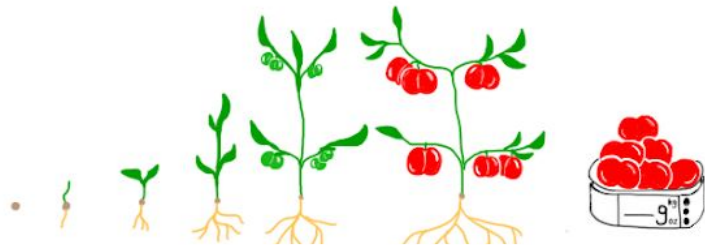


# Survival kit

Seeds to start a farm

*Kit includes:*

Seeds and Booklet of Gardening Strategies



Contents of booklet:

## Seeds

When to plant seeds  
Start seeds  
Make potting soil

## Garden

Prep a garden  
Water crops  
Save seeds  
Make compost  
Make compost tea  
Grow plants in water

## Metrics

Plants per square meter  
Harvest per crop  
Market value per crop



[www.permaville.com](http://www.permaville.com)

*Seeds include:* 32 edible varieties of plants  
Enough seeds to fill four square meters per crop

### Stalk fruits

- Tomato, Roma 20 seeds
- Tomato, Brandywine 20 seeds
- Pepper bell, Yellow 20 seeds
- Hot pepper, Jalapeno 20 seeds
- Corn, Golden Bantam 20 seeds
- Broccoli, Calabrese 38 seeds
- Cauliflower, Snowball 38 seeds

### Ground fruits

- Cucumber 20 seeds
- Squash, Crookneck 8 seeds
- Pumpkin, Cornfield 8 seeds
- Melon, Amish 8 seeds

### Leaves

- Spinach, Bloomsdale 38 seeds
- Kale, Lacinato 38 seeds
- Head lettuce, Buttercrunch 200 seeds
- Leaf lettuce, Salad mix 640 seeds
- Arugula, Arugula 160 seeds
- Cilantro, Cilantro 38 seeds
- Celery, Utah tall 38 seeds

### Roots

- Onion, Yellow of Parma 160 seeds
- Beets, Red 80 seeds
- Carrots, Scarlet Nantes 160 seeds
- Turnips Purple Globe 80 seeds
- Radish, Red Round 600 seeds

### Legumes

- Beans, Green 38 seeds
- Beans, Kidney 38 seeds
- Beans, Lima 38 seeds
- Peas, Sugar Snap 38 seeds

### Culinary herbs

- Basil, Genovese 38 seeds
- Dill, Bouquet 38 seeds
- Mint 38 seeds

### Flower mix

160 seeds



# Garden Strategies Booklet

Booklet includes strategies to:

## Seeds

- When to plant seeds
- Start seeds
- Make potting soil

## Garden

- Prep a garden
- Water crops
- Save seeds
- Make compost
- Make compost tea
- Grow plants in water

## Metrics

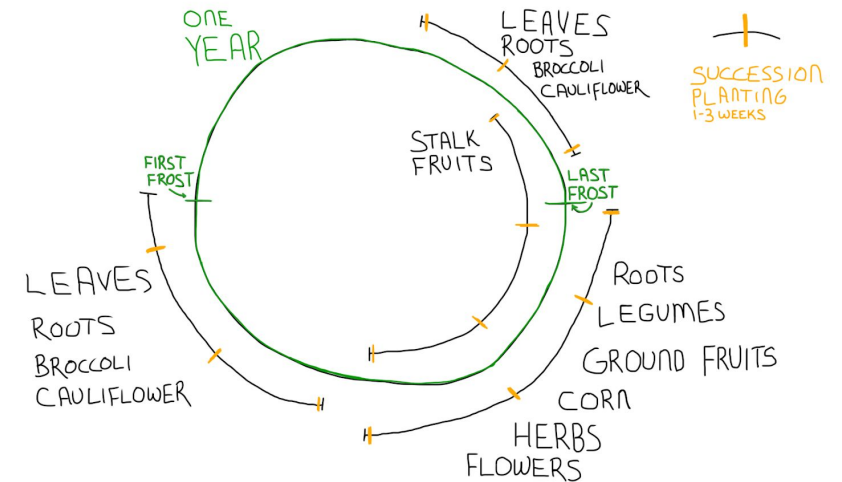
- Plants per square meter
- Harvest per crop
- Market value per crop



