

Sustainable Hydroponic Garden

Checklist & Resource Guide

How to Use This Guide

This comprehensive checklist helps you audit and improve your hydroponic garden's sustainability across five key areas: **Energy & Lighting, Water Management, Nutrients & Plant Health, Materials & Waste,** and **Business & Community.**

Print this guide, check off completed items, and use the resource links to implement new practices. Track your progress quarterly and watch your system become more efficient, profitable, and eco-friendly.

Estimated time to review: 30–45 minutes

Frequency: Quarterly audit recommended

Part 1: Energy & Lighting Sustainability

Current Status Assessment

Total system power consumption (kWh/day): _____

Current primary power source:

- Grid electricity (100%)
- Grid + solar hybrid
- Solar only
- Battery / generator

Current lighting technology:

- HPS (High-Pressure Sodium)
 - Fluorescent / T5
 - LED full-spectrum
 - Mixed (list types): _____
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Energy & Lighting Checklist

Task	Status	Notes	Time line
Calculate total daily kWh for all systems (pumps, lights, fans, heaters, controls)	<input type="checkbox"/> Complete <input type="checkbox"/> In Progress	Current: ____ kWh/day	Target: ____
Audit all pumps and identify those running 24/7 unnecessarily	<input type="checkbox"/> Complete <input type="checkbox"/> In Progress	Pumps identified: _____	By: ____
Install timers or automation on pumps and controls	<input type="checkbox"/> Complete <input type="checkbox"/> In Progress	Systems on timers: _____	By: ____
Get solar sizing estimate from local installer or online solar calculator	<input type="checkbox"/> Complete <input type="checkbox"/> In Progress	Estimated cost: \$_____	By: ____
Install or expand solar panels / solar generator (even small 1–2 panel systems help)	<input type="checkbox"/> Complete <input type="checkbox"/> In Progress	Panels installed: ____ kW	By: ____
Replace all HPS / fluorescent lights with high-efficiency LEDs	<input type="checkbox"/> Complete <input type="checkbox"/> In Progress	LED fixtures installed: ____	By: ____
Verify LED specs (efficacy: $\mu\text{mol}/\text{J}$, spectrum, wattage) match crop needs	<input type="checkbox"/> Complete <input type="checkbox"/> In Progress	Target efficacy: $\geq 2.0 \mu\text{mol}/\text{J}$	By: ____
Install dimmers or multi-mode controllers on LED fixtures	<input type="checkbox"/> Complete <input type="checkbox"/> In Progress	Dimmable lights: ____ / total	By: ____

Task	Status	Notes	Time line
Set up light schedules: seedling vs. veg vs. flower modes	<input type="checkbox"/> Complete <input type="checkbox"/> In Progress	Cycles programmed: <input type="checkbox"/> Yes	By: _____
Monitor and log monthly kWh usage; compare to pre-LED baseline	<input type="checkbox"/> Complete <input type="checkbox"/> In Progress	Current usage: _____ kWh/month	By: _____

Energy & Lighting Resources

Solar Panel Sizing & Installation:

- Local solar installers (search "solar panels [your city]")
- Online calculators: Palmetto Solar, Sunrun, or EnergySage for quotes
- "Solar Hydroponics and the Future of Gardening (2025)" – 8MSolar
- Solar generator kits for renters/portable setups

LED Grow Light Specs & Selection:

- LED efficacy comparison charts (request from manufacturers)
- SecretLED Blog: "Why Full Spectrum LEDs Are the Future of Hydroponics"
- PacLights: "LED Plant Growth Light: How It Affects Electrical Load"
- Mars Hydro: "LED Grow Light Electricity Cost—Are These Lights Cost-Effective?"

