# THE ZIPGROW BEST CROPS FOR HYDROPONICS GUIDE

THE QUICK REFERENCE GUIDE FOR CROP MANAGEMENT



This manual provides guidance for choosing the best crops for hydroponics while providing proper management practices for each crop. Feel free to reach out to our skilled team of growers with questions at any time. Happy growing!

- The ZipGirow team



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# Overview

# **Purpose Of This Guide**

The advent of hydroponics has changed the shape of growing practices and operations of all shapes and sizes. Hydroponic techniques often require different crop conditions, and when conditions are different, management is different.

This guide is written to help you optimize growing conditions and practices to grow crops better than ever before. Anyone using this manual, novice or expert, will be able reference this as they grow any of the crops provided.

Use this guide to build a crop list that will fit your growing experience, compare the ideal pH and EC ranges for specific crops, imagine the labor involved in planting and harvesting, and understand more generally what crops need to grow optimally.



### Environmental Needs



Growers benefit from new technology and resources by being able to grow almost anything anywhere. All they need to do is choose crops that can grow together in the environment they choose.

There are some tricks for growing dissimilar crops in the same environment. For example, differences in irrigation needs can be solved by plumbing your system with valves on each section to control irrigation, timing, and pressure for independent sections. A grower with rosemary in one section can turn the valve onto that sector for a few hours a day, but still water fennel or lettuce on a constant drip by controlling the valves on those crops' respective sections.

# Reproductive Cycles

The reproductive stage of a plant's life cycle is cued by age and environmental values like heat and light. You can steer your crops to or away from these life cycles by pruning, and/or by adjusting light ratios, nutrient ratios, and temperature.

For most greens and herbs, reproductive growth means bolting. During this stage, vegetative growth slows down and the leaves become bitter and tough.

For other crops such as strawberries, cucumbers, squash, melons, etc., reproductive growth is the desired outcome so the plant bears fruit.

# Harvesting & Pruning

Differing crop varieties and techniques require different harvesting methods. Some crops (like lettuce) are only harvested once before being torn out and replanted. Other crops, such as kale, mustard, chives, chard, and some herbs can be harvested multiple times.

Harvest and prune carefully to maximize the next production cycle of the plant.

### Glossary

**Apical growth:** growth which grows upward from the apical bud of the plant; usually results in the "main" branch of the plant.

**Bolting:** a shift from vegetative to reproductive growth, usually resulting in a tall inedible flower stalk and a bitter taste.

**Cole crops:** (Brassicas) varieties of the species Brassica oleracea, including mustard, cabbage, kale, broccoli, and kohlrabi, among others.

**EC:** Electrical Conductivity (measure of dissolved nutrients in solution)

**IPM:** (Integrated Pest Management) a pest management strategy which utilizes multiple types of control and precise timing to control pest populations for the best economic outcome in the long-term.

**Lateral buds:** the set of undeveloped buds situated on the side of the stem of a plant which grow if the apical branch is badly damaged or removed.

PPM: Parts Per Million (measure of dissolved nutrients in solution)

Turn: the time it takes for a plant to grow from transplant to harvestable crops.

**\*\*A note on conductivity measurements:** PPM readings may differ from instrument to instrument. The PPM levels provided in this guide are based on the ppm 500/TDS standard (also known as the Hanna standard used by most North American-based meters). When in doubt, refer to EC over PPM as the unit. Click <u>here</u> for more information on the different measurements of conductivity and <u>here</u> for our recommended conversion chart.

# Greens

## What You Should Know

The leafy greens we know from our supermarket visits are limited in their variety, flavor, and overall excitement. Luckily, there's a whole world of crops that fall in this broad category that re-excite both the eyes and the palate. By sourcing heirloom seeds you can expand what you know and challenge what you thought was possible with the most mundane of crops. Even if you decide to stick to highly traditional crops, growing and eating them fresh will be sure to change your perceptions of how that crop should taste.

