FLEX FARM GROW GUIDE

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SECTION 1
INTRODUCTION AND SAFETY

We believe that growing fresh food isn't just about planting seeds...

It is about creating meaningful, innovative, and exciting experiences.

We believe in the power of learning through experience. By putting the power to grow in your hands, you will connect with nutritious plants and find new joy in producing, harvesting, and eating good food.

We believe farming isn't just a science. It is an art form and a way of life. We hope our technology doesn't just offer you a way to grow food efficiently. We hope it also brings you lessons in creativity, dedication, health, and happiness.

This guide will show you how to grow high quality produce year-round in the most energy-efficient indoor farming system on the planet. Our goal is to help the world gain access to the highest quality food at the lowest cost. Together, we will create a better food system.

Understand Your Flex Farm

Your Flex Farm is a hydroponic growing system. Hydroponics is the practice of growing plants without soil. Instead, you add nutrients directly into the water supply. As water runs down the panels to wet the roots, it is also feeding the plants. The plants will pull the nutrients right from the water.

[HYDRO + PONICS] = [Water + Labor]
Literal Translation: Putting water to work

Your system uses 99% less land, 98% less water, and 95% less energy than conventional farming practices. It is clean, safe, and prolific.

Safety First

Be aware that the Flex Farm uses water and electricity, so there is a risk of electric shock if instructions are not followed carefully. Also, some of the materials used are caustic and should be kept out of the reach of children.

Your Flex Farm is equipped with safety features. Its in-line GFCI protection ensures that if water ever meets the light tower, no one will get hurt. The water tank design helps protect your floor by collecting water drips or leaks that might occur.

We recommend using food safety gloves when handling harvested plants. If you touch anything other than plants with the gloves, you should re-glove before handling plants again, in order to protect the plants.

Visit the Fork Farms website (*www.forkfarms.com*) for commercial food safety tools and resources. Fork Farms recommends following standard food safety practices to farms of all sizes.

Always pay special attention to the safety notices included in this guide.

⚠ Warning

WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

⚠ Caution

CAUTION indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

Notice

NOTICE is used to address practices not related to physical injury, which, if not avoided, could cause damage to the Flex Farm or surrounding property.

Warranty Information

Fork Farms backs all Flex Farms with a 1-year Parts Warranty against manufacturing defects or failure, not due to misuse or error in operation. Should any part fail within one year of purchase, as a result of a manufacturing defect or failure not due to misuse or error in operation, Fork Farms will replace that part free of charge.

The LED lights included with each Flex Farm are also covered under a 3-year manufacturer warranty.

Any modifications to the Flex Farm or allowing water to fall below the top of the pump will void the warranty.

Returns

Fork Farms offers a 14-day return policy on all Flex Farms. You have 14 calendar days to return your Flex Farm from the date you received it. To be eligible for a return, your item must be unused and in the same condition that you received it. Your item must be in the original packaging and needs to have the receipt or proof of purchase.

Shipping

You will be responsible for paying your own shipping costs for returning your item. Shipping costs are nonrefundable.

If you receive a refund, the cost of return shipping will be deducted from your refund.

Contact Us

If you have any questions about warranties or returns, please contact Fork Farms at: *support@forkfarms.com* or *1-877-886-7736*.

SECTION 2
FLEX FARM OPERATION

WHAT TO HAVE ON HAND

Resupply Kit

A standard Resupply Kit comes with each Flex Farm and includes the following supplies that need to be replenished periodically:

- Rockwool – 4 flats
- Nursery tray – 1
- Nutrient A – 5 oz.
- Nutrient B – 8 oz.
- pH kit – 1
- Food grade hydrogen peroxide – 8 oz.
- Seeds – 1,000

We recommend ordering your next Resupply Kit at least one month before you run out of supplies to ensure your farm can continue to operate. Resupply Kits can be ordered through our website (*www.forkfarms.com*) or by contacting customer service at: *support@forkfarms.com*.

