

ORGANIC PRODUCTS AND THEIR RECOMMENDED USES

Agrispon: A liquid, metabolic stimulator product that encourages root growth and top growth and helps control pathogens of all sorts indirectly through biological activity. It is used for soil, foliage, and seed treatment to enhance plant growth and health. It reduces drought stress and salt stress and makes better use of all fertilizer elements, especially nitrogen. By increasing microbial activity, Agrispon increases nitrogen fixation by microorganisms. Concentrated biostimulant formulated from plant and mineral extracts. Designed to stimulate beneficial soil microbial activity for increasing nitrogen availability and balancing soil and plant systems. A liquid, metabolic stimulator that encourages root growth and top growth and helps control pathogens of all sorts indirectly through biological activity. It's used for soil, foliage, and seed treatment to enhance plant growth and health. It reduces drought stress and salt stress and makes better use of all fertilizer elements, especially nitrogen. By increasing microbial activity, Agrispon increases nitrogen fixation by microorganisms. A mineral and plant extract product that stimulates microorganisms and basic soil and plant functions. Manufactured in Dallas, Texas by Appropriate Technologies. Use when soil temperature exceeds 50 degrees F; on landscape plants, food crops, trees, houseplants, transplanting and seed germinating. 1.5 oz. covers 5,000 square feet; 13 oz. covers 1 acre.

Alfalfa Meal: Alfalfa used as a natural fertilizer product provides many nutritional benefits not only for plant use, but for soil organisms as well. One very important ingredient is tricontanol, a powerful plant growth regulator. Orchid and rose growers make an alfalfa tea and spray it directly on as a foliar fertilizer. Alfalfa is very high in vitamins, plus N-P-K-Ca, Mg, and other valuable minerals. It also includes sugars, starches, proteins, fiber and 16 amino acids. Sprinkle lightly over garden and water, or use about a handful (depending on the size) around each rose, tree, or shrub. Approximate analysis is 3-1-2. Alfalfa meal and hay used for mulch contain vitamin A, folic acid, trace minerals and the growth hormone "tricontanol." Use at 25 pounds per 1,000 square feet or 400-800 pounds per acre. Alfalfa helps plants create larger flowers and increases the tolerance to cold. Make alfalfa tea by soaking 1 cup of alfalfa meal per 5 gallon of water. Good for all flowering plants. Research has shown that using more is not better. At recommended rates alfalfa works wonders on roses but it can be overused causing adverse effects.

Alfalfa Tea: Put one cup alfalfa meal in a 5 gallon bucket. Fill bucket with water, let it sit from 1 to 4 days. The result will be a thick tea. Apply generously to the root area of shrubs and flowers or use as a foliar spray after straining the solids out. The longer it brews, the better it is but the worse it will smell.

***Bacillus Thuringiensis* (Bt):** A pest control product that is made from beneficial bacteria and applied as a spray to kill caterpillars. Sold under a variety of names such as Thuricide, Dipel, and Bio-Worm and others. Use *Bacillus thuringiensis* 'Israelensis' (Bti) in water for the control of mosquito larvae and for control of fungus gnats in pot plants in office buildings. Use Garrett Juice with Bt for extra effect. Molasses also helps. It provides protein and keeps insect-killing bacteria alive on the foliage longer – even during rain. Bt "San Diego" is good for Colorado potato beetle, elm leaf beetle, and other leaf-chewing beetles. It should be used only as a last resort and only spray specific plants under attack because it will kill all moths and butterflies. The Bt products are not harmful to beneficial insects and other animals.

Baking Soda: Sodium bicarbonate is a product that can be used as a natural fungicide for black spot, powdery mildew and brown patch by mixing 4 teaspoons (approximately 1 rounded tablespoon) per gallon of water along with one teaspoon of mild liquid soap or horticultural oil and spraying foliage. Be careful to keep the spray on the foliage and not on the soil as much as possible. Baking soda is composed of sodium and bicarbonate – both are necessary in the soil but only in very small amounts. Potassium bicarbonate is a good alternative for those concerned about sodium. Potassium is better for the soil in most cases.

Bat Guano: Bat guano is an organic fertilizer product that has been composted thoroughly by the guano beetles and the microorganisms on the floor of the caves. However, nut trees. Hydroponic growers have also used guano successfully by metering out small amounts in their liquid solutions. Note: If bat guano still looks like mouse droppings it hasn't been processed by the beetles. It is still a good fertilizer, but is less sanitary. Bat guano can be used year round in any soil. It helps to bind loose soil and mellow up tight soils. It will even help control soil borne diseases. Bat guano is nature's most highly refined organic fertilizer. It starts out as plant life as insects eat from plants and fly into the air and are eaten by the bats. Bat droppings fall to the floor in the caves where millions of

guano beetles attack the droppings and use it for their food. While the beetles are feeding on the bat droppings billions of beneficial decomposing microbes are also attacking and feeding on the bat droppings. Use at 10-15 pounds per 1,000 square feet.

Bat guano has been composted thoroughly by the beetles and the microorganisms on the floor of the caves. However, guano from attics of buildings may not have been processed by beetles. If it still looks like mouse droppings it is not processed and should be handled with care to avoid disease exposure. Use 1-2 teaspoons per 6" pot diameter. Repeat in 4-6 weeks if necessary. In the flower and vegetable garden use 1-3 quarts per 100 square feet. However guano is a slow release fertilizer and will not burn even if using double the recommended amounts. It's always better to use smaller amounts than larger especially in sandy soils. You can burn plants with bat guano. Homeowners have reported using bat guano one time on their lawn and could still see good effects 3-4 years later. Processing by the beetle in the decomposing microbes renders the bat guano free of toxins and dangerous pathogens other than the normal opportunistic pathogens that are found in most any dust. Bat guano is an excellent inoculant to activate compost piles.

Guano has plenty of nitrogen for green growth, ample phosphorous for roots and flowering and appropriate amounts of potassium for strong stem growth. Besides these three major nutrients guano contains all the minor and trace elements needed for overall plant growth. There are no fillers in bat guano. Everything including the beneficial microbes are useful and necessary for the soil, the roots and the foliage and the plant life.

Bioform: Liquid fertilizer products made from fish emulsion, seaweed and molasses. The sulfur in the molasses has virtually eliminated the fish smell. The products also contain a biostimulant/soil penetrant.

Bioform 4-2-4: Organic fish and seaweed fertilizer that is not derived from fish waste. Bioform is a premium fish hydrolysate derived from whole fresh water fish and fortified with Maxi-Crop seaweed, molasses and bone meal. It contains 3% sulfur from the molasses.

Bioform Liquid Fish 3-1-1: Fertilizer concentrate derived from fish for houseplants, gardens, orchards, shrubs and commercial crops as a foliar spray. One gallon makes two to four gallons of spray. High quality and economical.

Bioform Dry: A high quality, powerful organic fertilizer made from a blend of natural materials.

Biostimulants: A generic term that refers to products that are applied to plants and the soil to stimulate microbiotic activity.

Blood Meal: Smelly source of nitrogen and phosphorus. Good to use as a mix with cottonseed meal. Expensive, but it's good to use occasionally. Analysis can range from 12-2-1 to 11-0-0. A good nitrogen source but smelly and expensive. This natural meal has a low pH and many trace minerals including iron. Use at 20 pounds per 1,000 square feet or 300-400 pounds per acre. A good blend is made by mixing 80 percent cottonseed meal with 20 percent blood meal. If zeolite is blended in with these two products it helps reduce odor and makes them last a lot longer. Blend in at the rate of 1-3 percent.

Bone Meal: Excellent slow-release source of calcium and phosphorus recommended for bulbs, tomatoes, and other vegetables. Analysis will range from 2-12-0 to 4-12-0 with 2 to 5 percent calcium. Slow release form of calcium and phosphorous. It is used for bulbs, tomatoes, and other vegetables. Analysis will range from 2-12-0 to 4-12-0 with 2 to 5% calcium. A good calcium and phosphorus source but slower acting and more expensive than soft rock phosphate. Analysis of bone meal will vary from about 2-12-0 to 4-12-0 with 2-5 percent calcium. Young bones usually have less phosphorous and more nitrogen than older bones. Commonly available steamed bone meal is made from bones that have been boiled or steamed at high pressure to remove fats and proteins. This process reduces nitrogen but increases phosphorous. Bone meal works more quickly on well-aerated soil. Use at 20-40 pounds per 1,000 square feet or 400-500 pounds per acre.

Boric Acid and Borates: We do not recommend copper products. It is a heavy metal that can reach toxic levels easily. Boric acid and its salts are also herbicides, and thus gardens and landscaping would be at risk as a result of ground treatment with water-soluble salts. Borax has been used to suppress poison ivy and a number of other noxious weeds. Borates do not discolor wood, are odorless, and do not vaporize. Nor do they cause wood to absorb

water. Water-soluble borates will leach out from wood in contact with wet soil. Since borates are also herbicides, any that leach from wood can kill plants. Boric acid is toxic to insects, decay fungi, and bacteria. Borates occur naturally in orange juice, carrots, raisins, bread, and other foodstuffs, and an average daily American diet contains about 8 ppm. Concentration in soil averages 7-80 ppm, surface water contains up to 0.1 mg/liter, and sea water contains an average 4.5 mg/liter. The greatest danger to humans from borates is chronic unprotected exposure to aerosols, or accidental acute ingestion of large amounts. Boric acid and borates do not cause cancer, have low acute toxicity, do not cause skin allergies by contact, and generally are quite safe if properly used.

Bt: Short for *Bacillus thuringiensis* Bt is a toxin found in a bacterium that kills the European corn borer, a common pest. A spray version of Bt has been popular with organic gardeners since the seventies. See *Bacillus thuringiensis*.

Cedar Mulch: The very best topdressing mulch is made by simply grinding up cedar trees, actually *Juniperus* spp. This mulch won't wash away easily, repels insects and is very helpful to plant growth.

Cedar Tea: Made by simply soaking cedar mulch in water. It can be used as a mild foliage feeding material and a mild pest control.

Chelators: Chelated iron and other chelated nutrients are used when a direct dose of a particular nutrient is needed to quickly solve a deficiency. Chelated products are organic compounds with attached inorganic metal molecules, which are more available for plant use. Compost, humus, humic acid, and microorganisms have natural chelating properties. Chemically, lime is the oxide of calcium, with the formula CaO . It occurs in limestone, marble, and chalk as calcium carbonate. Finely ground limestone is the best form to use because it will be more available to plants. There are two kinds of limestone available: calcic and dolomitic. Low-calcium soils usually have ample magnesium, so high calcium or calcic lime is the best calcium source. Dolomitic lime contains 30-35 percent magnesium. High-calcium lime contains only 10 percent magnesium and is preferred because most low-calcium soils have enough or too much magnesium.

Chemical Fertilizers: Common term for synthetic, high-nitrogen, soluble fertilizers. Studies have shown that as much as 50% of all synthetic nitrogen applied to the soil will be leached out, and the half that does reach the plant may be harmful. Other studies show that an excess of chemical fertilizer slows or even stops the activity of microflora and microfauna such as beneficial bacteria, algae, fungi, and other microorganisms. Harsh fertilizers also cause damage to macroorganisms, such as earthworms, millipedes, centipedes, etc., which are extremely important to the natural processes in the soil.

