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After my staff and I could not find that synthetic chemicals directly caused turfgrass problems, we abandoned this part of our project. We noticed, however, that the check plots (areas not treated with chemicals) contained interesting results: turfgrass with healthier, more massive, deeper roots and with more numerous rhizomes and stolons; better soil structure that improved health and vigor; and fewer diseases and weeds.

It’s important to remember that turfgrasses are basically factories. These live factories produce finished products (carbohydrates, proteins, amino acids and other basic components) that make up necessary enzymes, hormones and organic compounds. These necessary products produce leaves, crowns, roots, rhizomes, stolons and seeds that yield healthy, aggressive plants.

These factories receive many of their basic raw materials from the soil. Besides water and all forms of nutrients, the soil contains microorganisms that provide enzymes, hormones and various natural organic products. The organic products combine with nutrient elements and other ingredients that plants absorb through roots to manufacture vital end-products for optimum growth. Fertilizers do not supply these natural products. Rather, soil microorganisms are the key to supplying the majority of these natural raw materials.

A large majority of turfgrass problems occur not only when the plant’s requirements are not met but when wrong or harmful materials are supplied in place of the right products. Problems develop, for instance, when turfgrass cannot obtain from the soil all the raw materials balanced to the requirements of the plant or when the grass cannot use or produce its essential finished products. When this occurs, the plant will begin to produce incomplete, slightly different end-products that will not fulfill the needs of the specific turfgrass. The resulting plant response may or may not initially show visual signs of weakening, but physiologically the decline within the plant proceeds.

Conditions For Health
As plants become established, the soil changes to favor the more aggressive plant. One change involves the variety and quantity of soil microorganisms. Each plant requires specific soil microbes to obtain optimum growth. These microorganisms include a large array of families such as bacteria, fungus, yeasts, molds, viruses, algae and others. Special varieties within the families accomplish specific tasks. The microorganisms work alone and in groups to accomplish essential reactions and to create by-products necessary for improving the soil.

Certain microbes and groups, for instance, decompose dead matter into organic compounds that enrich the soil and feed other microbes. Other microbes absorb and reduce accumulations of toxic substances such as animal salts from urine and excessive ingredients from leaching, weathering and incomplete soil reactions. Some specialized groups solubilize nutrient elements from rocks and other materials, making them available for root absorption. Others release essential enzymes, hormones and specific organic compounds to aid in the plant’s development of roots, rhizomes and stolons and to stimulate the production of “key” products necessary for the plant’s total health. Finally, as a plant becomes dominant, microorganisms associated with the plant species develop within the soil. Some of these microbes fight off pathogens and predators by attacking disease organisms and the germinating seeds of other plants.

Unhealthy Soil
Besides microbes that grow under healthy conditions, there are microorganisms that develop under less desirable conditions and which are basically detrimental to the growth of turfgrass. When this occurs, the turfgrass microbes die, the grass fades away, and another plant and its soil microbes take over the area. This second plant will grow aggressively until the soil changes again.
This plant growth and death, a continual occurrence in nature, is defined as “plant succession.”

Humans, unknowingly, cause plant succession to occur more quickly and harmfully. In their attempt to grow more playable, attractive turfgrass with chemicals, people cause many plant and soil changes that are unnatural to plant succession. The following represents a few problems unnatural chemicals can stimulate.

Fungicides are designed to kill plant pathogenic diseases and perform well against their targets. Eventually they wash into the soil where they continue their deadly action. Being non-selective, they kill soil microbes, including essential ones. Natural soil and plant reactions change or cease occurring, causing other problems to develop.

Fertilizers. Most contain soluble salts of nutrient elements, unnatural chelates and synthetic organic compounds not found in nature. Salts from frequent applications of these fertilizers will eventually kill turfgrass roots, forcing surface root growth and causing internal water holding and usage problems. Salts can kill beneficial soil microbes, dramatically reducing turfgrass health. The lack of beneficial microbes also causes compacted soils and stimulates unhealthy anaerobic microbial growths. Another problem with commercial fertilizers is that they do not contain all the nutrients and other ingredients required and in the right proportions for the individual conditions of the turfgrasses. Thus, a turfgrass will be unable to manufacture products necessary for its survival. For instance, too much nitrogen produces fast leaf growth and better appearing turf, but the plant develops fat cells and thin cell walls, which begin weakening the plant, making it more susceptible to disease and other problems.

Herbicides are unnatural chemicals designed to kill either broad ranges or selected plants. Initially, the targeted weeds are killed, but these unnatural materials do not react harmoniously in the soil or within the turfgrass. The result is immediate or delayed undesirable plant and/or soil reactions.

Management can cause negative reactions. Too much water, too frequently or at one time, can be dangerous, especially after chemicals have reduced the number of essential soil microbes. Weaker grass requires more immediately available water to stay alive.