The crops that fall into this category are typically very easy to grow and are much lower maintenance than some varieties of herbs making them great for beginners or producers who want less time growing and more time enjoying the fruits of their labors.

For commercial growers, greens are considered low-dollar crops, fetching \$3.50-\$5.00 per pound of produce. Though they bring in less monetarily per pound than most herbs, greens can be a benefit to farmers because they satisfy a specific and consistent need in most communities. Greens can also be a liability-reducer for farmers. Knowing that it will only take four to six weeks (a typical turn for greens) to return to full production is peace of mind for those just getting started should issues arise causing an operation to shut down for maintenance or management.



# Arugula

# About Arugula

Arugula is a brassica, like mustard or kale. It carries a spicy punch in a tender leaf, making it a great addition to salads, pizzas, and sandwiches. Some varieties are spicier than others, with the Rocket variety being considered the spiciest of the three most popular (Astro, Rocket, and Sylvetta).



Though arugula grows like lettuce (some varieties are ready for harvest in just 3 weeks) and is in the family of brassicas, it's often considered an herb.

Growing Arugula

**Planting** Germinate from seed

Harvesting Full harvest

**Yield** 5-7oz / Foot of Tower / Harvest

### Pests and diseases

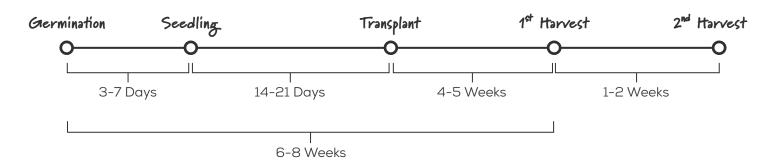
Rare; most common are aphids and flea beetles. Disease problems rarely occur. **pH range** 5.5-6.5

**EC/PPM** 0.8-1.4 / 400-700

**Light hours** 12-18

### Temperature

Range: 50–75°F Ideal: 65°F



# **Bok Choy**

## About Bok Choy

Bok Choy–also called white Chinese cabbage, Chinese Chard, Chinese Mustard Cabbage, Pak Choi, among others– belongs to the leafy vegetable pak choi family of Chinese brassicas. Bok Choy has white or green, thick, crunchy stems with light to dark green wide leaves.

All parts, stems and leaves, can be eaten with the leaves being soft and buttery while the stalks are crunchy and slightly bitter.

Size can vary from 4-12 inches tall, bigger if lengthier grow-out times are practiced.

Growing Bok Choy

**Planting** Germinate from seed

Harvesting Full harvest

**Yield** 0.7-0.9lbs / Foot of Tower / Harvest

### Pests and diseases

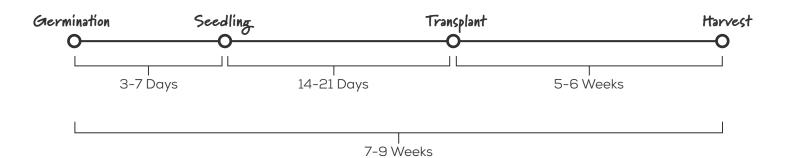
Rare; most common are aphids and powdery mildew

**pH range** 5.5-6.5

**EC/PPM** 1.5-2.5 / 750-1250

**Light hours** 14-18

**Temperature** Range: 55–75°F Ideal: 65°F



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# Kale

## About Kale

Kale has been hailed as a super food and has found its way into home and restaurant menus alike. Crop varieties from the scaly-looking Dinosaur Kale (also called Tuscan Kale) and Curly Kale grace our soups, smoothies, salads, and more. Some varieties display shades of red and purple, like Russian Red Kale.



Kale's wide electrical conductivity (EC) range makes it compatible with many different herbs and greens. Fortunately, kale is another crop which – when grown indoors – is targeted by only a few pests such as aphids and some powdery mildew.