Chicken Manure: Chicken litter is a good natural fertilizer high in nitrogen. Pelletized forms are better because they are not as dusty. Approximate analysis is 6-4-2. Unfortunately, commercial chickens are still being fed lots of unnatural things including arsenic. Best to compost before using. Use at 400 pounds per acre.

Cinnamon: Natural pest control that can be dusted to repel ants, roaches and other indoor pests. Liquid concentrate can be used to kill plants.

Citric Acid: Derived from mold fermentation of carbohydrates, from lemons, limes, pineapples, and molasses. The natural acids in all citrus fruits.

Citrus Oil: The extracted oil product made from citrus rinds, sold commercially as d-limonene. Used in cleaning products and natural pesticides.

Citrus Oil Spray: Insect control spray made by adding 2 ounces of citrus oil such as orange oil or d-limonene to one gallon of water. Best when mixed with compost tea and molasses.

Coffee Grounds: Approximate analysis is 2-3-6. An excellent natural fertilizer with an acid pH and up to 2 percent

nitrogen. Collect grounds at home and from your local restaurant or coffee shop and use in the compost pile or apply directly to the soil at 20-80 pounds per 1,000 square feet. Coffee grounds are a natural soil amendment and acid organic matter for bed preparation. Use directly in alkaline soils or mix into the compost pile.

Colloidal Rock Phosphate (Soft Rock Phosphate): A mixture of fine particles of phosphate suspended in a clay base. An economical form of natural phosphorous and calcium. Unlike chemically-made phosphates, rock phosphate is insoluble in water, will not leach away, and therefore is long-lasting. It has 18% phosphorous and 15% calcium as well as trace elements. The Lonfosco company in Florida is the primary source.

Compost Tea: A basic product used to build soil structure, add to the organic matter content of the soil and helps hold valuable nutrients in the soil. This tea is made from the leachate of compost and may be the best foliar feeding tool of all. It is not only an effective foliar fertilizer, it has powerful insect – and disease – control properties. The humic materials and microorganisms in compost tea are effective on many pests. German researchers studied the effects of compost tea, but gardeners have known its beneficial properties for years. Common fungal problems like black spot on roses and early blight on tomatoes can be controlled with compost tea. How to dilute the dark compost tea before using depends on the compost used. A rule of thumb is to dilute the leachate down to one part compost liquid to 4-10 parts water. Applying compost tea at late evening just about dusk works best.

Compost: Approximate analysis is 1-1-1. This is the best all-around organic fertilizer and soil building product. After all, it's nature's. Apply at a minimum of 50-100 pounds per 1,000 square feet or 800-4,500 pounds per acre. Use in all potting soil mixes and to prepare all new beds. Compost is far superior to any other form of organic matter for use in building the soil. Compost is organic matter that's rotted and broken down into an unidentifiable form. Every living thing on earth is going to die and everything that dies, rots. Completely rotted material is compost. Compost contains many nutrients and therefore is a fertilizer. It also contains organic matter, enzymes, vitamins and living organisms.

Corn Gluten Meal: Corn gluten meal is a natural pre-emergent fertilizer (9.5-0.5-0.5) that reduces the germination and establishment of troublesome annual weeds. It is available as a powder or in granular form. It is 60 percent protein and approximately 10 percent nitrogen by weight. It is a by-product of the wet milling process and commonly used in pet and livestock feed. It can be used in vegetable gardens as a fertilizer and can help with weed control, but be careful. It can damage the germination of your food crops. Use it only after your vegetable seeds are up and young plant roots are well-established. It is a powerful fertilizer and will create large healthy weeds if applied after they germinate. This unique use of corn gluten meal was discovered by Dr. Nick Christians and his research staff at Iowa State University. Corn gluten meal is on the market as an EPA registered product. It's also still available in generic bags at most of the local nurseries and feed stores specializing in organic products. It was determined that corn gluten meal stops root formation of germination sprouts. Seeds treated with corn gluten meal developed top shoots but no roots and died when water was withheld from the soil surface. It was also tested for detrimental effects on established grasses. Not only does corn gluten meal not damage mature grass, it is an excellent organic fertilizer,

Corn gluten meal is a natural weed and feed fertilizer. It should be broadcast in the spring around **February 15-March 15** to prevent grassburs, crabgrass, and other annual weeds that germinate from seed. These dates are for the North Texas areas. Your dates will depend on location. The key is to broadcast the material before the weed seed germinate.

For the cool season or winter weeds, broadcast sometime between **September 15 and October 15** at 15-20 pounds per 1,000 square feet for the control of henbit, dandelions, annual bluegrass and other winter weeds. It also serves as a powerful organic fertilizer having about 9-10 percent nitrogen.

Corn gluten meal can be used when overseeding ryegrass or other cool season crops but only with care. You must wait until the grass, vetch or clover has germinated and started to grow before putting the corn gluten meal down or the seed germination will be hurt. Do not use prior to planting anything from seed.

Corn gluten meal replaces the need for other fertilization for that period.

Corn gluten meal – a different product - a Natural "Weed and Feed"

In the early 1990s Dr. Nick Christians and his research students at Iowa State discovered that corn gluten meal, a product of the wet milling process, works as a pre-emergent weed and feed. It inhibits weed root formation during germination. With a nitrogen content of about 10 percent, it is also a powerful fertilizer. It is available in the natural powdered form or in a granulated form. Powdered products are more effective and cheaper but the granulated products are much less dusty and messy.

Apply about 20 pounds per 1,000 square feet just like a fertilizer application. In North Texas, do it about March 1 and again about June 1 for even greater control. Unlike chemical herbicides, corn gluten meal replaces the need to buy additional fertilizer. Warning: Do not allow a bag of corn gluten meal to get wet. The resultant odor can be overwhelming.

P.S. Cornmeal only works in an organic program. When toxic chemical products are used, the effect of the cornmeal will be lost.

Cornmeal: Cornmeal is a powerful natural fungus control. May also be effective on other soil borne diseases. Apply to soil at 10-20 pounds per 1,000 square feet. Use at 20 pounds per 1,000 square feet or 200-800 pounds per acre to add cellulose and stimulate the beneficial microorganism that controls several disease pathogens such as Rhizoctonia, Pythium, Fusarium, Phytophthora, and others. Can also be used in pools and water features to control algae at 2 cups of cornmeal per 100 square feet or 150 pounds per acre. It is also useful on pond algae. Apply to ponds and lakes at 150-200 pounds per acre to control algae.

Cornmeal controls diseases and builds the soil better than any of the toxic chemicals. They provide four different products.

1. **Bed Preparation** – Wheat Bran/Corn Meal Soil Amendment with Molasses is used at 10-50 lbs/100 sq ft as a source of nutrients, organic matter and cornmeal's natural disease control. It can be used as the primary bed prep material or mixed with any of the commonly recommended additions.
2. **Disease Control** - Use Alliance Horticulture Corn Meal for root or soil borne fungus problems at 10-20 pounds per 1,000 square feet. Cornmeal works as a disease fighter in the soil by stimulating beneficial microorganisms that feed on pathogens such as brown patch in St. Augustine, damping off in seedlings and other fungal diseases. Use cornmeal at about 2 pounds per 100 square feet to help control any soil borne fungal diseases on both food and ornamental crops. One application may be all that is needed, but multiple applications are okay if necessary because cornmeal serves as a mild organic fertilizer and soil builder. The cornmeal needs moisture to activate. Rain won't hurt cornmeal's efficacy because, like all organic products, it is not water soluble.
3. **Algae Control** – Use Alliance Pond Cleaner for floating paint-like and filamentous algae in water, use cornmeal at 5 pounds per 1,000 square feet or 150-200 pounds per surface acre. The cellulose in the cornmeal helps to tie up the excess phosphorous in water, balances the water chemistry and thus kills off the algae. The organic carbon in the cornmeal enables the beneficial bacteria in the water to flourish at the expense of the algae. Then the decomposing algae provide a source of carbon for the bacteria. One or two treatments is usually enough to control the algae for several months.
4. **Compost Starter** – Alliance Compost Starter should be used at 1 lb/cubic yard of compost to stimulate beneficial decomposing microbes in order to neutralize contaminants or just speed up the composting process. The material can be used at much higher rates for accelerated results. Caution: any fast algae kill from any product can cause an oxygen deprivation and result in fish kill. Additional information can be obtained from the following publications: Cornmeal – it's not just hog feed anymore, The Peanut Farmer, May 1996. Aquaculture Engineering 9 (1990) 175-186. P.S. Cornmeal only works in an organic program. When toxic chemical products are used, the effect of the cornmeal will be lost.

The treatment rates have not been refined. The standard recommendation for a start is about 150-200 pounds of cornmeal per surface acre. Don't over use per application – 43,560 square feet = 1 acre. The finer ground cornmeal will be more effective, the coarse ground or cracked corn from feed stores will be effective at a low cost (8.00 per 50 lbs). The organic carbon from the corn enables the bacteria to flourish at the expense of the algae. The decomposing algae then provide a source of organic carbon for the bacteria so the treatment does not need to be continuous. One or two treatments should be sufficient for any pond or reservoir for algae suppression over a several month period. Too much bacterial growth could have a negative effect on the algae, the algal primary productivity of the pond for other aquatic life. The cornmeal dose rate should be tied to the pond and algae characteristics but that information has not been developed.

Cornmeal, plain old cornmeal right out of the kitchen, has a terrific use in gardening, landscaping, and farming. Even for your potted plants. It's a natural disease control. Dr. Joe McFarland and his staff at the A&M Research Station in Stephenville discovered, that cornmeal is effective at controlling fungal diseases on peanuts. I started playing with it and discovered that it is effective on brown patch in St. Augustine and damping off in seedlings. Used at about 20 lbs./1,000 sq. ft. per surface area of soil. Cornmeal will help control all diseases on photinia, Indian hawthorn, roses, fruit trees, turf and seed flats. Horticultural cornmeal is even better because it is the concentrated outer edge of the corn kernel and it's available in large bags at many of the garden centers and feed stores that sell the organic products.

DISEASE CONTROL IN THE GARDEN

Use cornmeal for root or soil borne fungus problems at 10-20 pounds per 1,000 square feet. Cornmeal works as a disease fighter in the soil by providing and stimulating existing beneficial microorganisms that feed on pathogens such as rhizoctonia, better known as brown patch in St. Augustine. Cornmeal at about two pounds per one hundred square feet also works on seedlings to prevent damping off, also on any other soil borne fungal diseases on both food and ornamental crops. One application may be all that is needed, but multiple applications are okay if necessary because cornmeal serves as a mild organic fertilizer and soil builder. The cornmeal needs moisture to activate. Rain won't hurt cornmeal's efficacy because, like all organic products, it is not water soluble.

CORN GLUTEN MEAL – It does not have the same disease fighting qualities. It is the natural “weed and feed” fertilizer. See separate entry for details.

Cotton Boll Compost: Compost made from cotton processing waste. It has an approximate analysis is 7-2-2, an acid pH, and with lots of trace minerals. It has possible pesticide residue because so many toxic poisons are used in the cotton industry. Use at 20-25 pounds per 1,000 square feet or 700-800 pounds per acre.

Cottonseed Meal: Organic fertilizer with an acid pH. Good natural source of nitrogen and trace elements. Cottonseed meal is made from the cotton seed. A special value of cottonseed meal is its acid pH which makes it a valuable fertilizer for acid loving specialty crops. Analysis will vary and ranges from 6-2-1 to 7-3-2 with trace elements. Does have odor for a while after use

Cow Manure: Approximate analysis is 2-1-1. Trace mineral content varies widely depending on raw materials used in the cow feed. Cow manure is loaded with beneficial living organisms. Manure is one of our greatest natural resources, if not overused. It is best to use cow manure in composted form to avoid weed seed and odor. It can be used at the rate of 1-4 tons per acre. The high salt content of cow manure as a common scare tactic organophobes often use. Contamination from broadleaf herbicides is a more serious concern.

