



Success Stories

Turf

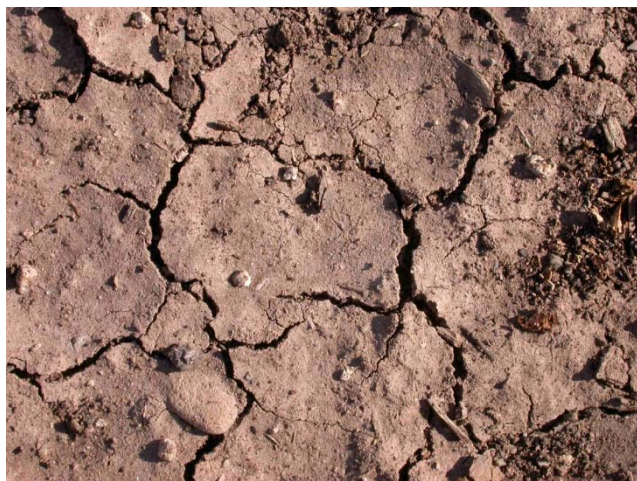
The site where Soil Secrets Soil Restoration was developed is the private gardens & arboretum of our nursery division **Trees That Please** called **the Arboretum Tomé**. When the site was purchased in 1986 the soil was a toxic heavy clay 12 feet deep that turned white in winter from White Alkali. The pH ranged from a low of 8.3 to 9.2 very alkaline and toxic to most landscape plants. The soils were a saline, sodic, alkaline clay!

After 24 years of treating the Arboretum soils once per year, using Soil Secrets **TerraPro®** (also known as **Earth Magic®**), and making every plant Mycorrhizal, we can now grow almost any plant we choose as long as it can tolerate our climate zone. **Be clear that bulk compost was not used as a soil amendment to remediate this site!** The arboretum and its collection of plants is a testimony to the success of biological remediation as the collection of trees both native to the Southwest as well as exotic is extensive. There are Redwoods started from seed in 1989 that today are nearly 60 feet tall, and Oaks started from acorns planted in the ground in 1998 that today are close to 40 feet tall.



The arboretum lawns are a blend of cool season grasses irrigated every 2 to 3 weeks. Three weeks if we are having our normal summer monsoons! Our annual precipitation is 8 inches! The key to making a landscape more conserving of water is the use of Humic Acids (Humus) and the beneficial fungi known as Mycorrhizae. **Research has proven that when turf is made Mycorrhizal it is made dramatically more drought tolerant!**

Humus is a substance rich in Humic Acids that will Aggregate Clay and Improve Turf Health & Growth.



Clay lacking Humus



Clay with Humus showing aggregation

These two images were taken at **the Arboretum Tomé** and show an area of clay that has not yet been exposed to our annual treatments of TerraPro (also known as Earth Magic®). The clay lacking Humus is collapsed and dispersed which results in a very hard soil with poor oxygen levels, poor root growth and poor drainage, none of which are good for optimum health of any plant including turf, trees or a farm crop.

It's important to understand that Humus is a common non scientific term used to describe the bio-molecules called **Humic Acids**. There are several organic acids that make up this group of substances that together are known as **Humic substances** or Humus. According to the **Journal of Chemical Education** in the December 2001 issue, titled '**Humic Acids: Marvelous Products of Soil Chemistry**' "Humic acids are remarkable brown to black products of soil chemistry that are essential for healthy and productive soils". There are many reasons why this is true that go beyond the scope of this paper, but can be found in Michael's paper on **The Science of Humus Part I** and the **Science of Humus Part II**, published in **ACRES USA The Voice of Eco-Agriculture**.

TerraPro® (also known as **Earth Magic®**) is our flagship Humus product used on this site. Manufactured by Soil Secrets, TerraPro is rich in the Humic Acids at 76% and is also rich in Organic Matter at 58.7%, higher than any compost products on the market. A certified analysis is available upon request. TerraPro or Earth Magic are affordable and easy materials for fortifying the Humic Acids into the construction and maintenance of urban landscapes, land reclamation, mine reclamation, and sustainable/organic farms. Homeowners will find **Earth Magic** an excellent choice for lawn and gardens as it's safe for pets and children, while improving the health of their soils! **Healthy Soil Grows Healthy Landscapes**

Unlocking the Secrets of Healthy Soil by Restoring the Natural Biology of Soils...

The lawn on this site had been treated with standard chemical fertilizers for about 20 years before Soil Secrets treated it. The soils on the site had become hydrophobic (would not absorb water), were biologically lacking Humic Acids and Mycorrhizae, and were a constant struggle to keep healthy and free of turf disease. The products called **TerraPro** and **Protein Crumbies** were applied on October 21st of 2001 and in 19 days a benefit could be seen.



The images below are at an Elementary School in Albuquerque New Mexico with hard clay soil compacted from heavy use! Water and oxygen could not penetrate the tight soils resulting in a poor and shallow rooted turf. Soil Secrets products and protocols were used on this site correcting the problem, resulting in a healthy turf better able to tolerate traffic and needing less water.. No over-seeding or aeration was done on this site! The elapsed time between images is 25 days!