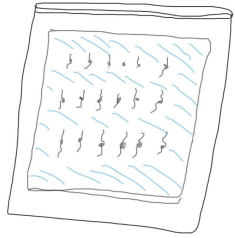
[www.permaville.com](http://www.permaville.com)

## Planting strategies

When to plant seeds



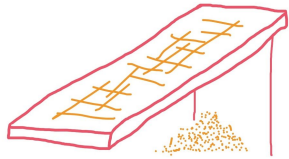
## Starting seeds



For tomatoes, peppers, spinach, kale, broccoli, cauliflower, celery, cilantro, beets, turnips, **germinate seeds in paper towels.**

After seeds sprout, plant in cups, trays or soil blocks...

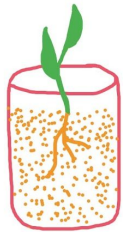
## Potting soil



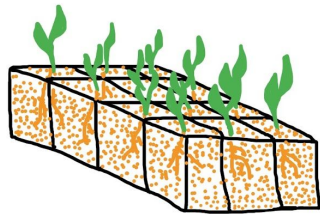
Sift compost, manure, sand and or perlite vermiculite, mix equal parts of each material

Fill cups, trays or soil blocks with loose potting soil

## Planting and transplanting



Cups

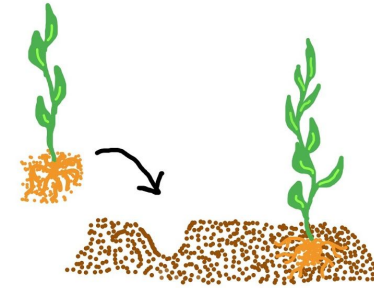


Trays

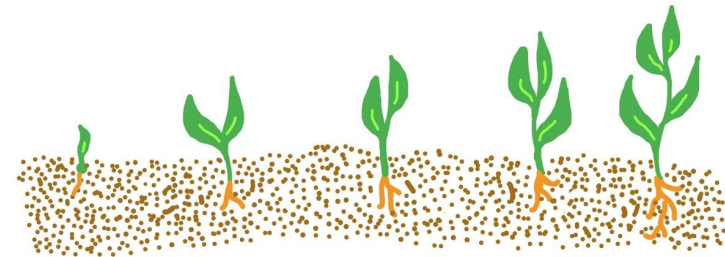


Soil blocks

Plant head lettuce, onion, basil, mint, dill, and flower seeds **directly in cups trays or soil blocks**



**Transplanting +** Transplant seedlings to garden when they are 10-15cm tall, after 2-4 weeks



**Direct seeding +** Plant radishes, carrots, leaf lettuce, cucumbers, corn, squash, cantaloupe, watermelons, pumpkins, beans and peas **directly in garden**

## Preparing the garden

Garden space should be flat, in the sun receiving 6-8 hours of sunlight, with access to water



Tilled bed  
Till soil, add compost



Raised bed  
Layer compost 20-30 cm

## Compost

Green materials + brown materials + water = compost

Compost = Nutrient rich soil

Organic materials good for compost:

### Green (nitrogen)

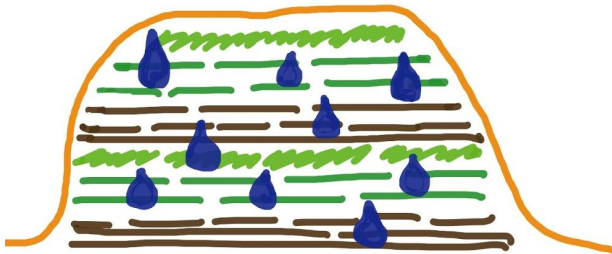
Green leaves  
Vegetable scraps  
Manure  
Grass clipping  
Coffee grounds  
Weeds.

