Farm Layout

What will go where? 12

Creating a Farm Layout

What would our acre of land eventually look like? How would it be organized? How much land would be in production versus in fallow for the first season? These are the questions we struggled with over the course of the semester. During week 7, one of the faculty advisors came forward with a farm layout design option. It showed the 1 acre site divided equally into annual crop production area, future perennial production area and fallow cover cropped area. Which led to a discussion about options after which we had each student take a 8 1/2" by 11" sheet of paper and map out what they wanted to see on the farm. One of the students and myself each interpreted the "farm layout survey" results and made a list of what the class had come up with. Knowing full well that pinning down a farm layout design could be time intensive, the students self selected a group of students to take the survey results plus the results of the cropping systems and components assignments and come up with a proposal for the farm layout outside of class. That meeting was an intense one. The students were divided on many issues- should the beds be long and straight or adopt the keyhole design that maximizes growing area and minimizes pathways? Should the beds be oriented north south or east west? Which cropping systems should we try? Should we plan on mulching all the beds and with what? In the end we decided to try a little of everything. We ended up with 6 block areas 5 of which would have 7 north south oriented beds, 1 with keyhole beds which would be the Keyhole Block. 3 of the Blocks would utilize the Eliot Coleman Family Bed Rotation adapted from The New Organic Grower- with each block trying a different mulching regime- rye straw mulch, oat straw mulch and no mulch. One Block would be adapted from John Jeavon's temporal polyculture for feeding one family for a year. One Block would be designed using intensive companion plantings and intercropping of vegetables, herbs and flowers with ideas taken from multiple sources. The main idea was to try different things out the first season and see what we could learn, what would work and what wouldn't.

This section:

Initial Idea for Farm Layout

Future Perennial Area
Fallow Cover Crop Area
Production Area

Farm Layout Time Table	
Week of Class	Activities
5 (10 minutes)	Initial idea for Farm Layout shared by Paul
7 (15 minutes)	Farm layout visioning exercise w/ bubble diagrams
8 (15 minutes)	Summary of Student's Bubble Diagrams
10 (5 minutes)	Delegate Farm Layout Group to Meet outside of Class
Outside of Class between weeks 10 & 12 (2 hours)	Created Proposal for Farm Layout - general areas
12 (20 minutes)	Reveal Farm Layout proposal, discussion & approval & assign individuals to map out specific blocks
13 (15 minutes)	Block layouts shared for Jeavon's Polyculture Block, Coleman Rotation Blocks, and Companion Blocks
14 (10 minutes)	Block layout shared for Keyhole Block Current Farm Layout (handout)

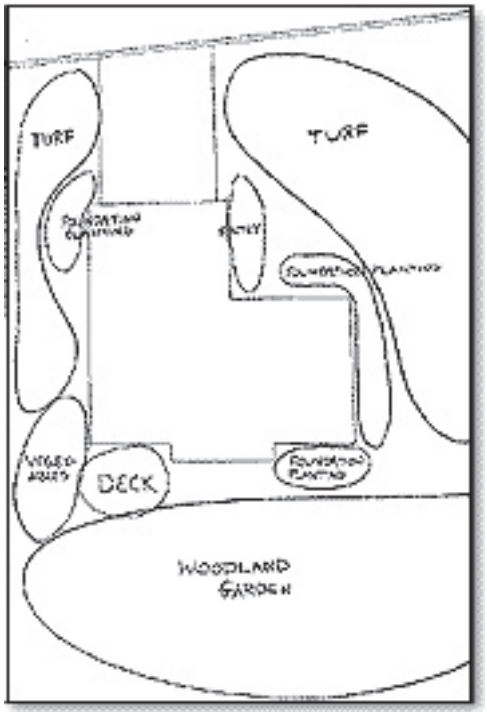
Bubble Diagram Exercise

From: http://www.sustland.umn.edu
Bubble Diagrams are used to define spaces within the landscape. Each space will receive specific attention during thee landscape design process. These are identified from information on the base plan and in the landscape design program. Spaces are frequently defined by the function that will take place in the,

Several bubble diagrams are completed before the best one is selected. A bubble diagram defined spaces that are identified on the base plan.

