The Wood Vinegar Guru

Critters, Compost, and the Closed Loop

Luna Char

CONTENTS

WELCOME

Hello, and thank you for picking up this guide.

My name is Kevin Hoffberg. I'm the President of Regenerative Biocarbons, and I also own and work a small family farm here in the Pacific Northwest. Season after season, that farm has reminded me that good soil, careful stewardship, and a little curiosity are the real engines of productivity.

We created the LunaChar brand to bring our products — wood vinegar and biochar — directly to growers like you. These are simple, natural tools with deep roots in global agricultural practice, now refined and produced from Pacific Northwest softwoods.

Our wood vinegar and biochar are designed for ultra-low ash content, balanced pH, and maximum absorption.

They contain compounds like karrikins and cyanohydrins that help seeds sprout, roots grow deeper, and plants become stronger.

The results are healthier soil, more resilient crops, and better water retention — all while locking away carbon and contributing to a cleaner future.

This guide is meant to be practical. Inside you'll find stage-by-stage advice for vegetables, fruit, and livestock; farmer-math dosing charts; and tips you can put to work the same day.

A friendly reminder before you dig in: every garden, farm, and flock is unique. Pay attention to your conditions, take good notes, and start small as you learn what works best. Wood vinegar is powerful, but it's not a silver bullet. Used thoughtfully, it can become one of the most versatile allies in your toolkit.

We're proud to share what we've learned, and even more proud to stand alongside you in the growing movement toward regenerative agriculture — from the ground up.

GETTING STARTED WITH LUNACHAR WOOD VINEGAR

Working the land should restore it, not deplete it. Whether you garden, raise livestock, or manage a few acres of orchard or pasture, the soil beneath your feet is the foundation of everything.

LunaChar Wood Vinegar is a natural byproduct of making biochar — a smoky, amber liquid rich in organic compounds that plants, soil microbes, and even animals respond to in remarkable ways. Used in small amounts, it helps seeds germinate, roots dig deeper, leaves grow stronger, and soil life rebound. It also reduces odor, suppresses disease, and speeds composting — all without synthetic chemicals.

Each volume in this LunaChar Vinegar Series explores a different part of the farm or garden:

- **Vegetables** – quick crops that thrive on balance and consistency.
- **Fruit & Berries** – long-lived plants that benefit from steady nutrition and fungal control.
- **Flowers & Ornamentals** – bloom and color powered by gentle foliar care.
- **Critters & Compost** – bedding, manure, and soil systems that close the regenerative loop.

Though the examples come from our work in the Pacific Northwest, the principles apply anywhere growers care for soil and community alike.

How to Use This Guide

Think of LunaChar as a **multiplier of good practices**, not a replacement. Healthy soil, clean water, and good husbandry still do the heavy lifting. Wood vinegar simply tips the balance toward resilience — fewer pests, less odor, stronger plants, faster compost.

Use the dilution table on the next page as your reference point. Start light, observe results, and adjust as you go. Consistency matters more than precision.

A Note on Ratios

Our dilution rates are **guidelines**, not prescriptions. Wood vinegar is forgiving within a reasonable range — a slightly strong or weak mix won't hurt your plants.

Avoid doubling concentrations unless treating a specific issue (odor, fungus, or heavy disease pressure). When in doubt, go lighter and build from there.

Tips for Scaling Up

1 U.S. gallon = 128 fl oz = 3.78 L.

To scale, multiply the *per-gallon amount* by the number of gallons in your tank.

Example: A 10-gallon sprayer at 1:100 = 10 fl oz (≈ 300 mL) LunaChar.

- **When in doubt, start light.** You can always increase concentration if needed.
- **Mix only what you'll use that day.** Wood vinegar solutions lose potency after 24 hours.

FARMER MATH

Here are some common dilutions and applications

Dilution Ratio	Per Gallon of Water	Approx. Volume (fl oz / mL)	Common Use Context
1:500	½ teaspoon per gallon	0.1 fl oz / 3 mL	General foliar sprays for vegetables, flowers, or berries; delicate seedlings
1:400	1 teaspoon per gallon	0.17 fl oz / 5 mL	Compost activation, seed germination, sensitive transplants
1:200	2 teaspoons per gallon	0.33 fl oz / 10 mL	Disease prevention, stressed plants, bulbs, and transplants
1:100	2 tablespoons per gallon	1 fl oz / 30 mL	Soil drenches, root stimulation, fruit trees, manure treatment
1:50	4 tablespoons per gallon	2 fl oz / 60 mL	Heavy odor control (bedding, pens, compost piles)
0.1 %	½ teaspoon per gallon	0.1 fl oz / 3 mL	Cut-flower vase solution, post-harvest dips

WHAT IS WOOD VINEGAR?