Growing Kale

**Planting** Germinate from seed

Harvesting For partial harvest, only take 30% of the plant at one time

### Yield

0.5-0.7lbs / Foot of Tower / Harvest

### Pests and diseases

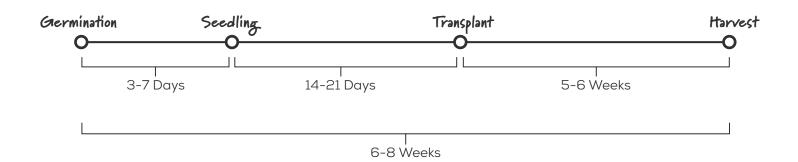
Rare; aphids and powdery mildew most likely indoors

**pH range** 5.5-6.5

**EC/PPM** 1.6 to 2.5 / 800-1250

**Light hours** 14-18

**Temperature** Range: 45–85°F Ideal: 65°F



# Lettuce

### About Lettuce

Lettuce is one of the most popular crops in the world. The coolweather crop grows sweet and tender, a perfect addition to any fresh dish.

Lettuce grows well in almost any gardening system, whether hydroponic, aquaponic, or traditional soil gardens. It takes up relatively little space, has a short (5-6 weeks from transplant or 9-11 weeks from seed) growing cycle when it's healthy, and there is always high market demand.



Hundreds of lettuce varieties are grown around the world. The common varieties, like red and green Romaines, Iceberg, Oak Leafs, Green Leaf, and Mesclun mixes, can be found in almost any grocery store.

Don't forget about unique heirloom varieties. Seed companies like <u>Baker Creek Heirloom</u> <u>Seeds</u> offer great varieties of lettuce like Deer Tongue, Bronze Beauty, Brune D'Hiver, Cimmaron, and Devil's Ear.

Growing Lettuce

**Planting** Germinate from seed

### Harvesting

Harvest lettuce as a whole head (or whole plant) and store at 32-35°F. Keep temperatures as consistent as possible

### Yield

0.7-1.0lbs / Foot of Tower / Harvest

### Pests and diseases

Aphids, leaf miners, and powdery mildew

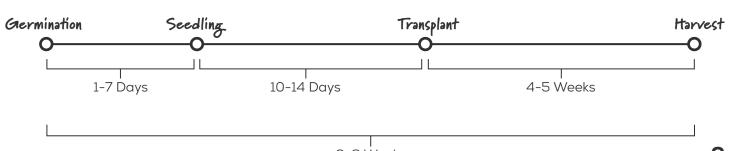
**pH range** 5.5-6.5

**EC/PPM** 1.0-1.6 / 500-800

**Light hours** 14-18

### Temperature

Range: 45–75°F Ideal: 65°F



# **Mustard Greens**

### About Mustard Greens

Brassica juncea, or mustard greens, is another member of the brassicas family (a relative of kale and cabbage). Although its precise origins are unknown, there's support to assume that mustard is native to Eastern Europe and Asia, as is reflected by its common names – India mustard and China mustard.

The ruffled leaves of mustard taste similar to radishes and can add a spicy bite to a salad, sandwich, or can be eaten by themselves (often steamed). Mustard is often cultivated for its seed, which is used in brown mustard (the condiment) and has been used for centuries in folk remedies for aches, arthritis, and even to promote cow milk production in some areas of the world.

A grower favorite is the Southern Giant Curled variety; however many varieties have been bred with different flavors and colors ranging from green to dark purple.

# Growing Mustard Greens

**Planting** Germinate from seed

**Harvesting** For partial harvest, only take 30% of the plant at one time

### Yield

0.5-0.7lbs / Foot of Tower / Harvest

### Pests and diseases

Potential pests and diseases are minimal; cabbage loopers, flea beetles, cabbage worms, and clubroot