### Brown (carbon)

Brown leaves  
Cardboard  
BW newspaper  
Branches  
Straw  
Wood chips

### Making a compost pile

1. Layer 50% green and 50% brown material
2. Water each layer
3. Cover with a plastic tarp
4. Flip pile after four days and every other day for **a month**
5. Add water as needed each time the pile is flipped



*Moisture content* + when you squeeze a handful of compost you want a little water to run down your arm

## Pests

Big pests, deer, coyote

- Fence, wire, plastic, electric

Mid-size pests, rodents, gophers, moles groundhogs, mice

- Bury fence
- Cats, chickens eat rodents,
- Play music and put coffee grounds outside rodent holes
- Traps

Small pests, slugs caterpillars

Tiny pests, aphids mites ants

Micro pests, mold mildew fungus

- For all, use spray (see fertilizers)
- Air between plants prevents anaerobic growth

Airborne pests

- Row covers, hoophouses

Soilborne pests

- Fabric

## Fertilizer

All-purpose fertilizer made with common household items

Fill a bucket with water with an air pump, add ingredients as needed.

Makes a tea to apply to soil and plants.

### Ingredients and benefits

1. Baking soda

Baking soda rids fungus (also stimulates flowering and deodorizes compost piles)

2. Lemon juice
3. Onion hot pepper and garlic

Rids mold mildew

4. Diatomaceous earth, rids ants
5. Rock dust, adds minerals
6. Apple cider vinegar
7. Olive oil

## Tending

### Weeding

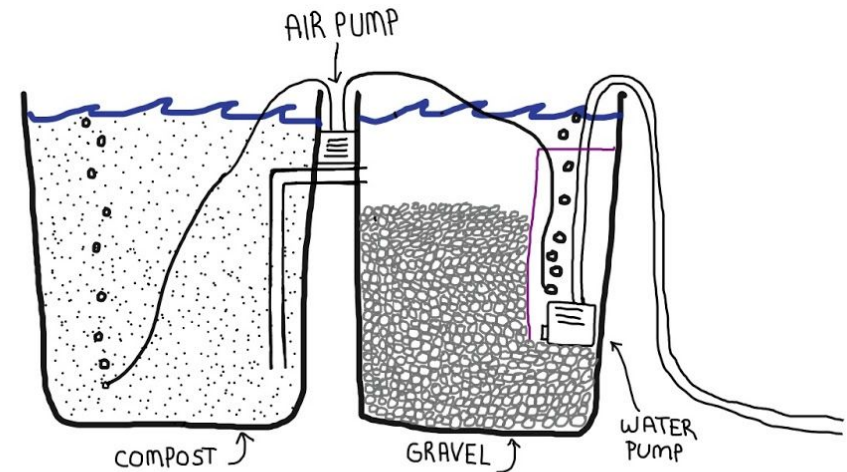
- Lay ground cover tarps
- Start crops in the greenhouse to give them a head start to weeds
- Till right before planting
- Weed intermittently while tending

*Sketch of planting tall transplants,  
part with weed barrier, part with soil, weeding by hand*

## Compost tea

Water + compost + air = compost tea

Compost tea is nutrient rich fertilizer and water  
Irrigates and fertilizes crops, easier for plants to absorb nutrients



### Materials

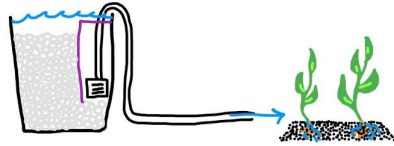
- Air pump
- Water pump
- Container
- PVC pipe
- Gravel
- Steady supply of compost, add fresh compost every other day

### How it works

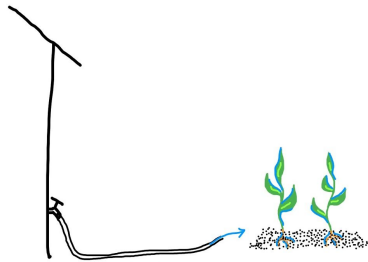
- 1) Air pump increases oxygen in water, cultivates microbes,
- 2) Water drips into second container filled with gravel
- 3) Gravel filters sediments out of the water
- 4) Water pump pumps water out of the second container
- 5) Inlet pipe returns water to repeat the process
- 6) Add compost and compostable materials daily or as needed

