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Here's some information you can use about SoilRenu and its properties.

Through the over use of chemical fertilizers, fungicides, herbicides, pesticides and so forth, we have negatively affected the native, beneficial microorganisms that are in the soil. The good news is that research has shown that even in the harshest of environments micro- organisms don't really die, but rather go into an inactive, dormant state.

SoilRenu is a biochemical product that is used to selectively infuse the soil with beneficial microorganisms. One of the means by which this is done is by using certain types of enzymes that are really designed to awaken the microorganisms and make them extremely hungry (These enzymes are selective and only wake up desirable microbes as per the specific plant's nutritional needs). Once awakened the beneficial microorganisms begin a feeding frenzy and immediately begin dividing and multiplying at an incredible rate. For example, one microorganism can divide and multiply into one billion within a 24-hour period, and those billion can each multiply into a billion microorganisms within the next 24-hour period. And this may continue up to two weeks until the population of microbes naturally levels off to an ideal, environmentally balanced number.

Through the use of SoilRenu it is possible to command this powerful force of microbes to enrich worn soil, and to digest the nastiest, most troublesome pollutants. Microorganisms recycle the components of organic matter, or once living organisms, and convert them to the nutrient organic chemicals used by plants in photosynthesis and chemosynthesis. It's important to remember that it's the eating of food that helps the microorganisms to multiply. The SoilRenu wakes them up from their dormant state by making them extremely hungry.

SoilRenu is fused in a dry humate that is a carbon-based, high-energy food source that contains virtually every major and trace element known to man. Our product is mined out of a mountain rather than being strip-mined. Most dry humate, which is found on the surface, has a tendency to have nutrients leeched out of it due to its exposure to the weather. Our product, in contrast, is found in nature sandwiched between layers of limestone, thereby protecting it from the elements. In side-by-side field studies, our dry humate has markedly outperformed all the dry humates, which have been tested and compared.

There are 5000 calories of growing energy in each gram of dry humate. This is critical energy used by microorganisms in building new topsoil. A researcher by the name of Dr. William Jackson has calculated that the amount of energy expended by the microorganisms on each acre of soil is the equivalent to the same amount of energy used by 10,000 people doing the same work for the same amount of time.

As has already been mentioned, SoilRenu is used to wake up microorganisms and make them extremely hungry. But if we wake up the microorganisms and don't feed them, they will go right back into a state of dormancy. SoilRenu's dry humate is an ideal organic food source that provides the microorganisms with all the food and energy they need to keep them actively building topsoil all year long. What literally happens is that while the microorganisms are eating the dry humate, they are also consuming soil. The soil itself contains many organic and inorganic nutrients normally unavailable to plant life. After the microorganism eats the dry humate and soil, it excretes it directly around the root system of a plant. This microorganism "elimination" is nutrient enriched and is in an organic form that plants can readily take up through their root systems. Thus, by using our formula of SoilRenu, the microorganisms can be out there all winter long digesting soil, making new topsoil and making nutrients available. The result of using SoilRenu is a 100% organic gardening. Your organic garden is established without adding chemical fertilizers, insecticides or pesticides. In fact you will never use these chemicals again! Our studies have shown that pest infestation has decreased up to 97% without the use of chemical deterrents. Fruit and vegetable plant production increases yield an average of 66% and as much as 200% in some cases. Adding raw manure (untreated and certified organic) or pure organic compost with an additional recommended amount of SoilRenu every year increases the richness of your soil. There's no need to worry about handling or storing toxic chemicals especially around children for SoilRenu is user friendly and non-toxic. SoilRenu can be stored conveniently in a dry place out of direct sunlight to avoid excessive heat.

**What are the Microbial Inoculants found in SoilRenu?**

SoilRenu contains a large variety of microbial inoculants, enzymes, vitamins and minerals (humate). SoilRenu is a unique formulation of these elements and cannot be discussed in detail in order to protect the formula, however SoilRenu contains this large variety of elements in order to support virtually any type of plant. Not every plant has the same chemical makeup and not every plant uses the same support structure either, therefore those microbes or enzymes which are not used will either die off, be ingested by other microbes or go dormant. The two main organisms used by the majority of inoculated products are: *Rhizobia and mycorrhizae.* These are the grandfathers, if you will, of the microbial families. SoilRenu contains many more than just these two because in our studies we have found there are far more beneficial microbes available for good soil support. Many have been overlooked by others and ignored. Many have been discovered to be of great value even those on the surface they seem almost innocuous. SoilRenu has discovered which microbes and which enzymes really are needed to maximize the growth effect.

