



## Hydroseeding Protocol

**Objective:** The purpose of Soil Secrets is to use a Biomimetic approach to establish a healthy relationship between plants, the microbes of soil and the carbon sequestration process of soil. In order to accomplish this we must plant specific bacteria with known characteristics in the soil, inoculate the plants with the proper species of mycorrhizal fungi, provide the building blocks of all life which are amino acids, and establish an environment that everyone can live in. In order to grow more soil microbes and to build the Carbon Matrix of soil amino acids are precursor chemicals needed and the only place you can get amino acids from is protein. These steps are of even greater significance when dealing with sites where the vegetation was removed or lost for extended periods of time. Without plants you cannot have a healthy 'Soil Food Web' as the plants are the source of the high calorie chemicals (proteins, fats and carbohydrates) needed by the soils biota. In Nature, even so called Weeds are part of the 'Journey to Better Soil Health', as they are the first line of plant succession and therefore should not be forgotten. Weeds and other annual plants are part of the process of soil stabilization, erosion control and vegetation management! In the re-vegetation of raw sites such as Highway right-a-ways, mine reclamation, forest fire reclamation, and construction sites, it's essential to re-establish the biological health of soils rapidly by priming the Bio-Geo-Chemical processes, which is what Soil Secrets can do. The following protocol is one developed over the past 25 years by the team of staff biologists, plant physiologists, nurserymen, soil scientists, and chemists working for Soil Secrets LLC, in Los Lunas New Mexico.

## **Protocol:**

This protocol is based on using hydroseeding equipment and applying 100 gallons of hydro mulch mixture per 1000 square feet. Included in the mixture will be the substances of molecular biology provided by Soil Secrets in addition to the seed and wood fiber mulch or the mulch of choice. Normally a hydroseeding mulch will appear green as it comes out of the machine, but with the Carbon Matrix of Soil Secrets used the mulch will look more gray. In our protocol we suggest using a glycoprotein glue coming from the okra fruit which will help reduce erosion and loss of seed until the seed can germinate. The slurry including the gel like glycoprotein from the okra fruit becomes a glue, with the objective of holding down the seed and minimizing erosion potential until such time that adequate irrigation or precipitation allows for germination and maturation of the vegetation. Inside the slurry mix is the following materials

- Seed –Native grass and wildflower seed of your choice. We recommend doubling the seed company's recommended application rate for best potential successful germination and stabilization of the site.
- Hydro Mulch – A mixture of straw and wood fiber mulch of your choice. **Use one bale per 1000 square feet!** \_
- Compost – **TTP Supreme Compost®** or comparable locally available compost that's been screened in a barrel screen to remove any particle size greater than 1/4 inch. A good quality compost can provide many nutrients, both major and minor needed by the emerging vegetation. Never use more than 3000 pounds of compost per acre to avoid overdosing the site with salt and nitrogen. Good compost should be about 2% nitrogen, with 3000 pounds providing 60 pounds of N per acre. That's plenty! **If using the Soil Secrets brand of compost called TTP Supreme, use one .6 cubic foot bag per 1000 square feet!** \_
- **Soil Activator: Commercial TerraPro®** - Carbon Matrix. In Nature a healthy soil contains a naturally occurring form of recalcitrant carbon, which is organic matter that is resistant to decay and capable of lasting in a soil for thousands of years. This form of soil organic matter is called a Carbon Matrix. Organic matter that is labile and not recalcitrant will decay rapidly in a few short years and does not contribute to long term soil carbon banking. Unlike compost, bio-char, and soil organic matter that's labile, the molecules of the Carbon Matrix contain molecules rich in Aromatic rings and Functional Groups that provide known chemical reactions and benefits. When fortified into soil, the Carbon Matrix of TerraPro will soften clay, build soil structure, increase soil porosity, improves the soils water holding potential, improves nutrient availability, supports soil carbon sequestration, and improves the environment of the soil so that plants and soil biota can live there. The Carbon Matrix found in TerraPro contains molecules that mimic those of Nature found in soils. **TerraPro®** contains a carbon substance formulated by Soil Secrets with identified molecular characteristics measured at the National Nuclear Labs using a Commercial Proprietary Information Contract. Deliverables of this study provided a complete molecular characterization of the whole Carbon Matrix substance, identifying the Functional Groups attached to the molecules and describing what percent of the whole substance each Functional Group occupies. This research is unique and exclusive to Soil Secrets and is protected under **Intellectual Property Law**. Commercial TerraPro also contains indigenous soil bacteria, enzymes, protozoan, and saprophytic fungi, useful in instigating and supporting the Bio Geo Chemical Process of Plant Nutrition and Soil Formation. **Use one .6 cubic foot bag per 1000 square feet!** \_
- Mycorrhizal inoculant: **MycoMaxima®** or **EndoMaxima®**- use MycoMaxima if conifers and hardwood trees are part of the planted site. Use EndoMaxima if planting grass and herbaceous plants. **Use 20 grams of spore concentrate per**

**1000 square feet!** If installing containerized or bare-root plant material onto the construction site, treating the planting site with **MycoMaxima** per label rates is effective. See the label for details on this application method.

- Organic Slow Release Nitrogen product - **Protein Crumbles**<sup>®</sup> - Provides a slow release amino acid formula that feeds the soil biota, providing nourishment and calories to jump start the soil building process. Plants can uptake amino acids as part of their nitrogen budget, which does not contraindicate the mutualistic mycorrhizal uptake of nutrients for plants. Nitrate and acid based fertilizers contraindicate mycorrhizal plant relationships! **Use one .6 cubic foot bag per 2000 square feet.**
- Mycorrhizal inoculant: **MycoMaxima**<sup>®</sup> or **EndoMaxima**<sup>®</sup>- use MycoMaxima if conifers and hardwood trees are part of the planted site. Use EndoMaxima if planting grass and herbaceous plants. **Use 20 grams of spore concentrate per 1000 square feet, which is 2 pounds per acre.**
- Soil Microbe Activator/Food providing Amino Acids - **Protein Crumbles**<sup>®</sup> - Provides a slow release amino acid formula that feeds the soil biota, providing nourishment and calories to jump start the soil building process. Plants can uptake amino acids as part of their nitrogen budget, which does not contraindicate the mutualistic mycorrhizal uptake of nutrients for plants. Nitrate and acid based fertilizers contraindicate mycorrhizal plant relationships! **Use one .6 cubic foot bag per 2000 square feet or 22 bags per acre.**
- Soil Pro-biotic of beneficial bacteria - **Consortium BIOpack** - Apply 1 packet will treat one acre. Divide the packet into 1/5's and apply 1/5 of the pack into each 1000 gallons of hydroseeding slurry.

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