Indoor Vegetable Gardening

including

Indoor Seed Starting

Some Things You May Not Know

- Most indoor growing systems are adaptable to odd shapes
- When set up correctly, more economical and efficient than the traditional outdoor garden
- Fruits and vegetables grown indoors have been shown to contain as much and more vitamins and often taste better than traditional soil grown produce.
- Larger numbers of plants grown in a smaller space
- Time spent to weed and till soil is eliminated.
- Indoor vegetable gardens add beauty to your home

What's Needed for Growing Vegetables Indoors?

1. Light
2. Temperature
3. Humidity
4. Water
5. Media

and maybe . . .

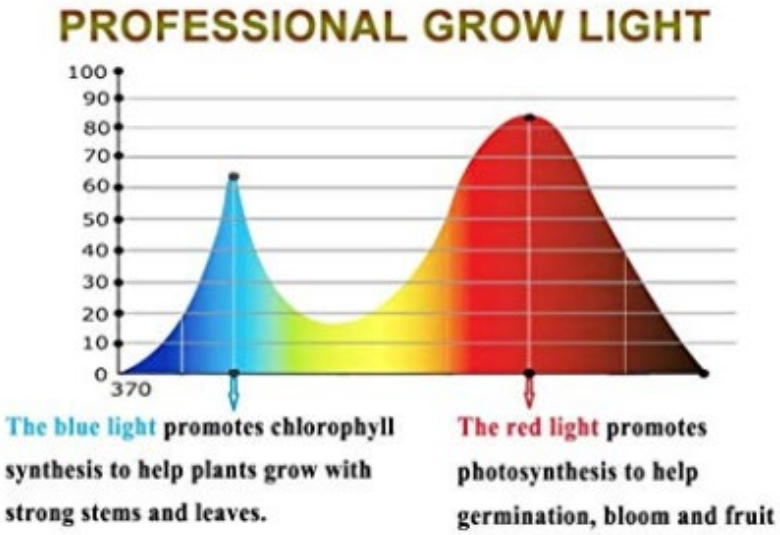
6. Pollination

All Light Isn't The Same

- Lumens versus PAR
- Lumens - measurement of light output visible to the human eye
- PAR – Photosynthetic Active Radiation - the light radiation which plants "see" to photosynthesize
- Window light isn't adequate to grow most edibles
  - Low E Windows are not a factor
- Regular indoor lights have narrow spectral wavelengths
- Plants have photoreceptors that absorb specific wavelengths of light.

The Blue and The Red

- Blue light
  - Regulates plant enzymes & regulates the respiratory process
  - Encourages strong leaf production
- Red light
  - Stimulates leaf and stem growth
  - Assists in germination, blooming and fruiting



Buying Plant Lights

Opus Grow Real Light Box

Coltura LED Grow Frame

The Long & The Short of It

Long Day Plants (Day Length > 12 hrs)		Short Day Plants (Day Length < 12 hrs)	Day Neutral Plants (Ignores Day Length)
artichoke	lettuce	black-eyed peas	apples
barley	oats	blueberries	apricots
beets	onions	cotton	Brussels sprouts
carrots	peas	mung beans	cabbage
cilantro	potatoes	raspberries	corn
clover	radishes	rice	cucumbers
dill	rye grass	soy beans	kale
fennel	spinach	sugar cane	peaches
flax	turnips	sweet potatoes	pears
lentil	wheat		tomatoes

Air - Temperature

- The optimal temp for air and soil is 65° to 75°F
- Air circulation is important
- Don’t place plants directly under heating-cooling vents
- Plants need humidity