**Microbial Inoculants by Category**

Inoculants, which are dry or liquid preparations of one or more species of microorganism, fall into three broad groups: 1) those that inoculate individual plants with symbiotic organisms (chiefly *Rhizobia* spp.), 2) those that inoculate the soil with desirable organisms, and 3) those that are used as "cover crops" (algae).

**Rhizobia**

The most clearly beneficial microbial preparations for agricultural use are the different strains of *Rhizobia* used to inoculate legumes. Specific strains of these bacteria live in a mutually beneficial (symbiotic) relationship with specific species of legumes. The bacteria penetrate the plant roots, causing the formation of root nodules containing both plant tissue and bacteria. In very simple terms, the plant supplies the physical environment and certain nutrients to the bacteria; the bacteria "fix" nitrogen from the air into compounds that then become available to the plant. Typical nitrogen fixation rates vary from 50 lbs/acre to over 300 lbs/acre, depending on climate, species, and soil conditions. On most farms these rates make it possible to harvest good crops without purchasing additional nitrogen.

**Mycorrhizae**

The mycorrhizae (my-cor-ry-'zee) group of fungi live either on or in plant roots and act to extend the reach of root hairs into the soil. Mycorrhizae increase the plant's uptake of water and nutrients, especially in less fertile soils. The superfine, root-like structures of these fungi are more extensive and more effective than plant root hairs at absorbing phosphorus, and other nutrients as well. Phosphorus moves slowly in soils but the fungi can absorb it much faster than the plant alone can. This enhanced root feeding makes it possible to reduce fertilizer rates for plants having a healthy colony of mychorrhizae. Some plants including citrus, grapes, avocados, and bananas, are dependent on mycorrhiza fungi. Others that benefit from having them are artichokes, melons, tomatoes, peppers, and squash.

Roots colonized by mycorrhizae are less likely to be penetrated by root-feeding nematodes since the pest cannot pierce the thick fungal network.

Mycorrhizae also produce hormones and antibiotics, which enhance root growth and provide disease suppression. The fungi benefit from plant association by taking nutrients and carbohydrates from the plant roots they live in.

In soils where mychorrhizae have been killed off, an inoculation may be beneficial. In healthy soils where they already exist there will be little or no benefit to adding more. There are dozens of mychorrizae species in nature. Additionally, the species found on plant roots may change as the plant matures. If those that are available are of the correct species, and are handled properly at all stages, they offer interesting potential benefits to farmers in well-managed systems. Generally it is preferred to inoculate with several species rather than a single one.

**Free-living soil organisms**

A great many of the products in this category are designed to be sprayed on the soil surface or on crop residues in order to inoculate the topsoil with desirable microorganisms. Manufacturers of these products make numerous and varying claims about their beneficial effects, which fall into three broad categories:

- ✓ The microbes will fix enough nitrogen from the air to allow the farmer to eliminate much or all fertilizer.

- ✓ The product improves soil organic matter and "releases" soil nutrients to the crop.
- ✓ The product produces better yields, especially during times of drought.

Many microbial products do indeed contain free-living (as opposed to symbiotic) microbes that are known to fix nitrogen in certain circumstances. Those species, however, work best in wet, oxygen-poor conditions that most farmers and their crops would prefer to avoid. Rice paddies are a notable exception. In the vast majority of cropping situations other than rice production, the amount of nitrogen fixed by such free-living microbes is not generally considered economically significant (3). In other words, the value of any fixed nitrogen may be less than the cost of the product. Far greater nitrogen fixation, for example, can be obtained via symbiotic *Rhizobia* on a legume sod or cover crop, for much lower cost.

Soil microbes, like all living things, will thrive only in the presence of their preferred environmental conditions-moisture, oxygen, temperature, pH, food, and shelter. When conditions are not within favorable ranges, the microbes cease reproduction or die. Natural microbial populations will be abundant if soil conditions are right.

**General Dosage:** Existing plants require about one tablespoon (a thumb and four-finger pinch) per one gallon equivalent size plant spread evenly around the stem base or root ball and blended within 1-2 inches of the surface. Judge larger plants appropriately. Wet to activate the microbes then backfill. New growth requires the equivalent amount added before the plant is placed in position. (Sprinkle SoilRenu into the hole and then wet first before placing the plant.). Grass will need approximately 2 lbs. per 100 sq. ft.

