedfoot

Exercice: Carrot
My Target : 5$ per bedfoot

- Harvest of the day : 160 lbs
- Row harvested : 120 ft
- Rows per bed: 3 rows
- Price: 1,25$ / lb

160 lbs ÷ (120 ft ÷ 3) * 1.25$ = 5$ / bedfoot



2007

Rank by $		Total	$/bedfoot	$/acre
21	Tomatos - Cherry	2925	7,47 $	65096
12	Leeks	3757	6,01 $	52523
1	Garlic	10740	5,75 $	50121
14	Scallions	3415	5,49 $	47810
15	Carrots storage	3332	5,35 $	46650
20	Onions fresh	2344	5,02 $	43753
3	Mesclun	9011	4,83 $	42051
8	Onions storage	5524	4,66 $	40767
9	Squash - Summer	5400	4,63 $	40317
4	Lettuce	9006	4,45 $	38795
18	Basil	2655	4,33 $	37728
7	Tomatoes	5970	4,26 $	37146
10	Beets fresh	4884	4,18 $	36433
5	Carrots fresh	7800	3,76 $	32740
19	Turnip	2488	3,70 $	32226
16	Cuke field	3218	3,18 $	27727
45	Eggplant	983	3,10 $	26986
32	Peppers Sweet	2175	3,00 $	26137
11	Squash - Winter	4180	2,69 $	23462
2	Potato	10205	2,34 $	20410
13	Beans	3452	2,24 $	19499
28	Cauliflower	1755	1,99 $	17365
17	Peas snap	3033	1,62 $	14186
6	Broccoli	6880	1,80 $	13959
37	Melon	1277	1,17 $	10219
	Total	115759	3,37 $	29404

Classify your crops

- Helps to look at season
  - Why?
  - Absolute values meaningless without interpretation
- Compare between seasons

3 levels of analysis

- Theoretical production
- Quantities harvested
- Quantities sold

3 levels of analysis –Theoretical

- You don't have records…?
  - You can still use the analysis!
- Ex. Broccoli
  - Determine - Profitability target
  - Broccoli spacing
  - Rows per bed + bedwidth
  - Price of broccoli
- Is it profitable enough? What are your options?
  - price
  - Spacing
  - Number of rows
  - Double cropping
  - Intercropping
  - Accept it and compensate with other crops

3 levels of analysis – Qt Harvested

- Records needed
  - Harvested quantities
  - Bedlength harvested
- Can look at specific harvest day
  - Whole plant harvested (lettuce, carrot, brocco…)
- Records about the whole year
  - Crops harvested several times (cucumbers, tomatoes, etc.)
  - Analyse + compare specific plantings/waves
  - See how production varies with seasons / years

Summer 2007 page 2		Blk	Bed	Monday	Blk	Bed	Wednesda	Blk	Bed	Friday	Week Total
week of											
fruit - Sum Squas	Med										
fruit - Sum Squas	Sm-Patty Pan										
fruit - Sum Squas	Sm-Zuke										
fruit - Cukes	Field										
fruit - Cukes	Lemon										
fruit - Bean											
fruit - Bean											
fruit - Bean											
fruit - Bean											
fruit - Eggplant	Dusky (287 pl)										
fruit - Eggplant	Nadia (30 pl)										
fruit - Eggplant	Black Beauty (20 pl)										
fruit - Eggplant	Fairy tale (13 pl)										
fruit - Eggplant	others										
fruit - Peppers											
fruit - Peppers											
fruit - Peppers											
fruit - Peppers											
fruit - Peppers											
fruit - Peppers											
fruit - Peppers											
fruit - Peppers											
fruit - Peppers											
fruit - Tomatoes	New Girl										
fruit - Tomatoes	Matina										
fruit - Tomatoes	First Lady										
fruit - Tomatoes	Big Beef										
fruit - Tomatoes	Lemon Boy										
fruit - Tomatoes	Golden Girl										
fruit - Tomatoes	First in the Field										
fruit - Tomatoes	Pink Beauty										
fruit - Tomatoes	Cuoreone										

3 levels of analysis – Qt sold

- Where is your revenue coming from?
- Some crops produce really well but don't sell
  - Target marketing efforts on these crops
- Need to track all of your sales
  - CSA
  - Market
  - Others