Cypress Bark Mulch: Pretty good topdressing mulch that is expensive and tends to seal off the oxygen/carbon-dioxide transfer. It is better than no mulch at all and provides moisture retention, preserves the soil and retards weed growth but it breathes less than other mulches. It also breaks down very slowly which is a negative point.

DEET

Deet Should NEVER be Used!

In our opinion, DEET should never be used. It is far too toxic, especially for children. As stated on the label, it is dangerous to spray directly on the skin of anyone. Alternatives for repelling mosquitoes include Cactus Juice, Cedar-Cide, Divebomber Defense and vanilla extract and water.

Federal officials are now recommending two new options other than the chemical DEET to combat mosquitoes:

- ☐ **Picaridin:** More pleasant to the skin and doesn't have the odor that DEET repellents have.
- ☐ **Oil of lemon eucalyptus:** A natural ingredient for those who don't like the thought of putting toxic chemicals on their skin.

D-Limonene: Technical name for orange oil extraction. This is the product used in most of the commercial citrus products for cleaning and/or pest control.

Diatomaceous Earth: Diatomaceous earth (DE for short) is the remains of microscopic one-celled plants (phytoplankton) called diatoms that lived in the oceans that once covered the western part of the United States and other parts of the world. Huge deposits were left behind when the water receded. They are now mined and have several important uses in making paint, toothpaste, beer filtering and swimming pool filters. DE is approximately 86 percent silicon, 5 percent sodium, 2 percent iron and many other trace minerals such as titanium, boron, manganese, copper and zirconium.

Diatomaceous earth can be applied in a variety of ways. To use for flea and tick control, apply a light dusting over the lawn, in dog runs, around pet bedding or favorite resting spots and sprinkle a little on your pet between baths of a mild solution of biodegradable, non-phosphate soap. Since DE is dusty and abrasive, it can cause lung damage if breathed heavily. Remember, however, that breathing any dusty material can be dangerous. Be sure to wear a dust mask if applying with a dry blower. Mixing into a water spray eliminates most of these problems. DE will not hurt earthworms or beneficial soil microorganisms. Diatomaceous earth is one of the few pesticides in the world classified as non-toxic although I'm not real comfortable with that classification. I think anything can be toxic if overused or misused. Fresh water DE that has less than 2% crystalline silica dioxide is the safest and best choice.

DE makes a very effective natural insecticide. The insecticidal quality of DE is due to the razor sharp edges of the diatom remains and its absorptive properties. When DE comes in contact with the insects, the sharp edges lacerate the bugs' waxy exoskeleton and then the powdery DE absorbs the body fluids causing death from dehydration. Said more simply, DE kills insects by drying 'em up. You will see how drying DE as if you handle it with bare hands.

The best way to apply the dust over a large area is with a light weight apparatus such as Dustin' Mizer, Spritzer or other similar blowers. Applying by hand can be done but wastes a lot of material and will dry your skin. To apply with water, mix ¼ cup of DE in a gallon of water and apply to the lawn and/or shrubs where pest problems exist. It's much more powerful when mixed with pyrethrum.

The wet spray method does work but only after the liquid has dried. Mix from 1-4 tablespoons DE per gallon of water and spray on the lawn, shrubs, tree trunks and building foundations. When the mixture dries, it has the same abrasive and dehydrating powers as the original dry dust. When sprayed wet the material covers the foliage and other surfaces better than dusting dry, thus giving better insect control. It seems to last longer when applied wet but the dry application is usually more effective at killing insects quickly. DE has no insect killing power while it is wet. It does however when mixed with pyrethrum. Caution: Never mix pyrethrum into the feed supplement DE. Only pure feed-grade DE should be used to feed animals. There is no residual danger or contamination, in fact, DE is actually beneficial to the soil. It's loaded with trace minerals. However, there are a few precautions. Diatomaceous earth is very dusty and can cause lung problems if breathed heavily, so when applying it dry always wear a good dust mask or stand up wind. The second precaution is that DE sold for swimming pool filters is ineffective for insect control because it has been heated and chemically treated. The sharp edges have been removed and it's more dangerous to breath in this form. Finally, DE will kill beneficial insects too, so use it sparingly to kill problem infestations of harmful insects and don't use it too often.

Dillo Dirt: Composted biosolids made from sludge and tree trimmings by the City of Austin, Texas. Excellent soil building material and mild fertilizer. Should be done by all cities since it is a great way to recycle natural organic resources.

Earthworm Castings

An effective organic fertilizer that is high in bacteria, calcium, iron, magnesium, and sulfur as well as N-P-K and has over 60 trace minerals. Earthworm castings make an excellent ingredient in potting soil, in flats when germinating seed, and to toss into each hole when planting vegetables, herbs, or small ornamentals. It is a gentle, sweet-smelling and clean organic fertilizer.

Epsom Salts: Epsom salt is made by treating magnesium, hydroxide or carbonate with sulfuric acid. Epsom salts is the common name for magnesium sulfate. Magnesium is a vital element in the production of chlorophyll in plants. A

deficiency shows in the discoloration of the leaves between the veins, which develops into dead areas if the condition is allowed to persist. Epsom salts is a fast-acting source of magnesium and sulfur normally used as a foliar feed, but it can also be applied to soil. Use 1 tablespoon per gallon and spray monthly if needed on flowering plants. Broadcast at the rate of 5-10 pounds per 1,000 square feet. It can also be applied by putting a small amount in transplant holes of vegetables and flowers. Epsom salt is not a natural organic product, but is acceptable to us.

Fish Emulsion: A concentrated liquid fish fertilizer for use directly in the soil or as a foliar feed. The analysis will range from 4-1-1 to 5-2-2. It is reported also to be an effective insecticide. All-purpose spray is made by mixing with liquid seaweed. Fish emulsion has an odor for about 24 hours – a pretty strong one, in fact. Fish hydrolysates are better because they use the whole fish. Foliar feed plant per label instructions.

Fish Meal: Approximate analysis is 12-1-1. Fish meal has lots of vitamins and minerals, but is smelly. It is a natural fertilizer originally used in this country by native Americans growing corn. Fish meal is one of the most powerful natural fertilizers, but it's expensive and stinky, so use with caution. Use at 10-30 pounds per 1,000 square feet. Zeolite can be blended into fish to the rate of 5% to eliminate the odor by tying up the ammonia. Floating Gro-Cover: Generic term for gardening fabric designed to envelope plants in a moist, greenhouse warmth while allowing water, light, and ventilation for proper plant respiration. Protects foliage from chewing insects, prevents flies and moths from laying eggs, and reduces diseases carried by pests. Birds, rabbits, and other animals are discouraged from feeding on plants.

Organic foliar feedings can help control insects and disease as well as fertilize and stimulate plants. The best foliar feeding spray is Garrett Juice, a mix of compost tea, natural apple cider vinegar, liquid seaweed, and blackstrap molasses. See the Appendix for the exact recipe.

Some spray products are stimulators rather than feeders. They work by stimulating plant growth and flower/fruit production by increasing photosynthesis in the foliage, increasing the movement of fluids and energy within the plant, increasing root exudates and microbiotic activity in the soil at the root zone, and increasing the uptake of nutrients from the soil through the root hairs. In other words, foliar feeding can provide missing or “locked up” elements as well as stimulate all of the natural systems in the plant and in the soil. The end result is bigger, stronger, healthier plants with increased drought, insect, and disease resistance.

When food crops or ornamentals have a chlorotic symptom (yellow leaves with green veins) resulting from lack of iron, magnesium or other soil elements, spraying the foliage with a chelated product can create a greening improvement within a few days. Organic products have natural chelating abilities. Plants need green foliage to be able to produce food through the process of photosynthesis where sunlight, water, and carbon dioxide combine in the leaves to produce sugars and carbohydrates to feed the plant.

Young foliage seems to absorb nutrients better than old, hard foliage. Therefore, foliar feeding is most effective during the periods of new growth on plants.

Here are some points to remember when using foliar sprays: High humidity increases a leaf's ability to absorb sprays. Spraying on damp mornings or evenings will increase the effectiveness of the spray. The small openings (stomata) on the leaves close up during the heat of the day so that moisture within the plant is preserved. The best time of day to spray is late afternoon for pest control. Daybreak is best for foliar feeding.

Some foliar sprays such as fish emulsion, compost tea, humate and seaweed are fertilizers. When fertilizer nutrients are sprayed directly on the foliage, immediate results can often be seen because the micronutrients, when taken in through the foliage, are immediately available to the plant.

Garden Ville

San Antonio fertilizer, compost and pest control company founded by Malcolm Beck and now owned by Texas Disposal Systems. Some of the products are as follows:

Lawn and Garden Soil is a compost enriched garden soil for all flowers and vegetables.

Potting Soil is a professional container mix with compost, worm castings, perlite, red sand, cedar flakes

Bat Guano is nature's finest organic fertilizer. Harvested at Garden-Ville's exclusive Bracken Cave.

Compost Microbes is ideal for jump-starting compost piles for faster breakdown.

Texas Greensand is a natural iron source (13%) for alkaline Texas soils. For all turf and garden applications – even golf courses.

Humate A refined humic acid – compost in its most evolved form.

Volcanite A unique blend of paramagnetic rock powders, including lava sand, basalt, mill sand, greensand, and zeolite. 7%+ iron

Garrett Juice A foliar feeding product for more direct nutrient absorption. Contains compost tea, apple cider vinegar, molasses

Sea Tea Fish Emulsion The best of everything for liquid fertilization – fish emulsion, seaweed extract, humic acid, compost tea, molasses.

Seaweed Liquid is a product the rosarians swear by. Foliar nutrients, plus insecticidal properties.

Tree Trunk Goop is a mixture of compost, natural diatomaceous earth and soft rock phosphate that is mixed with water and applied.

Cedar flakes are ground to a fine consistency and cooked to remove oils.

Cedar Mulch (Red Native) is recycled double-shredded mulch from area cedar clearing projects.

Pecan Mulch is recycled and aged to eliminate phytotoxic effects of fresh pecans. Dark reddish brown.

Diatomaceous Earth is a feed grade horticultural DE. Natural insecticide that rubs hard-shelled insects to death.

Soil Conditioner Auntie Fuego is an original orange-based mound drench plus molasses and humate to condition soils.

Rocket Fuel is a starter fertilizer for transplants and cuttings. Works in direct contact with roots.

Rock Phosphate is 22% total Phosphorus. Non-burning phosphorus root stimulator.

Soil Food 5-3-2 a starter fertilizer for new lawns and gardens. Green sand fortified for iron (2%)

Soil Food 6-2-2 is a slow release garden and rose fertilizer. Made from a variety of feed-grade meals and trace elements. Urea-free.

Sick Tree Treatment is a product containing all of the ingredients of the Sick Tree Treatment program with the exception of cornmeal.

Soil Food 7-2-2 is a best selling specialty lawn and garden fertilizer.

Soil Food 9-1-1 is designed for St. Augustine, but effective on all turf projects for quick green-up and long lasting results. Urea-free.