When Pacific Northwest softwood goes through **pyrolysis**, two valuable materials emerge:

- The **solid carbon**, which becomes LunaChar Biochar — a stable, porous material that improves soil structure and fertility.
- The **vapors**, which condense into LunaChar Wood Vinegar — a smoky, amber liquid packed with natural organic acids, phenols, and karrikins that plants and microbes recognize as signals for growth and renewal.

Nothing is wasted. Every solid, liquid, and gas is captured and reused — a process that's not only efficient but **carbon-negative**.

A Practice Rooted in Nature

Farmers in Japan, Korea, and China have used wood vinegar for centuries to stimulate growth, balance soil biology, and control pests.

You've seen its power in nature: a year after a forest fire, new green shoots carpet the ground. That's because **karrikins**, compounds in smoke, trigger seeds to sprout and ecosystems to rebound.

LunaChar Wood Vinegar simply captures and concentrates those same compounds in a safe, practical form you can use in your garden or on your farm.

Why It Matters for Livestock and Soil Systems

Healthy animals and healthy soil are part of the same circle. LunaChar Wood Vinegar helps keep coops, stalls, and pens cleaner while boosting compost quality and nutrient retention. When sprayed lightly on bedding, manure, or compost piles, it reduces odor, suppresses flies, and accelerates decomposition — closing the loop between barn and garden, animal and soil.

How It Works

Wood vinegar contains **over 200 natural compounds** that work together to restore balance and vitality:

- **Seed germination boost** – Karrikins help seeds break dormancy and sprout faster.
- **Root and growth support** – Organic acids stimulate roots and enhance nutrient uptake.
- **Natural pest deterrence** – Volatile phenols make leaves less attractive to insects and fungi.
- **Microbial balance** – Encourages beneficial soil life while suppressing pathogens.

It's not a replacement for good practice — it's a natural amplifier that helps living systems thrive.

Safe and Sustainable

Wood vinegar is **not** wood alcohol (methanol). Methanol is toxic; wood vinegar is not.

LunaChar Wood Vinegar is made exclusively from clean, untreated Pacific Northwest softwood and engineered for:

- Ultra-low ash and balanced acidity
- Consistent potency across batches
- Safety for plants, animals, and people when properly diluted

Each drop embodies the same circular principle: taking what forests offer, refining it responsibly, and returning it to the land in a form that sustains life.

CRITTERS, COMPOST, AND THE CLOSED LOOP

Every garden is more than just plants — it's an ecosystem alive with animals, insects, and the hidden world of microbes. Chickens scratching in the yard, bees visiting blossoms, worms tunneling through soil: these "critters" are just as much a part of the harvest as the vegetables and flowers. Managing them well can mean the difference between abundance and frustration.

LunaChar Wood Vinegar has a role to play here, too. In pens and coops, it keeps bedding fresher, suppresses odors, and cuts down on flies. In the garden, it discourages pests while leaving pollinators unharmed. In compost piles, it accelerates decomposition, locks in nutrients, and reduces the smells that drive neighbors crazy. And when paired with biochar, it helps close the loop — turning waste into the fertile, living soil that feeds the next season's crops.

This chapter brings those threads together. We'll look at livestock and companion animals, insect management, and composting — not as isolated problems, but as part of a whole system. The goal is a garden where everything works in balance: plants, animals, microbes, and people all contributing to a cycle that sustains itself year after year.

COMPANION ANIMALS & LIVESTOCK

If vegetables and fruit trees bring food to the table, animals bring a whole different kind of energy to the garden and homestead.

Chickens cluck, goats bleat, rabbits twitch, and suddenly the garden isn't just about plants anymore — it's about movement, sound, manure, and the constant give-and-take between humans and animals.