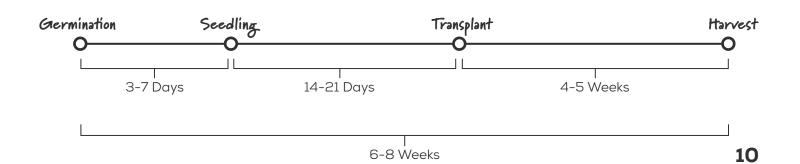
**pH range** 5.5-6.5

**EC/PPM** 1.2 to 2.4 / 600-1200

**Light hours** 14-18

### Temperature

Range: 50–75°F Ideal: 65°F



# **Swiss Chard**

### About Chard

Chard is a French green popular in greenhouses and kitchens around the world. The tender leaves add freshness and a mild buttery flavor to dishes like soup, the bacon-friendly southern dish "greens and beans", and even in salads or on BCG (beet, chard, and goat cheese) sandwiches.

Chard leaves grow on elegant stems which range in color from red, to yellow, to white, and can get larger than a dinner plate. Chard is a great crop for beginners due to it's easy-togrow nature.

The cool weather crop is not only tasty and easy to cook, but easy to grow in almost any hydroponic or aquaponic system. A multitude of varieties can be found from seed companies; our favorite is Swiss "Rainbow" Chard. Chard is bi-annual, so it will not bolt for the first year which makes it a good candidate for cut-and-regrow practices.

Growing Chard

**Planting** Germinate from seed

### Harvesting

Only harvest 30-35% of the plant, leaving the rest of the plant to support another harvest

### Yield

0.5-0.7lbs / Foot of Tower / Harvest

### Pests and diseases

Potential pests and diseases are minimal; very rarely will aphids & powdery mildew effect chard

**pH range** 5.5-6.5

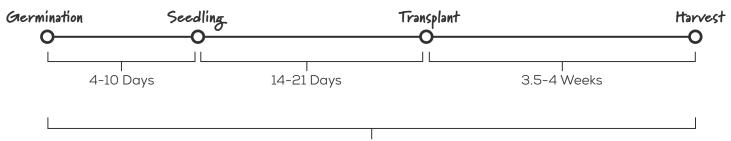
**EC/PPM** 1.6 to 2.3 / 800-1150

Light hours

14-18

### Temperature

Range: 55–75°F and cold hardy Ideal: 65°F



# Herbs

### What You Should Know

Herbs are some of our favorite crops to grow due to the outstanding flavor and aromas they pack into their typically small form factors. While these crops typically take longer to reach maturity, these crops will be sure to turn heads wether you're growing them for your friends and family or as a commercial producer. Much like everything else grown locally and with purpose, the qualities these herbs will possess are sure to blow away all preconceived notions of what they have to offer.

For commercial growers, herbs are typically high-value crops regularly bringing in \$1.99/ oz.-\$2.99/oz and more depending on the market. Most herb varieties are also capable of continuous yield making them an excellent choice should your market support them. While some herbs can be easier to grow than greens, the longer maturation time can cause problems in the event something in the operation goes wrong. It takes longer for a grower to reach full production again after an incident, however, most herbs can be harvested multiple times.



# Basil

### About Basil

There are dozens of basil varieties, from spicy bush basil, to lemon basil, to Thai basil, all of which bring a delightful twist to any dish when paired well. Favorites are the classic sweet basil, Genovese basil, and dwarf basil. This wildly variable crop produces large harvests and is so fragrant and delicious you won't want to stop growing it once you start.



Growing Basil

**Planting** Germinate from seed or start from clone

**Harvesting** Prune apical meristem to cue lateral growth

**Yield** 7-10oz / Foot of Tower / Harvest

### Pests and diseases

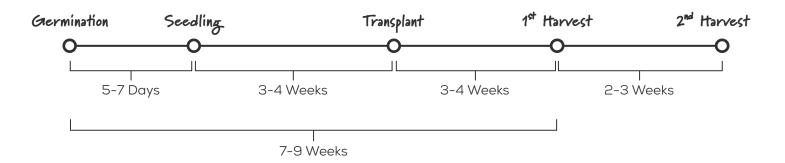
Potential threatening pests include nematodes, aphids, thrips, flea beetles, whiteflies, snails, and slugs. Diseases include damping off, root rot, leaf spot diseases, fusarium wilt, and downy mildew **pH range** 5.5-6.5

**EC/PPM** 1.6-2.2 / 800-1100

**Light hours** 14-18

### Temperature

Range: 65–90°F Ideal: 75°F



# Chives

### About Chives

Common chives are the variety most used. A few other varieties, like garlic chives and Chinese chives are also available.