Basically, synthetic chemicals do not cause specific problems, but they do disturb natural plant reactions so dynamically that the turfgrass or soil slowly declines. On the plus side, many of these chemicals provide quick and complete cures for many problems. As we'll see later in this series, by mastering and programming their reactions, we can use these chemicals to our benefit while helping essential natural reactions.

Donald J. Arenberg is a turfgrass agronomist and naturalist with Consulting Agronomists, Inc., Northbrook, IL 60065-2113; phone (708) 272-8090, fax (708) 455-6902.
Floyd Perry’s Hands-On Seminars

By Chris Turner

Floyd Perry has a wagon full of toys. Actually the wagon is full of tools, but there is really no distinction between the two with Perry. He lifts one little gadget after another from the wagon and shows them to the assembled group with the enthusiasm of a third-grader at a Friday show-and-tell.

"Over here is a little something we developed to aerate your infield that allows a person to do the job by himself," he says, pointing to a white, pitchfork-looking instrument with three long tines and a platform for pushing it into the ground with your foot. The tool is demonstrated; then Perry continues.

"If you want to see how compacted your turf is, you can use this tester," he says as he pulls a long, thin meter that resembles an oversized cooking thermometer out of the ground.

Perry is no Inspector Gadget — he is a grounds maintenance expert. He is founder and owner of Grounds Maintenance Services, a company that travels around the country offering instruction for the low-of-budget and the short-of-manpower staffs. The groups often include small city parks and recreation departments and high school coaches who maintain their own playing fields. The participants pay their money and, in exchange, take with them all kinds of neat little tricks and tidbits of information, while also being introduced to tools that can aid them in their jobs.

"I pride myself in being a blue-collar kind of guy," Perry says. "I've never claimed to be a professional groundskeeper. What I try to do is provide these guys with the tools and the techniques to help them do their jobs better. Groundskeeping is a great profession. There are a lot of little things you can do to get better."

Although Perry is an advocate of continuing education by reading trade publications and attending seminars, he earned his experience by doing. Perry was a high school baseball coach for many years and also coached at Valencia Community College in Orlando, FL, for 15 years. He left coaching to accept the director of baseball operations position at Baseball City, near Orlando, where he was responsible for maintaining several fields. When Baseball City closed after five years, he and his wife, Libby, struck out on their own with the Grounds Maintenance Services.

"I saw a real need for groundskeepers to be able to learn ways to make their jobs easier and for playing surfaces to be prepared in a safer manner," Perry says. "There is a real liability factor, and everyone is looking at the groundskeepers now as to why a field wasn't safe to play on."

Perry started the business in 1992 and conducts four multi-day academies and 80 one-day workshops around the country each year. Photos courtesy: Floyd Perry.

Perry conducts four multi-day academies and 80 one-day workshops around the country each year. Photos courtesy: Floyd Perry.

"I think the academy works better when we can bring in a group of people and can prepare the field for multiple games like we did in 1994," he says. "There is a little more downtime with just one game a day."

Perry speaks in terms his disciples can understand: time. When it rains and there are several games scheduled, time becomes a valued commodity.

"Floyd shows you ways to get the job done in a short period of time," says a participant from Bartlett, TN. "That's the biggest thing I've learned from his academies."

"You get so many ideas on how to do things better or make the most of what you have," says a Buffalo, NY, school district groundskeeper. "So much of what we learn helps us to streamline our efforts."

Perry says, "The majority of the parks and recreation departments in the country do not have 15 or 20 people they can run out onto a field when it rains. We teach ways one person can get a field ready for play in a short period of time."

That's where the wagon full of gadgets comes in. The USA Stadium complex has two fields, one of which is used for pre-game batting practice. Perry took his group to the practice field and began to hose down the third base corner of the field to the point where the bag appeared ready to float away. A concerned member of the stadium's staff nervously reminded Perry that a team from Nicaragua was scheduled for practice on the field in just a few hours. Perry assured the gentleman it would be ready for play in 15 minutes. When he did turn the water off, chuckles from the audience left the impression that some people were betting whether the field would be playable or not. Ye of little faith.

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Perry pushed his wagon to the edge of the quagmire. He dumped the wagon’s contents on the outfield grass, picked up a pump, and moved the wagon into position. As he spoke, he slid one end of the pump into the watery mess and leisurely pumped most of the water into the wagon. He rolled the wagon to the edge of the field and poured out the water. With most of the water gone, he picked up a sponge-covered board by its rope handles and dropped it into the remaining standing water. A volunteer stood on the board mashing the sponges down in the water — then picked it up and dropped it into the grass where the water was squeezed out.

With the water gone and only moisture remaining, Perry tossed some cabined clay on the ground and scratched it around until the surface looked as though it had been sprinkled during pre-game field preparation to settle the dust.

In a typical day at Perry’s 1994 USA Stadium academy, participants did hands-on training in the morning, a classroom portion in the afternoon, and were at the stadium to help prepare the field for two games each evening.

