



Grow Guide



Table of Contents

Why Hydroponics?	1
What You Can Grow in a Solaris Garden	2
Seedling Preparation	2
Water Preparation	5
Algae.....	10
Keeping the Reservoir Filled.....	11
Room Temperature.....	12
Light Schedule	12
From Seedlings to Harvesting.....	13
Cleaning the Solaris Garden.....	17
Maintenance Tips.....	19
Growing Outdoors.....	19
Optional Items and Supply Refills.....	21
Contact Us.....	28

*** A digital version of this Grow Guide with clickable links can be viewed or downloaded at <https://solaris.garden/video-print-guides> ***

Why Hydroponics?

Growing your own food hydroponically provides these benefits:

- ◆ Food goes directly from garden to table, and tastes fresher than store-bought food.
- ◆ No need to refrigerate. Harvest when you are ready to eat.
- ◆ No pesticides, herbicides or bugs to worry about.
- ◆ There is no off season for indoor, hydroponic plants.
- ◆ Hydroponic gardening uses 90% less water than traditional dirt gardening.
- ◆ Satisfaction of seeing seeds grow into mature, edible plants.

When your initial stock of supplies runs out, you will need to purchase the following for additional harvests:

- ◆ Seeds
- ◆ Seed Starter Sponges
- ◆ Fertilizer
- ◆ pH Down
- ◆ Hydrogen Peroxide (3%)

What You Can Grow in a Solaris Garden

Almost any type of lettuce and leafy green as well as herbs, vegetables and flowers. Spinach is a bit more difficult to germinate, though having an initial cool and dark environment helps with germination.

Large-headed lettuce, or vegetables like kohlrabi and peppers grow very well too. However, due to their size, you may need to leave adjacent plant openings empty. Try to find dwarf versions of these plants when possible.

With the powerful grow lights in our indoor systems, flowers and fruiting plants (tomatoes, peppers, marigolds) work as well.

About the only thing that doesn't work are root vegetables, or anything that must grow taller than 24".

Seedling Preparation

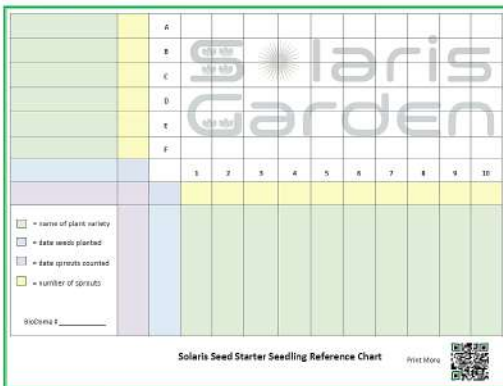
Before your Solaris Garden is assembled and ready to use, you can start the seeds of your choice in our Solaris Seed Starter system.



The Solaris Seed Starter uses Seedling Sponges that are composed primarily of peat moss. This also makes the sponges bio-degradable (unlike rock wool). These sponges, along with the humidity dome and grow lights, help ensure germination.

Seeding Steps

- ◆ Soak the Seedling Sponges in pH balanced water for 10+ minutes.
- ◆ Insert the sponges into the holes of the *Solaris Seed Starter*.
- ◆ Fill the Solaris Seed Starter tray with pH balanced water **to 50-75% full**.
- ◆ For most seed types, place seeds into the hole at the top of each plug. Tiny seeds that need light to germinate should be sown on the surface of the plug, not in the hole. Tweezers may be helpful in planting and retrieving seeds.
- ◆ Place the humidity dome over the tray. The cover will maintain a humid growing atmosphere until the seeds germinate.
- ◆ Place the set of three small grow lights with their green legs over the dome and turn them on. Set the timer to a 12 hour on/off cycle, which shows as a red back light on the timer.
- ◆ When the seeds have sprouted, open the vents on the BioDome cover to provide some air-flow.
- ◆ Before the seedlings reach a height of 1 inch, remove the cover to prevent excess moisture, and possible mold from forming.



