Gardening for Gut Health

Small Space Strategies to Improve Your Microbiome

Grace Hensley | NW Flower & Garden Show 2026

About the Presenter

Grace Hensley is a gardener, photographer, and scientist with a personal interest in the microbiome following a cancer diagnosis in 2023. She combines scientific research with practical gardening advice to help people improve their health through soil and food.

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The Big Idea

Your garden and your gut run on the same principles: **feed the microbes, and the system takes care of itself.**

Healthy soil grows more nutritious food. More nutritious food — especially diverse, fiber-rich, phytochemical-dense plants — feeds a healthier gut microbiome. A healthier gut microbiome means better immunity, mood, digestion, and disease resistance.

You don't need a lot of space. You need the right plants and a few good habits.

Part 1: Build Better Soil

Good soil smells alive because it is. That earthy scent after rain comes from *Streptomyces* bacteria releasing geosmin — we can detect it at concentrations 200 times lower than sharks detect blood. Our connection to soil microbes runs ancient and deep.

How Soil Actually Feeds You

1. Plants photosynthesize and produce sugars
2. Root hairs exude those sugars to attract mycorrhizal fungi
3. Fungi pull phosphorus and nitrogen from the soil and make them available to the plant
4. This underground exchange feeds billions of microbes per handful of healthy soil

The result: **regeneratively grown vegetables contain 2–3x higher levels of vitamins, minerals, and phytochemicals** than conventionally grown ones (Bikle & Montgomery, 2022).

Small-Space Composting Options

Bokashi — Best for small kitchens. Accepts meat and dairy. Ferment food scraps 2–3 weeks in an airtight bucket, then bury or add to a traditional compost pile. Use the liquid diluted 1:100 as plant fertilizer.

Worm bin — Red wigglers only, no meat or dairy. Ready in 1–3 months. Dilute the leachate 1:10 and use as plant feed.

Compost tea — Brew 24 hours with active aeration; use immediately.

- For vegetables/annuals: greens-based compost + molasses
- For trees/shrubs: browns-based compost + kelp (supports fungi)

Regenerative Principles for Any Size Garden

- **Diversify**: Rotate crops, plant companions
- **Don't double-dig**: Protect soil structure and fungal networks
- **Keep soil covered**: Mulch, cover crops, or living mulch always
- **Skip pesticides and herbicides**: They work like antibiotics — collateral damage to the beneficial organisms you're trying to build

Part 2: Know Your Microbiome

Your body hosts trillions of bacteria, yeasts, and viruses. Most of them are doing useful work.

The Gut-Brain Axis

Your gut and brain communicate constantly via:

- **Neurotransmitters** (including serotonin — 90% of which is made in your gut)
- **Short-chain fatty acids** that regulate hunger and insulin
- **Cytokines** (immune signaling molecules)

Gardening is medicine: Soil microbe *Mycobacterium vaccae* — inhaled or absorbed through skin contact — boosts serotonin and reduces anxiety. "Dirt therapy" has measurable effects on childhood asthma.

What Microbiome Research Can (and Can't) Tell Us

Microbiome science identifies associations, not yet causes. Researchers have found microbial differences in people with digestive disorders (IBS, Crohn's, colorectal cancer), neurological conditions (anxiety, depression, Parkinson's), and autoimmune diseases — but we're still learning which comes first, the microbial shift or the disease.

The direction of evidence is clear, even if the mechanisms aren't fully mapped yet.

Part 3: The 3 F's — What to Grow and Eat

1. Fiber

Target: 30 grams per day. Most Americans get 10–15g.

Soluble fiber (feeds your bacteria, stabilizes blood sugar):

Oats, barley, chia, flax, broccoli, beans, peas, lentils, garlic, onions, leeks, asparagus, Jerusalem artichokes, apples, berries, avocados, sweet potatoes

Insoluble fiber (adds bulk, keeps things moving):
Crucifers, root vegetables, whole grains, nuts and seeds

Resistant starch — "compost for your gut":
Cook and cool rice, potatoes, or oatmeal. The starch changes structure and passes to your colon undigested, feeding beneficial bacteria. Leftovers are a feature, not a bug.