Actually, less than 15 minutes had expired, including lecture time.

“Maintaining a field is as important to me as CPR, driving a school bus, or teaching a player how to catch ground balls,” Perry says. “I try to teach groundskeeping from that perspective.

“It’s funny. Coaches have been going to clinics for years learning ways to teach a curve ball, but they have some of the worst-looking fields in the world. What I try to do is show them things that will give them a nice, safe field.”

Raking and dragging a field is not all the participants do. During his 1995 academy at USA Stadium, Perry brought in Tom Samples, a horticulturist and turf specialist from the University of Tennessee-Knoxville; Chip Houmes, from CIBA Industries; Mike Provost from the University of Memphis; and James Griffin from Toro Industries. All made presentations dealing with their areas of expertise.

“You’ve got to keep ahead of things in this industry because your labor will sometimes walk out on you,” Perry says. One way to keep the hired help around, he says, is to give them tools and knowledge they can work with. “Groundskeeping is not landscaping. The tools that groundskeepers have always come from landscaping. A group of us got together and came up with the idea of manufacturing tools specifically for groundskeepers. In this profession,
a lot of times, you have to use your imagination and improvise.”

Perry has done both. He saw a farmer using a tool that inspired the idea of making a triangular blade attached to a handle that could be used for sliding across the top of the ground to trim around the edges of the infield and the home plate area. The result is a perfectly manicured grass line. One industrious Little League volunteer, who works for a styrofoam company, came up with the idea to make “Puddle Pillows,” which can be tossed into a wet spot and used much like the sponge board. The Puddle Pillows are chunks of styrofoam sewn into an absorbable fabric.

“I probably learn as much from the people who attend the academies as they do from me,” Perry says with a laugh.

Probably the most useful items the seminar participants take with them are the little tricks of the trade that are subtle, but can save time and wear and tear on a groundskeeper’s back.

**Thanks to Perry’s seminars, low-of-budget and short-of-manpower staffs can learn many professional techniques, such as the art of field painting.**

Tricks like:

- Dragging a hose across the infield and around the foul territory in the morning to sweep away the dew so the grass can be cut;
- Hanging a piece of PVC by a pipe to the other side of the fence near the bullpen so a mound tarp can be wrapped around it, flipped over the fence and quickly drawn over the mound before it gets too wet;
- Burying clay blocks in the batter’s box and the landing area of the pitcher’s mound so the wear areas are not as difficult to repair and take less time between games;
- Brooming the infield clay surface rather than steel-mat dragging;
- Using artificial turf pads from which to pitch and hit off so as not to tear up the prepared clay;
- Using a fine, finish rake to smooth the mound and home plate areas to leave a touch of neatness.

With more municipalities adding soccer to their recreational programs, Perry says the need has risen to provide educational support for maintaining all types of fields and has seriously considered expanding the scope of Grounds Maintenance Services to meet that need. Until then, he’ll continue to push his wagon full of goodies around the country, pulling out his toys, and doing a show-and-tell for people who are as excited about their profession as he is.

Chris Turner is the sports editor for *The Millington Star* in Millington, TN.
INDUSTRY HAPPENINGS

UMass Sponsors Lawn Care Seminar, Show

The University of Massachusetts Extension and the Massachusetts Association of Lawn Care Professionals (MALCP) will host a seminar for lawn care operators and associated grounds management professionals on February 26 at the Sturbridge Host Hotel in Sturbridge, MA. For the first time ever, the seminar will be accompanied by a mini-turf show featuring suppliers of lawn care products.

The seminar is designed to provide lawn care professionals with an opportunity to access new-product information, gain information on IPM, and provide applicators with information regarding personal, customer and environmental protection. Five CEUs for pesticide recertification within Massachusetts are available. Recertification credits have been applied for other New England states and New York. For more information, contact Karen Connelly, executive director, MALCP, at (508) 287-0127 or Mary Owen, turf specialist, UMass Extension, (508) 892-0382.

New GIE Board to Meet

The 1996 Green Industry Expo officers and directors will take over their respective duties at the GIE board meeting on March 2. The slate of officers was announced last November during the sixth annual GIE in Fort Worth, TX. The board will meet in Nashville, TN. The officers, serving a one-year term, are: President Lou Wierichs Jr., CTP, of Pro-X Systems in Appleton, WI, representing PLCAA; Vice President Jeff Bourne of Howard County Parks & Recreation Service in Columbia, MD, representing PGMS; Secretary/Treasurer Dale Elkins of ISS Landscape Management Services in Orlando, FL, representing ALCA; and Sam Farison of Farison Lawn Care Inc. in Louisville, KY, representing PLCAA. Other voting board members include Gary Trinetti (PGMS), Mike Dietrich (PLCAA), and Rick Doesburg and David Luse, both representing ALCA.

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