Many people start small: a half dozen chickens in a backyard coop, a rabbit hutch, maybe a few ducks. But animals have a way of multiplying, and so do the demands.

What felt simple at first — toss some feed, collect some eggs — quickly scales into fencing battles, predator management, new flock integration, parasite pressure, and a coop that seems to get dirty as soon as you've cleaned it. You go from owning animals to realizing they own your schedule.

At small scales, healthy animals are mostly about attention: good feed (garden scraps, table leftovers, even fermented grains), clean water, and a tidy coop.

At larger scales, you start searching for "hacks" to make the system manageable — solar-actuated doors that let chickens in and out at dawn, chicken tractors to move birds across pasture, or integrating poultry with ruminants the way farmers like Joel Salatin advocate. Meat birds, laying flocks, even goats or pigs — each step up adds more labor, more mess, and more risk of disease.

And here's the hard truth: with animals, one sick or stressed individual quickly becomes *everyone's* problem. Pathogens and parasites spread fast. Odors and flies multiply. Social chaos flares when new birds are introduced.

This is where natural, non-toxic inputs like LunaChar Wood Vinegar can make a real difference. It's not a silver bullet, but it is a practical hack: a way to keep bedding fresher, coops cleaner, pests at bay, and animals healthier without leaning heavily on synthetic chemicals.

Whether you're caring for six hens in a backyard or managing dozens of animals on pasture, the principles are the same — and LunaChar helps tip the balance toward health and simplicity at any scale.

Bedding & Odor Control

Animal bedding quickly becomes a source of trouble when it soaks up urine and moisture. Ammonia odors build, flies multiply, and pathogens thrive — all of which stress animals and their caretakers.

The problem: Bedding (straw, shavings, sawdust) absorbs urine and moisture, creating ammonia odors, fly pressure, and conditions ripe for pathogens.

The solution: Light sprays of diluted wood vinegar neutralize odors, suppress harmful microbes, and make bedding less attractive to flies.

How to use it:

- Mix 2–4 tablespoons per gallon of water.
- Spray lightly over bedding once or twice a week, or after cleaning.
- Safe for use in chicken coops, rabbit hutches, goat pens, and even dog kennels.

Animal Health Support

Beyond the environment, animals themselves benefit from gentle, supportive care. Parasites, skin irritation, and general stress reduce vitality and productivity.

The problem: Skin irritation, external parasites, and stress reduce animal health and productivity.

The solution: Gentle sprays of very dilute wood vinegar act as a natural tonic, reducing pest pressure and promoting skin and coat health.

How to use it:

- Mix ½ teaspoon per gallon of water.
- Lightly mist animals' coats or feathers weekly, avoiding eyes and mucous membranes.
- For poultry, a spray on legs can discourage mites and lice.

Sidebar: Wood Vinegar as a Feed Additive — An Emerging Practice

In several Asian countries, farmers experiment with adding tiny amounts of wood vinegar to livestock feed. The idea is simple: a few drops in the ration can improve digestion, reduce gut pathogens, and boost overall performance.

What the research shows so far:

- **Chickens** – Trials in Japan and Thailand report improved feed conversion and reduced intestinal parasites when 0.5–1% wood vinegar solution was mixed into drinking water.
- **Pigs** – Small-scale studies show better weight gain and lower ammonia emissions from manure.
- **Rabbits** – Evidence suggests reduced diarrhea incidence when feed is lightly supplemented.

How it's thought to work:

Wood vinegar contains organic acids and phenolic compounds that may balance gut microbes, reduce harmful bacteria, and stimulate enzyme activity.

Important cautions:

- **Dilution matters**: too strong (>1%) can suppress appetite or cause stress.
- **Not a substitute** for balanced nutrition, clean water, and good husbandry.
- **Still experimental**: most North American producers have little to no experience with it.

👉 For homesteaders curious to try: start with a *very low concentration* (a few drops per gallon of drinking water), observe carefully, and keep detailed notes. More science is needed, but early signals are promising.

Manure & Waste Treatment

Manure is a valuable resource, but left unmanaged it produces odors, attracts flies, and loses nutrients before it can return to the soil.

The problem: Manure piles can generate odors, attract flies, and leach nutrients before they're returned to the garden.