Energy Monitoring:

- Kill-A-Watt meter (plug-in electricity usage monitor, ~\$25)
- Smart plugs with Wi-Fi (Wyze, TP-Link Kasa) for remote monitoring and scheduling

Part 2: Water Management & Conservation

Current System Assessment

Primary hydroponic system type:

- NFT (Nutrient Film Technique)
- DWC (Deep Water Culture)
- Ebb & Flow (Flood & Drain)
- Recirculating Drip
- Kratky (non-circulating, static)
- Aquaponics / Biofilter hybrid
- Other: _____

Water source:

- Municipal tap water
- Well water
- Rainwater collected
- Recycled / recirculated system water
- Mixed sources

Current monthly water usage (estimated): _____ gallons/month

Water Management Checklist

Task	Status	Notes	Timeline
Measure or estimate current monthly water consumption	<input type="checkbox"/> Complete <input type="checkbox"/> In Progress	Current: ___ gal/month	By: ___
Verify system is recirculating (non-recirculating systems skip to rainwater)	<input type="checkbox"/> Complete <input type="checkbox"/> In Progress	System type: _____ —	By: ___
Cover all reservoirs with opaque lids to reduce algae and evaporation	<input type="checkbox"/> Complete <input type="checkbox"/> In Progress	Reservoirs covered: ___ / total	By: ___
Replace clear tubing with opaque, UV-resistant lines where visible	<input type="checkbox"/> Complete <input type="checkbox"/> In Progress	Sections replaced: _____ —	By: ___
Conduct leak audit: check all fittings, connections, and pump seals	<input type="checkbox"/> Complete <input type="checkbox"/> In Progress	Leaks found & repaired: _____	By: ___
Research local rainwater harvesting regulations	<input type="checkbox"/> Complete <input type="checkbox"/> In Progress	Regulations reviewed: <input type="checkbox"/> Yes	By: ___
Install rainwater collection (gutters, mesh screens, storage tanks)	<input type="checkbox"/> Complete <input type="checkbox"/> In Progress	Tank size: ___ gallons	By: ___
Set up pre-filter and treatment (sediment screen, carbon filter, UV) for collected water	<input type="checkbox"/> Complete <input type="checkbox"/> In Progress	Treatment installed: <input type="checkbox"/> Yes	By: ___

Task	Status	Notes	Timeline
Establish protocol for safely disposing or reusing spent nutrient solution	<input type="checkbox"/> Complete <input type="checkbox"/> In Progress	Disposal method: _____	By: _____
Document monthly water top-ups and compare to baseline	<input type="checkbox"/> Complete <input type="checkbox"/> In Progress	Current loss: _____ gal/month	By: _____

Water Management Resources

Water-Efficient System Design:

- LetPot Blog: "Tips for a Sustainable Hydroponic Garden"
- Eden Green: "Analyzing the Cost and Sustainability of Hydroponic Growing Systems"
- Forest Nation: "Hydroponics & Sustainability: Everything You Need To Know"

Rainwater Harvesting & Local Regulations:

- Local city/county water authority websites (search "[city] rainwater harvesting rules")
- American Rainwater Catchment Systems Association (ARCSA)
- Smart Water Signs or similar regional guides

Water Testing & Treatment:

- DIY water testing kits (pH, EC, hardness)
- Home Depot or Amazon: sediment filters, carbon filters, UV sterilizers
- Local pool supply stores for water testing services

Part 3: Nutrients & Plant Health

Current Nutrient Strategy

Primary nutrient source:

- Synthetic mineral salts (e.g., General Hydroponics, Masterblend)
- Organic / bio-based nutrients (e.g., fish emulsion, kelp)
- Mixed (partial organic): _____
- Experimental (compost tea, insect frass, etc.)

