Six Principles of ~~Soil~~ Human Gut Health

In many ways, human health and wealth is contingent on soil health - its ability to grow food, filter pollutants, provide resources for small producers and food businesses – but the most impactful relationship is on a microbial level. "The microbiome of the plant directly mirrors the microbiome of the soil in which it was grown," states Jolene Carlson, a former educator, licensed nutritionist, and officer for the Minnesota National Guard. Jolene is also a board member for the Minnesota Soil Health Coalition, a producer-driven organization working to reduce inputs and increase profits through conservation and education. "When we eat healthy plants from healthy soil, those plants are going to have the best nutrient profiles, and therefore you will get the best nutrient profiles from eating that food."

As Jolene explains, a plant's ability to absorb nutrients is impacted by the health of the soil microbiome where it's grown, which in turn impacts the soil quality overall as well as the plant's ability to nourish the eater. Similarly, our gut's ability to absorb nutrients is impacted by the health of the gut microbiome in which the food is being digested. Over time, malnourishment from a lack of nutrient uptake can then lead to an overall degraded ability to heal, "and the longer it happens, the worse the outcomes are," says Jolene. **These parallels illustrate an interconnectedness between the soil microbiome and human gut microbiome, therefore it's important to consider both when talking about how to heal and regenerate.**

HEALING THE SOIL MICROBIOME

In the world of farming, the ability to heal and regenerate soil is strongly dependent on **"Six Principles of Soil Health" (Minnesota Soil Health Coalition, 2023)**, designed to promote practices that build microbial conditions in which soils can thrive. Not only does this build soil health on a microbial level, it also positively contributes to the overall ecology.

HEALING THE HUMAN GUT MICROBIOME

On an individual level, assessing gut health starts with nutrition. Jolene suggests the **"weed, seed, feed" system** to evaluate what we're eating and make adjustments. For example, increasing **fiber will improve digestion, absorption, and overall functioning.** Fiber content is a **prebiotic, which serves as nutritious food for the living microbes** in our gut.

Now consider again the concept of "soil health is human health" - **if the soil and human microbiota are aligned, can we align with these same principles of healing and regeneration for the human gut as well?** If we provide healthy conditions for the gut, the "soils of the body", can our overall human health thrive? Using Jolene's "weed, seed, feed" system as a foundation, let's explore these parallels between soil and human health by shifting our perspective to **consider the "Principles of Human Gut Health".**

WEED IT

Start by removing or minimizing gut disturbances from your diet.

SEED IT

Add sources of healthy gut bacteria, or prebiotics and probiotics, into your diet to protect your gut health.

FEED IT

Probiotics are transients in our body. Maintain your gut health by consistently feeding it nutrient-dense foods, prebiotics, and probiotics.

Written and designed by Kelly Bloedorn, MS (Basil's Harvest, 2025)

Basil's Harvest and the Minnesota Soil Health Coalition are working together with regional producers to build a new market channel for local producers by establishing a farm-to-institution value chain with the MN and WI National Guard. This initiative aims to bring more nutrient-dense, regional products to institutions where they are more widely accessible to communities. This program will be implemented as part of the Department of Defense's Go For Green (G4G) Initiative. G4G's goal is to improve the food environment where Service Members live and work. If you would like more information on how to get involved with Farm-to-Military, reach out to Basil's Harvest.

Questions? Feedback?
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BASIL'S HARVEST

MINNESOTA SOIL HEALTH coalition

	SOIL MICROBIOME	HUMAN GUT MICROBIOME
1 CONTEXT	Consider the context of your **own farm**, i.e. standard operations, environmental conditions, etc.	Consider the context of your **own body**, diet, nutrition, health, and wellbeing.
2 MINIMIZE SOIL DISTURBANCE	**Minimize tillage** to keep soil aggregates together which have the capacity to infiltrate, filter, and store water.	**Minimize or "WEED" out gut disturbances** to maintain a healthy gut microbiome which has the capacity to improve digestion and absorption
3 ARMOR YOUR SOIL	**Keep the soil covered** to protect it from the elements and moderate temperatures.	Armor your gut - **"SEED" it with prebiotics and probiotics** for extra protection from disturbances.
4 PLANT DIVERSITY	Use a **diverse rotation of cover crops** for added plant, wildlife, and biological diversity.	Consistently **"FEED" your gut diverse sources of prebiotics and probiotics**. Supercharge nutrient diversity with nutrient density.
5 KEEP A LIVING ROOT	**Keep a living root** in the soil as long as possible to feed the soil biology, thus feeding the plants.	Keep a living root in your gut when you can - **"FEED" it real, fresh food**. Nutrients are at peak density when the produce is harvested.
6 INTEGRATE LIVESTOCK	When **livestock graze on plants**, photosynthesis increases and supplies nutrients for regrowth.	Animals are the only species that provide **essential amino acids** not found in plant proteins. Amino acids are the building blocks that support all functions of the body.

LTC Jolene Carlson, MS, MEd, Licensed Nutritionist, adapted from *Principles of Soil Health* (Minnesota Soil Health Coalition, 2023)