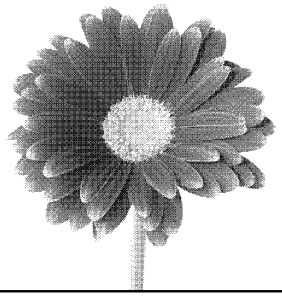
Beaconsfield	A	C	A	C	A	C	A	C	a	c
	juin-28	juil-05	juil-12	juil-19	juil-26	####	août-09	####	####	
arugula				1	1 x					
basil	1	1			0,33	0,5	0,2	0,25		1
beans 3/4 lb						0,5	1	1	1	1
beets					1	1			0,5	0,5
broccoli		1	1	1	1	1	1	1		0,5
cabbage					1	0,5		0,5 x		0,5
carrots								1	0,5	0,5
cauliflower						0,5		0,5		
coriander		0,5		0,33		0,25		0,25		
cucumber GH		0,33				1				
cucumber Fld				1			3	2	3	3
cucumber lemon								2		3
dill		0,5		0,33		0,25	0,2	0,25		
ed. Flowers						0,25				
eggplant						0,5	1	0,33	0,5	0,5
garlic									2	2
garlic scapes (6)	1	1	1		x					
gr. onions	1	1	1	1						
gr. Cherries									0,5	
hot peppers						0,25				
kale	1	1		x						
kohlrabi		1				1				
lemonbalm										
lettuce head	1	1	1	1			1	2	1	

2007
June

MARKET	
WEATHER	
DATE	

Caterogy	Vegetable	Unit	Start	End	price
leaf	Arugula	Bunch			$ 2,50
leaf	Chard	Bunch			$ 2,50
leaf	Kale	Bunch			$ 2,50
leaf	Lettuce	Unit			$ 2,50
leaf	Mesclun	1/2 lbs - 2L			$ 3,50
leaf	Mizuna	Bunch			$ 2,50
leaf	Mustard	Bunch			$ 2,50
leaf	Pac Choi	Bunch			$ 2,50
leaf	Spinach	1/2 lbs - 2L			$ 3,50
leaf	Stir fry mix	1/2 lbs - 2L			$ 3,50
leaf	Tat Tsoi	Bunch			$ 2,50
roots	Beets	Bunch			$ 3,00
roots	Carrots	Bunch			$ 2,50
roots	fresh garlic	bunch			$ 2,50
roots	Leeks (baby)	bunch			$ 3,00
roots	Pearl onions	Bunch			$ 2,50
roots	Radish	Bunch			$ 2,50
roots	Scallions	Bunch			$ 2,50
roots	Turnip	bunch			$ 2,50
veg	Broccoli	Unit			$ 2,50
veg	Kohlrabi	Unit			$ 1,50
fruit	cukes GH	fruit			$ 1,00
fruit	Peas	pt			$ 3,00
Herb	Basil	plant			$ 3,00
Herb	Cilantro	Bunch			$ 2,00
Herb	Dill	Bunch			$ 2,00

Profitability in Time



Profitability in Time

- For everyone who feels they don't have enough time to do everything they would like to do…
- Objective
  - Help you determine which crops take a lot of time to harvest vs what they are worth
- Very different concept from previous analysis

Basic Assumption
Average use of time on a veg farm

- 20% - Crop establishment
  - Greenhouse, seeding, transplanting
- 20% - Crop maintenance
  - Fertiliz, weeding, row cover, insects, etc.
- 20% - Harvest, washing, packing
- 20% - Marketing
- 20% - Administration + others

Formula 1

Gross sales ÷ total available hours = target $ / h

- Gross sales
- Total available hours
  - 2000 h per year = full time
  - Add all of your employees
- 40 000$ sales / 4000 hours = 10$/h

Formula 2

Target $/h ÷ % time = target harvest efficiency ($/h)

- 10 $/h / 20% = harvest 50$ /h

Formula 3

Units harvested * price ÷ harvest time = Actual harvest efficiency ($/h)

- 50 b. leeks * 2.5$ ÷ 3h = 41.66$ / hr

What can I do about it ?

- Change harvest team
- Change harvest/ wash/packing technique
- Increase price
- Solve insect/disease problems to make harvest faster
- I work with employees
- Learn techniques to motivate employees
- Etc. etc.

Profitability Analysis and Crop Planning

- Helps you make decisions about crops
  - Increase, decrease, stop
  - Balance profitability in time and space
- Use targets as average values for your farm
  - Some more, some less profitable is OK
- A word on crop failures

Reviewing your prices

- Should you feel bad about increasing prices?
  - It's your livelihood, don't undervalue your veggies
  - Customers get
    - Top quality and freshness
    - Contact with the source of their food
    - Reliable, dedicated, smiling

Summary - Profitability in Space

- Identify crops that occupy a lot of space in garden for little return
  - Reflect about strategies to improve efficiency
  - Address the weakest link
- Choose a profitability target to judge crops
- Classify crops according to their profitability
  - Identify priorities
- 3 ways to use it

Conclusion

- Tracking your gross sales and your profitability in time and space should help you
  - Make decisions on the farm
  - Choose your crop mix
  - Improve the profitability of your operation