Garlic/Pepper Tea: An organic insect and disease control material made from the juice of garlic and hot peppers such as jalapeno, habanero, or cayenne. This is one of the few preventative controls that I recommend. It is effective for both ornamental and food crops.

Garrett Juice: Garrett Juice is a high quality, subtly powerful foliar feeding spray. It was created by Howard and his listeners. It can be used as a liquid soil fertilizer as well. For foliar feeding, use it with water at 1-2 ounces per gallon and use on herbs, vegetables, groundcover, shrubs, vines, trees, turf grasses and greenhouse plants. Garrett Juice

is a blend of manure compost tea, seaweed, natural apple cider vinegar, and molasses. It can be used on any age plants but it's always best to spray any liquid materials during the cooler parts of the day. For soil treatment, the application rate can be doubled. Garrett Juice provides major nutrients, trace minerals and other beneficial components. See Chapter 5 for recipe. Garrett Juice is a high quality, subtly powerful foliar feeding spray. It can be used as a liquid soil fertilizer as well. For foliar feeding, use it with water at 1 ounce per gallon and use on herbs, vegetables, groundcover, shrubs, vines, trees, turf grasses and greenhouse plants. Garrett Juice is a blend of manure compost tea, seaweed, natural apple cider vinegar, and molasses. It can be used on any age plants but it's always best to spray any liquid materials during the cooler parts of the day. For soil treatment, the application rate can be doubled. Garrett Juice provides major nutrients, trace minerals and other beneficial components. The Commercial product is made by Garden-Ville in San Antonio.

Glaucanite: Better known as greensand, an iron potassium silicate that's green in color. It is a rounded, soft but stable aggregate of finely divided clay. The most common glauconite mineral is the greensand of New Jersey which was deposited near the "mud line" surrounding the continental shores many millions of years ago. See greensand.

Granite Sand: Sand-like residue from the granite quarry or natural deposits. Excellent way to add minerals to planting beds. Much better than washed concrete sand. Contains 5% potash and many trace minerals. Also has paramagnetism, but less than lava sand. Approximate analysis is 0-0-5. Granite is a low cost source of minerals, especially potash. It is sand-like residue from the granite quarry or natural deposits. Granite dust or granite stone meal is a natural energy and potash source. Its potash content varies between 3 and 5 percent and it contains valuable trace mineral elements. Granite dust can be used as a topdressing or worked directly into the soil. In the garden, suggested rates of application are 10-100 pounds per 1000 square feet; on the farm, 1 to 2 tons per acre. Research at Garden-Ville farm proved granite sand very beneficial. It made southern peas turn green in an 8.3 pH soil. Peas nearby with same growing conditions but no granite sand remained chlorotic and had poor growth.

HastaGr Since HastaGro is a liquid and applied as a foliar spray, the nutrients are taken directly through the leaves, which means faster more efficient absorption of the fertilizers. Contains chelated micronutrients including iron and organic complexing agents.

Greensand: Greensand is a natural marine deposit that occurs all over the United States. Texas greensand is a relatively new discovery. Its major difference is it contains somewhere between 19-20% iron and is very effective in the high calcium soils which we call the black and white soils.

Humate: Humate is a generic name for humic materials – salt forms of humic acid. They are most commonly low grade lignite coal. Humates regulate water-holding capacity, have extremely high ion exchange capacities, and reduce soil erosion by increasing the cohesive forces of the very fine soil particles. Very low concentrations of humates have been shown to stimulate seed germination and root growth. They have also been shown to stimulate desirable soil microorganisms. The percentage of humic acid in a humate will vary from product to product. Humates may be made into liquid form or used in the dry form. Analysis test done for Garden-Ville at a competent lab found Hou-Actinite lower in lead and arsenate.

Hydrogen Peroxide: A liquid oxygenating product. Hydrogen peroxide is not a good source of oxygen. It is toxic at any level where you would get sufficient oxygen in a water solution. As a greenhouse mist it should be used no more than one part per million in air and a complete change out before entering the area unprotected. Used incorrectly hydrogen peroxide can be the source of considerable plant damage.

Iron Sulfate: Sold as copperas, it helps to create an acid soil condition. It is used as a fertilizer catalyst, wood preservative, herbicide, soil acidifier and iron supplement. Can be used in the compost (1 pound per cubic yard). Microbes will chelate. It's a nasty material. We really don't recommend its use.

Kelp Meal: Approximate analysis is from 1-0-2 to 1-2-8 with lots of trace minerals. Seaweed is a source of enzymes, nutrients, and hormones. Kelp meal is a dry fertilizer made from seaweed. It is an excellent source of plant hormones that stimulate root growth and regulate plant growth. Seaweed also provides soil conditioning substances that improve the crumb structure or tilth. It is a good natural source of copper and boron. Use at 20-40 pounds per 1,000 square feet or 300-500 pounds per acre.

Kelp and seaweed are the same. Large brown seaweed, especially the families Laminariaceae and Fucaceae have been found valuable as soil conditioners. *Ascophyllum nodosum* is the species that has the most university research. Kelp is available in liquid or dry meal form.

K-Mag: K-Mag and Sul-po-mag are one and the same product, mined from same location, but by 2 separate companies. The scientific name “langbeinite”. See Sul-Po-Mag.

Lava Sand: The sand-sized and smaller waste material left from lava gravel mining is an excellent, high-energy soil amendment material. It can be used in potting soils, germination media, and bed preparation. Lava sand, or lava in any size, increases the water holding capacity of the soil and increases the paramagnetism. The result is increased production of any plant crop. Broadcast at 40-80 pounds per 1,000 square feet. (1 ton per acre) or till into new beds at 80-150 pounds per 1,000 square feet. Lava sand works in potting soil, propagation flats and in any container plants. If possible use lava sands with high paramagnetic count. Lava sand offers a physical improvement to the soil that moves unhealthy, unbalanced soils toward balance. The mineral make up of lava sand is less important than the shape of each piece of sand. The angular, porous pieces of lava hold and exchange nutrients efficiently and they attract and redistributed cosmic energy in the soil. Cosmic energy is a fancy term for the sun's energy. The sand-sized and smaller waste material left from lava gravel is an excellent, highly paramagnetic soil-amendment material. It can be used in potting soils and bed preparation for all landscaping and food crops. Finer textured material is even better. Lava sand is magical stuff. Dr. Phil Callahan, the scientist who probably understands more about the secrets of nature than anyone on earth, taught me to teach people to add lava sand to the soil. When he explains the reason why, it sounds so simple and makes so much sense, but when I try to explain it, there's often something lost in the translation.

Here are some of the ways to use lava sand for greater plant production. Sick trees – broadcast under the trees at 40-80 pounds/1,000 square feet. For more effective results on sicker trees, drill 2” holes 12-18” deep throughout the root zone and fill with 50% lava sand and 50% compost. Roses – add to rose bed preparation at 80 pounds per 1,000 square feet and to the top of roses in pots at a rate heavy enough to cover the soil surface red. Gently work into the top 1”. Turf broadcast at 40 pounds per 1,000 square feet. Bed preparation – till together with compost and organic fertilizer. Use 40-80 pounds per 1,000 square feet. Potting soil – add up to 1/3 the volume of good potting soil. Lava sand – magic? No, it just helps the physics, chemistry and biology of the soil. Shortly after I had turned north Texas and Oklahoma on to this fascinating natural material the questions started coming in. “OK, it's working great, but why? What's in lava sand that's making plants respond so strongly?” At this point I really didn't know for sure other than what Dr. Callahan had told me about energy and paramagnetism. I knew that trying to explain paramagnetic energy to organic gardeners would be difficult and explaining it to organophobes would be a total waste of time. So, I tried another angle. A soil test. I sent some lava sand, which had been brought into the Dallas/Fort Worth area from New Mexico, to K. Chandler at Texas Plant and Soil Labs in Edinburgh. The results were interesting but puzzling. The nutrient value was almost nil and the pH was 8.2. How was this stuff working to make plants grow so well? I had never seen any chlorosis (iron deficiency) come on from using lava around susceptible plants such as sweetgum, dogwood or photinia. In fact, I saw just the opposite. Yellowing plants greened up. How could that be? It could be because pH is an indicator only – not a controller. Many factors in the soil are more important than pH. Lava sand addresses those factors. Lava holds water, just at the right level for a long time. If the soil has good moisture and a balance of minerals, organic matter, microbes and earthworms, plant production will be good. The paramagnetism of the lava sand helps make all that happen.

Liquid Humate

A liquid form of leonardite shale or low grade lignite coal that is an excellent source of carbon, humic acid and trace minerals. It can be used as a soil drench or foliar feeding material.

Lime Sulfur: fungicide (calcium polysulfide) for fruits, berries, roses, nuts, and ornamental plants. Spray plants as buds swell, but before they open. It is effective for powdery mildew, anthracnose, peach leaf curl, brown rot. Insects it controls include scale, mites and others. Not a commonly used product anymore.

Lime: A major calcium fertilizer, dolomitic lime contains 30-35% magnesium. High-calcium lime is preferred because most low calcium soils have plenty of magnesium. High calcium lime is calcium carbonate. Chemically, lime is the oxide of calcium, with the formula CaO . It occurs in limestone, marble and chalk as calcium carbonate. Finely ground limestone is the best form to use because it will be more available to plants. There are two kinds of limestone, calcic and dolomitic. Low calcium soils usually have ample magnesium so the high calcium or calcic lime is the best calcium source. Dolomitic lime contains 30-35% magnesium. High-cal lime contains only 10% magnesium.

Limestone: A high-calcium source of lime often used to correct calcium deficiencies and low pH. Contains 94% calcium carbonate. Should be broadcast and worked into soil. Helpful to put small amount (1-3 lbs.) in each hole when planting trees in calcium-deficient areas. Spread on soil at 2-10 lbs./100 sq. ft. (500-4,000 lbs./acre),

depending on soil analysis.

Maestro Gr Maestro Gro is a line of organic fertilizers made in Texas. Products include a wide variety of ingredients such as bone meal, fish meal, feather meal, rock phosphates, kelp meal, greensand, and microorganisms. Texas T is a general purpose product within this line. It was one of the first organic fertilizers formulated. Gary DeMasters, Brian DeMasters, P.O. Box 310 121 Lincoln Drive, Lowell, AR 72745, 501-361-9155. Maestro Gro liquids are also available for foliar feeding and pest control.

Manure: The three manures that we know of currently that can be used direct without any processing at all are rabbit, llama and alpaca. For whatever reason, these manures fresh out of the animal are very well buffered and can be used as fertilizer directly on the plants without any fear of burning. In fact they are excellent products in every way. All manures should be recycled back to the land.

Maxicrop Seaweed: Maxicrop seaweed is made from fresh growing *Ascophyllum nodosum* seaweed harvested off the coast of Norway. Use natural liquefied Norwegian seaweed for feeding of trees, shrubs, flowers, house plants, lawns and vegetables. (1-0-4 powder made from fresh growing Norwegian seaweed). One container makes one gallon of concentrate to be used on house plants, vegetables and lawns. Research has found that Maxicrop seaweed contains: A) A huge complex of chelated trace minerals, to help nullify or lessen trace mineral deficiencies. B) Important bio growth stimulants, which have tremendous effect on seed germination, root development, and general growth. C) Organic sugars that make available all the properties of seaweed to the plant. Benefits of Maxicrop seaweed: A) increase yields, B) improve quality, C) increase resistance to pests and disease.

