**Communicating the Beneficial Effects of Soil Health Practices**
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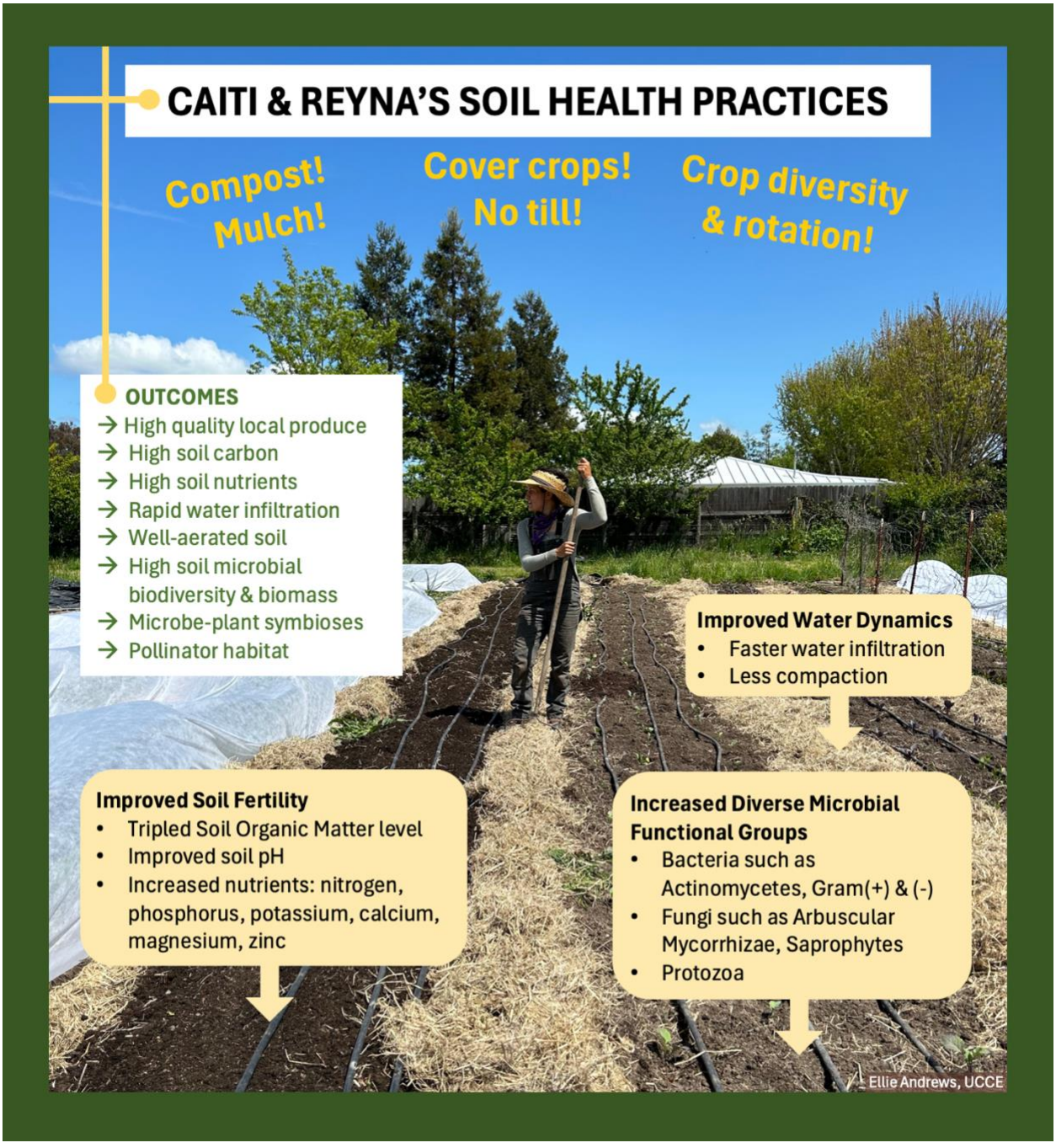
How do we communicate key messages about on-farm soil health practices to buyers, consumers, other farmers, and the public? How can we use indicators to assess effects and demonstrate the value of outcomes? Here is one example exploring these questions. Thank you, Reyna Yagi, Yagi Sisters Farm, for permission to share.



