

# CUTT

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## Organic Lawn Care The Facts and Fallacies

**Y**ou've seen the ad. The one with the turfgrass manager, chin in hand, looking at two bags of fertilizer—one marked organic, the other chemical. With a pond in the background, one is left with the impression that this person is agonizing over the decision to pollute the pond or not. Is the choice between organic and inorganic as difficult for you? More important, are your customers asking for organic lawn services? ■

There's no doubt that American consumers today are more aware of their health, as well as the impact materials used around the home have on the environment. Because the term "organic" normally conjures thoughts of "natural" and "safe" in most consumers' minds, the demand for organic lawn care programs has increased. Likewise, the number of organic products and lawn care providers has also increased.

While most lawn care professionals currently classify the organic market as a "niche market", many recognize it as one that is growing. As biological pest control products are developed, organic lawn care services will become even more attractive and competitive.

### What is Organic?

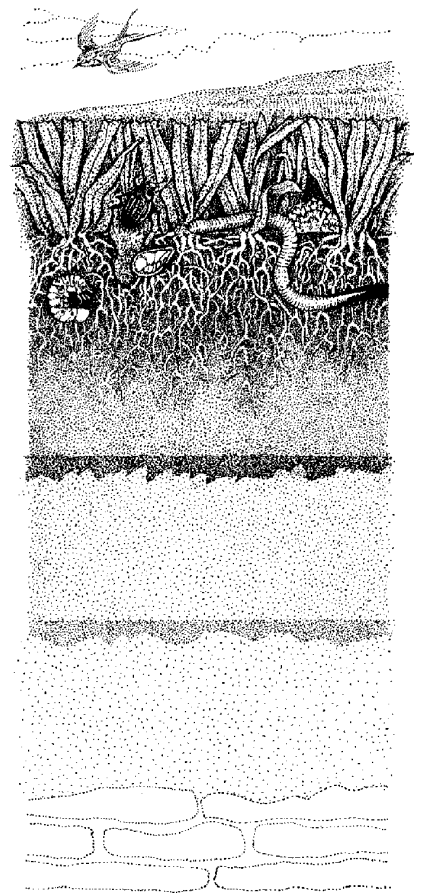
A quick look in the dictionary reveals several definitions of organic. The most basic definition of organic is any carbon containing compound. Some of these compounds occur naturally (natural organic), while some are man-made (synthetic organic).

If you were to ask your customer to define organic, they would likely describe a natural

organic. True organic lawn care practitioners use natural products. In fact, certification standards for natural lawn care professionals have been developed by an ad-hoc group of the Natural Organic Farmers Association (NOFA).

There are some basic philosophical differences between natural organic and traditional lawn care programs. Practitioners of natural organic lawn care believe that the biotic character of the soil must be maintained. The organic matter in particular must be preserved because of its many benefits: nutrient and moisture holding abilities, soil aggregation, and the ability to support a diverse array of organisms. They further believe that using synthetic materials such as chemical fertilizers and pesticides will adversely affect the organic matter and the organisms it sustains. In fact, there is some documentation to support this. If the soil is healthy, the plant life it supports will be healthy as well.

Traditional lawn care programs have evolved to utilize the technologies and products developed that will produce attractive, lush,



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Rod Ferrentino,  
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## Organic Lawn Care

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***There are some basic philosophical differences between natural organic and traditional lawn care programs; regardless of the differences between the two approaches, their goals are the same—a satisfied customer.***

***Both traditional and natural organic lawn care programs rely on the basics of sound turfgrass management. Proper mowing, fertilization, irrigation, and grass species and cultivar selection are the first defenses to pest encroachment or damage. The main differences between the two programs lie in the materials used.***

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lawns. Regard for how these practices affect the soil or the long term well-being of the lawn area is often an afterthought.

Regardless of the philosophical differences between the two approaches, their goals are the same—a satisfied customer. In fact, the means to that end are also quite similar. Both traditional and natural organic lawn care programs rely on the basics of sound turfgrass management. Proper mowing, fertilization, irrigation, and grass species and cultivar selection are the first defenses to pest encroachment or damage. The main differences between the two programs lie in the materials used.