A realistic 30g day:

- Breakfast: Oatmeal + chia + blueberries + yogurt = 10g fiber
- Lunch: PB&J on whole grain = 6g fiber
- Dinner: Lentil dal with chickpeas = 21g fiber

Note on beans: The gas comes from microbes fermenting oligosaccharides (complex sugars). To reduce it: soak and rinse dried beans, and cook with epazote or a strip of kombu seaweed.

Take fart walks. Movement after a fiber-rich meal helps everything transit properly.

2. Phytochemicals

Plants make phytochemicals to protect themselves — from UV, pests, pathogens, and to attract pollinators. Those same compounds protect us.

Polyphenols — berries, tea, dark chocolate, onions, kale, parsley

- Anti-inflammatory, prebiotic, inhibit pathogens

Glucosinolates — all crucifers (broccoli, cabbage, kale, radish, mustard)

- Chewing releases sulforaphane, which reduces inflammation, flushes carcinogens, and supports cardiovascular health
- Broccoli *sprouts* have the highest concentration per ounce of any food

Anthocyanins — purple and red produce (purple carrots, red cabbage, berries)

- Powerful antioxidants; different pathway than beta-carotene

Don't grow only orange carrots.
Purple and white carrots were the norm until the 17th century. Grow heirloom varieties for phytochemical diversity.

3. Fermentation

Prebiotics feed your microbes (fiber, resistant starch, inulin).
Probiotics *are* the microbes — live cultures that temporarily support and diversify your gut flora.

Fermented foods to eat:

- Cultured dairy: yogurt, kefir, buttermilk (pre-digested lactose)
- Aged cheeses: cheddar, Gruyère, Gouda, Brie, Camembert
- Fermented vegetables: kimchi, sauerkraut, real pickles (not vinegar-brined)
- Fermented soy: miso, tempeh, natto
- Fermented drinks: kombucha, water kefir, beet kvass

- Sourdough: pre-digested gluten (note: baking kills the live cultures)

Growing for fermentation: Cabbages, cucumbers, radishes, carrots, and onions are all ideal for small-batch home fermenting. The lactic acid bacteria process creates an acidic, salty environment hostile to pathogens — it's one of the safest food preservation methods humans have developed.

Tools: "Pickle pipes" or burpable lids make beginner fermentation easy. Keep vegetables submerged, use clean jars.

Part 4: Countertop Crops — Maximum Nutrition, Minimum Space

Sprouts

Highest phytochemical concentration available from your kitchen counter.

How to grow:

- Rinse seeds twice daily (morning and evening)
- Drain completely — no standing water
- Refrigerate after sprouting; eat within a few days
- Eat raw or lightly steamed to preserve sulforaphane

Best varieties: Broccoli, radish, sunflower, pea, arugula, mustard

If immunosuppressed: Use certified pathogen-free seeds.

Microgreens

4–40x more nutrients than mature plants of the same species.

How to grow:

- Use certified pathogen-free seeds if immunosuppressed
- Grow in shallow trays with good soil or fiber mats
- Press seeds firmly for good soil contact
- Water evenly; ensure airflow to prevent mold

Best varieties: Mustard, radish, arugula, sunflower, pea, all brassicas
Avoid: Nightshades, okra

Mediterranean Herbs

Anti-inflammatory and antimicrobial. Grow in small pots on a sunny sill and succession-crop them.

Oregano, rosemary, thyme, basil, parsley, sage, mint, lemon balm, turmeric

Mushrooms

Benefits: Slow-release fiber (beta-glucans) that helps insulin resistance, lowers cholesterol, and supports immunity. 2 shiitake per day is associated with a 45% reduction in cancer risk (Dai et al.).

Easy to grow:

- Shiitake: on maple, ash, or alder logs (not cedar)
- Oyster: in bags; very forgiving for beginners

Part 5: The 30:30 Rule

30 grams of fiber per day. 30 different plants per week.