The chart is a grid with 6 rows (A-F) and 10 columns (1-10). A legend in the bottom left corner defines the grid cells:

- White box: name of plant variety
- Light blue box: date seeds planted
- Light green box: date sprouts counted
- Light yellow box: number of sprouts

 The chart includes a QR code and the text 'Print More' at the bottom right.

When planting seeds, use the included *Seedling Reference Chart* to keep track of the different varieties of plants and the date the seeds were planted.

Once the seedlings have developed their first true set of leaves, mix a weak fertilizer solution of a teaspoon of FloraMicro to a half-gallon of pH balanced water and water with this solution.

When the second set of leaves appear, and the seedlings are at least one inch high, the seedlings are strong enough to be transplanted. Use the bamboo spear to move the seedling and its plug to an open spot in the Solaris Garden.

Some seeds may be duds or will sprout as weaklings, and will not be strong enough to transplant to the Solaris Garden. The extra plants that do sprout can be eaten as young greens.

The seeds included with the Solaris Garden system are a variety of lettuces and herbs that are easy and quick to grow and harvest, which is perfect for beginning hydroponic gardeners. For more information on growing lettuce hydroponically, you can read this excellent article on the subject:

<https://www.trees.com/gardening-and-landscaping/grow-hydroponic-lettuces>

Some seeds that come with the Solaris Garden are “pelleted” seeds because they have a clay covering. Pelleted seeds are much easier to handle than the minuscule, un-coated lettuce seeds. The clay covering provides extra moisture so the seeds do not dry out easily.



Visit the [Recommended Plants](#)

(<https://solaris.garden/recommended-plants>) section of our website to get other ideas of good plants to grow.

Water Preparation

Overview

- ◆ Add 1 tablespoon of FloraMicro fertilizer for every 2 gallons of water and stir to incorporate.
- ◆ Add 1 tablespoon of FloraGro fertilizer for every 2 gallons of water and stir.
- ◆ (Optionally) If any plants are budding, blooming, or fruiting, add 1 tablespoon of FloraBloom for every 2 gallons of water and stir.
- ◆ Add 1 tablespoon of 3% Hydrogen Peroxide for every 1 gallon of water
- ◆ pH balance the water to 6.0

Source

If your water comes from a city water supply, it is likely treated with either chlorine or chloramine. If your water passes through a softener, then salt has been added.

If you can smell chlorine in your water the best thing to do is to fill your water container and let it sit for 12+ hours in a warm location, above 70 F (21 C). Most of the chlorine will evaporate in that time. Then you can move on to the step of adjusting the pH.

However, most cities now treat their water with chloramine, which is a chlorine/ammonia bonded molecule, as it is more

stable than plain chlorine. This stability also means it will not evaporate out of the air if you leave it sitting out. However, your water should be okay to use if this is the case. As you'll read in a later chapter, one of the side benefits of adding Hydrogen Peroxide to your water is that it helps eliminate this.

If your plant's leaves begin to burn/dry out at their ends, then there may be too much chlorine/chloromine making its way into your system. If that is the case, you'll want to use an inline activated charcoal filter to reduce the levels in your water. See the final chapter of this guide for a recommendation.

pH

Maintaining an optimum pH level for your plants is an important aspect of hydroponic gardening. The pH level tells you how acidic or alkaline your water is. Water pH levels can range from 1 (most acidic) to 14 (most alkaline), with 7.0 being the neutral point. Most available water sources (city water, well water, rain water) range from 6.0 to 8.0.

Plants grown hydroponically often require a different pH level from those grown in soil. The best range for a hydroponics system which is growing leafy plants is a pH between 5.5 and 6.5, with 6.0 being the target level. Within this range, the pH level is acidic enough to slow down algae growth and alkaline enough to allow plants to use nutrients efficiently.