Grower Kit

The Grower Kit included with your Flex Farm contains the following items:

- TDS meter
- Measuring cup
- Bristle brush

Additional Tools

The following tools are recommended for farming. They are not required and must be purchased separately.

- Food safety gloves
- Eye protection
- Clean spray bottle
- Tablespoon, teaspoon, and 1/2 teaspoon measures
- Food bags or sterilized bins

Assigning a Farm Manager

We recommend choosing a “farm manager”. This person is your knowledge base on Flex Farm operations and will help students, staff, customers, or family members use the farm. They should not necessarily be responsible for all the work. Instead, they know how the Flex Farm works, and they help everyone who works on the Flex Farm keep everything on track to produce great harvests. We think the more people that can get involved the better, but we have found that sites with a farm manager have much higher rates of success over time.

Farmers are responsible for:

1. Flex Farm setup
2. Planting Seeds
3. Transplanting
4. Harvesting
5. Weekly water maintenance
6. Cleaning

These tasks should take anywhere from 30-90 minutes per week depending on what you are growing. There is a learning curve at first, but once you use the Flex Farm for a few weeks, it will become second nature.

Flex Farm Setup

Complete setup approximately 24 hours prior to planting. Setup is only required before your first planting and after deep cleaning.

NOTE: Skip to ‘Planting’ if your Flex Farm is already set up.

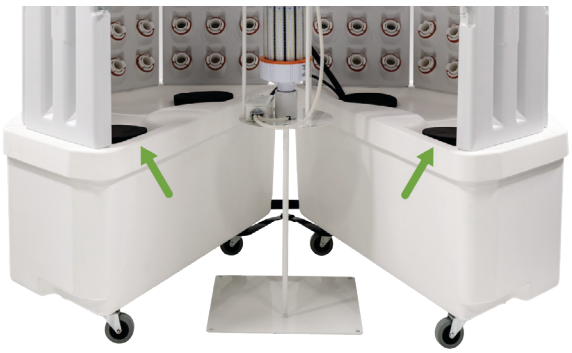
1. Fill the tanks halfway with water (about 25 gallons). Run a hose to the tank or carry the water using a bucket.

NOTE: Always use one of the front holes in the tank lid when adding or testing water from the Flex Farm.

⚠ Warning

Danger of electrical shock. Always use a grounded outlet and keep electrical cords dry.

This Flex Farm can be used by children aged from 8 years and above and persons with reduced physical, sensory, or mental capabilities if they have been given supervision or instruction concerning its safe use.



2. Plug the cord from the pump into a grounded (three-pronged) outlet. The pump starts automatically when plugged in, and the water will run very quickly.

3. Purge the drain valves to remove any manufacturing debris.
    - Place a bucket under the drain valves located at the end of each top cap assembly.
    - Open the drain valves for 10 – 30 seconds.
    - Close the drain valves after purging is complete.
4. Adjust the valve on the irrigation hose until the stream is soft, but steady. A soft stream will protect the plants' roots. We recommend positioning the valve at 2:00 for a standard Flex Farm and at 1:00 for a Flex Farm Pro.

Notice

To prevent clogs in the line from low pressure and to reduce the chance of leaks caused by high pressure, carefully adjust the valve.

Caution

The pH kit contains caustic materials. Keep out of reach of children. Handle carefully to avoid personal injury.

5. Locate the pH test kit from the Grower Kit and test the water in the Flex Farm.
    - Remove a tank plug from one of the front holes in the tank lid and fill the vial from the pH kit halfway with water from the Flex Farm.
    - Add 3-4 drops of indicator solution to the vial and shake to combine.
    - Compare the color in the vial to the indicator solution bottle label. A yellow reading is correct. Slightly yellow-green or slightly yellow-orange is acceptable, and no adjustment is necessary.

