Supplementary Materials

MAKING LEM AND FALSE – LEM

LEM

The LEM is made by collecting 30 gallon sack (30 gallon capacity) of O horizon (loose and partly decayed organic matter) from healthy, well established upland, mixed pine and hardwood forests, which provides the microbial inoculant. The microbial inoculant is combined with one 50-lb sack of organic semolina, 1/2 cup of active dry baker's yeast and 22 lb of crushed hardwood charcoal. A liquid solution consisting of one gallon of feed-grade molasses, one gallon of unpasteurized, nonhomogenized milk, and one gallon of non-chlorinated water are then blended into the solid mixture. Once the liquid and solid mixtures have been well blended, the LEM is placed into a 190 L-container and sealed to ferment for 6 weeks and kept at temperatures above 5^0 C and below 30^0 C. To make the liquid LEM solution, 3kg of solid fermented LEM mixture are place in a porous sack and suspended in a 100 L-container with a 16:1 of water: molasses solution. The container is sealed and the liquid LEM solution is allowed to ferment for at least 2 weeks.

False-LEM

Because the growing media (molasses and semolina, yeast and raw milk) contain nutrients and microbes, the False-LEM (F-LEM) treatment solution is formulated without the forest microbial inoculant but with the growing media. The False-LEM mixture is prepared under the same conditions as the LEM using the molasses, semolina, milk, yeast and charcoal at the same ratio as the LEM.

MATURITY INDEX, STRUCTURAL INDEX AND ENRICHMENT INDEX

Maturity Index (MI) = $\frac{\sum v\text{i x } f\text{i}}{\text{n}}$ where v_i = colonizer-persister value (c-p) value assigned to family (Bongers 1990), f_i = frequency of family in sample and n = total number of individuals in a sample.

Enrichment Index (EI) = $\frac{100\ x\ e}{e+b}$

Structure Index (SI) =$\frac{100\ x\ s}{s+b}$

Calculated using (c-p) values combined with functional guilds: Bacterial-feeding (Ba), Fungal-feeding (Fu), Carnivorous (Ca), Omnivorous (Om).

Where:

$b = (Ba_2 + Fu_2)\ W_2$ where $W_2 = 0.8$

$e = (Ba_1W_1) + (Fu_2W_2)$ where $W_1 = 3.2$ and $W_2 = 0.8$

$s = (Ba_nW_n) + (Ca_nW_n) + (Fu_nW_n) + (Om_nW_n)$ where n=3-5, W_3= 1.8, W_4 = 3.2, W_5 = 5.0