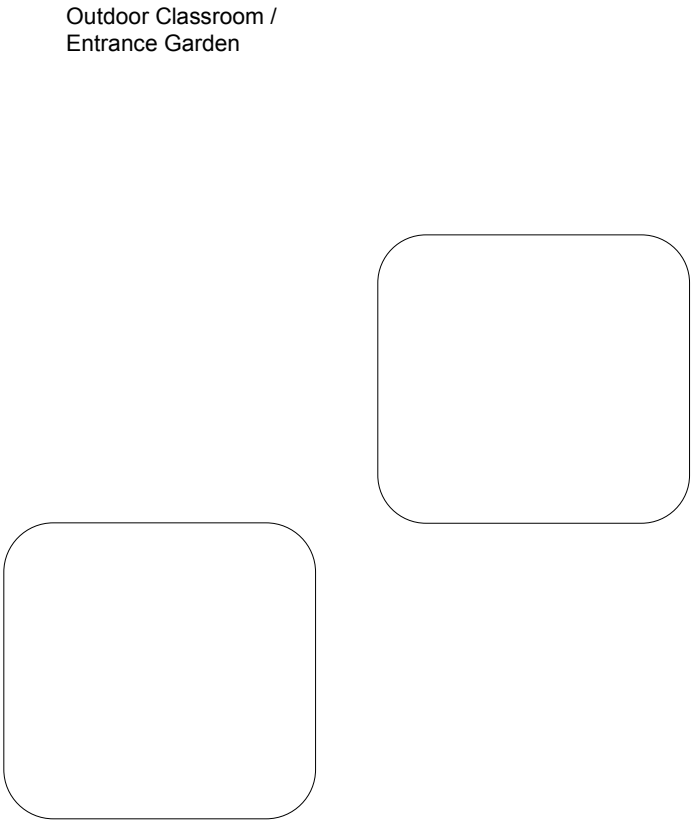
At first, bubbles have many shapes and sizes. They roughly correspond to what will eventually be a real space in the landscape, but they are not specific and are without detail. A designer may sketch many different diagrams before the best solution is determined.

Once a bubble diagram is chosen it will continue to be refined. The sizes and shapes will change. Some bubbles may divide into more than one while others will converge.



Example of a bubble diagram as it is used in landscape design.
From: http://www.sustland.umn.edu

Examples of Student's Bubble Diagrams



Farm Layout Survey Results:

From each participants bubble diagram we tallied both what was included and how much space (on the page) as a percentage of 100 was allocated for each component. Here are the results:

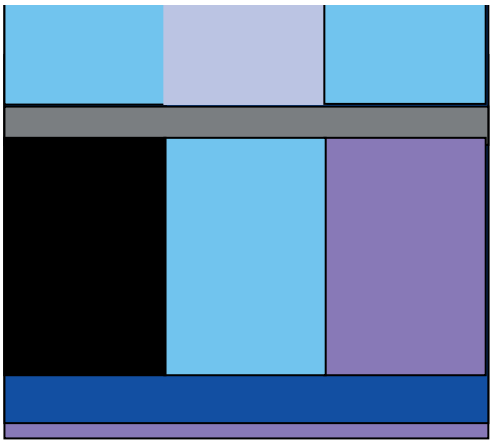
Component	Popularity (out of 17)
Vegetables	14
Woody Plants	12
Cover Crops	10
Compost	10
Research	10
Herbaceous Perennials	8
Herbs	7
Flowers	4
Prairie	4
Outdoor Classroom	4
Polyculture	3

Component	Average % Space on the Page
Vegetables	27
Cover Crops	17
Woody Plants	10
Research	7.8
Herbaceous Perennials	7.5
Polyculture	6.0
Herbs	3.4
Outdoor Classroom	2.8
Prairie	2.3
Flowers	2.2

* Compost not included

Other Components & Amenities Listed:
*Wild Foods / Native Market Garden
*Three Sisters Garden
*Fallow
*N fixing perennials
*Path for Irrigation Gun
*Season Extension
*Entrance Garden
*Display Booth / Educational Structures
*Chicken Tractor
*Market Stand
*Small Space Demonstration Garden

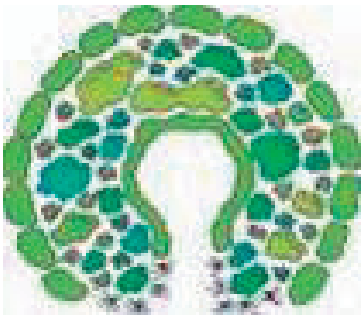
2005 Farm Layout Plan as of May / End of Class



