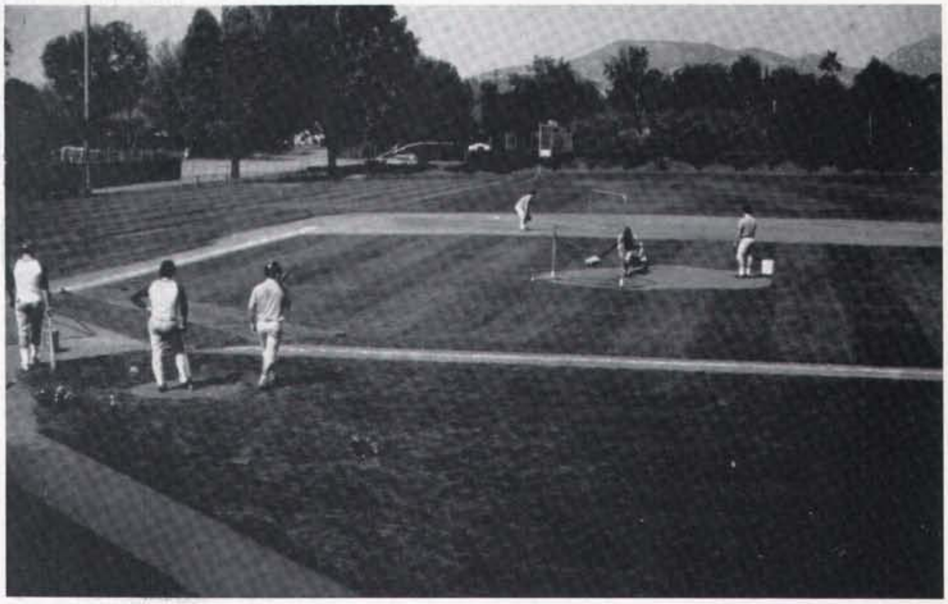
Fertilizing High-Traffic Turf

By Stephen T. Cockerham, Victor A. Gibeault and Matthew K. Leonard



Sports fields can have a dark uniform color with the correct application of fertilizer.

Sports fields are stomped on, kicked, scuffed, dug out, and otherwise generally and thoroughly beat up. More often than not, through all of this, the field still has turfgrass on it.

Well-managed turfgrass sports fields are safe, durable, and aesthetically attractive, but they are not low maintenance. Turfgrass under the pressures of high traffic should be sustained at their optimum vigor. Correct fertilization of the turf is a key factor in that process.

Fertilizers—When selecting fertilizers for use on sports turf, consider the turfgrass species, the nutrients needed, the effect of the nutrients on the plant, the nutrient sources available, the characteristics of different nutrient sources, time of year, and the requirements and limitations of the facility (budget, manpower, equipment, events schedule, and maintenance schedule).

There is not a particularly wide range of grasses grown as sports turf. In the Sunbelt it is pretty well limited to cultivars of one warm-season grass, bermudagrass, plus various cool-season species that might be winter overseeded. In the North, three cool-season species are used alone or in mixtures: Kentucky bluegrass, tall fescue, and perennial ryegrass.

Nitrogen (N), phosphorus (P), and potassium (K) are the primary nutrient elements used in large quantities by plants. Fertilizer labels contain the nutrient analysis indicated by the percent by weight of N-P-K in the package.

As a fertilizer, phosphorus is referred to as phosphate and shown as the chemical notation P2O5. Potassium as a fertilizer is known as potash and is shown by the chemical notation K2O. For simplicity we will use P and K, meaning P2O5 and K2O. Nitrogen is designated as N in fertilizer analysis.

Nitrogen is a major ingredient of the plant. As a component of chlorophyll, nitrogen deficiency first shows up as a yellowing of the turf. The deficiency is corrected by the application of nitrogen as a turf fertilizer. Nitrogen fertilizer sources are separated into three groups: inorganic, natural organic, and synthetic organic.

Inorganic nitrogen fertilizers produce quick plant response, are not very sensitive to temperature, and are low in cost per unit of nitrogen. However, they are highly soluble in water, so the response doesn't last much longer than four weeks.