## Watering

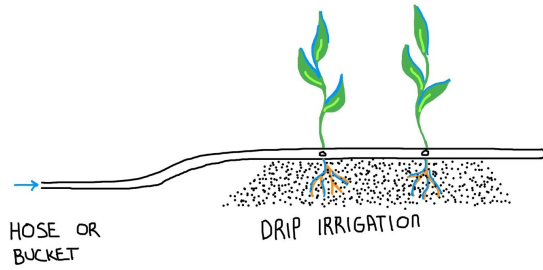
Strategies for irrigating crops



BUCKET AND HOSE

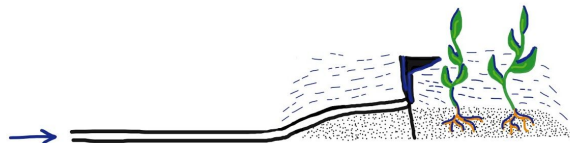


HOSE



HOSE OR BUCKET

DRIP IRRIGATION

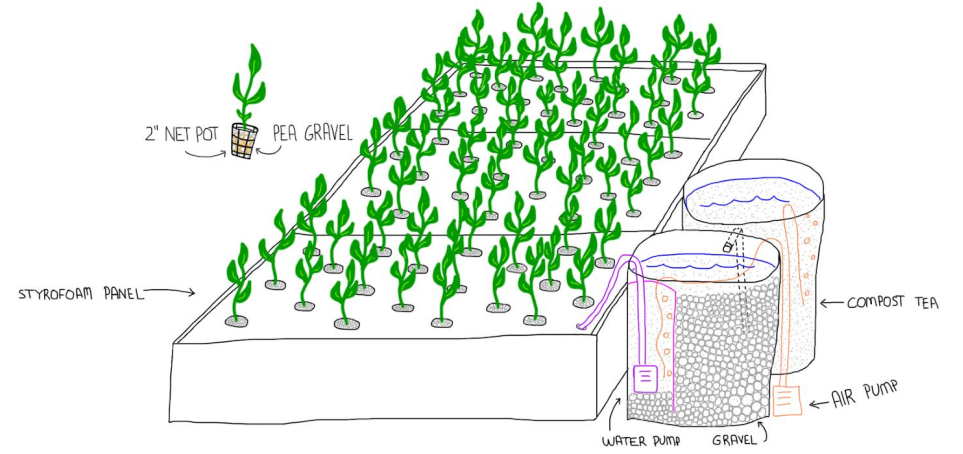


HOSE OR BUCKET

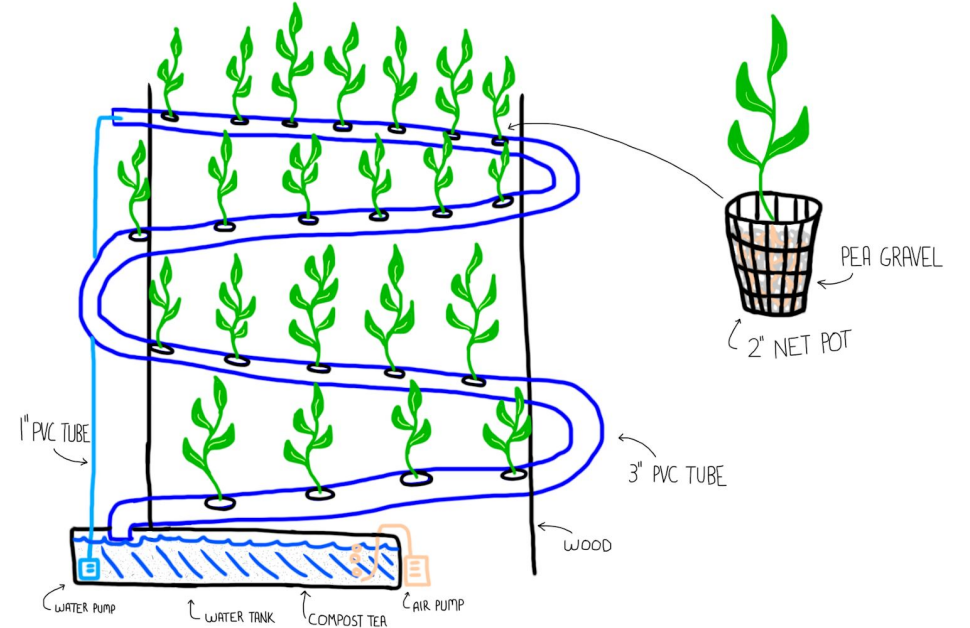
SPRINKLERS

## Hydroponics

Growing plants in water



Horizontal hydroponics "Pond garden"