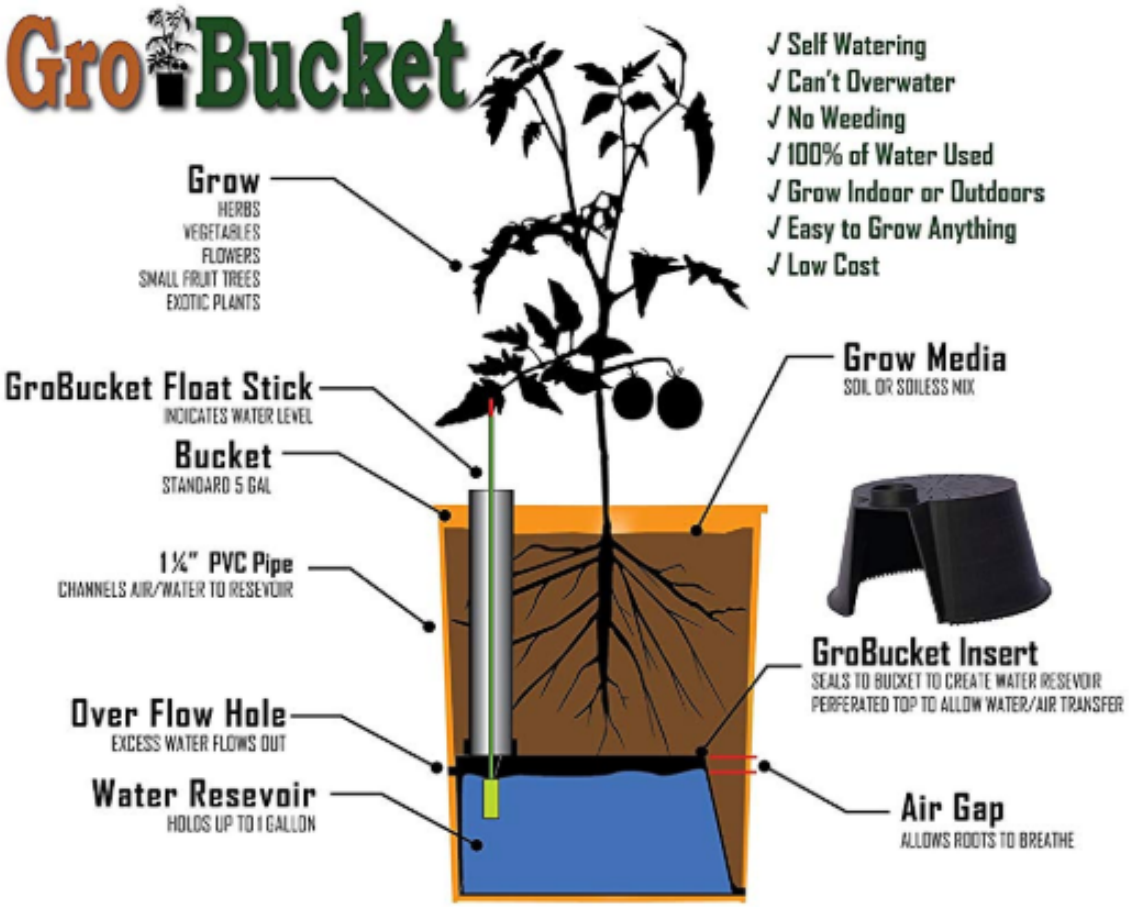
Humidity

- Increase humidity by:
  - Misting
  - Place a tray of water near your plant
  - Place plants close together to create a more humid microenvironment
  - Run a humidifier
- Signs of low humidity
  - Tips of leaves turning brown
  - Plants look withered or puckered
  - Plants lose their leaves

Water

- Best sources: Rainwater, Well Water, Bottled Water
- Fluorine & Chlorine – let tap water sit overnight
- Room Temperature is best (65° to 75°F)
- Cold can throw plants into a “winter mode”
- Heat can kill roots or cause plants to go into shock
- Resist the temptation to overwater
- Dry to a depth of at least ½ to an inch

Watering Systems



Self Watering Pots

Watering Systems

Stakes, Globes & Spikes

Growing Media

Growing media are materials that plants grow in.

Not suitable for indoors:

- **Garden soil**
- **Bark and wood mulch**

Growing Media

Suitable for indoors:

- **Commercial mixes (potting soil, planting mix)**
- **Soilless Mixes (typically contain mix of sphagnum peat moss, perlite, vermiculite, composted bark, compost coconut coir**
- **Compost**

Pollination

- Gently shaking or vibrating the plants/flowers daily for a week after flowers appear
- Directing a fan at your garden.
- Use a cotton swab or small artists paintbrush to move pollen from the male flowers to the female flowers.

Insects

Common insects that attack indoor plants:

- **Ants**
- **Aphids**
- **Fungus Gnat**
- **Spider Mite**
- **Leafminer**
- **Mealybug**
- **Root aphid**
- **Thrips**
- **Scale**
- **Springtail**
- **Whitefly**

Remedies for Insects

- Neem oil or Insecticidal soap
- Pick off
- Tap, brush, crush
- 1 part Hydrogen peroxide, 3 parts water
- Mite predators