Medina Products:

Medina Compost Starter (powder) – A blend of specially formulated dry organisms. Ideal for compost piles low in organic activity, or when first getting the pile started. Balances the pile with proper waste digesting organisms.

Medina Soil Activator (Liquid) – According to organic gardening expert John Dromgoole Medina Soil Activator is like Yogurt for the soil because it stimulates the beneficial organisms in the soil. Promotes healthier, stronger root systems because it actually loosens and balances the soil. Excellent for breaking down chemical and salt accumulations that may be impairing soil health. Can be used with any natural, low-chemical or traditional gardening program. Great for compost piles, too!

Medina Plus (Liquid) – We took Medina Soil Activator and added the PLUS. It's fortified with essential micro nutrients and natural growth regulators. Use for transplanting, foliar feeding and soil building.

HastaGro Liquid Plant Food – A blend of natural plant food supplements, Medina Soil Activator and HuMate Liquid Humus. Low chemical/low salt formulation is gentle even for foliar feeding. Ideal for gardeners making the transition to an organic program. Does contain some urea so is not a pure organic product.

HuMate Liquid Humus – “Concentrated Compost in a Bottle”. A basic product for every gardener. Helps build soil structure and quality without chemicals. Refined into a thick, rich liquid from organic residue found deep below the earth surface. Increases fertilizer and water uptake, chelates trace minerals.

Milky Spore Disease: Attacks and kills Japanese beetle grubs in the soil, requiring only one application for permanent control. Not toxic to insects, earthworms, birds, mammals, humans or plants. The spores multiply inside the grubs, and when the grub infestation subsides, the spores lie dormant in the soil, waiting for subsequent populations. Milky Spore Disease takes 2-3 years to achieve complete control, and should be supplemented during this time with Japanese beetle traps. Use at 10 ounces per 2,500 square feet and 7-10 pounds/acre. Use with beneficial nematodes for best results.

Molasses: Sweet syrup that is a carbohydrate used as a soil amendment to feed and stimulate microorganisms. Contains sulfur, potash, and many trace minerals. Approximate analysis is 1-0-5. Molasses provides food for microorganisms and is a source of carbon, sulfur, and potash. It is a good, quick source of energy for the soil life and microbes in a compost pile, and will chase fire ants. It is a carbon source and feeds beneficial microbes creating greater nature fertility. It's side benefit is that it repels fire ants. It's also used as an ingredient in the fire ant control mix. Liquid molasses is used in sprays and dry molasses is used as an ingredient in organic fertilizers. Sweet syrup used as a soil amendment to feed and stimulate microorganisms. Contains sulfur, potash, and other trace minerals. Excellent foliar feeding material and can be mixed with other organic liquids. Use at 2-4 quarts/acre for soil application. For foliar application on broadleaf plants use 1 pint per acre. For grasses and grains still use 1

quart per acre. Blackstrap molasses is the best choice because it contains the sulfur and iron of the original material. Blackstrap molasses is the cow feed molasses.

Mushroom Compost: The material in which mushrooms are grown, consisting mainly of peat, composted straw, gypsum and animal manure. Spent mushroom compost is widely available and is a useful addition to garden soils since it increases the supply of organic matter and water retention. The only negative about mushroom compost is that it is dense and tends to hold water too long at times. Mix coarse textured compost or shredded bark with it to improve the quality.

Neem: A biological insect control product. Neem is not a systemic insecticide as a foliar spray, however it is a long lasting systemic insecticide when used as a soil drench. From the neem tree *Azadirachta indica*, native to India and Burma, it is kin to mahogany and chinaberry thrives in poor soil. It's a tall tree that resembles the shape of an oak. It produces large white flowers and bears a fruit that's similar in size and shape to the olive. Extracts of the bitter seeds and leaves as a natural pesticide. It is harmless to humans, animals, and beneficial insects. Pests are unable to build up a genetic resistance which will effect its potency. Neem extracts (the bark is being used in this case) can prevent tooth decay, as well as, prevent and heal inflammation of the gums. It has been added as an active ingredient in several popular toothpastes in that country. Neem is antibacterial, fungicide and antiviral Insect repellent: Neem contains a compound called salannin which biting insects hate. It is more effective at repelling biting insects than the synthetic chemical "deet" which as become the main ingredient of most consumer insect repellents. Insecticide: Neem extracts don't instantly kill pests. The insects absorb these compounds which block their endocrine systems and disrupt their reproductive cycle. Neem has been in use for centuries for a wide variety of pests. The active ingredient is azadirachtin, which works by preventing molting, suppressing feeding or repelling, depending on the insect. It does not harm humans, birds, plants, earthworms, or beneficial insects. This product is registered for use on ornamentals (registration is pending on food crops) against aphids, whiteflies, thrips, hornworms, mealybugs, leafminers, gypsy moths, weevils, webworms, loopers, psyllids and sawflies. Tests conducted by USDA showed neem extracts to repel cucumber beetles for up to 6 weeks. Neem is most effective against insects, which pass through all stages of metamorphosis. Neem Oil is a thick, 'fatty' oil, with a very strong odor. It has been used in India for centuries in most cosmetics and toiletries, etc. Neem oil is strongly insecticidal and can be used in head lice removers. It is rich in oleic acid, palmitic acid, stearic acid, linoleic acid and arachidic acid. It is very moisturizing and used on psoriasis and eczema.

Nematodes

Beneficial nematodes should be used for soil-borne pests. Overall broadcasting is best. Spot treating helps if the budget dictates. In an organic program one treatment a year is usually enough. No, they do not hurt the beneficials. Apply per the label instructions for the control of fleas, ticks, grubworms, termites, fire ants and roaches. Beneficial nematodes are just one of the beneficial microbes that exist in healthy soil. That's why they seem to control more pests than they are supposed to.

Root knot nematodes: Many nematodes are beneficial, but there are those that will attack ornamental trees, garden plants, and lawn grass. Controls include increasing the organic matter level in the soil, using organic fertilizers, and applying products that increase microbial activity. Cedar flakes applied to the soil surface will also help. You can also use a citrus oil drench or citrus peeling pulp tilled into the soil prior to planting or used around existing plants.

Norit: Gro-Safe Powdered Activated Carbon, is a specialty activated carbon manufactured for agricultural applications. It is widely used in agriculture as a soil amendment to protect and enhance plant and turfgrass growth and vigor. Gro-Safe effectively removes organic toxins, such as herbicides, from soil to provide a safe environment for new or existing root systems. Gro-Safe is especially effective in protecting valuable agriculture products where herbicides have been spilled or over-applied. It's ability to decontaminate soil is beneficial when replanting ornamentals, turfgrass or food crops where pesticides have been previously applied. Because Gro-Safe is a finely ground powder, it may be applied either dry or as a suspended slurry. More details on dosages and methods of incorporation are available from Norit American, Inc.

Orange Oil: The extracted oil from citrus rinds, sold commercially as d-limonene. Used in cleaning products and natural pesticides. One of the most interesting specific products that I talk about that has a considerable amount of research is orange oil. Orange oil can be used in gardening and pest control in several ways.

One of the fire ant products that is currently on the market and has EPA registration for fire ant control is Safer's Fire Ant Control. It used to be called Citrex so you may have heard me talk about it in the past. It is an orange oil or

d-limonene product that has very detailed research both from Texas A&M in the field and the University of Texas at Austin in the lab. The product is currently owned by the Woodstream Company and is sold under the name Safer Fire Ant Control Give it a try. It works very well. Another orange oil product with the research behind it needed for its EPA approval is Orange Guard. It is registered for the control of many household insect pests. There are of course many other uses for orange oil and its extract called d-limonene. Just a few of the products include air fresheners, cleaners and soil detox products. Why use toxic chemicals when non-toxic food products work just as well.

Organic Fertilizers: Organic fertilizers are better than artificial products because they are the derivatives of plants and therefore contain most or all the trace elements that exist in growing plants, probably all 92 basic elements. Synthetic fertilizers do not have this rounded balance of mineral nutrients.

Peanut Shells: Peanut hulls and shells can be and are used in mulching and composting. Peanut shells contain about 3.6 percent nitrogen, .7 percent phosphoric acid and .45 percent potash. Peanut shell ashes contain .8 percent nitrogen, .15 percent phosphoric acid and .5 percent potash.

Perlite: A processed volcanic mineral used for soil conditioning, rooting medium and a substitute for sand in potting mixes. Volcanic rock is heated to about 1,800°F, popping it like popcorn. The horticultural grade is a coarse aggregate and is best suited for mixing with other materials such as peat moss and bark for making very light-weight mixes for growing plants. It's used as a soil amendment to loosen soil and prevent compaction. It breaks down fairly slowly, and helps to maintain soil structure. Perlite is high in fluoride and some people are quite sensitive causing dermatitis.

Phosphate: The middle number of N-P-K, the phosphate source more commonly used now is triple super phosphate 0-46-0. It is used in most all fertilizers. It is made by treating rock phosphate with phosphoric acid. The end product is considered "naked" and tends to bond with iron, zinc and manganese and other trace minerals and render them unavailable. The old source 0-20-0 was a much better source but can hardly be found anymore.

Pig Manure: Good source of nitrogen and other elements but needs to be composted before using.

Pine Bark: The worse choice of organic matter. Not good as a mulch because it washes and blows away. Slow and mucky in its breakdown. Better than no mulch at all, but barely.

Pine Needles: Good mulch but looks a little strange under plants other than pine trees. Also a good compost ingredient.

Potassium Sulfate: Sulfate of potash is made from minerals extracted from the Great Salt Lake. A unique process combines solar energy in a solar evaporation pond system as a first step, and water and natural gas in the final step. The potash and sulfate ions dissolved in the lake water are concentrated and crystallized with solar energy in the large solar evaporation pond system. It is a much better source of potassium chloride (muriate of potash), a commonly used product.

Poultry Manure: Approximate analysis is 6-4-2. Chicken manure is a good natural fertilizer high in nitrogen. Pelletized forms are better because they are not as dusty. Unfortunately, commercial chickens are still being fed lots of unnatural or toxic natural things. Best to compost before using.

Pyrethrum: An insecticide derived from the flower heads of a summer-blooming perennial, called the painted daisy. It grows one to two feet tall and has fernlike leaves and showy daisy-like flowers in white, pink, red, or lilac. Pyrethrum likes a rich soil and a compost mulch. It is best propagated by root division in the spring. Available in liquid or dry forms. Will kill a wide range of insects including aphids, beetles, leafhoppers, worms, caterpillars, and ants. It is short-lived and relatively non-toxic to animals. Pyrethrum is dried and powdered painted daisy (*Chrysanthemum cinerariaefolium*). Artificial chemical substitutes, called pyrethroids, should be avoided. Pyrethrin is the active ingredient in the natural product. Even though pyrethrum is a natural product, we no longer recommend it except as a last resort, especially if it contains piperonyl butoxide (PBO). There are less toxic alternatives.

Rabbit Manure: Approximate analysis is from 2-1-5 to 3-2-1. Rabbit manure is not used enough: it is an excellent source of natural nutrition. Mixed with leaves, sawdust, straw, grass, and other vegetative materials, it makes an excellent compost. Rabbit manure is rich in nitrogen, is good for heating a compost pile, or can be applied directly to the garden soil without composting. It can be used on lawns, vegetable gardens, and around trees and shrubs all through the year. Sawdust, straw, dry leaves, grass, cedar flakes, and similar dry materials can be used for litter in

the hutch, producing an excellent compost when the droppings and urine are caught and absorbed by these materials. Earthworms love rabbit manure. Rabbit manure compost is an excellent soil builder.