**Example Soil Sampling Map**

Thank you, Reyna Yagi (Yagi Sisters Farm at the Permaculture Skills Center) for permission to share.

Blocks are indicated by colored outlines. Dots (●) indicate location of soil sample collected. Soil samples from each block were combined in a bucket, mixed, and poured into a plastic Ziplock bag for 4 bags total. All areas are loam soil according to the NRCS Soil Web Survey.

**Uncultivated Soil** (for comparison)

**Block 2**
- 2nd longest block in production
- Compost, cover crops, no till

**Block 1**
- Longest block in production
- Compost, cover crops, no till

**Block 3**
- Most recent block in production

**Yagi Soil Fertility Results 2023**

Dellavalle Labs, Fresno CA

| No. | Description | Sat. Paste **SP** % | Sat. Paste **pH** units | Sat. Paste **EC** dS/m | Sat. Paste **Ca** meq/l | Sat. Paste **Mg** meq/l | Sat. Paste **Na** meq/l | **ESP** % | Sat. Paste **B** mg/l |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Upper Bed | 48 | 6.9 | 2.03 | 10.9 | 5.0 | 3.9 | 0.8 | 0.3 |
| 2 | 2nd Block | 50 | 6.8 | 1.76 | 9.7 | 4.7 | 2.8 | 0.3 | 0.2 |
| 3 | 3rd Block | 42 | 6.9 | 1.28 | 9.0 | 3.0 | 1.6 | ND | 0.1 |
| 4 | Uncultivated | 38 | 6.4 | 0.72 | 4.2 | 2.1 | 0.7 | ND | 0.1 |

| **Vegetable soils** | | Texture | pH* | salts** | Ca | Mg | Na | ESP | B |
|---|---|---|---|---|---|---|---|---|---|
| **Low** | | Sand <20 | < 7.3 | <1.0 | < 5 | < 3 | | < 1 | 0.1 |
| **Medium/ Optimal** | | 20-50 | 7.3 - 7.8 | 1.0- 2.0 | 5 - 10 | 1/2 Ca | | 1 - 4 | 0.2- 0.5 |
| **High** | | Clay >50 | 7.8 + | 2.0+ | 10 + | > Ca | >Ca | 4 + | 1.0+ |

| No. | Description | AA Ext **$NO_3$-N** mg/kg | Olsen Ext **$PO_4$-P** mg/kg | AA Ext **K** mg/kg | DTPA Ext **Zn** mg/kg | DTPA Ext **Mn** mg/kg | DTPA Ext **Fe** mg/kg | DTPA Ext **Cu** mg/kg | **OM** % |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Upper Bed | 67 | 108 | 363 | 21 | 21 | 98 | 2.1 | 8.30 |
| 2 | 2nd Block | 88 | 118 | 418 | 28 | 31 | 98 | 2.9 | 12.40 |
| 3 | 3rd Block | 12 | 115 | 280 | 11 | 19 | 100 | 1.5 | 4.90 |
| 4 | Uncultivated | 12 | 84 | 297 | 9.1 | 32 | 99 | 1.5 | 3.90 |

| **Vegetable soils** | | $NO_3$-N | $PO_4$-P | K | Zn | Mn | Fe | Cu | OM |
|---|---|---|---|---|---|---|---|---|---|
| **Low** | | < 20 | < 50 | <250 | < 2.5 | < 2.5 | <5 | < 2 | <1.0 |
| **Medium/ Optimal** | | 20 - 30 | 50 - 60 | 250- 350 | 2.5 - 4.5 | 2.5 - 10 | 5-10 | 2 - 4 | 1-3 |
| **High** | | 30 + | 60 + | 350+ | 4.5 + | 10 + | 10+ | 4+ | 3+ |

ND = None Detected

* pH values should be above 7.2 to prevent club root. Lower levels are acceptable for other than cole crops

** EC values above 2 can reduce lettuce yields. EC values up to 4.0 may be tolerated ***if*** primarily calcium, however, yield will still likely be reduced.

