



The instructions in this manual are simple and designed to make your maintenance activities short and uneventful. Naturally, they should be accompanied with good horticultural knowledge. We encourage you to know your plants, soil, and growing conditions. Each location, design, and plant palette will respond to unique maintenance and growing inputs.

DOCUMENTATION

Always record each maintenance event. By keeping records, you will learn the nuances of caring for your particular LiveWall® planting.

Name of Person	Date	Activity	Observations
		Watering regimen: record duration and frequency.	
		<ul style="list-style-type: none"> If feeding continuously with a fertilizer injector, record injector setting and fertilizer product. If periodically feeding with granular controlled release fertilizer or liquid feed by water cart, or other method, record type & application rate here. 	
		Soil test? Record lab, test procedure, & results.	
		Record insect or disease issues observed and control measures implemented.	

Biweekly Maintenance Regimen

Water Management

Water management is the most important part of the maintenance routine. With each maintenance visit, physically check the moisture content of the soil, then adjust the irrigation interval and quantity, if needed.

In all cases, be mindful that most interior plant deaths are caused by too much watering. *The appropriate amount to irrigate is just enough, in respect to frequency and duration, to keep the plants in a healthy non wilted condition throughout the watering period.* The amount of water to apply will vary with the soil, plant type, plant maturity, light intensity and temperature, and exposure to air currents. *Typically it is best to water after the soil has dried down, and just before the plants begin to wilt.*

Pruning and “Cleaning”

The need to prune may occur at anytime, and should be done in such a way as to keep one plant from climbing or draping over and smothering another plant.

Likewise, as plants become shaded by other plants, they may drop some of their lower leaves, and when this occurs, the drop leaves should be disposed of.

Soil Fertility Management

It is not necessary for you to strictly monitor soil fertility; however, each soil/water/plant combination will behave somewhat differently. Telltale signs of potential fertility problems include premature leaf drop, yellowing of the leaves, or lack of flowering vigor.



Pests and Diseases

Pests and diseases are best prevented with proper watering and fertilization. However, pests such as mealy bugs, mites or aphids may appear at times. And should they be present, we recommend that you speak to your local horticultural professional for advice on applying an appropriate biological or organic control agent. If pest organisms are persistent, they can be controlled or prevented by occasional releases of predatory insects, which eat the bad pests.

- Should you observe any unusual plant problems, first look for disease symptoms and pests, and check the roots which should be white and fibrous.
- Should you find no pests or disease problems, or have difficulty correcting the problems, consider testing the soil.

Watering Instructions

You will know it is time to water if...

- The soil in the vicinity of the drip emitters feels dry when you stick your fingers into it, not the surface, but half way down or deeper. If there are no drip emitters, check the soil moisture toward the center of the planters.
- The plants show a slight wilting at the ends of the stems.

#1 MANUAL METHOD

If your LiveWall is manually watered, you will need either a watering can or water cart. As the soil becomes dry, water it just to the point of run-off (when water comes out the bottom of the system). Pick a day of the week, e.g. Wednesday - and attempt to go an entire week before watering again. A weekly interval is easy to remember and easy to stick to. If you can't go a week without needing to water again, then apply a little more water next time, or shorten the watering interval (perhaps every 5 days).

#2 AUTOMATIC IRRIGATION USING ELECTRONIC TIMER (AND DRIP TUBES)

Automatically irrigated LiveWall systems include a controller with settings that are easy to read and adjust. We suggest you start with a run time of 2 minutes every 5 to 7 days.

If this proves to be inadequate to make it through one week, increase run time to 3 minutes or shorten the interval. Alternatively, if the soil is still quite moist at the end of one week, lengthen the interval between waterings.

Fine tune quantity and frequency of water as needed, but *avoid overwatering*.



Fertilizing Instructions

You will know that it is time to fertilize if...

the plants lack vigor, show signs of yellowing, or fail to bloom (provided these symptoms are not caused by a disease, insect or lighting problem).