When testing the pH of your water, you can match the color against these samples:



pH Test Kit

A pH test kit is included with your Solaris Garden shipment. Fill the vial half-full of water, add three drops of the test solution, and compare the color with the pH color chart.

High pH (most common)

Most sources of water have high pH. In that case, stir in 1 teaspoon of pH Down for every two gallons of water in your bucket. After stirring well, measure your pH level again. If your pH drops below 5.5, pour out that water and start again with proportionately less than a full teaspoon of pH Down.

If you are out of pH Down, you can use white vinegar to lower the pH. If you use white vinegar, you have to use two times or more than the concentrated pH Down acid.

Low pH

If your pH level is low (below 5.5), then add 1 tablespoon of baking soda for every two gallons of water and stir well until the powder is completely dissolved. Wait a few minutes and then recheck the pH with the test kit. If your pH now reads between 5.5 and 6.0, you are ready to add your fertilizer to create the nutrient mix. If your pH is still low, add some more baking soda and retest.

Fertilizer

As a rule of thumb, add 1 tablespoon of FloraMicro and 1 tablespoon of FloraGro for every 2 gallons of water. This provides the primary nutrients that your plants need (nitrogen, phosphorus, and potassium) as well as trace minerals essential to plant health.

Be careful NOT to mix FloraMicro and FloraGro undiluted at the same time as this can cause an unwanted chemical reaction. Add the deep purple FloraMicro first and stir. Wait a

few moments, then add the green FloraGro followed by more stirring.

Fertilizer Pro Tips

When growing flowering or fruiting plants, cut back by half on FloraMicro fertilizer and begin to add FloraBloom once buds appear. We want to cut down on the FloraMicro to encourage flowers and fruits because this fertilizer contains a large amount of nitrogen. Nitrogen is used by plants to produce large leaves that detract the plant's stored energy from the fruits and flowers.

FloraBloom fertilizer is used only for flowering or fruiting plants. You may add 1 tablespoon per two gallons of water.

Some plants require other nutrients. For example, you'll need to add calcium when growing tomatoes to prevent bottom end rot.

Hydrogen Peroxide

2 tablespoons of 3% Hydrogen Peroxide are also added per 2 gallons of water. This will help keep algae and bacteria at bay, prevent root rot, improve oxygen content, and reduce chlorine levels. Read this article if you want to learn more about Hydrogen Peroxide in hydroponics:

<https://www.trees.com/gardening-and-landscaping/hydrogen-peroxide-hydroponics>

Water Depth	3% Hydrogen Peroxide to add Weekly	
	Tablespoons	Cups
10	25	
9	24	1/2
8	22	
7	20	1/4
6	19	
5	18	

Important: Every 5-7 days, measure the depth of water in the reservoir, and add the amount of Hydrogen Peroxide as indicated in the chart. The ratio is 1 tablespoon per gallon of water. This will ensure algae growth is kept in control and your plant's roots are healthy and happy.

Algae



Algae grows where there is light and water. It prefers warmer temperatures and a pH higher than 7. Algae is a plant, so any chemicals you might use to kill it have the potential of killing your plants as well. Although it looks bad, algae is not harmful to your plants or to people.

This picture shows a normal amount of algae growth amongst the roots of the plants in the growing trays.

One of the reasons we specify hydrogen peroxide in your water preparation is that it helps reduce algae growth. At the recommended levels, there is enough hydrogen peroxide to kill most of the algae, but not enough to harm your plants. Not only does hydrogen peroxide help control algae growth, but it also keeps harmful bacteria and diseases off the roots, neutralizes chlorine/chloramine, and oxygenates the water.

Keeping the Reservoir Filled

The simplest method to add water is to remove the reservoir lid and pour the prepared water in from a container or watering can with a spout. If you do larger 4+ gallons of water preparation at a time, you might want to purchase a water transfer pump. You may use a garden hose if you have close access to one through a door or window to take inside, and then prepare the water once it is in the reservoir.