If the reading is more than slightly green (toward blue), adjust as follows:

- Add one teaspoon of orange "pH Down" solution to the Flex Farm tank.
- As described above, check the pH again after 24 hours and a few times over the next days, adjusting as needed until stabilized.

If the reading is more than slightly orange (toward red), adjust as follows:

- Add one teaspoon of blue "pH Up" solution to the Flex Farm tank.
- As described above, check the pH again after 24 hours and a few times over the next days, adjusting as needed until stabilized.

Notice

Spikes in pH slow down plant growth and may kill plants. Always balance pH slowly (one teaspoon at a time), over a period of days to avoid adding too much of the highly concentrated pH Up or pH Down. If too much is added, you may need to completely empty your tank and start again.

6. Use the TDS meter from the grower kit to test the concentration of minerals in the Flex Farm water and establish a target nutrient level.

   - Press the meter's ON button. The reading should be 0 PPM (parts per million).
   - Dip the lower third of the meter into the water in the Flex Farm tank through the open hole in the tank lid.
   - After about ten seconds, press and hold the HOLD button for 3 – 5 seconds while the meter is still submerged.
   - Remove the meter, and record the setup reading here:

     _____

NOTE: If the meter has a blinking "x10", multiply the reading by 10 before recording it.

   - Add 700 to the recorded reading and record the target nutrient level here:

     _____

7. Add nutrient.
   - Using the measuring cup provided in the grower kit, combine three tablespoons of nutrient A and three tablespoons of nutrient B with approximately two cups of water, and stir to dissolve as much of the nutrient as possible.
   - Pour this solution into the tank with the pump and run the Flex Farm for a few hours.
   - Take a new reading as described step 7.

If the reading is within ±100 of the recorded nutrient target level in step 7, it is within range, and no more additions are necessary.

If the reading is more than 100 below the recorded nutrient target level in step 7, continue to add equal parts of nutrient A and nutrient B in one tablespoon increments until the target nutrient level is reached.

If the reading is more than 100 above the recorded nutrient target level in step 5:

   - Remove some of the water in the tank and refill with plain water.
   - Run the Flex Farm for a few hours.
   - Take a new reading as described in step 7.

Notice

Spikes in nutrients slow down your growth and may kill plants. Always add equal parts of the nutrients (one tablespoon at a time), over a period of days until you reach your nutrient target level.

Planting Seeds

1. Thoroughly wash your hands with soap and water.
2. Locate your rockwool flats, nursery tray, and seed packet. Rockwool is a biodegradable material that the seeds will be planted in. The rockwool gives the roots something to hold onto so the plants stay securely in the farm.
3. Pull out one flat of rockwool and place it in the provided nursery tray.
4. Completely saturate the rockwool using cold or luke warm water and let it sit for at least five minutes.

NOTE: Do NOT use hot water to saturate rockwool.

5. Pour out all excess water. Do not squeeze the rockwool.
6. Place one seed in each of the pre-made holes.

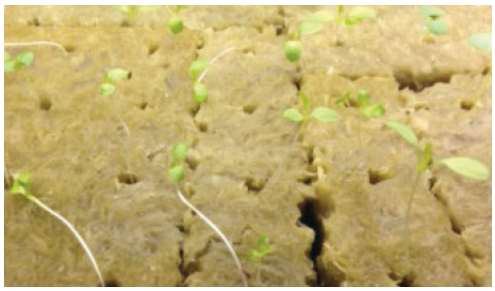
NOTE: As often as possible use pelleted seed (seeds with a clay coating). Pelleted seeds are easier to handle and the clay provides extra moisture to the seed so it doesn't dry out. They are worth the additional expense.

7. Cover your nursery tray with plastic. Keep your nursery flat covered until the seeds sprout (about 2 days). This will help ensure plants stay adequately warm and do not dry out.
8. Place your nursery tray in a warm environment (at least 70°F). A southern exposure window works great.
9. Spray your plants daily with plain water using a clean spray bottle until your seeds sprout.
10. Once your seeds sprout, remove the plastic covering.