Chives are a tough crop that will survive a wide range of temperatures and can even

go without water for a while without it impacting quality. Chives are also fairly pest-resistant, rarely infected with diseases, and rarely are targeted by insect pests.

Chives propagate rapidly from roots, and can be planted by division (this is ideal since germination times on chives are relatively long). Growers using ZipGrow Towers can simply tear apart the roots of a plant from another ZipGrow Tower and use it to plant multiple others.

Rarely will growers need to use seeds to grow chive seedlings as using rootstock is the fastest and most effective way to grow them.

Growing Chives

**Planting** Germinate from seed or from root by breaking apart mature plants and re-planting

#### Harvesting

Harvest every 2-3 weeks by cutting the plant to 1-2 inches from the crown

### Yield

7-8oz / Foot of Tower / Harvest

#### **Pests and diseases**

Rare; most common in hydroponic systems are viruses and fungus gnats

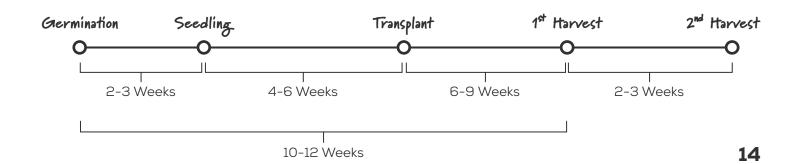
**pH range** 5.5-6.5

### **EC/PPM** 1.6-2.2 / 800-1100

Light hours

#### Temperature

Range: 55–80°F Ideal: 70°F





# Cilantro

## About Cilantro

Cilantro can be a tricky crop to grow since it bolts very easily, especially in hot conditions. If bolting is triggered, trim the bolts and adjust environmental conditions. Be aware that the flavor of the greens becomes more bitter and harsh once the plant has bolted. Growers can purchase slow bolting seeds to minimize the potential for crop failure.



Growing Cilantro

**Planting** Germinate from seed

### Harvesting

Harvest completely cutting at the base of the plant and on the face of the tower

Yield

5-7oz / Foot of Tower / Harvest

### Pests and diseases

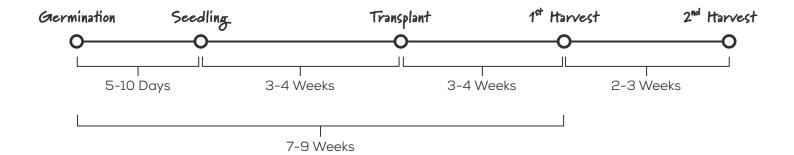
Pests include fungal wilt, leafhoppers, and aphids; Diseases include powdery mildew **pH range** 5.5-6.5

**EC/PPM** 1.2 -2.0 / 600-1000

**Light hours** 14-18

### Temperature

Range: 50–80°F Ideal: 65°F



# Fennel

### About Fennel

A mildly sweet herb with a taste reminiscent of anise, fennel is edible both as bulbs and greens. The greens may be harvested once before a full-plant harvest a few weeks later.

Fennel prefers a lower EC and moderate pH. Though fennel often proves drought tolerant, heat tolerant, and cold tolerant, it is not frost tolerant. Fennel rarely struggles with pests if it's kept healthy, although aphid infestations could affect the crop.

Fennel has a wider range of germination rates, from about 60% to 90%. Be sure to get good seeds (Baker Creek and Johnny Seeds are both great places to start). Seeds take 1-2 weeks to germinate and are typically ready to plant 3-5 weeks later. The bulbs can be harvested as soon as the grower wants, but .5 to 11b bulbs are standard at most markets. From seedlings it takes most plants 6-8 weeks to reach harvesting size.