Vertical hydroponics "Pipe Garden"

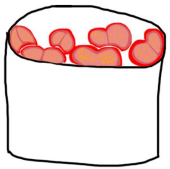
## Seed saving

Save about 10% of crops for seed

Strategies for **fruiting, gourd and legume crops**:



Pull fruits when plants are mature



Cut into pieces and leave to dry in a bucket for 2-4 weeks

Collect seeds

Strategies for **leaf and root crops**:



Leave plants until they grow seeds

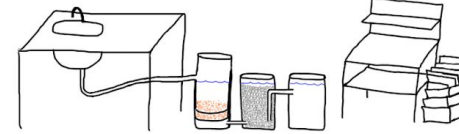
Leave seeds to dry on the plant

Carefully remove earlier if in a windy area

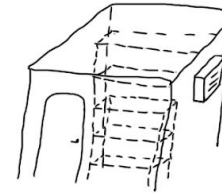
Place seeds on a drying rack or in a bucket in a dark, well ventilated space for 2 weeks

## Post-harvest

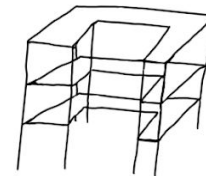
Preparing crops for consumption or sale



Wash pack areas  
Includes wash basin, greywater,  
packing and labeling table



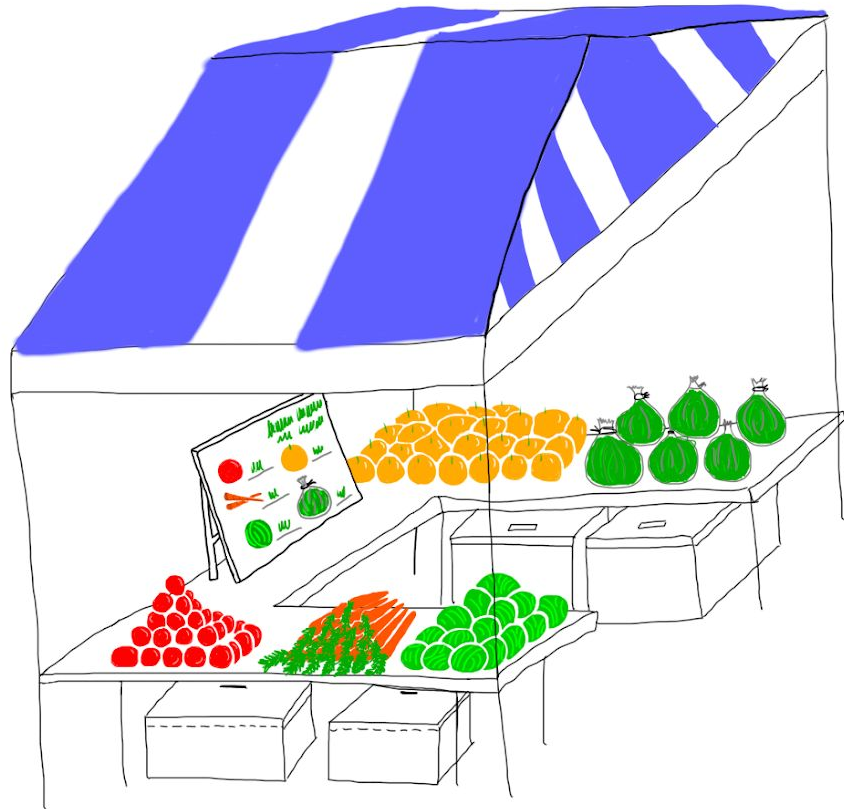
Cold storage, fridge with insulated walls and air conditioning unit