Can be used directly as a fertilizer without fear of burning plants.

Sawdust: Sawdust is useful to gardeners primarily as a carbon ingredient for the compost pile. It should be mixed with a nitrogen source when used directly in the soil so it won't rob the nitrogen from plants. It does not make a good top dressing mulch because it blows and washes away. Well-rotted sawdust is compost and can be used anywhere. One of the best carbon sources for the compost pile.

Seaweed: Best used as a foliar spray. Excellent source of trace minerals. Should be used often. Contains hormones that stimulate root growth and branching. Many trace elements are found in seaweed in the proportions they are found in plants. Seaweed contains hormones and functions as a mild but effective insect control, especially for whiteflies and spider mites. It acts as a chelating agent, making other fertilizers and nutrients more available to the plants. Seaweed or kelp is available in liquid and in dry meals.

Soap: Insecticidal soaps are used as organic pesticides to control various small insects. Soaps are non-toxic to people and animals but are indiscriminant on insects and will hurt the beneficials. Commercial products are available or you can make your own by mixing one tablespoon of a non-phosphate soap in a gallon of water. Soap will burn the foliage of some plants like beans, cucumbers and ferns. Water hardness reduces the effectiveness of soaps as pesticides. Soaps should not be used often – they are harmful to beneficial nematodes.

Basically all soaps are biodegradable – some just faster than others. Nonphosphate liquid soaps and water mixed together into a spray are used to control aphids and other small insects. Strong solutions can damage plant foliage, and even weak solutions can kill many of the microscopic beneficial insects and microorganisms – so use sparingly, if at all. Best when used in very small amounts to help make pest control products more effective.

Soft Rock Phosphate: Soft rock phosphate, also known as colloidal phosphate is a clay material that is surface mined from the old settling basins of former hard phosphate rock mining operations in Florida. It contains about 20 percent P_2O_5 as well as over 25 percent lime and other trace minerals. It is a very fine material, but can be applied with all common fertilizer spreaders. Natural phosphate stays where it's put when applied and does not move or dissolve into the soil solution. It needs to be plowed under or tilled into the soil. Unlike chemically made phosphates, soft rock phosphate is insoluble in water, will not leach away, and therefore is long-lasting. Has 18% phosphorous and 15% calcium as well as trace elements. Florida is the primary source. As annual plant takes up to 60 percent of its total phosphates needs the first few weeks of its life. If it doesn't get phosphate then it is always behind and never catches up. Soft rock phosphate used directly under the seed or transplant at planting time is the very best method of application, especially in low acid or high alkaline soils. It is not as critical but still beneficial in slightly acid to neutral soils. It is almost impossible to overuse soft rock phosphate, you can grow beautiful plants directly in it without any harmful effects.

Soft phosphate rock should be applied at a rate about two tons per acre with other organic amendments. This phosphorous source will soon be gone. It is a byproduct of the making of 0-18-0 and only one company still bags it. In alkaline soils, apply the phosphate directly under the seed or transplants so the small roots don't have to search for it. This is especially important in the spring. Tests at the Garden-Ville farm have shown that this technique can double production. Unfortunately this product may not longer be available.

Sticky Yellow Trap: Organic growers have been using these traps for years, to monitor and "trap out" whiteflies, fungus gnats, leafminers, flying aphids, leafhoppers, fruit flies and other insects attracted to its bright yellow surface. Cards are coated with a unique non drying sticky substance. Traps must be hung in the immediate area of pest infestation. For trapping out, use 1 trap/25-50 square feet. For monitoring, fewer traps are required.

Streptomycin: A preventive for fire blight on pears and apples. Use liquid copper during dormant period, and follow-up with streptomycin 2-3 times during the bloom period when temperatures are above 60 degrees and conditions are moist and favorable for infection. Active ingredient is streptomycin sulfate. Approved by some organic certifiers, because fire blight is so devastating and copper should not be used during bloom when infections are likely to start. One pound treats 1/3 to 2/3 acre, makes 100 to 300 gallons. Also good for tomato and pepper bacterial spot.

Sugar: Sugar is a helpful soil amendment used to stimulate microorganisms and to initiate the metabolic processes in the soil. White sugar, when used with other trace minerals in organic fertilizers, is an excellent carbohydrate

source. Molasses is an even better form of sugar. Sugar should be used on gardens or fields at about 5-10 pounds per 1,000 square feet or less.

Sulfur: Finely ground sulfur is used by mixing with water or dusting on dry plants to control black spot, leaf spot, brown canker, rust, peach leaf curl, powdery mildew, apple scab, and many insect pests. Mix with liquid seaweed to enhance fungicidal properties. Sulfur will also control fleas, mites, thrips, and chiggers. To avoid leaf burn, do not use when temperature is 90 degrees or above. As an insecticide or fungicide use 3 tablespoons per gallon of water. Sulfur is present in oil compounds responsible for the characteristic odors of plants like garlic and onion.

Sulfur deficiency can be distinguished from nitrogen deficiency because the leaves do not completely dry out. Legumes, like alfalfa, have high sulfur requirements, deficiencies usually show up first in these crops. Corn, small grains and grasses rarely show sulfur deficiencies. Since some water contains a high amount of sulfur, watering can sometimes take care of sulfur deficiencies. It takes one pound of sulfur per 100 square feet to lower the pH one point. However, used at this rate, it is very destructive to soil life and beneficial insects. Sulfur has been used as a fungicide for thousands of years. American Indians called it brimstone. Sulfur applications may also damage cucurbits such as squash and cucumbers. Sulfur is a basic mineral often lacking in alkaline soils. Applying granulated sulfur at 5 pounds per 1,000 square feet twice annually can bring base saturation of calcium down and raise magnesium. Be careful not to breathe dust, over apply, or use when planting seed. It can also act as a pre-emergent herbicide. Mix with corn gluten meal and humate for even better results. Sulfur dust is also used as a pesticide in some situations. Sulfur should be used only as a last resort in the orchard. Sulfur and oil sprays should not be used within a month of each other. It is generally classified as a minor element, but it is of major importance to plant growth. Sulfur is easily leached down into the root zone, especially in sandy soils. Therefore, the availability of sulfur will vary considerably during a season, depending on the kind of soil. Add elemental sulfur to the compost pile to speed up the action of microorganisms and the release of nutrients. The rate should be very small, from 0.1 to 0.5% by volume of initial organic material added and related to the nitrogen content.

Sul-Po-Mag: A naturally occurring mineral containing 22% sulfur, 22% potash, and 11.1% magnesium. An excellent product for the organic program. Approximate N-P-K analysis is 0-0-22. Also called Langbeinite and K-Mag, Sul-Po-Mag is mined. Should be applied at 20 pounds per acre as needed.

Tea Tree Oil: Tea tree oil (neem) has therapeutic uses for such common ailments as acne, athlete's foot, boils, burns, corns, dandruff, gingivitis, insect bites, mouth ulcers and other infections. It's also used in deodorant, mouthwash and throat lozenges. Tea tree oil, distilled from the leaves of the Neem (*Melaleuca alternifolia*) tree, has a colorful and fascinating history. The "good oil" as it's called in Australia, was such a valued commodity during WWII that those producing it were exempt from service. Helps greatly with fleas, can help improve dogs' skin condition and makes the coat more shiny. Tea Tree Oil Dog Shampoos are available now.

Texas Greensand (Glaucanite): Texas greensand is an iron potassium, silicate that is green in color due to the minerals it contains. Greensand is a marine deposit that contains traces of many if not all of the elements which are in seawater. It has been used successfully for enriching soils for over 100 years. Approximate analysis is 0-2-5. This is a natural source of phosphorous, potash, and trace minerals. Texas greensand is different than the glaucanite from the New Jersey area. The natural Texas product contains about 19 percent iron and about 2 percent magnesium. Its pH is 8.3, but don't let that fool you. Use it on all plants for an effective green-up. Research at Garden-Ville farm proved green sand to be better than most iron products in helping plants overcome chlorosis in high pH soils, slightly better than granite sand. The iron supplement that we recommend the least is Ironite because tests have shown that it has high levels of lead and arsenic. The company agrees with the existence of the heavy metals but argues that the risk is slight since the product is in the gallena form and not quickly available. As a soil conditioner Texas greensand can be used at 10-50 pounds per 1000 square feet on lawns or tilled into the soil. It is also an excellent amendment for golf greens and tees. In potting soils it can be used at a rate of 5-20 pounds per cubic yard. In a Garden-Ville research project demonstration an eroded field that was low in organic matter with a pH of 8.3 was tested 66 test plots of peas, peppers and okra grown in each plot. All were fertilized equally with organic fertilizer and then each plot got an additional product. Many of them were iron products. Texas Greensand plot at 150 pounds per 1,000 square feet outperformed all other iron test products in the plants green color and growth. It even beat the iron sulfate plot. The only plots that did as good or even better were the compost plots.

Texas Tee

A wonderful natural fertilizer with added microbes, Texas Tee is inoculated with a host of beneficial microorganisms, enzymes and amino acids along with nitrogen, potassium and phosphorous. Is a safe choice for promoting

healthy and beautiful grass, shrubs and flowers. Texas Tee will help you achieve a healthy, safe and highly disease resistant turf. Apply at 10 pounds per 1000 square feet.

Urea: Urea is a synthetic protein and is the best choice of all the synthetic fertilizers. Microbes accept urea the same as they do urine. It contains 45 percent nitrogen. Natural urea is a waste product from animals. Synthetic urea is the only manmade fertilizer that contains carbon. However, sugar or molasses and humic acid needs to be applied with it to maximize its efficiency. It is made synthetically by reacting ammonia and carbon dioxide under high pressure and temperature. Urea, when used at low levels and in conjunction with organic matter and sugar, is an effective and organically acceptable fertilizer. It helps jump start the microbes. Humates are a good organic matter choice for this use. Large amounts of urea can damage seeds and vegetation can be toxic to aquatic life because of ammonia buildup.

Vinegar: Vinegar is a wonderful organic tool that was discovered by accident ten thousand years ago when wine was accidentally allowed to ferment too long and turned sour. It can be made from many products, including beer, apples, berries, beets, corn, fruits, grains, honey, malt, maple syrup, melons, molasses, potatoes, rice, sorghum, and other foods containing sugar. Natural sugars from these food products are fermented into alcohol, which is then fermented into vinegar.

The strongest vinegar available for general use is 20 percent or 200 grain, meaning that about 20 percent of the liquid is acetic acid. At this strength, which is corrosive enough to eat metal and must be handled carefully in plastic containers, it will obviously kill weeds, making it an effective nonselective organic herbicide. It works best when sprayed full strength during the heat of the day and in full sunlight. While 200-grain (20 percent) material is the best strength for killing weeds, 100 grain (10 percent), which is made by doubling the amount of water in the 200-grain vinegar, seems to work just about as well if used consistently especially if orange oil is added at about 2 ounces per gallon. Since this diluting process cuts the cost in half, it's usually advisable to go ahead and use the weaker solution.

If your water is alkaline, add 1 tablespoon of 50-grain (5 percent) natural apple cider vinegar to each gallon of water to improve the quality of the water for potted plants and bedding. This doesn't have to be done with every watering, though it wouldn't hurt. This technique is especially helpful when trying to grow acid-loving plants such as gardenias, azaleas, and dogwoods. A tablespoon of vinegar per gallon added to the sprayer when foliar feeding lawns, shrubs, flowers, and trees is also highly beneficial, especially where soil or water is alkaline. The other horticultural use for vinegar is the watering can.