QUICK START TIP: If you have limited space and/or do not have access to a quality light source, skip to 'Transplanting' and complete the remaining stages of seedling growth in your Flex Farm.

11. Your seedlings now need water and nutrients. Mix 1/2 teaspoon of Nutrient A and 1/2 teaspoon of Nutrient B with approximately five gallons of water. Pour one cup of the mixture into the nursery flat, below the rockwool. Don't worry if there is extra liquid, your plants will eventually absorb it.

NOTE: If your Flex Farm is already set up, taking one cup of water out of the tank and adding it to the nursery flat below the rockwool is the easiest way to give your plants the nutrients and water that they need.



12. Place the flat in a southern exposure window or under a grow lamp. A simple fluorescent shop light works great, too. Keep the grow lamp 6-12 inches from the plants and leave the light on for 18-24 hours per day.
13. It is critical to make sure your rockwool does not dry out! If it is looking dry, add another cup of nutrient solution.
14. After 10-14 days your plants should start to slightly overlap each other. Once that happens they are ready to be transplanted into the farm

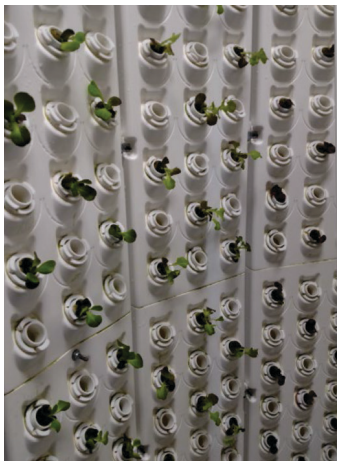
NOTE: If your plants are starting to look like the picture to the right they are not receiving enough light. Either move them to a better-lit window or purchase an inexpensive table-top grow lamp.

Transplanting

1. First, thoroughly wash your hands with soap and water.

NOTE: You must first wash your hands with soap and water any time you touch seedlings.

2. Carefully separate an individual rockwool cube from the flat.
3. Choose a plant snap for planting the rockwool cube. It is important to make sure the snap is securely in the panel.



4. Place the cube into the plant snap. Make sure it looks just like the picture to the right. The top of the rockwool should be below the rim of the snap. Remove any excess rockwool or roots so that the snap looks clean. This ensures that it doesn't create a leak out the front of the panel.
5. Repeat steps 2 – 4.
    - For lettuce and larger plants, we recommend planting every other snap in a grid pattern (right).
    - For taller, thinner plants like basil and peppers, we recommend planting every snap.

6. Excess seedlings should be kept in case any plants die during transplanting. Dead plants can be replaced with leftover seedlings. If you have an overabundance of leftover seedlings, make sure to plant fewer on your next crop cycle. Leftover seedlings can also be planted in your outdoor garden or eaten as baby greens if they are a leafy vegetable.
7. Locate the timer provided with your Flex Farm and set the slide switch located on the side to the "Timer" position.

NOTE: If the slide switch is in the "On" position, the light tower will stay on continuously instead of turning off after your time of activation.

8. Set the timer to the current time by rotating the dial in the direction of the arrow until the triangular mark points to the present time.
9. To program your timer, push in the trippers situated around the dial to set the amount of time for the light tower to be on. Each tripper represents 15 minutes.

NOTE: For example, if you would like to set the time of activation from 6:00 PM to 8:00 AM, then push down the trippers situated between 6:00 PM to 8:00 AM, including the segments corresponding with 6:00 PM
and 8:00 AM.

10. Plug the light tower into the timer and the timer into a grounded (three-prong) outlet. The timer will activate and de-activate the light tower as the dial rotates through the pushed-down segments.

NOTE: Always follow the instructions under Weekly Water Maintenance in Section 3 to maintain the tank water's level, pH, nutrients, and purity.