The most commonly used inorganic nitrogen fertilizers are ammonium nitrate, ammonium sulfate, and calcium nitrate. Ammonium is taken up by the roots, but most of it is absorbed by soil particles. Soil microbes convert it into the nitrate form, release it from the soil particles and make it available again. Cool temperatures slow the soil microbes, making the ammonium less available to the plant. Nitrate, also easily absorbed by the roots, is not sensitive to temperatures.

Ammonium sulfate (21-0-0) in addition to nitrogen in the ammonium form contains 24 percent sulfur. Because sulfur reacts to acidify soil, this fertilizer is recommended for use on alkaline soils.

Calcium nitrate (15-0-0) is a good cool weather turf fertilizer, but it absorbs moisture easily causing it to cake in the bag. Therefore, it should be stored in airtight containers.

Natural organic nitrogen turf fertilizers are derived mostly from animal wastes (manure and sewage sludge). These materials typically are not soluble. The plant growth response is slow and they are only effective for four to eight months.

The low nitrogen analysis (two to 15 percent) of natural organics makes their cost per unit of N higher than the inorganics. Even though they are expensive N sources, many turf managers use natural organics due to the presence of a number of other nutrients. Since soil microbes break down the natural organics to release the nitrogen, effectiveness is poor in cool weather.

Activated sewage sludge is the primary natural organic nitrogen fertilizer used routinely on turf. Activated sewage sludge, produced from treated, processed sewage, contains four to seven percent N. Manures are occasionally applied as a preplant fertilizer for turfgrass establishment, but the high soluble salt content can be undesirable.

Synthetic organic nitrogen fertilizers are primarily urea and urea-based compounds, both soluble (quick-release) and slow-release. Soluble synthetic organic fertiizers give quick turf growth response that may last four to six weeks.

Soluble urea (45-0-0) is by far the most popular soluble sythetic organic nitrogen source for use on turf. The prills are convenient to apply dry through a spreader, or can be dissolved in a sprayer tank for liquid application. The very high N content means that less total quantity must be handled compared to other fertilizers.

Besides leaching as rapidly as a soluble fertilizer, a large percentage of N is lost to volatilization in warm weather, which happens when the ammonium in the urea turns to free ammonia and evaporates. Cool-season use of urea minimizes volatilization.

Slow-release insoluble synthetic organic nitrogen fertilizers have little turf burn risk, and plant growth response is slow. They release N over an extended period, making plant growth more consistent and reducing the number of applications. However, the slow-release materials are more expensive than other sources.

continued on page 22

Fertilizing High-Traffic Turf
continued from page 21

Slow-release N fertilizers are made by either combining urea with other compounds to produce water-insoluble materials, or coating a readily soluble N source. The most commonly used water-insoluble urea compounds for turf are ureaformaldehyde (UF) and isobutylidene diurea (IBDU).

UF (38-0-0) fertilizer is packaged with about 25 percent N in the soluble form to provide a quick turf response. Nitrogen is released from the insoluble fractions of UF through microbial breakdown and is dependent upon temperature. It isn't very effective when temperatures fall below 50 degrees F.

The rate of N release from UF is controlled by the size of particles and the fertilizer chemistry. A smaller particle size increases the number of particles, thus increasing the surface area of the fertilizer that is exposed to microbial activity.

IBDU (31-0-0) releases N as the particles slowly dissolve in soil moisture. Since release is not influenced by microbial breakdown or temperatures, IBDU is good for cool season use. Like UF, the rate of N release depends on the size of the particle. Turf response may take as long as four weeks, but can last as long as 16 weeks. Turf managers, often anxious for a quick response, sometimes add soluble N to IBDU for immediate impact.

Slow-release sulfur-coated urea (SCU) is produced by spraying molten sulfur onto granules of urea. The rate of N release from SCU is determined by the thickness of the sulfur coating and the particle size. The N analysis varies, but 32-0-0 is a common formulation, and sulfur (12 to 22 percent) is available to the plant.

Response to common turf formulations of SCU lasts eight to ten weeks. SCU usually provides a better initial growth response than other slow-release fertilizers, and the cool season activity of SCU is acceptable. It is the least expensive slow-release synthetic organic fertilizer per unit of N.