Fruit vinegar is made from the fermentation of a variety of fruits. Apples are most commonly used, but grapes, peaches, berries and other fruits also work. The product label will identify the starting ingredients, such as "apple cider vinegar" or "wine vinegar". Malt vinegar is made from the fermentation of barley malt or other cereal grains. Sugar vinegar is made from sugar, syrup, or molasses. White, spirit, or distilled vinegar is made by fermenting distilled alcohol. Distilled white vinegar is made from 190 proof alcohol that is fermented by adding sugar and living bacterial. Natural vinegar contains at least fifty trace minerals. Vinegar that is made from the petroleum derivative, 99% acetic acid, is not acceptable in an organic program.

Volcanite: A blend contains four different volcanic, paramagnetic crushed rocks including zeolite. The zeolite is no longer paramagnetic but it has a very high cation exchange capacity, and since we are low in iron I also added glauconite – a sedimentary mineral rich sandstone commonly called greensand. A blend of several rock materials from the Garden-Ville Company in San Antonio including basalt, lava sand, zeolite, granite, and Texas greensand. This blend works better than any of the ingredients used alone. It's very economic because only small applications are needed to increase production. Overuse of this material can actually reduce production. Recommended rates are 1000-2000 pounds per acre, or 50 pounds per 1,000 square feet.

Wood Ashes: A valuable source of potash. Wood ashes generally contain from 1 to 10 percent potash and 1-1/2 percent phosphorus. They can be mixed with other fertilizing materials or side-dressed around growing plants. Apply about 5 to 10 pounds per 100 square feet. Avoid using wood ashes around blueberries or other acid-loving plants and don't use heavily in alkaline soils. Only wood ashes, and not coal ashes, should be used in the soil or compost. Wood ashes are also an effective tool in controlling slugs.

Worm Composting: Worm composting (or vermicomposting) is a natural and efficient way to "recycle" organic kitchen waste and compost your food scraps indoors with worms, and reduce the volume of your household

garbage by as much as 25%. The end result is unsurpassed as an organic soil builder and plant fertilizer.

Yeast: Beneficial soil organisms that exist in healthy soils. Unicellular fungi which convert sugars to alcohol and carbon dioxide. Living yeast cultures are better for animal nutrition, the brewer's yeast is dead and primarily used as a natural protein source.

Yellow Sticky Traps: Nontoxic, bright-yellow cards that trap insects with their sticky coating. They are primarily used to monitor insect populations. They give some effective control in greenhouses.

Zeolite: Zeolite can also be used for air and water purification, cat litter material, shoe deodorizers, animal feed supplements, garage floor spill removers, cooler and refrigerator odor and moisture removers, animal stall odor and moisture removers, and soil amendments. Mix raw zeolite (powder or granular) into the soil for new bed preparation. Broadcast onto contaminated soil to detoxify. Rates can vary from 10- to 50 pounds per 1,000 square feet. More than 50 pounds won't hurt anything but is probably a waste of money. Zeolite has a very high cation exchange capacity (CEC). It helps fertilizer to be more efficient. A natural ore used to absorb odors, gases, liquids and as an amendment to most soils. Zeolites are natural volcanic minerals with unique characteristics. Their chemical structure classifies them as hydrated aluminosilicates, comprised of hydrogen, oxygen, aluminum, and silicon arranged in an interconnecting lattice structure. Zeolites have the ability to change and absorb certain harmful or unwanted elements from soil, water and air. An example is the removal of calcium from hard water. Zeolite has a strong affinity for certain heavy metals such as lead and chromium. Zeolite works as a soil amendment by absorbing nutrients, especially nitrogen, and then releasing them at a rate more beneficial to plant root development.

Zinc: Zinc is an important trace mineral and frequently deficient in soils. Zinc is important for the sweet taste in vegetables and fruit. Zinc deficiency can impair growth, delay healing, and contribute to chronic disease. Lack of zinc is common in alkaline soils. However, soil with a high content of organic matter will have a sufficient amount of available zinc. Use of compost, organic fertilizer, aeration and other organic techniques will usually release zinc that is present but not available from the soil. Be very careful when adding zinc. Too much can quickly cause a zinc toxicity. Zinc deficiency results from heavy applications of artificial fertilizer. Large amounts of nitrogen, phosphorus and potassium in the fertilizer tie up available zinc. Low organic matter and soil compaction contribute to lack of available zinc. Deficiency shows in leaves with dead areas, poor bud formation, and small terminal leaves. Weed pressure is greater when zinc is deficient. Not needed in acid soils or balanced soils. Zinc is a trace element found in most organic fertilizers. Zinc is available in manure, rock phosphate, fish, seaweed and compost. Zinc deficiency is characterized by leaves which are abnormally long and narrow, deformed with wavy edges. The leaves may also turn yellow and be mottled with many dead areas. Since zinc deficiency tends to result in iron deficiency, the symptoms of both problems are similar. Zinc deficiency in pecans causes a rosetting of terminal foliage. Zinc locks up at a neutral pH supposedly.

SOIL THERAPY™ for flowers

STC potting soil blend is a potting soil specially blended for use in potting and repotting plants and flowers. STC Potting Soil Blend has excellent water retention properties, a high organic content and stable nutrient base. Whether using STC Potting Soil for potting plants or to build flower beds, STC potting soil will promote increased plant growth, bigger blooms, healthier root systems, and improve the overall health of plants.

SOIL THERAPY™ for lawns and landscapes

STC lawn and landscape blend is a general use product that has been composted and screened to provide maximum growth potential for both sod grass and seed grass, while incorporating well into existing lawns. Use STC Lawn and Landscape for bald spots in your lawn, areas where erosion has taken place or simply to prepare the soil for establishing a new lawn.

Bioform Dry 5-3-4 Fertilizer with 1% Sulfur - 5 lbs

Bioform Dry is our dry version of the popular liquid Bioform 4-2-4. This powerful organic fertilizer is one of our favorites for use on vegetables, shrubs, and flowers both at install and throughout the growing season. Easy to broadcast, simply work into the top 1 inch of the soil; use 5 lbs per 100 sq. feet.

Contains dried chicken manure, fish solubles, feather meal, alfalfa meal, bone meal, humates and Sulfate of Potash. 3.37% of the Nitrogen is slow release. Also contains 10% calcium.

Premium Lawn Fertilizer 7-2-2

Premium Lawn Fertilizer 7-2-2 is a time-tested formulation with Houactinate, bat guano, urea, feather meal, K-mag, molasses, humate and other natural ingredients. Prized among homeowners and professionals alike as a natural, slow release fertilizer.

Use at the rate of 10 lbs per 1,000 sq. ft in the fall and again in June. For best results always water it in to quickly stimulate all the beneficial soil life.

Composted Manures



Back to Nature, Inc. COMPOSTED CATTLE MANURE and COMPOSTED CHICKEN MANURE have been leached to reduce salt content, while maintaining high nutrient levels. Unlike many other manures on the market that are simply “aged,” Back to Nature, Inc. composted manures have been processed using the same windrow turning system that is a benchmark of quality in the compost industry.

Available in 1 cu. ft. bags.

GENERAL INFORMATION

Animal Manures:

- Add organic matter to help rejuvenate soils
- Improve soil aeration and the breakdown of plant residue
- Increase water retention in sandy soils
- Increase water distribution in clay soils and help reduce compaction

Cotton Burr Compost



Back to Nature REGULAR COTTON BURR COMPOST and ACIDIFIED COTTON BURR COMPOST are truly nature's perfect soil conditioners. We start with cotton burrs from short staple cotton grown on the High Plains of Texas. Unlike cotton grown in other parts of the United States, short staple cotton must be stripper picked, a method that produces a large amount of cotton burrs through the ginning process. The fleshy cotton burr is important because it is the primary repository of nutrients. Cotton burrs contain a significant amount of NPK (nitrogen, phosphate, potassium), the three macronutrients required by plants, as

well as numerous micronutrients. Cotton burrs have a carbon-nitrogen (C/N) ratio of 22:1, eliminating the nitrogen tie-up caused by using wood and wood-based soil amendments.

The USDA and EPA now require that all chemicals used on cotton be biodegradable within a two week period. An additional safeguard with cotton grown on the Texas High Plains is that early freezes all but eliminate the need for chemical defoliation. Lab tests show that the levels of all potentially harmful elements, chemicals, etc. in Back to Nature composts are well below the recommended EPA minimums and in some cases are less than amounts that occur in nature.

When properly composted, cotton burrs are a natural fertilizer with a protein content of approximately 35%. This makes cotton burrs an excellent food source for the beneficial soil organisms that help make nutrients available to plants, aerate the soil, and help to combat harmful organisms and diseases. The outstanding ability of COTTON BURR COMPOST to loosen tight, clay soils has long been common knowledge in the Southern United States. COTTON BURR COMPOST also has excellent moisture retention characteristics and unlike peat moss, accepts and retains water easily. REGULAR COTTON BURR COMPOST helps to neutralize soil pH. If additional acidification is needed, however, our acidified products contain sulfur, the longest lasting of the elemental acidifiers.

Back to Nature COTTON BURR COMPOST is also economical to use with an effective soil life of up to two full growing seasons. Back to Nature composts are produced through aerobic, windrow composting for over four months at temperatures approaching 160°F, ensuring the elimination of insects, weed seeds, chemicals, and pathogens. They are then screened to the desired texture, packaged and stored inside for curing. This assures you, the customer, a consistent, high quality product.

Back to Nature COTTON BURR COMPOST is available in three textures: Coarse in a 3 cu. ft. bag, medium in a 2 cu. ft. bag, and fine in a 1 cu. ft. bag. Coarse and medium are available regular or acidified.

Bradfield Organics®

Luscious Lawn & Garden™ 3-1-5 Natural Fertilizer

Net Wt. 40 lb (18.14kg)

- Alfalfa-Based All-Purpose Natural Fertilizer
- Ideal for Potted Plants, Lawns, Vegetable, Herb, Rose & Flower Gardens
- Non-Burning – Safe to Use Around Children & Animals When Used as Directed

Bradfield Organics® Luscious Lawn & Garden™ is a premium all-purpose fertilizer, developed to provide you a safe (when used as directed), clean, convenient, and easy way to fertilize lawns, trees, shrubs; vegetable, fruit, herb, flower, and rose gardens. Bradfield Organics® Luscious Lawn & Garden™ is an alfalfa-based product blended with other natural ingredients.

DIRECTIONS

Bradfield Organics® can be applied at any time of year. As in nature, there is no bad time to start building soil fertility.

ESTABLISHED LAWNS

Using a broadcast spreader, apply 20 lbs per 1,000 square feet for initial application and 10 lbs per 1,000 square feet every 60 to 90 days for long-term maintenance. Water immediately (1/2 inch). Will cover an area of 2,000 square feet at 20 lbs per 1,000 square feet and 4,000 square feet at 10 lbs per 1,000 square feet. Most broadcast spreaders, set 75% open, will disperse approximately 10 lbs per 1,000 square feet per pass.

NEW LAWNS

Apply Bradfield Organics® on the same day as seeding, at the rate of 20 lbs per 1,000 square feet. Water as recommended for seeding. Follow long-term maintenance schedule of 10 lbs per 1,000 square feet every 60 days during first growing season.