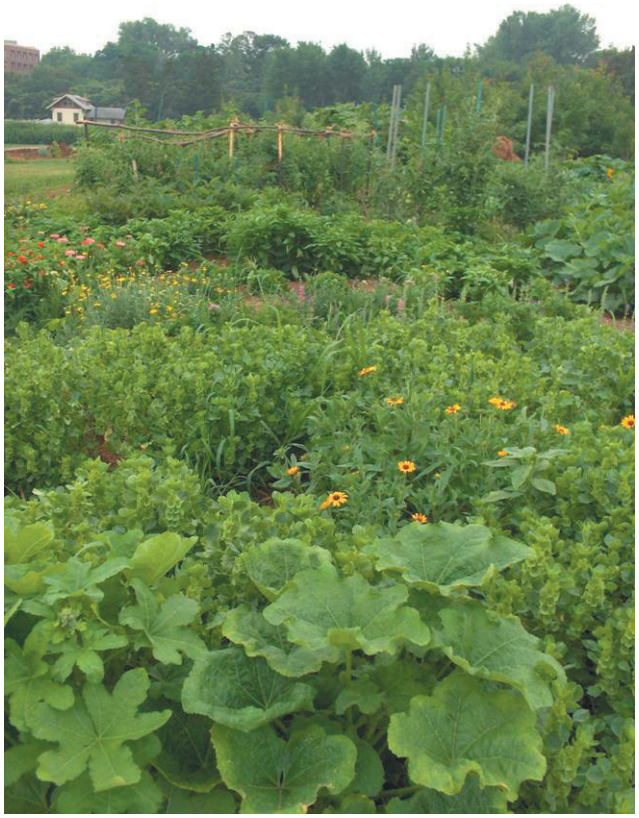
Block Layouts

This is roughly what the block layouts looked like the first season. The idea was to try different options and see what worked best. The Keyhole Block has keyhole beds- the other 3 block designs have seven 4 ft beds with 2 ft pathways in between. Over time the farm layout has gradually changed every year adapting what has and hasn't worked each year. For more details see section 15: What I learned.

Keyhole Block



(Left) Example of a Keyhole Bed- generally horseshoe shaped with an access path on one side. This shape is repeated throughout the keyhole block design.



(Above) The Keyhole Block in June after planting
(Right) The Keyhole Block in August overgrown note the paths are almost hard to find.

Companion Planting Block

(Above) Companion Block Planting: Chard, Marigolds, Summer Squash, Catmint, Nasturtiums, etc.

Biodiversity works! We learned a number of important things from the companion block. 1. Its labor intensive to plant something different every 6" down a bed.
2. By the end of the season harvesting is like treasure hunting. 3. Flowers and herbs make great beneficial insect habitat- which can benefit a larger area than the area that contains the flowers. Entomology students reported abnormally high rates of parasitizition of cabbage looper caterpillars all over our farm.

Key:	
ALY	Alyssum
CAL	Calendula
CAT	Catnip
COS	Cosmos
MAR	Marigold
NAS	Nasturtium

COS	kale-pepper-green onion	ALY	sunflower-melon-carrots-beets	CAT	beet-onion-carrot-parsley	MAR	radish-leaf lettuce-radish	NAS	corn-corn-soy-soy-corn-corn	CAL
CAT	deter. Tomato-basil-lettuce	CAL	broccoli-beets-radishes-beets-cucumbers	NAS	chard-kohlrabi-chard	ALY	pole beans-spinach-carrots	COS	broccoli-parsley-dill-cilantro-cabbage	MAR
CAL	Chard-cucumber-parsnip	MAR	corn-pole bean-summer squash	ALY	kale-pepper-cilantro	COS	indet.tomato-dry pole beans	ALY	sunflower-winter squash-parsley/ dill/chives	NAS
MAR	broccoli-parsley-dill-cilantro-cabbage	CAT	corn-bush bean-pumpkin	CAL	peas-potatoes-late head lettuce	COS	sunflower-winter squash-parsley/dill/ chives	NAS	Chard-cucumber-parsnip	ALY
NAS	peas-potatoes-late head lettuce	MAR	eggplant-bushbean-lettuce	COS	pole beans-spinach-carrots	ALY	corn -corn-soy-soy-corn-corn	CAT	eggplant-bushbean-lettuce	CAL
CAT	deter. Tomato-basil-spinach	ALY	corn-pole bean-summer squash	CAL	broccoli-beets-radishes-beets-cucumbers	MAR	chard-kohlrabi-chard	CAT	kale-pepper-parsley	NAS
ALY	beet-onion-carrot-parsley	CAT	radish-leaf lettuce-radish	MAR	indet.tomato-dry pole beans	NAS	corn-bush bean-pumpkin	CAL	sunflower-melons-carrots-beets	COS