The American Gut Project (2018) found that people who ate 30+ distinct plant species per week had significantly more diverse gut microbiomes than those who ate 10 or fewer — regardless of diet type (vegan, omnivore, etc.).

What counts as a plant "point": Every distinct species or variety counts separately — vegetables, fruits, legumes, whole grains, nuts, seeds, herbs, and spices. A handful of mixed greens can count as 4–6 plants.

Japanese *Washoku* as inspiration: Traditional Japanese cuisine aims for 30 plants *per day*, organized around 5 colors, 5 flavors, and 5 cooking methods. It's UNESCO-recognized as a dietary culture — not just food, but a philosophy of diversity.

Your Action Plan

This week:

- Start a jar of sprouts
- Add one fermented food to your daily routine
- Take a fart walk after your biggest meal

This season:

- Grow at least 5 distinct crops, including something purple, something bitter, and something you can ferment
- Add compost or compost tea before planting
- Skip one pesticide application and watch what moves in

This year:

- Track your plant points for one week — you'll be surprised by the gaps
- Try making your own sauerkraut or kimchi (one cabbage, one jar, two weeks)
- Get your colonoscopy

"Every time we feed the soil, our gut, or our compost bin, we're participating in the same ancient process of renewal. Microbes make health possible — from garden to gut."

This handout accompanies "Gardening for Gut Health" at the NW Flower & Garden Show, February 2025.

Fiber Reference Chart

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30g
fiber / day
30 plant species / week

VEGETABLES

Per 1 cup cooked · raw where noted · sorted by fiber

Winter squash	6.6g
Broccoli, steamed	5.1g
Spinach	4.3g
Brussels sprouts	4.1g
Green beans	4.0g
Chard	3.7g
Asparagus	3.6g
Beets	3.4g
Cauliflower	3.3g
Turnips	3.1g
Carrots	2.8g
Cabbage	2.8g
Kale	2.6g
Peppers, raw	2.5g
Zucchini	2.5g
Tomatoes, raw	2.2g
Radishes, raw	1.9g
Cucumber, raw	0.5g
Lettuce, raw	0.5g
Arugula, raw	0.3g

FRUITS & BERRIES

Raw, with skin where possible · sorted by fiber

Raspberries, 1 cup	8.0g
Blackberries, 1 cup	7.6g
Pear, 1 medium	5.5g
Apple, 1 medium	4.4g
Blueberries, 1 cup	3.6g
Orange, 1 medium	3.1g
Banana, 1 medium	3.1g
Strawberries, 1 cup	3.0g
Grapes, 1 cup	1.4g

SAMPLE 30G DAY

Breakfast	Oatmeal + chia + blueberries + yogurt	10g
Lunch	PB&J on whole grain bread	6g
Dinner	Lentil dal with chickpeas	21g
	Total	**37g**

LEGUMES

Per ½ cup cooked · sorted by fiber

Navy beans	9.5g
Lentils, any color	7.8g
Pinto beans	7.7g
Black beans	7.5g
Chickpeas	6.2g
Kidney beans	5.7g
Peas	4.4g
Edamame	4.0g
Peanuts	2.0g

WHOLE GRAINS

Per 1 cup cooked · bread per slice · sorted by fiber

Barley	6.0g
Quinoa	5.2g
Corn	4.6g
Buckwheat	4.5g
Oats	4.0g
Brown rice	3.5g
Wild rice	3.0g
Millet	2.3g
Whole wheat bread	2.0g
Rye bread	1.9g

NUTS & SEEDS

Per 28g / 1 oz · sorted by fiber

Chia seeds	10g
Almonds	3.5g
Sunflower seeds	3.1g
Hazelnuts	2.8g
Pecans	2.7g
Walnuts	1.9g
Pumpkin seeds	1.7g
Cashews	0.9g

Data: USDA FoodData Central · fdc.nal.usda.gov · Shaded rows = highest-fiber choices within each category.

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