### Fertilizers

A fertile soil will yield a healthy lawn. Thus, lawn fertilization is the basis of most lawn care services. All lawn services should use soil testing to assess the nutrient status of the soil. Once this is known, fertilizer programs can be adjusted to make up any nutrient deficiencies or imbalances, or to alter soil pH.

You should have soils tested prior to establishing a new lawn, and every 3 to 5 years thereafter. Here are a couple of suggestions to improve the quality of information you receive from soil testing: select a competent lab and stick with them (don't switch labs); sample at the same time of year and **at the same depth**; be sure the sample is representative of the area; and keep records, so that nutrient levels for specific areas can be monitored over time.

### Nitrogen

There are several natural organic nutrient sources to select for your lawn care program. Natural organic fertilizers contain between 3 and 10% nitrogen, the nutrients derived from bone meal, dried blood, manures, vegetable meals, feather meal, fish scraps, sludge, or any other organic source.

Most of the nitrogen in natural organic fertilizers is tied up in complex organic molecules. When applied to the soil, microorganisms quickly begin to use the organic carbon in the fertilizer as a food source. As the organic fertilizer degrades, nitrogen and other nutrients become available to the plant. Most of the nitrogen in natural organic fertilizers is in a slow release form. In fact, some of the nitrogen will not become available for several weeks to months after application. Therefore, the burn potential, and the potential for leaching and gaseous loss of nutrients is small.

Since nitrogen in natural organics releases very slowly, the visual turfgrass response to

these products may not be on par with their synthetic counterparts in the first year or two. With continued use, however, the release of this reserve nitrogen should enable organic fertilizers to perform very well. In one of our trials, we have noticed our organic program to be comparable to our "IPM" program in the second year.

Microorganism activity is slow during cool periods of the year, so nutrient availability is limited. One major hurdle organic lawn care providers have had to overcome is providing good quality turf during the cooler times. For this reason, organic certifying groups will sometimes allow the use of Chilean nitrate (sodium nitrate), a naturally occurring inorganic source, to improve performance at these times.

The main drawback of natural organic fertilizers is cost. A 50 pound bag of a processed manure product with 5% nitrogen contains 2.5 pounds of nitrogen. If that bag costs \$14, the cost per pound of nitrogen is \$5.60. Compare that to a 50 pound bag of product that contains 32% nitrogen from synthetic sources that costs \$12.95 per bag. The cost per pound of nitrogen is \$0.81. You can see immediately that you will have a cost disadvantage compared to the provider of traditional lawn care programs.

The short term performance and cost disadvantages of natural organic fertilizers have forced some to fortify these products with synthetic organic and inorganic nutrient sources. There is one company with an entire line of "organic" products that supplements their manure based product with methylene urea—a synthetic organic. While the manure makes up most of the product in bulk, nearly 90% of the nitrogen comes from the methylene urea.

Selling natural/synthetic organic or inorganic combination products is becoming more common. It brings the cost of the product down, and improves the short term performance. Using synthetic materials, however, would be in violation of the organic lawn care certification standards—a decision you would have to make.

### Other Nutrients

Most natural organic fertilizers and composts are excellent sources of other plant nutrients. Manures, for example, contain phosphorus, calcium, magnesium, and several micronutrients.

Phosphorus is an essential plant nutrient that is most important during new lawn establishment. Small seeded grass species such as bentgrass and Kentucky bluegrass are especially responsive to phosphorus applications in

the seed bed. Once established, turfgrasses are more efficient at obtaining available phosphorus. Therefore, phosphorus needs should be determined by a soil test on established lawns.

Phosphorus sources approved by organic certification groups include bone meal and rock phosphates. Bone meal is derived from the skeletons of vertebrates. It is sold raw, or as a processed by-product of one of several industries. Elemental phosphorus content can range from 10 - 20%. The phosphorus in bone meal products is more readily available than other phosphorus sources accepted by certifying groups. Bone meal fertilizers may have an offending odor, however, or may be in a physical form that makes it difficult to spread.

Rock phosphate is an inorganic, naturally occurring mineral (apatite) that contains between 12 - 17% elemental phosphorus. Untreated rock phosphate is very stable and of limited value to plants, unless it is ground to a very fine particle size. On alkaline (high pH) soils, rock phosphates are of little value. On acid soils, rock phosphates may be of some benefit, but rates as high as five times normal (compared to treated phosphates) are often needed to produce comparable results.