Eliot Coleman Style Rotation Block Plan with Cover Crops

Bed #		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
1	Crop	Nightshades	Root Crops	Corn	Leafy Greens	Brassicas	Cucurbits	Legumes
	Cover Crop	rye	clover	clover	rye	clover	clover	vetch
2	Crop	Legumes	Nightshades	Root Crops	Corn	Leafy Greens	Brassicas	Cucurbits
	Cover Crop	vetch	rye	clover	clover	rye	clover	clover
3	Crop	Cucurbits	Legumes	Nightshades	Root Crops	Corn	Leafy Greens	Brassicas
	Cover Crop	clover	vetch	rye	clover	clover	rye	clover
4	Crop	Brassicas	Cucurbits	Legumes	Nightshades	Root Crops	Corn	Leafy Greens
	Cover Crop	clover	clover	vetch	rye	clover	clover	rye
5	Crop	Leafy Greens	Brassicas	Cucurbits	Legumes	Nightshades	Root Crops	Corn
	Cover Crop	rye	clover	clover	vetch	rye	clover	clover
6	Crop	Corn	Leafy Greens	Brassicas	Cucurbits	Legumes	Nightshades	Root Crops
	Cover Crop	clover	rye	clover	clover	vetch	rye	clover
7	Crop	Root Crops	Corn	Leafy Greens	Brassicas	Cucurbits	Legumes	Nightshades
	Cover Crop	clover	clover	rye	clover	clover	vetch	rye

Simple design, easy to plant and harvest. The Coleman Block beds are 4' beds of any combination of members of any one plant family: Brassicas, Nightshades, Cucurbits, Legumes, Root Crops, Sweet Corn, and Leafy Greens.

(Below) The Leafy Green Bed of the Coleman Rotation Block
(Right) The Coleman Block in August 2005

To mulch or not to mulch? In 2005 we used the Coleman Rotation Plan on three blocks two with mulch one without. By the end of July we had learned how impossible keeping weeds out without mulch was and we ended up mulching the third block with Rye Straw.