The solution: Spraying manure with wood vinegar reduces odor, suppresses flies, and stabilizes nutrients for later use as compost or fertilizer.

How to use it:

- Mix 2–3 tablespoons per gallon of water.
- Spray directly on manure piles or around run-off areas every 1–2 weeks.

What to Expect

With regular use of LunaChar Wood Vinegar in animal systems, you'll notice:

- Cleaner, fresher-smelling pens and coops.
- Reduced fly and parasite pressure.

- Healthier animals with stronger coats, feathers, or skin.
- Manure that's more stable and ready for composting.

Sidebar: Animals as Pest Patrol

Sometimes the best pest control walks on two feet — or four. Chickens, ducks, and even goats can all play a role in reducing pest pressure in gardens and orchards.

Poultry patrol

- **Chickens** scratch through soil and mulch, devouring grubs, beetles, and weed seeds.
- **Ducks** are particularly fond of slugs and snails, making them ideal allies in the Pacific Northwest.

Larger animals

- **Goats** can clear invasive brush and weeds, reducing habitat for pests.
- **Sheep** in orchards keep grass low, improving airflow and reducing fungal disease pressure.

How LunaChar Wood Vinegar fits in

Spraying diluted wood vinegar around coops, pens, or grazing areas helps suppress flies and odors, creating a cleaner environment for both animals and plants. This makes integrated pest management smoother and less labor-intensive.

👉 Animals won't eliminate pests entirely, but when combined with good management — and a little help from LunaChar — they can reduce reliance on sprays and turn a challenge into an asset.

GARDEN PESTS & BENEFICIAL INSECTS

Every garden is a balancing act. On one side, you've got the critters you want — bees, butterflies, earthworms, ladybugs — the living allies that keep systems thriving. On the other side are the pests that chew leaves, spread disease, and ruin harvests.

Most gardeners fight this battle crop by crop, but the bigger truth is that insects and microbes don't respect boundaries. What you spray on roses affects the pollinators in your beans.

How you treat soil pests can ripple through the earthworm population.

This is where LunaChar Wood Vinegar shines: it offers gardeners a way to knock back pests without knocking out the allies.

Low doses deter harmful insects, suppress fungal spores, and clean up microbial imbalances — while leaving pollinators, beneficials, and soil life unharmed.

Broad-Spectrum Deterrent Sprays

Not every pest shows up in just one crop. Grasshoppers chew through vegetables, ornamentals, and pasture alike. **Cutworms** fell tender seedlings across beds**. Japanese beetles** skeletonize leaves whether they're on beans, roses, or grapes. **Aphids** and mites spread quickly across almost anything green. A general deterrent approach is essential for these "free agents."

The problem: Generalist pests like beetles, caterpillars, aphids, and mites cause damage across crops and ornamentals, and chemical controls often harm more than they help.

The solution: Foliar sprays of diluted LunaChar Wood Vinegar create an environment pests dislike. The smoky aroma and organic acids deter feeding and reduce

reproduction in pests like aphids, mites, and beetles — without leaving harmful residues.

Research shows sprays can cut aphid populations by more than half and suppress spider mites in controlled trials, while remaining safe for pollinators and beneficial insects.

How to use it:

- Mix 1–2 teaspoons per gallon of water.
- Spray foliage every 10–14 days during peak pest season.
- Reapply after heavy rain or if pressure is high.
- Apply early morning or evening to minimize leaf stress and avoid direct contact with pollinators.

👉 **The result:** plants stay cleaner, leaves show less chewing and sucking damage, and gardeners get a general-purpose shield that discourages pests without harming bees, butterflies, or beneficial predators.

Field Note: Wood Vinegar for Crawling Insects

Anyone who's lived through a fall ant invasion knows how persistent they can be.

We discovered something remarkable: a light pour or spray of diluted LunaChar around building thresholds and foundation edges stops them cold — not by killing, but by confusing them.

Wood vinegar's volatile acids (chiefly acetic and formic) and phenolic compounds overwhelm the scent trails ants use to navigate and recruit others. Within minutes, foraging lines scatter and do not return for days.

Research from both the USDA and independent universities confirms similar effects on orchard and storage pests, from psyllids to maize weevils .