Harvesting

You will know your crop is ready when you open your farm and all you can see is green. The provided lettuce typically takes 18-28 days, depending on your ambient air temperature. You will get an eye for it as you become more familiar with your Flex Farm.

1. Before doing anything, thoroughly wash your hands with soap and water.

NOTE: You must first wash your hands with soap and water any time you touch plants.

2. Clean your tools. Make sure any bins you will use for harvested food has been washed, rinsed, and sanitized. Make sure any scissors or other tools you intend to use are also washed.
3. Wash any surfaces you plan to use during the harvest. Prepare a trash can for roots and a clean table for sorting your harvest.

NOTE: We highly recommend using food safety gloves when handling harvested plants. If you touch anything other than plants with the gloves (like your cell phone) you will need to re-glove before handling plants again.

4. To harvest, carefully pull the plant, roots, and rockwool out of the snap. LEAVE THE SNAP IN PLACE. You will be able to clean the Flex Farm and reuse it as-is.
5. Using your hands, gently separate the roots and rockwool cube from the plant. Place the harvested plant on the table or directly in a bag or sterilized bin for food distribution. Place the roots and rockwool in a trash can for compost.
6. Repeat until all plants have been harvested.
7. Once the whole Flex Farm has been harvested, immediately place your harvest in a refrigerated space. When properly stored, leafy green crops may last up to 6 weeks.

NOTE: Place a paper towel in your bin or bag. Dry produce will last longer.

8. Clean the outside of your Flex Farm using the cleaning regime in Section 3. Make sure all debris is cleaned off the Flex Farm before replanting.

Once the Flex Farm is clean, it is ready for replanting. We recommend planting seeds about 10 days before your harvest so new seedlings are ready to go into your Flex Farm as soon as you harvest.

Visit the Fork Farms website (*www.forkfarms.com*) for commercial food safety tools and resources. Fork Farms recommends following standard food safety practices to farms of all sizes.

SECTION 3
FLEX FARM MAINTENANCE

Weekly Water Maintenance

NOTE: Any time you touch the plants or the water in the Flex Farm, you must first wash your hands with soap and rinse them.

1. You will need to add water to the Flex Farm at least once per week. It is critical that the water level does not fall below the top of the pump. This will limit the life of the pump and void its warranty.
2. You will need to test the pH at least once per week. Follow the instructions under Setup in Section 2.
3. You will need to test the nutrients at least once per week. Follow the instructions under Setup in Section 2.

> **⚠ Caution**
>
> Hydrogen peroxide is a caustic material. Keep out of reach of children. Handle carefully to avoid personal injury. If H_2O_2 comes in contact with your eyes, mouth, nose, ears, etc., immediately flush the area with water and contact local poison control or 911 for further instructions.

4. Add 1 teaspoon of the provided hydrogen peroxide (H_2O_2) to each tank.
    - This is the main cleaning agent for the Flex Farm. It comes in a 34% solution, which means it is very potent. Please be very careful when handling H_2O_2. Always keep out of reach of children. We recommend using gloves and eye protection when handling H_2O_2.
    - If the H_2O_2 comes in contact with skin, it will give a small chemical burn and turn that skin white. If this happens, gently wash the area. It will turn back to normal in about an hour.
    - If H_2O_2 comes in contact with your eyes, mouth, nose, ears, etc., immediately flush the area with water and contact local poison control or 911 for further instructions.
    - H_2O_2 will not harm your plants. In fact, in small doses they love it. H_2O_2 breaks down into one water molecule and one oxygen molecule, so it is safe and a great way to keep roots oxygenated.

Cleaning

After each harvest you will need to prepare your Flex Farm for the next crop.

1. Using warm water, wipe away any debris, such as dead leaves, remaining roots, algae, and other plant matter. Discard all.

> **Notice**
> To avoid damage to electrical components, do NOT use hydrogen peroxide cleaning solution on the light tower.