Growing Fennel

**Planting** Germinate from seed

#### Harvesting

At first harvest, only take 30% of the greens, take the full plant on the second harvest

#### Yield

8-10oz / Foot of Tower / Harvest

#### **Pests and diseases**

Rare; aphids and damping off are most common

**pH range** 5.5-6.5

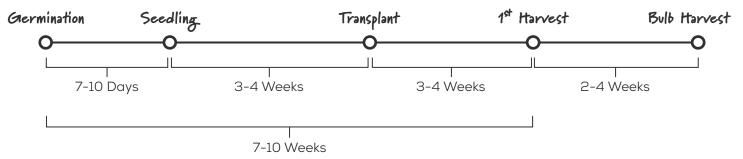
### EC/PPM

1.0-1.8 / 500-900

Light hours

### Temperature

Range: 55–75°F Ideal: 65°F



# Mint

### About Mint

There are dozens of types of mint, but the main varieties are spearmint (Mentha spicata), peppermint (Mentha x piperita), and pennyroyal mint (Mentha pulegium). Some of the other mints like lemon mint (Monarda citriodora) are actually not mint at all. When mint is used in the kitchen, it's usually spearmint.

Mint can be grown from seed, but using cuttings or rootstock is much quicker, especially on a commercial scale. From mint cuttings, or "clones", mint roots out and grows to maturity within a few weeks.

For stem cuttings, you can select healthy green sprigs and simply set them in water. We've also used cotton or loose soil to set cuttings.

For rootstock, you can pull out the media when a mature tower becomes overgrown, remove some root material to populate a new tower, and simply tuck the root material in the new media. Then replant both towers – one with old and one with new root material – and voila!

Growing Mint

**Planting** Germinate from seed, or start from cutting, or rootstock

### Harvesting

Multiple harvests through pruning, the last of which the entire crop is harvested completely

### Yield

8-10oz / Foot of Tower / Harvest

### Pests and diseases

Occasional verticillum wilt and powdery mildew

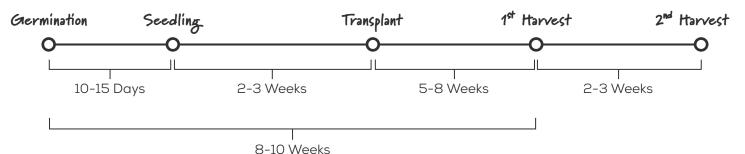
**pH range** 5.5-6.5

**EC/PPM** 1.6-2.6 / 800-1300

**Light hours** 14-18

#### Temperature

Range: 55–75°F Ideal: 70°F



# Oregano

# About Oregano

Oregano (Origanum spp.) is a small, bushy herb with a strong unique flavor that's especially pungent when the herb is fresh. The leaves are used fresh and dried in most types of cuisine, but especially Italian and French.

There are three main kinds of oregano used for culinary purposes: Greek (Origanum vulgare hirtum), Mexican (Lippia graveolens, which actually isn't oregano at all), and Italian (Origanum x majoricum).

Oregano has small, rounded leaves that are fuzzy in some species – this makes it harder for them to deal with high humidity.

Growing Oregano

**Planting** Germinating from seed works, propagation by cutting is best

### Harvesting

Multiple harvests through pruning, the last of which the entire crop is harvested completely

### Yield

6-7oz / Foot of Tower / Harvest

#### **Pests and diseases**

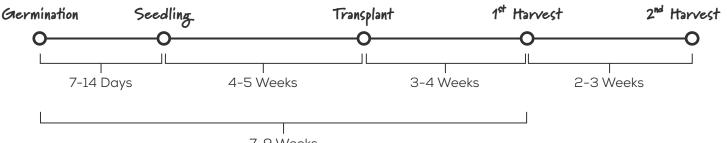
Pests included; thrips, whiteflies, aphids, spider mites, and leaf miners. Diseases affecting oregano plants are primarily caused by fungi **pH range** 5.5-6.5