Beneficial microbe use:

- None currently

- Mycorrhizal inoculant only
- Beneficial bacteria (Bacillus, Trichoderma)
- Compost tea / active biological cultures
- Other: _____

Pest & disease management:

- Broad-spectrum chemical pesticides
- Biological controls (beneficial insects, predatory mites)
- Cultural practices (isolation, hygiene, pruning)
- No active pest management (not recommended)

Nutrients & Plant Health Checklist

Task	Status	Notes	Timeline
List all current nutrient products and their ingredients	<input type="checkbox"/> Complete <input type="checkbox"/> In Progress	Nutrient list: _____ —	By: _____
Research OMRI-certified or organic hydroponic nutrient brands	<input type="checkbox"/> Complete <input type="checkbox"/> In Progress	Brands reviewed: _____ —	By: _____
Trial 1–2 crops with partial or full organic nutrient substitution	<input type="checkbox"/> Complete <input type="checkbox"/> In Progress	Crop date: _____ _____	By: _____
Source beneficial microbes (mycorrhizae, Trichoderma, Bacillus, etc.)	<input type="checkbox"/> Complete <input type="checkbox"/> In Progress	Products selected: _____ —	By: _____
Introduce compost tea or active biological cultures into your routine	<input type="checkbox"/> Complete <input type="checkbox"/> In Progress	Frequency: ___ / week or month	By: _____
Document crop quality, yield, and flavor changes when switching nutrients	<input type="checkbox"/> Complete <input type="checkbox"/> In Progress	Notes: _____ _____	By: _____
Increase aeration (air stone size, pump strength, timing) when using organics	<input type="checkbox"/> Complete <input type="checkbox"/> In Progress	Aeration settings: _____ —	By: _____
Establish IPM (Integrated Pest Management) plan: biological + cultural controls only	<input type="checkbox"/> Complete <input type="checkbox"/> In Progress	IPM plan documented: <input type="checkbox"/> Yes	By: _____

Task	Status	Notes	Timeline
Set up regular root health inspections and EC/pH logging	<input type="checkbox"/> Complete <input type="checkbox"/> In Progress	Inspection frequency: ___ / week	By: ___
Train staff or yourself on organic nutrient best practices	<input type="checkbox"/> Complete <input type="checkbox"/> In Progress	Training completed: <input type="checkbox"/> Yes	By: ___

Nutrients & Plant Health Resources

Organic Hydroponic Nutrient Suppliers:

- HTG Supply: Organic Nutrients for Hydroponic Gardening
- Nutraponics: Hydroponic nutrients and supplements
- Pre-Empt OMRI-listed Organic Fertilizer (fish-based, hydroponic-safe)
- Local grow shops and hydroponic retailers

Beneficial Microbes & Compost Teas:

- Great Lakes Bio Energy (GLB) – mycorrhizal products
- RootShield, Serenade (Bacillus subtilis for disease suppression)
- TeaLawn, Soil3, or local compost tea brewers
- DIY guides: "How to Make Compost Tea for Hydroponics"

IPM & Pest Management:

- University extension services: IPM guides for greenhouse crops
- Beneficial Insects: ladybugs, parasitic wasps, predatory mites (supplier: Arbico Organics, others)
- Sticky traps, neem oil, insecticidal soap (OMRI-approved options)

Part 4: Materials, Media & Zero-Waste Design

Current Materials Inventory

System construction materials:

- Food-grade plastic (durable, recyclable)
- Recycled plastic or upcycled containers
- Metal (aluminum, stainless, recycled steel)
- Wood (untreated, sealed for humidity)
- Mixed (list): _____

Growing media:

- Expanded clay pebbles (reusable, durable)
- Rockwool cubes (single-use, specialized disposal)
- Coco coir (renewable, locally available?)
- Peat moss (non-renewable; not recommended)
- Other: _____

Packaging waste (monthly):

- Nutrient bottles/bags: ____ / month
- Growing media bags: ____ / month
- Supplies & consumables: ____ / month