2. Use a hydrogen peroxide (H_2O_2) cleaning solution (4 parts water to 1 part H_2O_2) to sterilize the Flex Farm. Use a spray bottle or wash cloth to apply the solution on all surfaces, especially those that come in direct contact with plants. However, do NOT use this cleaning solution on the light tower as it may damage electrical components.
3. Turn off the pump. Using the provided bristle brush pipe cleaner, clean any debris out of the irrigation holes in the top caps.
4. Purge the drain valves.
   - Place a bucket under the drain valves located at the end of each top cap assembly.
   - Open the drain valves for 10 – 30 seconds.
   - Close the drain valves after purging is complete.

Deep Cleaning

Deep clean at least twice per year under constant use (about every 6 crop cycles).

1. Completely drain all of the water out of the tanks. This can be done by removing the top caps and panels from the Flex Farm and rolling the reservoir tank outside or to a sink.
2. Wipe down the inside of the tanks and clear any debris.
3. Put your Flex Farm back together.
4. Remove all plant snaps and gaskets from the Flex Farm.
5. Soak the snaps and gaskets in a hydrogen peroxide solution (4 parts water to 1 part H_2O_2) for 12 hours. Remove and allow them to dry.
6. Snap the plant snaps and gaskets back into the panels.
7. Restart your Flex Farm by following Setup in Section 2.

Troubleshooting

Problem	Cause	Solution
All the plants are dead/wilted.	1. The pump was left unplugged. If the plants go more than 24 hours without water, they will die.	1. Remove any dead plants, replant those snaps, and plug in the pump.
	2. The pump is not working.	2. Contact Fork Farms for a replacement pump. NOTE: If you allow your pump to run without water covering the pump, it will wear out your pump much faster and void its warranty.
A few of the plants are dead/wilted.	There is a clog in the irrigation line, preventing water to flow to those plants.	Turn off the water pump and use the pipe cleaning tool in the irrigation line holes. The irrigation line runs through the top caps. Use the drain valves to purge any debris out of the irrigation line before turning the water back on.
The tips of leaves are brown.	The plants are getting too much light.	Reduce the amount of light your plants receive by 2 hours per day by adjusting the provided timer.
The leaves are yellowing.	1. Chlorosis (leaves with reduced chlorophyll, leading to yellowing or discoloration) is caused by a pH and/or nutrient imbalance.	1. Check your pH and nutrients. See Section 2, Setup.
	2. Nutrients are there, but not available to the plants. Over time, older nutrients in your Flex Farm will bind to other nutrients, creating molecules that cannot be absorbed by plants. Your test reading might be correct but your plants still don't receive enough nutrient.	2. Drain the water from the Flex Farm and refill it with fresh water. Then rebalance the water supply with pH adjustment and nutrients. See Section 2, Setup. If this does not work, call Fork Farms.
A snap has become loose.	1. Improper installation	1. Try to reinstall the snap into the panel
	2. Gasket is broken or defective	3. Contact Fork Farms for a replacement gasket
You need to shut down the Flex Farm for an extended time.	Many of our partners, especially schools, need to shut down farm operations for a period of time (summer recess, holidays, etc.).	Drain as much water out of the system as possible. Then, wipe down the inside of the tank and allow to dry, uncovered. Restart your Flex Farm by following Section 2, Setup.
Water leaking from panel.	Loose, incorrectly installed, or missing snaps.	Install any missing snaps. If no snaps are missing, identify the source of the leak and reinstall any loose snaps. If leaking continues, install spare O-Rings around any snaps that don't fit tightly, taking care not to push the O-Ring any deeper than just below the level of the snap.

Expanding Your Farm

Our Flex Farms scale easily. Once our partners get four Flex Farms, they have the option to unify their irrigation system to one centralized pump. This means four or more Flex Farms can be managed by taking care of one water supply. This saves lots of time. Call us for more information at *1-877-886-7736*.