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Soil and Compost Foodweb Analysis

Client: Gina Kelsch
Hendrikus Shraven
. PO Box 1289
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Sample Received: 02/02/2000
Plant: Fescues
Invoice # 1812
Grower:

Date Mailed: 2-17-2001
Mid-bacterial-dominated
Summer

Organism Biomass Data

Sample #	Treatment	Dry Weight of 1 gram Fresh Material	Active Bacterial Biomass (µg/g)	Total Bacterial Biomass (µg/g)	Active Fungal Biomass (µg/g)	Total Fungal Biomass (µg/g)	Hyphal Diameter (µm)	Protozoa Numbers /g			Total Nematode Numbers (#/g)	Percent Mycorrhizal Colonization of Root
								Flagellates	Amoebae	Ciliates		
82007	Top of slope	0.72	38	432	**7.4**	205	2.5	212,965	387,203	81	33.5	NR
82008	Bottom of slope	0.71	31	329	**5.1**	101	2.5	19,460	64,655	1,946	11.3	NR
Bold means low		OK	Excellent	Excellent	Low, need to add fungal foods	Both in good range, but need to balance bacteria, so need fungal foods	OK	Excellent numbers, great nutrient cycling at top of slope, but lack of oxygen in soil at bottom of slope. Need to improve drainage Water bear present in 82008, indicative of wet conditions			Great number at top of slope, touch low at bottom, probably more the result of anaerobic conditions	
	Desired Range	Field Capacity	10 - 25	150 - 300	5 - 20	100 - 200	(A)	5,000+	5,000+	50 - 100	20 - 30	40%- 80

(A) Hyphal diameter of 2.0 indicates mostly actinomycete hyphae, 2.5 indicates community is mainly ascomycete, typical soil fungi for grasslands, diameters of 3.0 or higher indicate community is dominated by highly beneficial fungi, a Basidiomycete community.

Season, moisture, soil and organic matter must be considered in determining optimal foodweb structure. If sample information, such as pesticide, fertilizer tillage, irrigation are not included on the submission form, sender's locale is used. One report is sent to the mailing address on the submission form.

82008 had a water bear in it as well.

%

Organism Ratios

Sample #	Treatment	Total Fungal to Total Bacterial Biomass	Active to Total Fungal Biomass	Active to Total Bacterial Biomass	Active Fungal to Active Bacterial Biomass	Plant Available N Supply from Predators (lbs/ac)	Root-Feeding Nematode Presence
82007	Top of slope	0.47	0.04	0.09	0.19	400+	None detected
82008	Bottom of slope	0.31	0.05	0.10	0.16	300 but N loss	None detected
		Fescue needs more fungal biomass, add fungal foods	Need fungal foods to retain nutrients, bind soil even more, improve disease suppression	OK	Very bacterial, need to encourage fungi more. Add fungal foods	Anaerobic conditions at bottom of slope, need to improve soil structure	Excellent that not plant-pests were detected, but need to improve beneficial nematodes
Desired Range		(1)	(2)	(2)	(3)	(4)	(5)

(1) Brassica: 0.2-0.5; Row crops: 0.6 to 1.2; Early successional grass: 0.5-0.75; Late successional grass: 0.8 to 1.5; Berries, shrubs, vines: 2-5; Deciduous Trees: 5-10; Conifer: 10-100.

(2) Warm spring, early summer: 0.25 to 0.95; Early spring, late winter & mid-summer: 0.10 to 0.15; Fall rain: 0.15 to 0.20; Drought/frozen soil/heavy metal/many pesticides: 0.05 or lower. Values greater than indicated mean the organisms are recovering from a negative impact. Values lower mean organisms are not recovering and help is needed, typically addition of their food resource is required.

(3) Generally 1:1 results in good soil aggregate structure in crop soil; 2 to 5 for deciduous trees; 5 for conifers. Values above 1:1 mean soil pH may be decreasing, values less than 1:1 means pH increasing. Anaerobic conditions generally will result in extremely low soil pH.

(4) Based on release of N from protozoan and nematode consumption of bacteria and fungi (see Ingham et al. 1985). Often protozoa and nematodes compete for food resources. When one is high, the other may be low. Also, if predator numbers are high, the prey may have low numbers.

(5) Identification to genus.