**EC/PPM** 1.5-2.0 / 750-1000

**Light hours** 14-18

### Temperature

Range: 55–80°F Ideal: 70°F



# Parsley

## About Parsley

Parsley is a Mediterranean native used worldwide both as a garnish and as a popular addition to savory dishes. Several varieties of parsley exist, from the more bitter and frilly garnish parsley to the flavorful, tender large leaf varieties. Though popular mostly as a cooking ingredient, parsley has been used in a variety of ways, from a medicinal ingredient to a symbol in ceremonies like the Seder dinner.



Parsley's tolerance of a wide temperature range and EC range make it an easy crop for farmers to add into a crop set. Large leaf varieties like Italian flat leaf grow abundantly in hydroponics (or aquaponics), and farmers using ZipGrow Towers should plan on harvesting a lot of weight from the large plants, which grow 12-18 inches from the face of the Tower or media.

Growing Parsley

**Planting** Germinate from seed

### Harvesting

Multiple harvests-it's common to harvest parsley twice before replanting

### Yield

8-10oz / Foot of Tower / Harvest

### Pests and diseases

Pests and diseases are rare, the most common pests are thrips and aphids

**pH range** 5.5-6.5

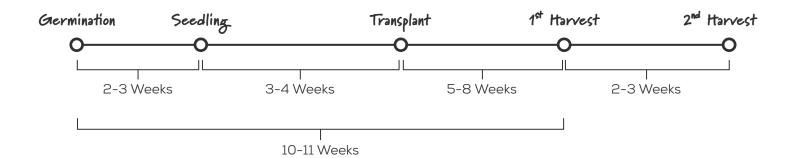
### EC/PPM

1.4 -2.4 / 700-1200

Light hours

### Temperature

Range: 55–80°F and cold hardy Ideal: 70°F



# Rosemary

### About Rosemary

Rosmarinus officinalis belongs to the family Lamiaceae like many of our culinary herbs. Rosemary is a great fit for indoor farming because it can be very compact.

Like its co-members of Lamiaceae, lavender and thyme, rosemary prefers "dry feet". This means that growers should give roots a dry period between watering.



Starting rosemary from seed can be a finicky process – the seeds need consistent moisture and germination rates tend to be around 30–50%. Growers are often better off propagating the plants from cuttings, although some argue that best flavors and aromatics come from seedgrown plants.

Growing Rosemary

**Planting** Germinating from seed is very difficult, propagation from clone is fastest and easiest

Harvesting Multiple harvests are common through pruning

#### Yield

0.8-1.1 oz / Foot of Tower / Harvest

#### **Pests and diseases**

Pests and diseases are rare, the most common are botrytis and powdery mildew when over-watered

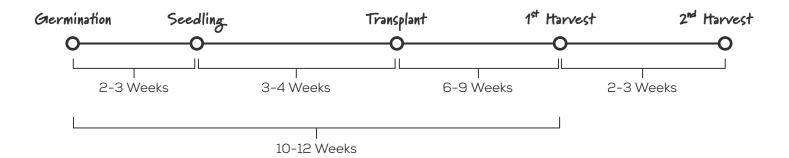
**pH range** 5.5-6.5

**EC/PPM** 1.2-1.8 / 600-900

**Light hours** 14-18

#### Temperature

Range: 60–80°F and cold hardy Ideal: 75°F



# **Fruiting Crops**

### What You Should Know

From a grower's perpective, fruiting crops are very unique. They require a very specific set of light and nutrient mixes throughout the course of their lifecycles, the growing periods are much longer, and they generally require noticably more skill and labor to grow. Luckily, its for these reasons that when done correctly, adding fruiting crops to your crop list can be so gratifying. Not only that, but depending on where you live, access to fresh fruits and veggies can be extremely limited making a fresh product that much more noticeable and enjoyable.