**Yagi Soil Microbial Results 2023**

Ward Labs, Kearney NE

| Sample ID | Total Biomass | Diversity Index | Bacteria % | Total Bacteria Biomass | Total Fungi % | Total Fungi Biomass |
|---|---|---|---|---|---|---|
| UPPER BED | 4584.85 | 1.538 | 47.35 | 2171.10 | 15.91 | 729.44 |
| 2ND BLOCK | 4488.67 | 1.556 | 45.85 | 2058.24 | 20.94 | 939.77 |
| 3RD BLOCK | 4567.09 | 1.582 | 45.18 | 2063.33 | 20.43 | 933.12 |
| UNCULTIVATED | 3091.25 | 1.534 | 44.53 | 1376.44 | 16.70 | 516.16 |

| Sample ID | Gram (-) % | Gram (-) Biomass | Gram (+) % | Gram (+) Biomass | Rhizobia % | Rhizobia Biomass | Actinomycete % | Actinomycete Biomass |
|---|---|---|---|---|---|---|---|---|
| UPPER BED | 21.20 | 972.09 | 26.15 | 1199.02 | 0.00 | 0.00 | 9.87 | 452.44 |
| 2ND BLOCK | 19.39 | 870.23 | 26.47 | 1188.01 | 0.00 | 0.00 | 10.56 | 473.78 |
| 3RD BLOCK | 18.76 | 856.89 | 26.42 | 1206.45 | 0.00 | 0.00 | 10.97 | 501.22 |
| UNCULTIVATED | 16.17 | 500.00 | 28.35 | 876.43 | 0.00 | 0.00 | 11.20 | 346.37 |

| Sample ID | Arbuscular Mycorrhizal % | Arbuscular Mycorrhizal Biomass | Saprophytic % | Saprophytes Biomass | Protozoan % | Protozoa Biomass |
|---|---|---|---|---|---|---|
| UPPER BED | 5.47 | 250.79 | 10.44 | 478.65 | 0.31 | 14.26 |
| 2ND BLOCK | 5.39 | 241.99 | 15.55 | 697.78 | 0.29 | 13.00 |
| 3RD BLOCK | 5.93 | 270.61 | 14.51 | 662.51 | 0.52 | 23.79 |
| UNCULTIVATED | 4.59 | 141.85 | 12.11 | 374.31 | 0.00 | 0.00 |

| Sample ID | Undifferentiated % | Undifferentiated Biomass | Fungi : Bacteria | Predator : Prey | Gram(+) : Gram(-) |
|---|---|---|---|---|---|
| UPPER BED | 36.43 | 1670.04 | 0.336 | 0.0066 | 1.2334 |
| 2ND BLOCK | 32.92 | 1477.67 | 0.4566 | 0.0063 | 1.3652 |
| 3RD BLOCK | 33.87 | 1546.82 | 0.4522 | 0.0115 | 1.4079 |
| UNCULTIVATED | 38.78 | 1198.65 | 0.375 | ALL PREY | 1.7529 |

Mention of lab names does not constitute an endorsement, simply examples. All data is shared with permission of the grower.

**Yagi Soil Structural Assessments 2023**

Bulk Density

Average Soil Bulk Density (grams of dry soil per cubic cm)

| | |
|---|---|
| UPPER BED | 0.77 |
| 2ND BLOCK | 0.64 |
| 3RD BLOCK | 0.95 |
| UNCULTIVATED | 0.87 |

Water Infiltration Rate

Average rate of water infiltration (seconds) within metal ring

| | |
|---|---|
| UPPER BED | 16 |
| 2ND BLOCK | 19 |
| 3RD BLOCK | 34 |
| UNCULTIVATED | 72 |