More on this case study can be seen on the next page.



Case Study: Growing Healthy Soil at Corrales Elementary - Albuquerque Public Schools



These photos were all taken from the same view at Corrales Elementary in Corrales New Mexico. The area of grass in the foreground that appears weak has more thatch build-up and more compacted soil than the areas of better growth. We were not surprised to see how this turf is responding as the high percentage of Humic Acids in **TerraPro®** (76%) is consistent in improving those issues! The soil on this site was compacted from years of use, resulting in poor porosity, poor drainage, and consequently very shallow roots. The grass had been historically fertilized with the normal protocol of balanced NPK fertilizers which contributed to compaction, salt accumulation, the loss of naturally occurring Humic Acids, the loss of the mutualistic Mycorrhizal fungi, and finally a poor turf that is unable to tolerate heavy use.

With continued annual use, the Humic Acids of **TerraPro (Earth Magic)** will accumulate and begin to aggregate the clay into a porous soft soil that will allow the grass roots to grow deeper into the soils resulting in a dramatic reduction in the need to water! See page 2 where clay has aggregated into a more porous and soft soil because of the Humic Acids of our TerraPro Humus product.

The Secret is Beneath Your Feet...

This homeowner's turf had been having regular organic fertilization treatments but still was not responding to their expectations! After this site was Hydro-fed with Soil Secrets products and protocols this site responded in amazing fashion to the pleasure of the homeowners! These clients are now on a year-round program utilizing the Soil Secrets technology! The elapsed time between images is 20 days!



The two images below show a before and after of a 32,000 square foot lawn that had been getting regular fertilization treatments every 30 - 45 days in order to keep it green. This resulted in an expensive yearly program, heavy water use, and turf disease problems. Further evaluation determined this site had shallow root growth, a thick layer of thatch and poor water penetration. The brown areas in the right-hand image are turf disease areas! After this site was treated with Soil Secrets products, the thatch and disease disappeared and the grass improved, needing less water than before. The elapsed time between images is 45 days!



Growing Healthy Soil in Santa Fe, New Mexico

Photos by Sunshine Gardening - Anna Diercks



This site had been using other brands of organic products for many years, but the grass would still not perform up to expectations. Santa Fe is known for having very poor soils along with serious watering restrictions. Consequentially it's a major undertaking to grow a healthy full lawn. These two photos show one year of progress on a site after using Soil Secrets products in spring of 2004. No re-seeding was done to supplement the bare spots.

Case Study: Growing a Healthy Sports Field by Hydroseeding with Soil Secrets



The time lapse between the time of hydroseeding and the final image is 28 days. This site was typical of the poor soils found in Northwestern New Mexico, low in organic matter and with an insignificant level of Humic Acids. Humic Acids are the definition of a top-soil and are the substance that not only gives the soil its dark color appearance, but are also known in science to be essential for a healthy and productive soil.

The contractor did not amend the soil with compost or any bulk organic soil amendment, instead **TerraPro Humus** was added to the hydroseeding mixing tank along with **Protein Crumbles**, seed, a tackifier and a wood fiber mulch which is needed to hide the seed from the hot sun and the birds. TerraPro is rich in Humic Acids testing out at a minimum of 76% and is also charged with the appropriate mycorrhizal fungi that all grass needs to be at optimum health.

Humus Working with Mycorrhizae on Golf Courses...



This series of photos show a spot on a golf course green in the Phoenix area where the Superintendent removed 3 plugs roughly 3"x3" in diameter. The Superintendent then blended Soil Secrets **TerraPro®**, **Protein Crumbles®**, and sand, filling in the plugged holes. After 3 weeks from application two changes occurred. First a green zone grew around the plugs, indicating the lateral movement of the mycorrhizae fungi benefit as the Bermuda grass is becoming mycorrhizal and improved water and mineral nutrient uptake is starting to happen. The other factor is the rapid recovery or fill-in over the plugs! In front of the 12th green the Superintendent used a ¾" soil probe to plug an area of Black Layer, blended the same mixture and in 4 days the problem had almost completely reversed! Several employees on this site asked what had happened, wondering what caused the plugged areas to becoming greener then the rest of the surrounding area! The secret truly is in the benefit that all plants get from Root-Tip-Colonizing-Mutualistic microbes including the Mycorrhizae fungi and the associated helper bacteria found in Soil Secrets living and viable humus product called TerraPro!



Humus and Soil Microbiology Maximizing Green...



In this series of photos the same Superintendent had treated a practice green that had been having trouble with bare spots and Chlorosis. The Superintendent treated this practice green through a Dry Jet Aerification process that blended TerraPro® and Protein Crumbles® with sand. The following day the Superintendent recorded that enough turf had grown to clog the mowers and that in 2 days the bare spots had filled in with significant new growth! In 30 days the practice green was little trouble and had gained substantial vigor and green up!





For information on where you can purchase these products contact Soil Secrets LLC.

Email: soilsecrets@aol.com

Phone: 505 550-3246

Web: www.soilsecrets.com