To grow fruiting crops well requires more information than what we can provide in this short guide. However, be sure to research both light and nutrient cycles for vegging and fruiting stages, in addition to proper long-term pest management. Since fruiting crops have to produce both vegetative and reproductive growth, nutrient requirements are much higher particularly in the fruiting stages of the crop's lifecycle and it's for this reason that nutrient levels in a system with fruiting crops require more active management than systems with greens or herbs.

We have only included strawberries in this guide as it is the easiest fruiting crop to grow in our ZipGrow Towers and we do not recommend growing large-statured crops (like tomatoes) in our Towers. But should you choose to grow larger-bodies and/or vining crops, know that these plants may require trellising which may be done with string, wood, netting, or wire. Also note that the large plants may make your towers bulkier and more awkward to move.



# **Strawberries**

## About Strawberries

Growers can order strawberries from most big seed companies like <u>Burpee's</u> or <u>Johnny's Seeds</u> with dozens of varieties available. The two main types of strawberries are ever-bearing and junebearing–we recommend ever-bearing (or "day-neutral") varieties.

Strawberries are best grown from rootstock rather than seed. Vegetative growth (runners) tends to be much faster than sexual reproduction (seeds), so you can cut the time from planting to production by months or years by using rootstock. Strawberries are prone to pest and diseases. Use miticides to manage mites, and a fungicidal dunk before planting to prevent fungal infections.

**\*\*Remember:** pesticides can be a useful tool for growing long grow-cycle crops, like fruiting crops. Should you choose to use chemical pesticides ALWAYS read the label before using your chosen pesticide. It is a legal document, straying from instructions is unlawful for commercial producers!

# Growing Strawberries

**Planting** Germinating from seed is very difficult, propagation from clone is fastest and easiest

### Harvesting

Multiple harvests are common through pruning

### Yield

1.2-1.8 oz / Foot of Tower / Turn

#### Pests and diseases

Pests and diseases of strawberries include arachnidslikespidermites, pythium, rhizoctonia, and other fungal pathogens **pH range** 5.5-6.5

**EC/PPM** 0.8-1.4 / 400-700

#### **Light hours** 14-18

### Temperature

Range: 65–75°F Ideal: 70°F



# Conclusion

# **Appendix A**

### **Cool Region Crops**

- Lettuce
- Arugula
- Kale
- Mustard Greens
- Bok Choy
- Mint
- Cilantro (Coriander)
- Tarragon
- Fennel
- Nasturtiums
- Peppermint

### Warm Region Crops

- Bok Choy
- Oregano
- Basil
- Lemongrass
- Spearmint

### Low Water Crops

- Cilantro
- Sage
- Chives
- Oregano
- Tarragon
- Fennel
- Nasturtiums
- Peppermint

### **Crops For Beginners**

- Lettuce
- Bok Choy
- Mustard Greens
- Chard
- Kale
- Mint
- Arugula
- Chives
- Fennel

# **About ZipGrow**

### The Purpose Behind What We Do

### Our Vision

ZipGrow's vision of a better future looks like: a global attitude of people wanting to participate and contribute-and have equal access-to the highest quality, environmentally and economically sustainable produce possible.

### Our Mission

ZipGrow's mission is to design and manufacture the most economically viable, resource-efficient, and productive hydroponic equipment possible for people who believe in smarter, local food sources and want to participate in changing how people think about and access food.



### Thank You!

Whether you're a farmer, hobbyist, or anything between, by reading this document you're taking steps towards being part of a better food system and for that we are truly grateful. We also realize that there are many great resources out there that are at your disposal and we want to thank you for using us as a tool to help you be more effective in your pursuit for local and sustainable food.

We hope this guide has been useful to you and if you have any feedback we would love to hear from you! We believe that the success of local and urban farmers is the success of the food system, so we make it our mission to help new farmers and growers everywhere see success in their efforts. If you can't be successful then neither can we so if you have additional needs or questions outside the scope of this manual, please contact us!



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