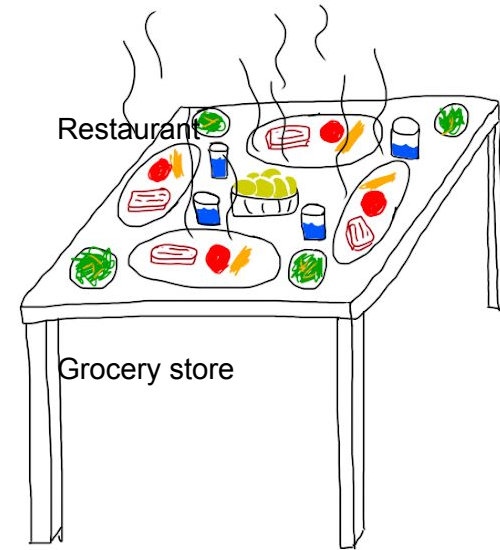
Dry storage, shelving

## Sales

Places to sell produce locally

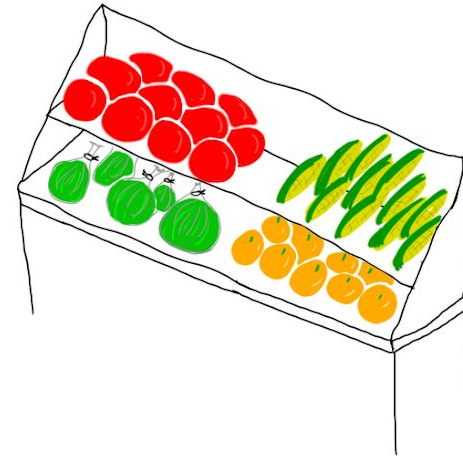


Farmers market



Restaurant

Grocery store

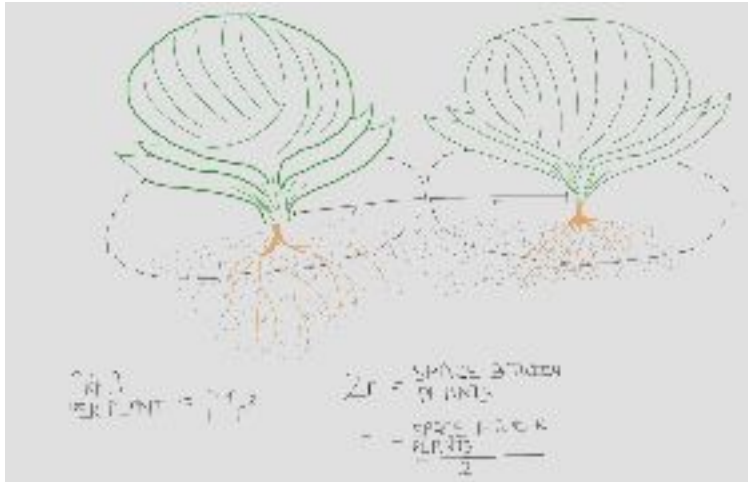




## Metrics

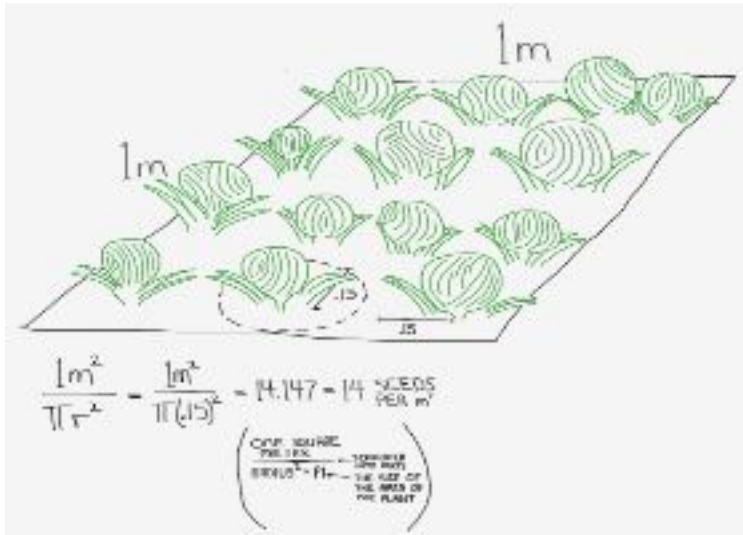
### Radius per crop

Radius of the area needed grow each crop



### Plants per square meter

1 square meter / area per crop = Number of plants per square meter



Seeds per crop in pack = 4sq meters \* seeds per crop per square meter

## Totals per crop

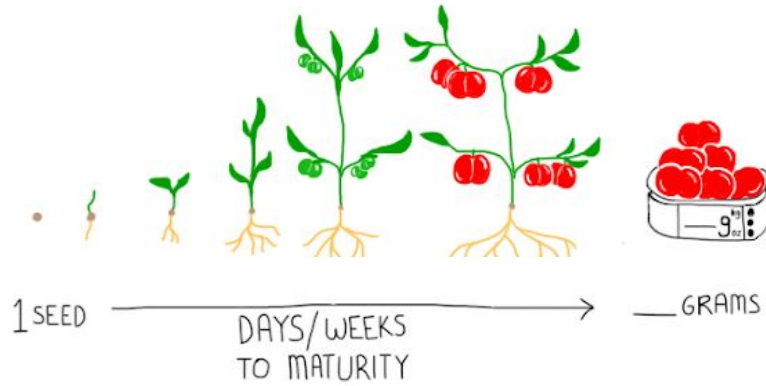
Optimal radius per crop / Growing area / Plants per square meter

Crop	Radius per crop (in m)	Growing area (r <sup>2</sup> x pi)	Plants per m <sup>2</sup>
<b>Stem fruit</b>			
• Tomato, Roma	0.3		
• Tomato, Brandywine	0.3		
• Pepper bell, Yellow	0.3		
• Hot pepper, Jalepeno	0.3		
• Corn, Golden Bantam	0.3		
• Broccoli, Calabrese.	0.2		
• Cauliflower, Snowball	0.2		
<b>Ground fruit</b>			
• Cucumber	0.3		
• Squash, Crookneck	0.8		
• Pumpkin, Cornfield	0.8		
• Melon, Amish	0.8		
<b>Leaves</b>			
• Spinach, Bloomsdale	0.2		
• Kale, Lacinato	0.2		
• Head lettuce, Buttercrunch	0.15		
• Leaf lettuce, Salad mix	0.05		
• Arugula, Arugula	0.1		
• Cilantro, Cilantro	0.2		
• Celery, Utah tall	0.2		
<b>Roots</b>			
• Onion, Yellow of Parma	0.1		
• Beets, Red	0.15		
• Carrots, Scarlet Nantes	0.1		
• Turnips Purple Globe	0.15		
• Radish, Red Round	0.05		
<b>Legumes</b>			
• Beans, Green	0.2		
• Beans, Soy	0.2		
• Beans, Lima	0.2		
• Peas, Sugar Snap	0.2		
<b>Culinary herbs</b>			