How to use it:

- Mix 2 oz (≈60 mL) LunaChar per gallon of water (≈1:64 dilution).
- Pour or spray around door thresholds, foundations, and entry cracks.
- Reapply after rain or heavy cleaning.
- Safe for use near pets, garden beds, and building perimeters — though the smoky scent may linger for a day or two.

Result: No toxic residues, no collateral damage to pollinators — just clean foundations and a calm kitchen.

Research Note: Broad-Spectrum Pest Deterrence

Laboratory and field studies confirm what growers observe: wood vinegar suppresses a wide range of chewing insects.

In one trial, sprays derived from pyrolysis at **500–600 °C** (the same range used for LunaChar production at ~550 °C) showed strong deterrent effects on **aphids, beetles, and caterpillars**.

- **Aphids:** Feeding was reduced significantly, with leaf surfaces treated at 0.25–0.5% dilutions showing far fewer colonies compared to untreated controls.
- **Beetles:** Leaf damage by generalist feeders dropped by up to **40%** under regular wood vinegar sprays.
- **Caterpillars:** Larval survival and feeding rates both declined when exposed to treated foliage.

Researchers attribute these effects to a combination of phenolic compounds and organic acids that alter leaf surface chemistry, making plants less attractive and less palatable.

Importantly, low-dose sprays deter pests **without harming beneficial insects** like bees, lady beetles, or butterflies when

applied responsibly (early morning or evening, away from bloom).

👉 Bottom line: wood vinegar produced at typical pyrolysis temperatures isn't just a soil aid — it provides a proven, broad-spectrum line of defense against chewing pests.

Pollinator Safety

Every gardener knows the paradox: you want to control pests, but you don't want to chase away the very insects that make harvest possible. Bees, butterflies, and hoverflies pollinate flowers and set fruit; without them, gardens would be empty of both beauty and food.

The problem: Conventional pesticides often kill indiscriminately. Even organic-approved treatments can disrupt pollinator health if applied carelessly, reducing visits and cutting yields.

The solution: LunaChar Wood Vinegar, when applied at low doses and with timing in mind, deters pests without harming pollinators. Because it's biodegradable and breaks down quickly, it doesn't linger on blooms or accumulate in the environment.

How to use it:

- Apply sprays in early morning or late evening, when pollinator activity is low.
- Stick to low dilutions (½–1 teaspoon per gallon) for flowers in bloom.
- Avoid spraying directly on open blossoms; focus instead on foliage and stems.
- Safe for use alongside integrated pollinator-friendly practices like wildflower strips or bee hotels.

👉 **The result:** crops and ornamentals stay protected, while pollinators continue to thrive — ensuring both yield and biodiversity.

Soil Invertebrates & Underground Allies

Healthy soils are alive — earthworms, springtails, nematodes, and countless microbes work together to aerate, recycle, and feed the plants above. These "underground allies" are often invisible, but they're essential. When soils are compacted, waterlogged, or overloaded with synthetic inputs, that living network breaks down.

The problem: Chemical drenches and heavy fertilizer use disrupt soil invertebrates, reducing earthworm activity and microbial diversity. This weakens soil structure, slows nutrient cycling, and leaves plants more vulnerable to stress.

The solution: Dilute applications of LunaChar Wood Vinegar support beneficial soil life. At low doses (about 1–2 teaspoons per gallon), wood vinegar stimulates microbial enzyme activity and helps maintain a balanced soil ecosystem without harming earthworms or other allies.

Studies show that wood vinegar enhances microbial respiration, boosts enzyme activity linked to nutrient cycling, and can increase soil earthworm activity compared to untreated controls.

How to use it:

- Apply as a soil drench at 1–2 teaspoons per gallon during the growing season.
- Use around the drip line of perennials, or directly in planting rows for annuals.
- For compost-enriched beds, spray lightly after turning or top-dressing to encourage microbial activity.

👉 **The result:** Soils stay biologically active and better structured, earthworms remain abundant, and plants enjoy stronger, more resilient root environments.

Research Snapshot: Worms & Microbes

Controlled trials show that wood vinegar not only avoids harm to soil life but can actively improve it:

- **Enzyme Activity:** Soil treated with wood vinegar showed **20–35% higher enzymatic activity** (urease, dehydrogenase, phosphatase) compared to untreated soils, improving nutrient cycling.
- **Earthworm Safety:** In soil incubation studies, earthworm populations were unaffected at field-use concentrations (<0.5%), with activity in some cases **slightly increased**.
- **Microbial Respiration:** Wood vinegar applications increased soil microbial respiration rates by **15–25%**, a sign of more active, diverse microbial communities.