Acid treated phosphate sources such as ordinary super phosphate (0-20-0) or triple super phosphate (0-46-0) are more readily available and have better physical properties than rock phosphate. They are not allowed by organic certifying groups because of the belief that acid treated phosphates are more prone to runoff than rock phosphates. This belief is unfounded.

Potassium is another essential nutrient that is required in fairly large quantities by turfgrasses. It is also commonly deficient in New York soils. Unlike nitrogen, potassium fertilizer will usually not provide an immediate improvement in the appearance of the turf. When the turf is subjected to heat, cold, or drought stress, however, adequate levels of potassium will help the turf through these adverse conditions.

Composts are a natural source of potassium allowed by organic certifying associations. Composts may contain up to 1% potassium, which means that large quantities of compost are needed to increase soil levels. This is possible in new seedings where larger quantities of compost could be incorporated into the soil.

Wood ashes are a naturally occurring inorganic source that may contain up to 4% elemental potassium. Ashes are actually a better liming source than a fertilizer and should be used sparingly, especially on high pH soils.

Potassium sulfate (0-52-0) is a naturally occurring, inorganic potassium source that is allowed (on a limited basis) by organic certifying groups. The potassium in potassium sulfate is soluble, meaning that it is readily available to the plant. It has a lower burning potential than other inorganic sources, and can easily be found with fertilizer dealers.

### Humates

We have recently seen a host of humate products introduced on the market. Sometimes called biostimulants, these products are some form of well decomposed organic matter from several possible sources; from seaweed to peat bogs. While research data on many of these products has been lacking, there are many testimonials to their merits.

Because of the wide array of products available, be cautious. If you're interested in any of these products, try them out on a section of a lawn, making sure you leave an untreated area for comparison. Better yet, do a little in-house research. Try a number of products on two or three lawns, take notes, and compare the results over an entire growing season.

### Organic Pest Management

Controlling pests is the most challenging part of any lawn care program. Traditional and organic programs alike should rely on proper turfgrass culture to minimize pest pressures.

The two best defenses for preventing weeds are mowing height and fertilization. In dry years, irrigation can be equally as important. Bluegrass and ryegrass lawns should receive about 3 pounds of actual nitrogen per 1000 square feet per year. Fine fescue and tall fescue lawns should receive slightly less. Mowing heights should be maintained at at least 2 inches.

If you don't provide mowing services to your customer, be sure to teach them how to mow and water properly. Not only will it help keep the weeds out, it will make your program look better.

Once weeds are in a lawn, there is little you can do, short of hand pulling, to eliminate them. Again, you must educate the customer on the realities of organic lawn care. They must be



*Fertilizer (applied to lefthand portion above) is a key component in any lawn care program.*

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## Organic Lawn Care

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**Chemical-free means of controlling insects has jumped forward in recent years. One of the most significant contributions to natural insect control was the introduction of endophytic turfgrass varieties.**

willing to either accept weeds in the lawn, go through the labor-intensive process of pulling them, or apply a herbicide. The latter option, of course, violates organic certification standards.

There may be some hope on the horizon for organic weed control options. Corn gluten meal is an organic product that has shown some preemergent herbicidal activity on crabgrass. The selectivity of this material is very narrow, however, and is not yet commercially available.

There has been far more success in genetic or biological control of diseases and insects. Any chance you have to introduce improved cultivars into a lawn area, do so. Most lawn grasses available today have resistance to diseases that were a scourge 20 years ago. Check *Cornell Recommendations for Grass Species*

suppression. The problem is, not all composts are disease suppressive. Research is now focusing on identifying the organisms in composts that are suppressive, and how to predict if a compost is suppressive.