Water Level

The reservoir level can be checked by lifting the lid and viewing how many inches of water is above the pump by using a ruler. It is best to maintain between 2-6 inches of water above the pump at all times.

NOTE: Never plug in the pump or let the pump run too long when you have fewer than four gallons of water in the reservoir. The pump is not able to run dry and it will burn out if the water level drops much below the top of the pump.

Room Temperature

All lettuces and most herbs prefer a cooler temperature range. High temperatures promote flowering/bolting, which is an undesirable event that will make the lettuce leaves turn bitter. Day temperatures should range from 68 to 75° F (20-23°C), never exceeding 77° F (25°C) because of the quick bolting in temperatures above that point. Lettuces will benefit from slightly lower night temperatures, so bear this in mind if you are growing inside.

If the air temperature doesn't exceed the low 60s when trying to germinate the seeds, you'll want to use a seedling heat mat (except for spinach which prefers it that cool).

Light Schedule

With the indoor Solaris Garden models, set the timer to have the lights on for 12-14 hours a day for faster growth cycles. Plants still need dark hours for respiration so it is counterproductive to leave the lights on 24 hours a day. That will slow down growth rather than speed it up.

While plants are giving off oxygen from photosynthesis, they are also undergoing respiration. When the lights go out, the photosynthesis stops but the respiration keeps going. Plants are not dormant when it is dark. In fact, this is often the time when they do more growing because they have an entire day's worth of energy stored up and ready to metabolize.

A good setting (which is preset on the mechanical timer for you) is LED lights off at 8 pm and back on at 6 am.

From Seedlings to Harvesting

Each type of lettuce and herb is different, and the seedlings will look different as they grow. This is what Bibb lettuce should look like when it is ready to be moved from your seed starter system to the Solaris Garden.



To reach the stage of growth shown by the seedlings in the above photo, you should make sure the tray stays filled with fertilized pH balanced water. This keeps the Seedling Sponges moist at the bottom because you want the roots to grow down.

If the seedlings have long skinny stems and tiny leaves, that means they are not getting enough light. Skinny stemmed seedlings are not likely to survive the transplant to the Solaris Garden. Make sure you are using the light that came

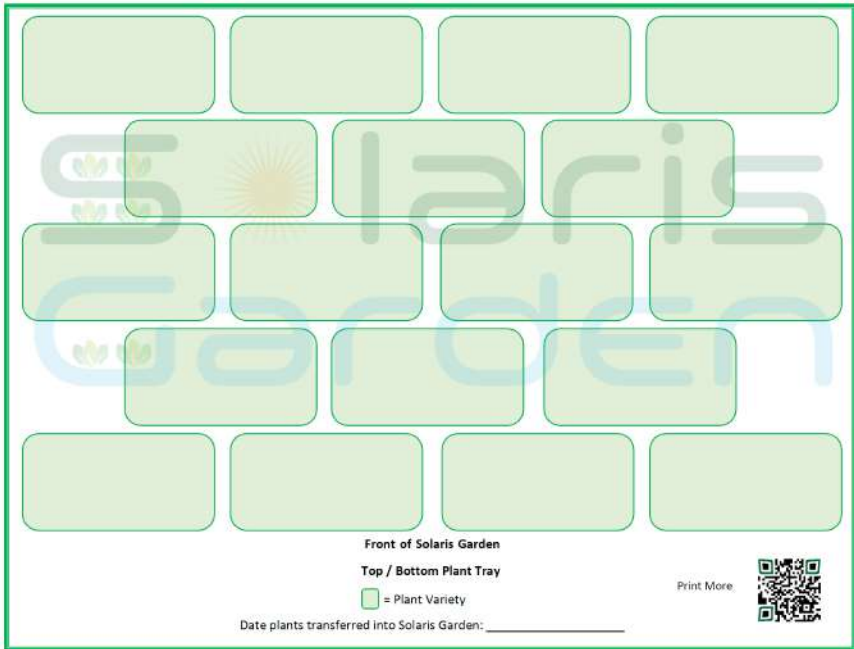
with the humidity dome, set for 12 hours on / 12 hours off.