Systems

Hydroponic

Aeroponic

Aquaponic

Aerogardens

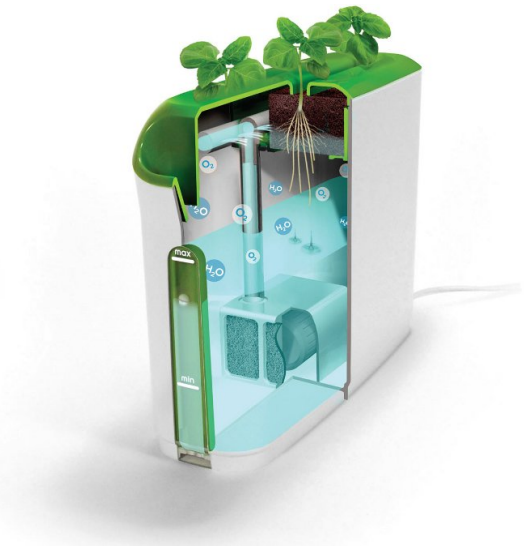
Power Plant Professional

Vaxer grow kit from Ikea

Krydda Cultivation from Ikea

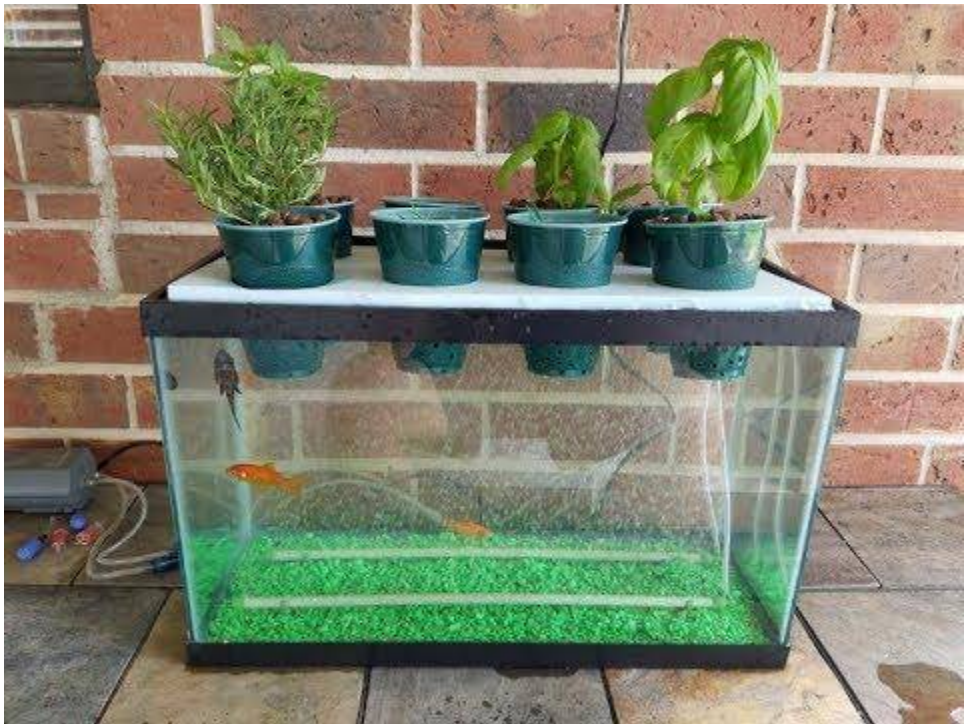
Niwa – Internet Connected system

Tower Garden



Power Plant

Omega Garden



Starting Seeds Indoors

What's Needed for Growing Vegetables Indoors?

1. Light
2. Temperature
3. Humidity
4. Water
5. Media

and maybe . . .

6. Pollination

What's Needed for Starting Vegetables Indoors?

1. Light
2. Temperature
3. Humidity
4. Water
5. Media

but most important is

TIMING!

Considerations

- Seeds don’t germinate at the same rate
- Seedlings don’t grow at the same rate
- Care must be taken to not stress the starts
- Transplanting typically required one or two times
- Indoor starts must be hardened off before sale or planting outside

The Basics - again

1. Light
2. Temperature
3. Humidity
4. Water
5. Media

Timing

Home Garden Vegetables

- What Plant
- When can plant go outside (based on temperature)
- What is the growing time to plant outside (harden off)

Plant Sale Vegetables

- What Plant
- What is the date of the plant sale
- What is the growing time to plant sale
- What is starting and final size of plant container(legginess/rootbound)
- How long to harden off

Planting Resource

www.harvesttotable.com

Planting Guide

	A	B	C	D	E	F	G
1			How Many		Where		
2	What	OutDate	Planned	Actual	General	Specific	Notes
3							
4							
5							
6							
7							
8							
9							
10							

You Could Go Crazy....

	A	B	C	D	E	F	G	H	I	J	K	L
1				Daytime								
2	**Plant**	**Culture**	**Soil temp**	**Low temp**	**High temp**	**Germination**	**Maturity**	**Time Indoors**	**Outdoor Date**	**Where**	**How Many**	**Notes**
3	Basil	1				8						
4	Carrots	3	45-85	60	85	20	50-80 / baby 30	----	2-3 wk b4 LF*			*also sow 12 wks b4 FF
5	Lettuce	3				7						
6	Anaheim chili	4				10						
7	Artichokes	4	50-85	50	75	15						Hay mulch when soil temps hit 40
8	Bell peppers	4				10						
9	Celery	4		55	80	20	98-130 days	6 weeks	Last Frost	Lite Sun/Shade		Harden off by reducing water
10	Cherry tomatoes	4				7						
11	Green Onions	4				10						

Like Me!

Transplant

- 2-4 weeks after first true leaf
- Leggy, tall, leaning
- Root bound
- Before starting any plant food

Hardening Off

- May take 4-7 days
- Phase 1 – Introduce to outdoors
  - Shaded, protected area, 1-3 hrs
- Phase 2 – Leave in protected area all day
- Phase 3 – Move to unprotected area
  - Leave there 1-3 hrs
- Phase 4 – Leave in unprotected area all day
- Phase 5 – Leave outside overnight

Questions?

For more information about our programs,
visit our website at
extension.arizona.edu/yavapai

The University of Arizona
is an equal opportunity provider.

Learn more at:
https://extension.arizona.edu/legal-disclaimer

Cooperative Extension
Yavapai County