# Foodweb Analysis
# Soil

**Report prepared for:**

None
Kalen Hartel
309 11TH ST SE
Watford City, ND 58854-7711

khartel@ruggedwest.com

Report Sent: 8/27/2009
Sample#: 01-107741 | Submission:01-019757
Unique ID: Field 2
Plant: Wheat
Invoice Number: 4227
Sample Received: 8/19/2009

For interpretation of this report please contact:
Soil Foodweb Oregon
info@oregonfoodweb.com
(541) 752-5066

***Consulting fees may apply***

| Organism Biomass Data | Dry Weight | Active Bacteria (µg/g) | Total Bacteria (µg/g) | Active Fungi (µg/g) | Total Fungi (µg/g) | Hyphal Diameter (µm) |
|---|---|---|---|---|---|---|
| **Results** | **0.890** | 18.5 | 861 | 3.64 | 559 | 3 |
| Comments | Above Range | In range | Above range | Below range | Above range | |
| Expected Range Low | 0.45 | 10 | 150 | 10 | 150 | |
| Expected Range High | 0.85 | 25 | 300 | 25 | 300 | |

| | Protozoa (Numbers/g) | | | Total Nematodes #/g | Mycorrhizal Colonization (%) | |
|---|---|---|---|---|---|---|
| | Flagellates | Amoebae | Ciliates | | ENDO | ECTO |
| **Results** | **2418** | 31319 | **36** | **8.12** | Not Ordered | Not Ordered |
| Comments | Low | High | Low | Low | | |
| Expected Range Low | 10000 | 10000 | 50 | 20 | 40% | 40% |
| Expected Range High | | | 100 | 30 | 80% | 80% |

| Organism Biomass Ratios | Total Fungi to Tot.Bacteria | Active to Total Fungi | Active to Total Bacteria | Active Fungi to Act.Bacteria | Plant Available N Supply (lbs/ac) | Actino Bacteria (µg/g) |
|---|---|---|---|---|---|---|
| **Results** | **0.65** | **0.007** | **0.02** | **0.20** | 100-150 | 12.1 |
| Comments | Low | Low | Low | Low | | |
| Expected Range Low | 0.8 | 0.1 | 0.1 | 0.75 | | |
| Expected Range High | 1.5 | 0.15 | 0.15 | 1.5 | | |

**Nematode detail (# per gram or # per mL)**
Classified by type and identified to genus.
(If section is blank, no nematodes identified.)

| | | |
|---|---|---|
| Bacterial Feeders | 1.48 | |
| Acrobeles | | 0.63 |
| Cephalobus | | 0.21 |
| Cervidellus | | 0.11 |
| Heterocephalobus | | 0.42 |
| Panagrolaimus | | 0.11 |
| Fungal Feeders | 0.85 | |
| Microdorylaimus | | 0.74 |
| Thonus | | 0.11 |
| Fungal/Root Feeders | 4.86 | |
| Aphelenchoides | Foliar nematode | 1.37 |
| Aphelenchus | | 1.06 |
| Ditylenchus | Stem & Bulb nematode | 2.33 |
| Filenchus | | 0.11 |

None
Kalen Hartel
309 11TH ST SE
Watford City, ND 58854-7711

khartel@ruggedwest.com

Report Sent: 8/27/2009
Sample#: 01-107741 | Submission:01-019757
Unique ID: Field 2
Plant: Wheat
Invoice Number: 4227
Sample Received: 8/19/2009

For interpretation of this report please contact:
Soil Foodweb Oregon
info@oregonfoodweb.com
(541) 752-5066

***Consulting fees may apply***

| | |
|---|---|
| Dry Weight: | Add organic matter to improve soil biology, build soil structure, increase water holding capacity. |
| Active Bacteria: | Aerobic bacterial activity in normal range for this plant, in this soil type |
| Total Bacteria: | Higher than normal bacterial biomass suggests high bacterial species diversity |
| Active Fungi: | Need to improve active biomass; Add 2 to 4 gal/ ac of liquid humic acids, or 5 to 10 tons/ ac fungal compost or woody mulch, or 20 gal/ ac fungal compost tea |
| Total Fungi: | Fungal biomass and diversity above typical range for this plant group, in this soil |
| Hyphal Diameter: | Good balance of disease suppressive and normal soil fungi |
| Protozoa: | Low flagellate numbers suggest lack of species diversity. Nutrient cycling will be limited. Need inoculum of protozoa to build populations, restore missing species. |
| Total Nematodes: | Low numbers, low diversity. Need to add beneficial nematodes, improve conditions to allow their survival. |
| Mycorrhizal Col.: | |
| TF/TB: | Too bacterial- dominated for wheat. Will lack disease suppression, nutrient retention, ability to build soil structure. Need to improve beneficial fungi to balance bacterial biomass. |
| AF/TF: | Low activity; need to add fungal foods to encourage fungi |
| AB/TB: | Low activity relative to total biomass |
| AF/AB: | Soil is bacterial dominated, and becoming more bacterial; addition of fungal foods might help maintain balance |

Interpretation Comments:

Plant: Wheat, Notes: These two samples are for an ongoing soil health demonstration through my high school years. I have four years left in this project.
Actinobacteria Biomass = 12.1 ug/g
Good fungal diversity, hyphal diameters 2 to 5 um.