Materials & Zero-Waste Checklist

Task	Status	Notes	Timeline
Audit all system components for durability and material origin	<input type="checkbox"/> Complete <input type="checkbox"/> In Progress	Results: _____ _____	By: _____
Replace flimsy plastics with durable, food-grade alternatives	<input type="checkbox"/> Complete <input type="checkbox"/> In Progress	Items replaced: _____ _____	By: _____
Source recycled metal racks, frames, or shelving for system support	<input type="checkbox"/> Complete <input type="checkbox"/> In Progress	Recycled materials sourced: _____	By: _____
Audit growing media: prioritize reusable or responsibly sourced options	<input type="checkbox"/> Complete <input type="checkbox"/> In Progress	Media used: _____ _____	By: _____
Transition to expanded clay or other long-lived media (if applicable)	<input type="checkbox"/> Complete <input type="checkbox"/> In Progress	Media changed: <input type="checkbox"/> Yes	By: _____
Reuse net pots, trellis clips, and other consumables for ≥ 3 cycles before disposal	<input type="checkbox"/> Complete <input type="checkbox"/> In Progress	Reused items: _____ _____	By: _____
Set up compost bin or worm bin for plant waste, spent roots, & trimmings	<input type="checkbox"/> Complete <input type="checkbox"/> In Progress	Bin type: _____ _____	By: _____
Coordinate with neighbors or growers for bulk nutrient orders to reduce packaging per unit	<input type="checkbox"/> Complete <input type="checkbox"/> In Progress	Partner found: <input type="checkbox"/> Yes / <input type="checkbox"/> No	By: _____

Task	Status	Notes	Tim elin e
Buy nutrient concentrates in larger refill containers (not single-use packets)	<input type="checkbox"/> Complete <input type="checkbox"/> In Progress	Refill system established: <input type="checkbox"/> Yes	By: _____
Establish recycling & disposal protocol: plastics, metals, organic waste	<input type="checkbox"/> Complete <input type="checkbox"/> In Progress	Protocol documented: <input type="checkbox"/> Yes	By: _____
Track monthly waste to landfill (in pounds or kg) and set reduction targets	<input type="checkbox"/> Complete <input type="checkbox"/> In Progress	Current waste: _____ lbs/month	Targ et: _____

Materials & Zero-Waste Resources

Durable, Recycled, & Sustainable Materials:

- Local recycled materials suppliers (search "[city] recycled plastic, recycled metal")
- Food-safe plastic retailers: Uline, Grainger, Alibaba (for bulk orders)
- FSC-certified wood suppliers for greenhouse or rack framing

Growing Media Options:

- Expanded clay (Hydroton, LECA) – reusable indefinitely with proper cleaning
- Coco coir suppliers – check for local sourcing to reduce transport emissions
- Rockwool disposal: check with local hazardous waste facilities or recycling centers

Composting & Waste:

- Local community compost programs (search "[city] compost drop-off")
- Worm bin suppliers (Worm Factory, Jewel, others) for apartment or small spaces
- Vermicomposting guides: EPA, university extension, or gardening blogs

Part 5: Business, Community & Sustainability Messaging

Business Model Assessment

Current revenue streams:

- [] Direct-to-consumer sales (farmers market, farm stand)
- [] Wholesale to restaurants, cafés, or retailers
- [] CSA or subscription boxes

- Consulting / services
- Tours, classes, or agritourism
- Other: _____

Current sustainability messaging:

- Website / social media highlight eco-friendly practices
 - Packaging or labels show water/energy/pesticide claims
 - Email or newsletter includes sustainability updates
 - None (opportunity to develop)
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Business & Community Checklist

Task	Status	Notes	Timeline
Draft a clear sustainability story: quantify water saved, energy mix, zero pesticides	<input type="checkbox"/> Complete <input type="checkbox"/> In Progress	Story written: <input type="checkbox"/> Yes	By: _____
Create a 1-page sustainability fact sheet or infographic for farm stand or website	<input type="checkbox"/> Complete <input type="checkbox"/> In Progress	Fact sheet created: <input type="checkbox"/> Yes	By: _____
Add sustainability metrics to website / social media (e.g., "95% less water than soil")	<input type="checkbox"/> Complete <input type="checkbox"/> In Progress	Metrics posted: <input type="checkbox"/> Yes	By: _____
Update product labels or packaging to highlight sustainability claims	<input type="checkbox"/> Complete <input type="checkbox"/> In Progress	Labels updated: <input type="checkbox"/> Yes	By: _____
Partner with 1–2 local cafés, restaurants, or grocers valuing sustainability	<input type="checkbox"/> Complete <input type="checkbox"/> In Progress	Partners identified: _____	By: _____
Launch or expand CSA box program with sustainability-focused marketing	<input type="checkbox"/> Complete <input type="checkbox"/> In Progress	CSA launched: <input type="checkbox"/> Yes	By: _____
Plan quarterly farm tours or open-house events highlighting eco-friendly systems	<input type="checkbox"/> Complete <input type="checkbox"/> In Progress	Event dates: _____	By: _____
Develop 2–3 workshop topics (e.g., "DIY Solar Hydroponics," "Organic Nutrient Hacks")	<input type="checkbox"/> Complete <input type="checkbox"/> In Progress	Workshops designed: <input type="checkbox"/> Yes	By: _____