#1 AUTOMATIC FERTILIZATION

Fertilization with an automatic irrigation system (and drip tubes) is typically done by injecting or siphoning the soluble fertilizer concentrate into the water supply line—at dilute concentrations such as 75 to 100 parts per million Nitrogen. LiveWall recommends Nature's Source 10-4-3 organic fertilizer. To prevent production of algae or biofilm, pour vegetable oil over diluted fertilizer stock solution as a simple air barrier.



#2 MANUAL LIQUID FEED

For automatic or hand watered systems, a water-soluble fertilizer such as Jack's, Peters, or Miracle Gro may be applied by hand with a hose or watering can. Select only fertilizers labelled for indoor use, and apply at a higher concentration, such as 350 to 500 parts per million Nitrogen, and relatively infrequently, perhaps every 6 to 12 months.



#3 MANUAL CONTROLLED RELEASE GRANULAR FERTILIZATION

Hand-watered indoor living walls may be fed with a granular slow release fertilizer. The preferred product is Scotts Osmocote®, which releases nutrition slowly for the entire growing season. This product is available from most garden centers. Typically, one teaspoon of fertilizer shaken evenly across the soil surface of each wall planter is sufficient to feed plants for 6-12 months.

IMPORTANT: Do not use granular fertilizer for indoor walls with automatic irrigation. The granules require water to run over the surface to activate, and automatically watered LiveWall indoor systems include drip stakes that inject water directly into the soil.



The amount of fertilizer to apply will vary with formulation and in all cases, the labeled directions on the package should be followed.

All applications of fertilizer are the sole responsibility of the applicator.

Performing a Soil Test to Check Fertility and pH

To test soil, gather a two cup sample by digging soil out in small quantities (using a large spoon) from at least 10-15 separate places throughout the affected area of the wall. Combine these small samples (sub-samples) in a labeled, sealed, plastic bag, or test kit from your desired testing lab. LiveWall, LLC recommends the following laboratory and test procedures.

A&L Labs
1311 Woodland Ave. Suite 1
Modesto, CA 95351
209-529-4080

Recommended Test
Nursery Growing Media Test S7A
Cost: appx. \$45.00

Interpreting Soil Test Results

FERTILITY

The soil report will indicate if there is a low (L), Moderate (M), or High (H) amount of the nutrient in the soil. It will also list micronutrient content such as Zinc, Iron, Sulphate, and others. The most important of these, in terms of plant vigor and color are Nitrogen and Iron. If your soil contains less than a moderate (M) amount of Nitrogen or Iron, the plants may appear yellow and lack vigor. If this is the case, it is advisable to apply supplemental fertilizer.

All fertilizers will be labeled with three numbers, which indicate the % by weight of Nitrogen (N), Phosphorus (P), and Potassium (K), in the fertilizer. Common formulations are 18-6-12 or 14-14-14, but there are many others.

In the event that your soil is lacking an a particular micronutrient, it may be as a result of using an incomplete fertilizer. Good quality fertilizers typically have a full compliment of micronutrients.

To correct micronutrient imbalances, consult your local garden center for a specific remedy.

pH

Another important part of your soil analysis is the pH. pH is an indication of the acidity or alkalinity of the soil. Plants have a preferred pH range for optimal utilization of nutrients, and in the case of most green wall plants, this range is 5.0 to 7.0. Below 5.0 is too acidic, and above 7.0 is too alkaline for most plants. If your soil pH is below 5.0, consult your local garden center for recommendations to increase alkalinity. Typically, this means adding lime. And, if the soil is above 7.0, it can be made more acidic with an acidifying fertilizer (of which most of them are) or elemental sulfur.



Replanting and/or Dividing Plants

Many tropical indoor plants have strong root systems that may become root bound and need to be replanted approximately every 5 years. If plants become root bound, and if they become stunted and overcrowded, the situation can be alleviated by dividing them and repotting them in a quality houseplant soil, which is carried by local garden centers.

Vacuum Planters and Clear Drainage

When moving or changing plants, debris (in the form of soil, leaves or roots) can fall into the drain lines. Before replacing planter inserts, vacuum out each planter. Pour water into empty planter to test drainage. If slow draining, inspect drain tube assembly and clear all blockage.

For a comprehensive discussion of indoor plant care, we recommend the book *Miracle-Gro Complete Guide to Houseplants*.



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