An average success rate for seed to a viable seedling is around 70%, so even when you do everything right, you will probably have 30% of your seeds which do not grow for one reason or another.

Moving the Seedling Sponges to the Plant Trays

To remove the Seedling Sponge from its holder, use the provided wooden pick (located on one of the legs of the seedling tray's lights) and stick it through the Seedling Sponge, taking care not to damage the plant's stem. Then, you can easily pull up to remove the seedling without damaging the roots. It is possible for the seedling's root length to already be 6" long or more. Simply thread it into the hole on the plant tray and insert the Sponge into one of the holes on top of the plant tray.

As you move the seedlings into the Solaris Garden plant trays, keep track of where you are placing different varieties by using the included Solaris Garden Planting Reference Chart (pictured below).



Growth and Harvest

The plant's rate of growth once they are in the Solaris Garden is not linear. They may look like they are not growing at all for the first few days. They may even wilt a bit due to the change in their environment. After 3–4 days, you will usually see them perk up and start visible growth.

Depending on the type of plant and their size when you put them in the Solaris Garden, the plants enter their rapid growth phase in approximately 2-3 weeks. You will want to check your reservoir water level frequently because the plants use considerably more water at this point in their growth cycle.



The lettuce plant in this photo is ready to be harvested. It is important to harvest at the right time. If you let lettuce leaves get too big, their taste will start to turn bitter. There is an approximate 3 day window in which the lettuce leaves are as big as they will get without turning bitter.

You can harvest the whole plant by removing the plant with its attached roots by pulling it straight up from the base where the sponge sits in the plant tray (some of the roots may stay behind). Alternatively, you can let the inner, smaller leaves continue to grow by just picking the larger, outer leaves. Both methods of harvesting are great. Which method you choose usually depends on whether you have more seedlings ready to transplant to the Solaris Garden and what type of plant you are growing.

NOTE: *If you harvest entire heads of lettuce and don't plan to eat it on the same day, then it is best to leave a large portion of the roots attached to the plant and put the harvested head in a sealed plastic bag in the refrigerator to keep the lettuce fresh longer.*

Plant Support

Larger plants such as peppers, tomatoes, and basil may benefit from a plant support. This will help keep them upright. Included with the Solaris Garden is one plant support. You may purchase more at <https://solaris.garden/shop>.



Cleaning the Solaris Garden

As a rule of thumb, it is best to clean out the plant trays and pump every 2-3 grow cycles. There are impurities in most water sources that can cause a scaly buildup in the plumbing tubes, pump, and plant trays. Algae can also buildup in places causing the water flow to slow down. To clean your system completely, follow these steps:

1. Remove/harvest the plants in both the bottom and top planting tray.
2. Using a plant friendly cleaning solution such as [Simple Green](#), spray the top of the plant tray covers and wipe clean with a sponge, paper towel, or cloth. Take the plant tray covers off and repeat the process to the bottom side.

3. Remove larger debris such as root masses or sponges from the plant trays by hand or with a small net.
4. While keeping the pump running, begin to [siphon](#) out the water from the top tray into a bucket or watering can that is sitting on the floor.
5. IMPORTANT: Only keep the pump running until you start to hear it sucking up the water or you see the water level dipping below the pump. Unplug the pump once it can no longer suck up water from the reservoir.
6. Once the water level in the top tray is too low to siphon you can either lift the plant tray by hand to tilt it towards the drain and empty the remaining water into the bottom planting tray; or you can use shims to tilt the planting tray and siphon up the remaining water.
7. Once both of the planting trays and reservoir have been emptied of water, spray them down with [Simple Green](#) and wipe them clean.
8. Lastly, take the filter out of the pump and rinse it under freshwater until it runs clear. You may also unscrew the pump from the hose connecter and clean the small washer.