• Basil, Genovese	0.2		
• Dill, Bouquet	0.2		
• Mint	0.2		
Flower mix	0.1		

## Crop yield

### Yield per crop

Yield per plant \* number of plants



### Projected return

Market value per gram (estimated) x yield per plant x number of plants

### Return per square meter

Return / 4

Successions. plant multiple successions for each crop.

Days/weeks to maturity, from seed to harvest. Efficient farming may reduce the days to maturity. This may increase the number of successions. More successions lead to exponential farm growth.

## Yield per crop / Yield per 4 square meters

Crop	Yield per plant (in g) (estimated)	Yield per 4 sq m (in kg)
Tomato, Roma	6000	50.93
Tomato, Brandywine	6000	50.93
Bell pepper, Yellow	4000	33.95
Hot pepper, Jalapeno	1000	8.49
Corn, Golden Bantam	1000	8.49
Broccoli, Calabrese	600	11.46
Cauliflower, Snowball	600	11.46
Cucumber, Early Fortune	5000	42.44
Squash, Crookneck	8000	9.55
Pumpkin, Cornfield	10000	11.94
Melon, Petite Gris	8000	9.55
Watermelon, Stone Mountain	8000	9.55
Leaf lettuce, Salad mix	200	61.12
Head Lettuce, Oakleaf	800	27.16
Spinach, Bloomsdale.	500	9.55
Arugula	300	22.92
Kale, Lacinato	500	9.55
Cilantro	400	7.64
Celery	1000	19.10
Onion, Yellow of Parma	300	22.92
Carrots, Scarlet Nantes	300	22.92
Beets, Bulls Blood	300	10.19
Radish, Early Scarlet	100	30.56
Turnip, Purple Globe	300	10.19
Bean, Green provider	2000	38.20
Bean, Agate Soy	2000	38.20
Bean, Lima Henderson Bush	2000	38.20
Peas, Amish Snap	2000	38.20
Basil, Genovese	2000	38.20
Dill, Bouquet	500	9.55
Chives, Garlic	500	38.20
Flower mix	500	22.92