👉 **Bottom line:** LunaChar Wood Vinegar doesn't just deter pests above ground — it supports the hidden soil workforce that keeps gardens fertile and resilient.

COMPOSTING WITH LUNACHAR

Compost is where the whole garden system comes full circle. Every weed you pull, every kitchen scrap you toss, every load of soiled bedding from the chicken coop has the potential to become dark, living soil food.

But anyone who has turned a pile knows it isn't always that romantic. Piles can stall, smell, or attract clouds of flies. Nitrogen escapes as ammonia. Manure and bedding get slimy. Even with careful layering of "greens" and "browns," composting takes attention — and patience.

This is where LunaChar Wood Vinegar comes in. Long used in Asia as a compost accelerator, it helps tip the microbial balance toward faster, cleaner, more efficient decomposition.

A light dose of diluted wood vinegar — whether that's a mist over a backyard bin or a spray across a tractor-turned manure pile — doesn't just hide smells.

It alters the biology of the pile, encouraging the fast-cycling bacteria and fungi that break down material while suppressing the microbes that cause rot, ammonia, and odor.

When you pair it with biochar, you get a synergistic effect: the vinegar energizes microbes, and the char locks in nutrients. The result is compost that matures sooner, smells sweeter, and produces a darker, more fertile humus.

The problem: Even well-built compost piles lose steam. Nitrogen volatilizes into the air, especially when manure or fresh grass is involved, resulting in strong ammonia odors and wasted fertility.

Poor aeration causes sour, anaerobic pockets that stall decomposition. And for many gardeners, manure piles or large heaps become magnets for flies and rodents — the opposite of what you want right next to your vegetable beds.

The solution: LunaChar Wood Vinegar addresses all these issues simultaneously. The organic acids and phenolic compounds suppress odor-causing bacteria and ammonia release while boosting the activity of beneficial decomposers.

This means more nitrogen is conserved, fewer flies, and a composting process that runs hotter and steadier. When biochar is layered in, it captures nutrients that would otherwise leach away, providing habitat for the microbes that LunaChar activates.

How to use it

- **At pile construction:** Dilute LunaChar 1:400 (about 1 teaspoon per gallon) and spray each layer as you build. This jump-starts microbial activity right from the start.
- **At each turn:** Reapply the same dilution, misting between "greens" (nitrogen-rich) and "browns" (carbon-rich) to refresh the biology and keep odors down.
- **For manure-heavy piles:** Increase slightly to 1–2 teaspoons per gallon to suppress ammonia and stabilize nutrients. This is especially useful with chicken or rabbit manure, which are high in nitrogen.
- **With bedding:** Bedding pre-treated in coops or pens with LunaChar and biochar (see Livestock section) makes the perfect compost feedstock. It arrives already inoculated with beneficial microbes, with much less odor and fly load.
- **With biochar:** Sprinkle a thin layer of biochar as you build the pile, and spray it with diluted LunaChar. The char soaks up nutrients and gives microbes a porous home, multiplying the effect.

What to expect

When you add LunaChar Wood Vinegar to compost, you're not just masking smells — you're changing the biology of the pile. It shifts decomposition toward the beneficial microbes that work quickly and cleanly, while preserving nutrients for your soil instead of letting them drift away as odor or runoff.

Over time, that means every wheelbarrow of compost you spread is more fertile, better textured, and ready sooner.

- **Cleaner, faster decomposition** — piles heat up more evenly and break down in weeks rather than months.
- **Odor reduced by up to 70%**, especially ammonia, making composting more pleasant and less of a nuisance to neighbors.
- **Nutrient conservation** — studies show nitrogen losses reduced by 15–20% in piles treated with wood vinegar.
- **Better texture and fertility** — finished compost is darker, more crumbly, and has a higher germination index, meaning seeds sprout more vigorously when started in it.
- **An easier system** — manure and bedding that once felt like a burden become an asset, cycling cleanly back into the soil.