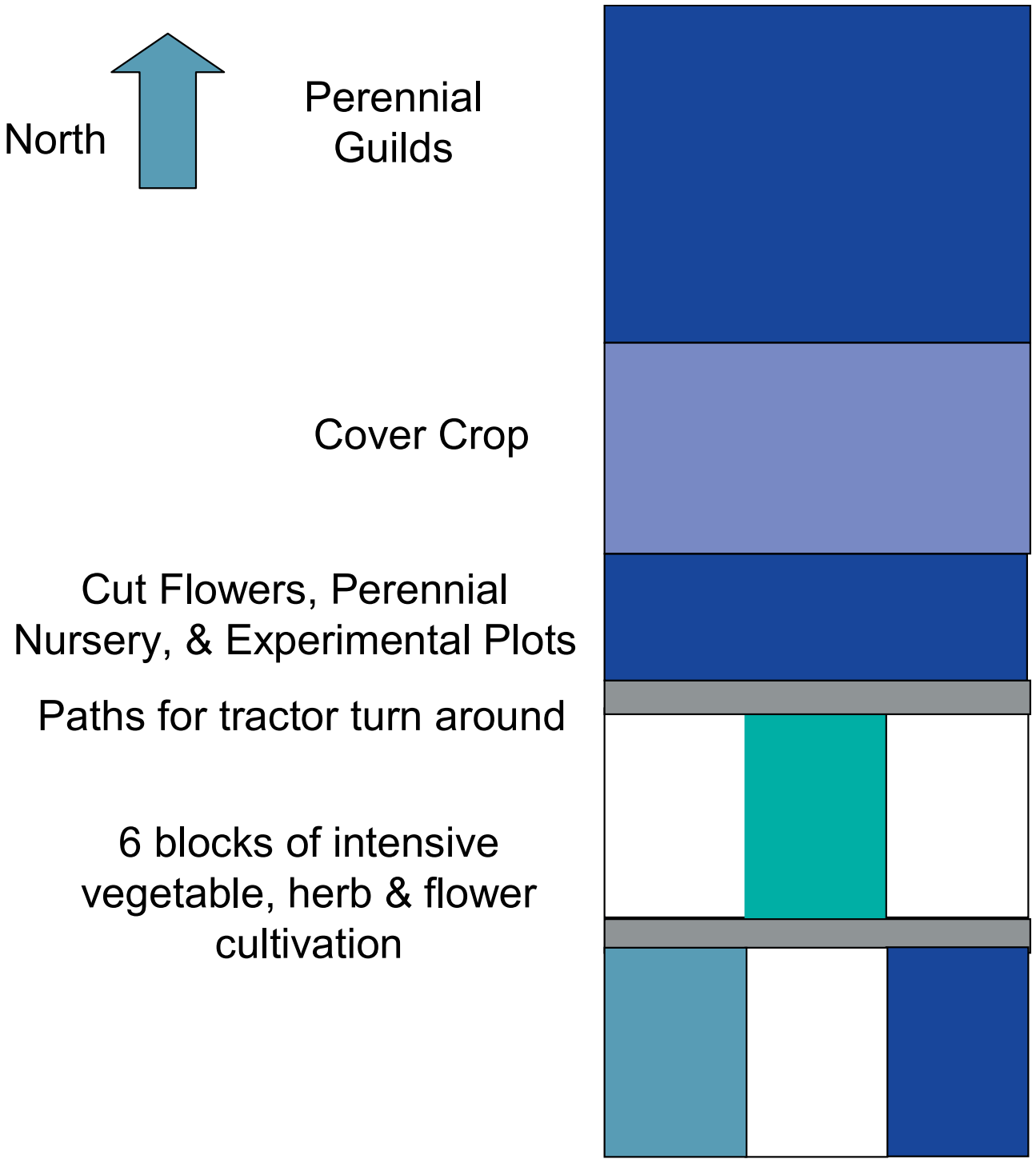
Jeavons Temporal Polyculture Block

1 Melons	Melons- Green Nutmeg Cantaloupe			Water Melon- All Sweet	
2 Potatoes & Spinach	Potato- German Butterball- (9)			Banana Potato	
	Spinach- Bloomsburg (centre row)			Spinach- Bloomsburg (centre row)	
	Potato- German Butterball- (9)			Banana Potato	
3 Corn & Squash	Corn -(2 rows) & Squash- Sibley- (10)				
4 Tomatoes	Roman Candle- (4)	Cherry- (6)	Green Zebra- (8)	Cilantro-Catnip-Chives-Basil	Eggplant- Black Beauty (3 rows x 8)
	Parsley- Italian Flat Leaf (centre row)				
	Brandywine- (6)	Roman Candle- (2)	Beef Steak- (5)	Silver Fir Tree- (6)	
5 Peas-Carrot-Radish-Beets	Peas- Sugar Soup (2 rows)			Carrot- Chantenaux	Beet- Chioggia
				Carrot- Denvers	Radish / Swiss Chord- Bright Lights
				Carrot- Chantenaux	
6 Brassicas-Beans	Aromic Defense	Cabbage-Red Dragonhead- (4 rows) / Marjoram- Sweet Sage- Broadleaf Oregano- Greek (4 Columns)	Lettuce- Baby Oakleaf - (5 rows x 9)	Lettuce- Rouge De-Granoblouse - (3 rows x 15)	Lettuce- Rubens Red - (2 rows) / Butter Crunch -(2 rows) / Onions- Ailsa Craig - (6 rows x 6)
				Barcarole - (2 rows x 15)	Rouge De-Gran -(2 rows)
7 Peppers-Potatoes	Pepper- Calif. Wonder - (3 rows x 6) & Jalapeno -(6)	Zucchini- Fordhook -(6) & Straight 8 -(7)	Bean- Dragons Tongue	Sweet Kale - (4 rows x 5)	Pumpkins- Howden -(2) & Mammoth- Velvet Queen- Vanilla Ice - (1 column x 6)
			Bean- Espada Garden		

Jeavons Vs. Coleman? Our analysis of the two block style rotations was that they ended up being very similar- so much so that we decided not to repeat the same blocks in 2006- we kept one of the 3 Coleman blocks and left the Jeavons block behind.

(Above) The Jeavon Temporal Polyculture Block: Watermelons, Potatoes, Corn and Squash. Note that members of the cucurbit family squash, melons, ect will not be contained in a 4 ft bed they will sprawl to at least 6 ft if given the chance

Actual 2005 Layout



More room needed for research! In 2005 we ended up needing additional room for cut flower production, a cover crop experiment and a perennial nursery area while we planned out our perennial guild area.