## Summary Points

### Five Parts to SoilRenu Formula

1. **Soil Microbes** – used to breakdown soil compounds into small particle-sized units that plant roots can absorb as well as affix nitrogen from organic matter that serves to provide a strong immediately usable nitrogen source and a stored nitrogen source for later use.
2. **Other microbes** – used to help detoxify contaminated soil.
3. **Humate** – used to provide humic and fulvic acid to the plant. Humic and Fulvic acids help create a better water-holding capacity of soil, breaks up clay soils, stimulates seed germination and root formation, respiration and growth (usually seen as a larger mass of roots) helps regulate the pH balance of the soil by assisting the soil in accepting or donating free hydrogen ions, increases plant metabolism and increases drought tolerance. Humate also is a food source for the microbes allowing the plant roots to absorb a maximum amount of pure nutrients immediately.
4. **Soil Enzymes** – Certain enzymes have been added to increase the microbial activity so they will reproduce at greater numbers within a specific time period. This allows for a very rapid deployment and hence a very rapid provision of nutrients to the plant.
5. **Root Growth Extracts** – Specific enzymes derived from organic materials that stimulate the root growth and creates a “doubling” of the root length to occur. The increase in root length does two things; one, creates more area for nutrient absorption and 2, seeks deeper ground in which to find water. This aids in the reducing the number of water applications.

## Practical Results

1. Increases growth in a shorter period of time
2. Develops a metabolically stronger plant
3. Reacts positively with all types of plants
4. Safe around humans and animals
5. Aids plant resistance to insect infestation and disease
6. Reduces the need for nitrogen by at lease 30%
7. Other than nitrogen, chemical fertilizers can be eliminated
8. Fruit and vegetables are well-balanced chemically resulting in proper pH balance
9. More nutrients are utilized by the plant
10. Soils become more manageable after humic acid breaks down soil clods
11. Very economical. At least 2/3 the cost of chemical fertilizers and about double the production results. (The higher production numbers reduces the cost per acre even more)
12. Application is only once per year for annuals and each time a plant is replaced.
13. Replaces lost soil microbes essential for proper soil formation
14. Suppresses soil pathogens
15. Environmentally safe. Will not harm water features, streams or lakes.

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## SHIPPING CLASSIFICATION

SoilRenu is not classified as a fertilizer in the United States and therefore it does not fall under any U.S. Government regulatory statutes. **In the United States it is classified as a soil amendment by the U.S. Census Bureau under Section 31.000000 (Other)**. This is the classification shipping companies' post on a Bill of Lading and for purposes of import permits in other countries. There is no classification for soil Amendment under the U.S. Department of Agriculture.

Many smaller countries have not classified humates or other soil amendments under a specific soil amendment category and have arbitrarily classified them as fertilizers for expediency. By strict definition, in most industrialized countries, this is not a correct classification. As all-natural products become mainstream in agriculture in modestly developed countries over time, a more specific application category will emerge.

# MATERIAL SAFETY DATA SHEET

## Product Identification: SoilRenu

*Soil Conditioner and Amendment*

**Ingredients***: **73% Humic Shale Ore, Soil Microbes, Plant Enzymes, Vitamins***

**Physical Data**:

State: Dry
Boiling Point: N/A
Vapor Pressure: N/A
Vapor Density: N/A
Flash Pt: Not Applicable
Flammability Limits: Lower N/A - Upper N/A
Susceptibility to Spontaneous Heating: None
Shock Sensitivity: None

Appearance: Dark Brown Granular
Order: None
Wgt Per Cubit Ft: 60 lbs per Cubic Ft
Melting Point: >3000 Degrees Fahrenheit
Method: N/A
Autoignition Pt: N/A
Fire Explosions Hazards: None
Extinguishing Media: None

**Health Hazard Data**:

Route(s) of Entry: Inhalation, Skin, Ingestion
Health Hazards (Acute and Chronic)

If in dust form: Possible slight irritation, slight hazard
No LD 50 (oral, dermal, or inhalation) has been determined.

**Carcinogenicity**:

Materials in this product not considered carcinogens or teratogens.
Signs and symptoms of exposure.
Possible stomach disorders if taken orally, possible lung congestion if breathed.
Medical conditions, Generally Aggravated by Exposure: None known.

**Emergency and First Aid Procedures**:

*Eyes*: flush with water for 15 minutes.
*Skin*: wash with soap and water
*Inhaled*: remove to fresh air
*Oral*: gets medical care.

**Precautions for safe handling and use**

*Steps to be taken in case material is released or spilled:*

Small spills should be picked up with broom and dustpan.
Large spills should be vacuumed or shoveled into suitable containers
For disposal or reclamation

*Precautions to be taken in handling and storing:*

Persons handling product should use proper protective equipment and handle with care.
Containers should be stored in a cool area to minimize product expansion
and possible leakage.

*Other Precautions:*

None considered necessary
Control Measures
Mechanical (General) usually adequate

**Work/Hygienic Practices:** Wash hands and clothing after product.