SOD

Prior to sodding, apply 10 lbs of Bradfield Organics® per 1,000 square feet to soil. Immediately after sod is laid, apply 20 lbs per 1,000 square feet and water immediately. At 60-day intervals, apply 10 lbs per 1,000 square feet for the remainder of the first year's growing season.

GARDENS

For best results, broadcast spread 20 to 30 lbs of Bradfield Organics® per 1,000 square feet of garden area prior to or same day as planting. Till into garden area. Lightly top dress area at 60 day intervals at a rate of 5 lbs per 1,000 square feet. Or at time of planting, make furrow or planting hole slightly deeper than necessary. Place generous amount (about 1 inch depth) of Bradfield into furrow or hole. Mix with soil. Follow regular planting instructions for the specific plant. Lightly top dress area at 60-day intervals at a rate of 5 lbs per 1,000 square feet.

ESTABLISHED TREES, ORNAMENTALS, SHRUBS, AND ROSES

Top dress by using 1/2 cup of Bradfield Organics® (per foot of weep line circumference of plant) around base of plant every 60 days during growing season. Work into loose surface soil if possible, but leaving as a top dressing and watering will work well over time.

POTTED PLANTS

For existing potted plants, work 1 teaspoon of Bradfield Organics® into the surface of the soil per gallon of soil mass every 90 days. When repotting plants, blend 4 teaspoons of Bradfield into new soil mix, per gallon of soil mass. This will provide nutrients for 4 to 6 months.

COMPOST TEA FOR PLANTS (indoor and outdoor) AND ROSES

Brew a nutrient tea by placing two cups of Bradfield Organics® into a 5 gallon bucket of water. Let stand in sunny/warm area for two or three days (stir occasionally). Use tea to water plants and roses. Tea may also be used as a foliar spray. Tea should be used entirely within 24 hours.

As in nature, the organic materials in this product are incorporated slowly, thus it may take two to three weeks before results are seen.

GUARANTEED ANALYSIS:

Total Nitrogen (N).....	3%
3% water insoluble nitrogen	
Available Phosphate (P ₂ O ₅).....	1%
Soluble Potash (K ₂ O).....	5%

Nutrients for this product are derived from alfalfa, molasses, sulfate of potash, and meat meal.

CONTAINS NO ANIMAL MANURE

Agrispon (Organic Gardening Product)

A liquid, metabolic stimulator that encourages root growth and top growth and helps control pathogens of all sorts indirectly through biological activity. It is used for soil, foliage, and seed treatment to enhance plant growth and health. It reduces drought stress and salt stress and makes better use of all fertilizer elements, especially nitrogen. By increasing microbial activity, Agrispon increases nitrogen fixation by microorganisms. Concentrated biostimulant formulated from plant and mineral extracts. Designed to stimulate beneficial soil microbial activity for increasing nitrogen availability and balancing soil and plant systems. A liquid, metabolic stimulator that encourages root growth and top growth and helps control pathogens of all sorts indirectly through biological activity. It's used for soil, foliage, and seed treatment to enhance plant growth and health. It reduces drought stress and salt stress and makes better use of all fertilizer elements, especially nitrogen. By increasing microbial activity, Agrispon increases nitrogen fixation by microorganisms. A mineral and plant extract product that stimulates microorganisms and basic soil and plant functions. Manufactured in Dallas, Texas by Appropriate Technologies. Use when soil temperature exceeds 50 degrees F; on landscape plants, food crops, trees, houseplants, transplanting and seed germinating. 1.5 oz. covers 5,000 square feet; 13 oz. covers 1 acre.

Rabbit Hill Farm Azalea Bed Preparation

An excellent medium for Azaleas, Rhododendrons, Camellias and Dogwoods. Azalea Bed Preparation is a 2-1-1 mixture designed to worked in around the roots of each plant. Use 2 cups of preparation for each plant and top with a mixture of compost and hardwood bark mulch.

Azalea Bed Preparation contains:

- Cottonseed meal
- Alfalfa meal
- Soft rock phosphate with colloidal clay
- Wormcastings
- Rabbit manure
- Epsom salts
- Wettable sulfur
- Humate

Rabbit Hill Farm Rose Food

Rabbit Hill Farm Rose Food builds soil health, resulting in healthier plants, larger blooms and richer color. The ingredients include alfalfa meal, soft rock phosphate with colloidal clay, bone meal, cottonseed meal, worm castings, soybean meal, feather meal, potash, humate, rabbit manure, greensand, kelp meal and epsom salt.

When these materials are mixed, the micro floral life in the rabbit manure and worm castings grow and expand. As the material comes from the mixer Rabbit Hill places it in special storage bags in which it will heat to 150 degrees. After the

rose food cools it's bagged and sent to customers.

Use 2 tablespoons of Rose Food for small potted plants, 1/4 cup for medium plants, 1/2 cup for large plants and a full cup for very large plants. It should be applied to roses once every 30 days during the growing season. In north Texas you should not feed during the heat stress months of July and August, and you should rest the plants in December and January. If you're not in north Texas of course, your growing season may be different.

Rabbit Hill Farm Rose Food may also be used to fertilize blooming plants other than roses.

Rabbit Hill Farm Azalea Food 3-5-2

An excellent food for azaleas, rhododendrons, camelias and dogwoods from Rabbit Hill Farm. Produces healthier plants, larger blooms and builds stronger roots.

Apply 4 cups of Azalea Food over the root area for each 2 feet of plant height.

Includes: cottonseed meal, alfalfa meal, soft rock phosphate with colloidal clay, wormcastings, peanut hulls, lava sand, compost, pecan shells, rabbit manure, granite sand and sulphur.

Rabbit Hill Farm Earthworm Castings

Earthworm castings are an odorless and non-toxic way to improve water retention, aeration and plant growth without the danger of burning delicate plants. Use alone or mix with soft rock phosphate or other amendments to boost root development. Or add to your pots.

Sick Tree Treatment

Mineral rich blend of compost and specialty sands that help improve the health of trees and woody ornamentals.

Sick Tree Treatment---A blend of bio-solids compost, lava sand and greensand. Apply over the whole root zone three times a year at 40 lbs. per 1,000 sq. ft. It would be best if the soil was aerated before treatment so the minerals and microbes can get to the roots quicker.

Rocket Fuel 2-6-1

A special fertilizer blend of rock phosphate, bat guano, molasses and other ingredients designed to promote remarkable blooms and leaf development. Garden-Ville Rocket Fuel contains the nutrients essential to plant root growth, and is recommended as a starter and transplant fertilizer. For use on all plant types.

- Great starter fertilizer and bloom producer
- Promotes the development of strong roots
- Use at a rate of approximately 1-2 teaspoons per plant

Rocket Fuel 2-6-1 analysis--- This fertilizer is a scientific blend of all our best microbe and plant food products. Colloidal Rock Phosphate, Bat Guano, Greensand, Red Phosphate, Volcanite, Brewers Yeast, Premium Fertilizer 7-2-2, Earth Worm Castings, Zeolite, Diatomaceous Earth, Alfalfa Meal, Kelp Meal and Molasses.. This product is excellent for all blooming and fruiting plants and should be applied anytime a seed or plant is placed in soil. For potted plants blend a tablespoon into each gallon of soil, for vegetables blend 1 to 2 tablespoons into each foot of row under seed or transplant, for shrubs or trees blend 1 tablespoon in each gallon of backfill soil. Always water in well.

BioformDry 5-3-4 with 1% Sulfur - 5 lbs.

Natural Organic Fertilizer

Ingredients:

Laying hen manure, fish solubles, hydrolyzed feathermeal, alfalfa meal, bone meal and naturally mined GSL sulfate of potash. No inert ingredients!

Analysis:

Total Nitrogen:	5%	Soluble Potash (K_2O)	4%
0.31% Ammoniacal Nitrogen (N)		Sulfur (S)	1%
1.32% Water Soluble Organic Nitrogen		Calcium (Ca)	10%
3.37% Water Insoluble Nitrogen		Magnesium (Mg)	0.4%
		Available Phosphate (P_2O_5)	3%

Traces of micronutrients & macronutrients with no inert ingredients.

Description:

Premium organic fertilizer. Slow release with 100% of the potassium and sulfur certified by organic grower associations as an approved nutrient source for organic farming. Ideal pH of 5.5 for plant nutrient uptake. Great Salt Lake in Utah produces the potassium and sulfur naturally by solar evaporation as the source found in Bioform Dry. Sulfur is in the immediately available form Sulfate SO_4 allowing it to act faster and more safely. Fish is food grade, certified for mercury content from northern lakes. Contains all the macronutrients as well as most micronutrients required for efficient plant uptake and optimum growth. Granulated form provides ease of use and carefree spreading. Ideal for long term slow release application for flower beds, ornamental shrub plantings, trees and vegetable & herb gardens.

Application Recommendations:

Spread granules at 15-20 lbs. per 1,000 sq. feet in spring, summer and fall. Bioform Dry should always be applied to a dry lawn and then watered in thoroughly for best results.

Bradfield Organics®

Luscious Lawn Corn Gluten 9-0-0

Organic Fertilizer

Net Wt. 40 lb (18.14kg)

- Feeds Lawns Naturally
- Helps Build Strong Turf
- Convenient Granulated Form Makes Spreading Easier

Bradfield Organics® Luscious Lawn Corn Gluten is a premium granulated all-purpose fertilizer developed to provide you a safe (when used as directed), clean, convenient, and easy way to fertilize lawns, trees, shrubs; vegetable, fruit, herb, flower, and rose gardens.

DIRECTIONS

Bradfield Organics® Luscious Lawn Corn Gluten 9-0-0 can be applied at any time of year. As in nature, there is no bad time to start building soil fertility. As part of your Bradfield Organics® fertilizer program, apply 20 lbs per 1,000 square feet of lawn, garden or flowerbed area each Spring and Fall.

CAUTION

Do not apply to areas when seeding is contemplated within 60 days. Root system from newly germinated seeds tends to wither in the presence of corn gluten meal.

GUARANTEED ANALYSIS:

Total Nitrogen (N)..... 9%
9% water insoluble nitrogen

Nutrients for this product are derived from Corn Gluten Meal. CONTAINS NO ANIMAL MANURE

Mor-M-Lass Dry Molasses - 50 lb.

The granular form of molasses is easily applied with the other amendments or fertilizers.

Feeding the soil micro-organisms stimulates their growth and activity, which results in more organic material in the soil being processed into a form more easily absorbed by the plants. It is recommended that molasses be applied even if no other fertilizer or amendment is used. Also is a minor source of trace minerals.

Lawn & Turf Fungicide

Garlic GP Lawn & Turf* is an all-natural, chemical-free fungicide that controls brown patch and dollar spot. It's safe for children, pets, birds, wildlife and beneficial insects, as well as yard-friendly creatures such as earthworms. **Garlic GP Lawn & Turf** - a safe and healthy alternative to chemicals - saves on grass replacement and is very economical, covering up to 10,000 square feet. It works for up to 21 days after application and becomes odorless in hours.

Safe for use on all lawn & turf grasses including:

Bermuda, Bent, Bahia, Carpet, Centipede, Dichondra, Fescue, Natives, Rye, St Augustine, Zoysia.

Available sizes:

- 1 gallon (concentrate)
- 1 quart (concentrate) Bettix bottle
- 1 quart (concentrate) hose end sprayer