**Total projected crop yield from seeds in pack 597 kg**

## Market price\* / Return per four square meters

\*Price = Estimates shown in per sale unit and kg. Based on typical us farmers markets. Prices vary.

\*\*Return = Price per gram x yield per plant (in g) x number of plants for 4 sq meter

Crop	Price	Return (in usd))
Tomato, Roma	2 / lb, 4.41 / kg	186.97
Tomato, Brandywine	2 / lb, 4.41 / kg	186.97
Bell pepper, Golden Treasure	2 / lb, 4.41 / kg	149.57
Hot pepper, Jalapeno	2 / pint, 16.00 / kg	135.81
Corn, Golden Bantam	1.5 / lb, 3.30 / kg	28.04
Broccoli, Calabrese	3 / lb, 6.61 / kg	75.72
Cauliflower, Snowball	3 / lb, 6.61 / kg	75.72
Cucumber, Early Fortune	2 / lb, 4.41 / kg	149.57
Squash, Crookneck	2 / lb, 4.41 / kg	42.07
Pumpkin, Cornfield	1 / lb, 2.20 / kg	26.29
Melon, Petite Gris	0.5 / lb, 1.10 / kg	10.52
Watermelon, Stone Mountain	0.5 / lb, 1.10 / kg	10.52
Spinach, Bloomsdale	2.5 / bunch, 10.00 / kg	95.49
Kale, Lacinato	2.5 / bunch, 10.00 / kg	95.49
Head Lettuce, Oakleaf	2.5 / lb, 5.51 / kg	149.57
Leaf lettuce, Salad mix	2.5 / bag, 10.00 / kg	611.16
Arugula	2.5 / bunch, 10.00 / kg	229.18
Cilantro	2.5 / bunch, 10.00 / kg	76.39
Celery	2.5 / bunch, 8.33 / kg	159.16
Onion, Yellow of Parma	1 / lb, 2.20 / kg	50.48
Beets, Bulls Blood	2 / bunch, 4.00 / kg	40.74
Carrots, Scarlet Nantes	2.5 / bunch, 8.33 / kg	190.99
Turnip, Purple Globe	2 / bunch, 5.00 / kg	40.74
Radish, Early Scarlet	2 / bunch, 20.00 / kg	407.44
Bean, Green Provider	2 / lb, 4.41 / kg	84.13
Bean, Agate Soybean	2 / lb, 4.41 / kg	84.13
Bean, Lima Henderson Bush	2 / lb, 4.41 / kg	84.13
Peas, Amish Snap	2 / lb, 4.41 / kg	84.13
Basil, Genovese	2 / bunch, 4.41 / kg	229.18
Dill, Bouquet	2 / bunch, 4.41 / kg	190.99
Chives, Garlic	2 / bunch, 4.41 / kg	122.23
Flower mix	2 / bunch, 4.41 / kg	122.23

**Total projected market return from seeds in pack 4256 usd**

## Goals

### General goals

- Increase yield per plant, in grams and return
- Increase number of successions
- Decrease days to maturity

### Strategies to achieve goals

- Implement strategies of efficient farming

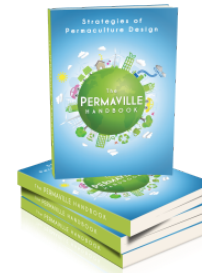
*For more strategies of efficient farming, visit these resources:*

Online course (follow link for 10 dollar coupon)

- In English: [www.udemy.com/permaville-course](http://www.udemy.com/permaville-course)
- In Spanish: [www.udemy.com/la-vida-sustentable](http://www.udemy.com/la-vida-sustentable)

### Permaville book

- 180 pages of farm strategies arranged by area of a farm
- Free PDF when you sign up for the mailing list on [permaville.com](http://permaville.com)



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