Task	Status	Notes	Tim elin e
Set competitive pricing that reflects sustainability value-add (premium for certified or transparent sourcing)	<input type="checkbox"/> Complete <input type="checkbox"/> In Progress	Pricing reviewed: <input type="checkbox"/> Yes	By: —
Join or promote local sustainability certification (e.g., Certified Naturally Grown, etc.)	<input type="checkbox"/> Complete <input type="checkbox"/> In Progress	Certification researched: <input type="checkbox"/> Yes	By: —
Track & report quarterly revenue, crop yield, and customer feedback on sustainability messaging	<input type="checkbox"/> Complete <input type="checkbox"/> In Progress	Reporting system set up: <input type="checkbox"/> Yes	By: —

Business & Community Resources

Sustainability Branding & Marketing:

- "Regenerative Organic Certification" (ROC) – verify eligibility
- Certified Naturally Grown (CNG) – affordable certification for small producers
- Local farmers market associations – sustainability programs and marketing support

Sales & Community Partnerships:

- Local independent grocers, cafés, restaurants (direct outreach + samples)
- CSA/ Community Agriculture networks in your area
- Agritourism associations and farm-tour directories

Content & Education:

- Workshop marketing: Eventbrite, local Facebook groups, email newsletters
- Content platforms: blog, Instagram, TikTok, YouTube for farm tours and growing tips
- Media outreach: local food publications, sustainability blogs (potential features & backlinks)

Quick-Reference Scorecard

Use this section to track overall sustainability progress. Complete quarterly.

Score Your Sustainability Level (1 = Not Started, 5 = Fully Implemented)

Category	Current	Q2 Target	Q3 Target	Q4 Target
Energy & Solar Integration	__/5	__/5	__/5	__/5
Water Conservation & Recirculation	__/5	__/5	__/5	__/5
Organic & Beneficial Nutrients	__/5	__/5	__/5	__/5
Sustainable Materials & Zero Waste	__/5	__/5	__/5	__/5
Community & Business Messaging	__/5	__/5	__/5	__/5
TOTAL SUSTAINABILITY SCORE	__/25	__/25	__/25	__/25

Interpretation:

- **20–25:** Highly sustainable system; focus on optimization and scaling impact.
- **15–19:** Strong foundation; prioritize 1–2 gaps (e.g., solar or organics).
- **10–14:** Moderate progress; identify 2–3 high-impact improvements.
- **Below 10:** Starting journey; begin with energy audit and water conservation.

Notes & Action Items

Use this space to track your top priorities and next steps:

Q1 (Next 90 Days) – Top 3 Priorities:

- _____
- _____
- _____

Assigned Owner(s): _____

Budget Estimate: \$ _____

Expected ROI / Impact:

- Water saved (annual): ____ gallons
- Energy saved (annual): ____ kWh
- Cost savings (annual): \$ _____
- Revenue uplift (sustainability messaging): \$ _____

Quarterly Review Dates:

- Q1 Review: _____
- Q2 Review: _____
- Q3 Review: _____
- Q4 Review: _____

Additional Notes

*Thank you for committing to a more sustainable hydroponic garden!
Download this guide quarterly, track your progress, and share your wins with your
community.
Questions? Visit [Your Blog] or [Your Contact Info]*