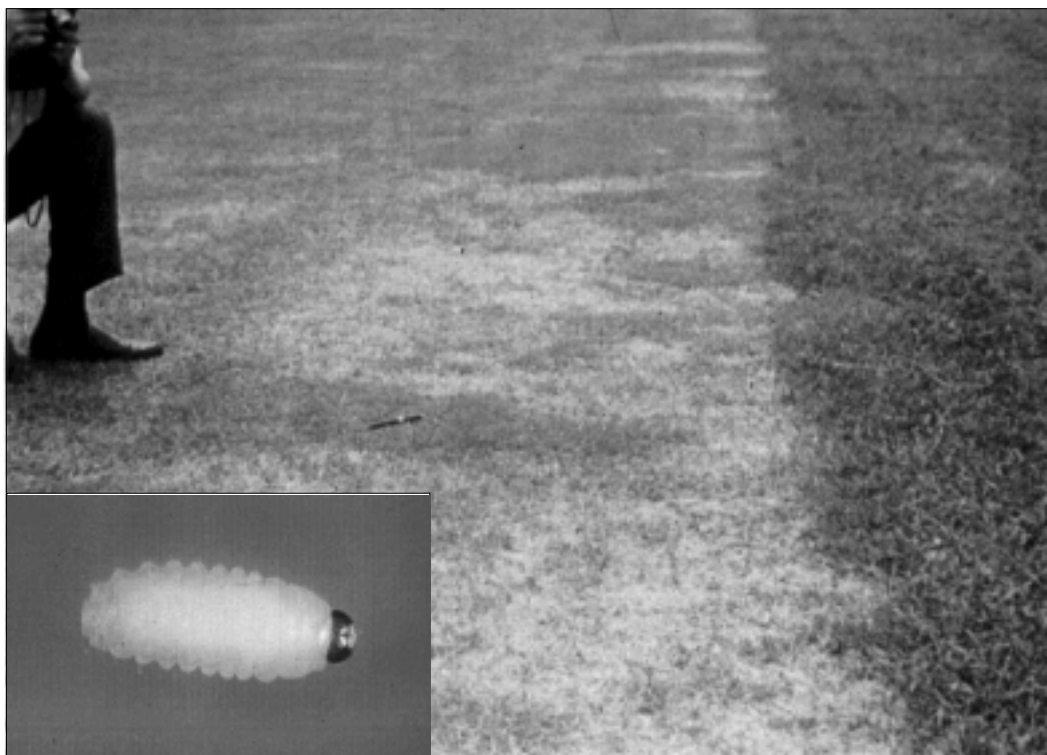
Chemical-free means of controlling insects has also jumped forward in recent years. Perhaps one of the most significant contributions to natural insect control was the introduction of endophytic turfgrass varieties. These are varieties that have resistance to surface feeding insects such as chinch bugs, billbugs and sod webworms. At this point, we have insect resistant ryegrasses, tall fescues and fine fescues available. Once again, check with *Cornell Recommendations* to identify cultivars that have this natural resistance to insects.

There are several biological control options for insects. Entomogenous nematodes include several species of nematodes, which are microscopic worms that parasitize insect larvae. Research conducted by Dr. Mike Villani at Cornell has found that *Heterorhabditid bacteriophora*, one species of these nematodes, was more effective on white grubs than other nematode species. It should be mentioned that control grub control with nematodes has been mixed. Another nematode species, *Steinernema carpocapsae* (Exhibit) has been shown to be effective on sod webworm and cutworm larvae, but not on white grubs.

The costs of nematodes can vary from being comparable to insecticides in cost, to 10 times the cost. Some practitioners of organic lawn care have found it cost effective to scout lawns for the presence of grubs, and to spot treat only those areas found to be infested. Before starting an organic lawn care business or program, assess your market. Is there a demand for organic lawn care? At what cost can you offer an organic program, and still make a profit? Then, is your market willing to pay those costs?

There is still much to be learned about organic lawn care, and more products to be developed. Many individuals, though, have successful businesses based on organic lawn care programs. Perhaps you can too.

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The damage done by *Hyperodes* weevils (inset), can be prevented by using insect resistant varieties.

and *Cultivars* for genetic resistance to specific diseases and insects.

Biological control of diseases is taking giant steps forward, thanks in large part to research conducted at Cornell. Dr. Eric Nelson and his associates have found suppression of diseases such as dollarspot and brown patch with natural organic fertilizers, such as Ringers Greens Restore and Sustane. Sustane also has been shown to reduce the severity of red thread.

Some composts have also exhibited disease

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