Notes on Scale

Composting looks differently depending on your perspective. A city gardener with a countertop bin or small tumbler has a different set of challenges than a homesteader managing piles with a tractor. The principles of LunaChar Wood Vinegar apply in all cases — only the scale of application changes.

- **Countertop or Under-Cabinet Composters:** A mist of very dilute solution (½ teaspoon per gallon) controls odor and fruit flies without overwhelming small volumes.
- **Backyard Bins or Tumblers:** Spray each layer when you add kitchen scraps or yard waste. Regular light applications keep odors down and help piles cycle faster.
- **Pallet-Style Bins:** At turning, use a garden sprayer to coat greens and browns as you remix. Biochar layers can be easily added here too.
- **Farm-Scale Windrows or Manure Piles:** Dilution rates remain the same (1:400), but application is by hose-end sprayer, pump tank, or tractor-mounted sprayer. Spray at

construction and again at each turn. Bedding pre-treated with LunaChar in coops or pens integrates seamlessly into large piles.

👉 No matter the scale, the outcome is the same: faster, cleaner, less smelly compost that conserves nutrients and comes out darker, richer, and more alive.

Sidebar: Science Behind Wood Vinegar in Composting

Gardeners have long noticed that wood vinegar makes compost smell sweeter and break down faster. Research confirms the effect — and explains why.

- **Nutrient Conservation:** Studies show nitrogen loss in untreated piles can exceed 20%. Adding wood vinegar reduces volatilization, conserving **15–21% more nitrogen**.
- **Odor Reduction:** Trials report ammonia and sulfur odors reduced by **up to 70%**, making piles more pleasant to manage and less attractive to flies.
- **Microbial Balance:** The organic acids in wood vinegar suppress odor-causing bacteria while stimulating beneficial decomposers. Enzyme activity (like cellulase and urease) increases, meaning faster breakdown of tough materials.
- **Compost Quality:** Treated piles mature sooner, producing a darker, crumbly humus with a higher **germination index** — a measure of how well seeds sprout in the finished compost.
- **Biochar Synergy:** When paired with biochar, wood vinegar helps lock nutrients into the char's porous structure, multiplying benefits.

👉 The takeaway: Wood vinegar doesn't just hide odors — it changes the biology of compost. Whether you're managing a backyard bin or a tractor-turned manure pile, the result is a cleaner, faster, more fertile compost.

THE BIOCHAR ADVANTAGE IN COMPOSTING

If wood vinegar is the spark that wakes up microbial life, biochar is the house it lives in. The two materials work together—one energizing, the other stabilizing—to transform waste into rich, resilient humus.

Why biochar matters

Biochar is highly porous, with surface areas that can exceed 300 m² per gram. Those internal nooks and crannies become long-term habitat for bacteria and fungi that drive decomposition. As the pile heats, biochar soaks up ammonium and soluble nutrients that would otherwise volatilize or leach away, holding them until plants can use them later.

Conditioning the char

Fresh biochar is almost too clean—it needs a biological "charge." Spraying it with a dilute LunaChar Wood Vinegar solution or mixing it with compost leachate before adding to the pile gives microbes a head start. In trials, pre-treated char shortened composting time by 20–30 % and boosted total nitrogen retention by roughly the same margin.

How to integrate it

- **Layering:** Sprinkle a ½-inch layer of biochar every 6–8 inches of new material and mist with diluted LunaChar (1 tsp per gal).
- **Turning:** Each time you turn the pile, re-mist the char layers to refresh microbial activity.
- **Manure-heavy mixes:** Use a slightly higher dose of LunaChar (1–2 tsp per gal) to capture ammonia and cut odor.

Results you'll see

Compost with both biochar and wood vinegar runs hotter early, smells cleaner, and finishes into a darker, more friable product that holds moisture longer once applied to soil.

ABOUT LUNACHAR

LunaChar is made in the Pacific Northwest by **Regenerative Biocarbons**, a division of **Regenerative Industrial, Inc.**, dedicated to restoring the balance between forest, farm, and community.

We turn local sawmill waste into carbon-negative products — biochar and wood vinegar — that help growers close the loop between what they take from the land and what they return to it.

Whether you grow vegetables, flowers, fruit trees, or livestock feed, LunaChar gives you a simple way to care for your soil and your future.

https://lunachar.com

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