Maintenance Tips

Water Flow

Although the Solaris Garden water recirculating system is reliable, clogs may happen on occasion, so be sure to glance at your water pump's flow once a week to ensure it is not reducing too much. Reduced flow means it is time to unplug, remove, and clean the pump out.

Drainage

Also, check weekly that the tray's drain holes are clear and free of any roots or other debris. Excess roots can be trimmed without damaging the plant.

Growing Outdoors

Growing outdoors hydroponically using the sun instead of LED lights saves money and provides a wider opportunity of plant varieties to use. We recommend our SGO product line, but if you take an indoor Solaris Garden outside, you must remove all lights and other electronics (besides the pump).

Here are a couple of tips to make sure you have the most success with each crop cycle.

Sunlight

Placement of your outdoor hydroponic system is crucial to make sure it doesn't receive too much or too little sun.

Consider the type of plants you will be growing and their light and temperature requirements. The sun shade cloth provides

protection from intense sun and heat.

The plants can also overheat if they are transplanted too early as it can expose a lot of the tray cover's surface to the sun, which can get hot. Therefore, wait until they are over a couple of inches high before transplanting.

Wind

Strong winds and storms can damage your plants or knock them over. Make sure to support your plants by using twine, netting, trellises, or [plant support braces](#).

Rain

Heavy rain may overflow your planting trays and water reservoir which will dilute your prepared (fertilized) water that your plants rely on.

It is a good idea to check the water level of the reservoir after a heavy rain storm. If it has increased, you may want to add more fertilizer and check the pH to see if it needs re-balancing.

Optional Items and Supply Refills



VEGETABLES FRUITS FLOWERS

Pelleted Seeds

<https://www.johnnyseeds.com/featured/pelleted-seeds/>



Seedling Sponges

<https://amzn.to/3TaiNam>



Pruning / Herb Shears

<https://amzn.to/3iY8rvg>



Seedling Heat Mat

<https://amzn.to/3gHOPd5>





Trio of Fertilizers

More sizes available on our website

<https://amzn.to/3YxYVAR>



pH Down

<https://amzn.to/3DjfupR>



pH Test Indicator



Hydrogen Peroxide

<https://amzn.to/3w9ZQwt>





Hose Water Filter
<https://amzn.to/3SOHdXv>



Simple Green
<https://amzn.to/30hmoOj>



Plant Support
<https://solaris.garden/shop>



Plant Tray Plugs
<https://amzn.to/3HtOszp>





Plant Tray
Shims

<https://amzn.to/3G41ogN>



2 Gallon
Watering Can
<https://amzn.to/3xSgdgT>



Waterproof
Surge Protector
<https://amzn.to/3u7NHGC>



Clip on Fan
<https://amzn.to/3QMykNT>





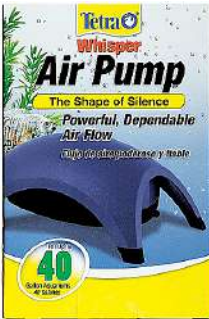
Water Siphon

<https://amzn.to/3OqNHdO>



Plant Ties

<https://amzn.to/3AJJSez>



Air Pump

<https://amzn.to/3PGqX8M>



Air Tubing

<https://amzn.to/3ws8LsB>





Air Stone

<https://amzn.to/3pFBkiv>



Mosquito Bits

<https://amzn.to/3hP9jo1>



Water Chiller

<https://amzn.to/3GAj1hZ>



5 Gallon Bucket

<https://www.homedepot.com/p/The-Home-Depot-5-Gal-Homer-Bucket-05GLHD2/10087613>





Silicone Mat

[https://amzn.to/
3WIE8QJ](https://amzn.to/3WIE8QJ)



Contact Us

If you have any questions about the best way to grow your plants using the Solaris Garden, visit our website at <https://solaris.garden> or send an email to ***support@solaris.garden***.