Resin-coated materials are produced by coating urea, or other compounds, with a water-permeable plastic resin. These products usually are 26 to 34 percent N. The permeability of the coating is sensitive to temperature. Lower temperatures slow N release by causing the resin to contract, so resin-coated fertilizers are primarily for warm season use.

Resin-coated fertilizers do not cause turf to produce a flush of growth. Instead, the initial response is a gradual increase in growth without the rapid spurts common with other fertilizers. This growth can be sustained for four to six months. Resin-coated fertilizers are the most expensive N source.

Forcing growth—Sports turf fields have the same normal maintenance requirements of any turfgrass sward. The unique demands of the sports field often call for forcing extraordinary growth. Frequent, high N-rate applications will cause a rapid flush of growth. Most of the response is foliage, but the roots also grow. This response is useful in peaking for a certain event or recovering from a particularly damaging event. However, forced growth creates a risk of long term problems with the turf, because the growth flush tends to deplete carbohydrate reserves and reduce later injury recovery potential.

Phosphorus is used to make proteins and help transfer energy within the plant. It is especially important in the development of roots, rhizomes, stolons, and tillers. The roots are vital to the sustenance of the grass plant. If there are no roots, then there is no growth. Rhizomes, stolons, and tillers are the mechanisms that established turfgrasses use to spread.

Traffic is the most significant stress on sports fields, and potassium increases traffic tolerance.

Two common sources for P are superphosphate (0-15-0) and triple superphosphate (0-45-0). Monoammonium phosphate (11-48-0) and ammonium phosphate-sulfate (16-20-0 plus 15 percent sulfur) are common N fertilizers that are high in phosphate.

Injury recovery—Turf density can be a function of the vigor and efficiency of the roots, rhizomes and tillers. Recovery from injury is most certainly a function of their vigor and efficiency. Excess P in the root zone allows the plant to utilize it.

Low solubility makes phosphorus very immobile, and repeated application causes it to accumulate in the upper soil layers. This has not been a problem and may provide excess P on demand to the plant under stress. If the sports field is being resodded, putting one of the phosphate-nitrogen fertilizers under the turf and on top of the soil or sand enhances sod knitting.

Potassium is involved in several plant metabolic processes, many of which are related to water use. It is highly soluble and does not stay in the root zone very long. Sports turf on sandy soils and pure sands lose K rapidly and requires applications nearly as frequently as N.

Common fertilizer sources are potassium chloride or muriate of potash (0-0-60) and potassium sulfate (0-0-50). Both are inexpensive. Often a nitrogen plus potash fertilizer product mixture is used to assure that both nutrients are available to the plant.

Stress resistance—Turf does not usually respond visibly to added potassium. It is the increased stress resistance that is important. Drought, heat, and cold tolerance are improved and disease resistance increased. Traffic is the most significant stress on sports fields, and potassium increases the turfgrass traffic tolerance.

Sulfur deficiency stunts the growth of the turf plant. Common sulfur sources are ammonium sulfate (24 percent S), potassium sulfate (18 percent S), sulfur-coated urea (12 to 22 percent S), superphosphate (12 percent S), ferrous sulfate (19 percent S), and elemental sulfur (99 percent S).

Occasional use of sulfur-containing nitrogen fertilizers (e.g. ammonium sulfate) usually takes care of the sulfur needs of sports turf. Many sports fields are built in marginal soils, including land fill, where sulfur applications may be beneficial. Sulfur fertilizers tend to lower pH due to their acid reaction in the soil and are usually preferred for alkaline soils.

Iron (Fe), essential for chlorophyll synthesis, is important to turf color. Turf suffering from iron deficiency is chlorotic, and does not respond to nitrogen. Iron is usually present in the soil, but has a tendency to form insoluble compounds.

Iron can be applied either as a salt or in a chelated form. Salts include ferrous sulfate (20 percent Fe) and ferrous ammonium sulfate (15 percent Fe). Chelates are chemicals that bind iron to prevent insoluble compounds from forming, while still allowing uptake by plants. Modifying the pH of alkaline soil with repeated sulfur use or an acid soil with lime can cause a turf response from released iron.

Turf color—As any sports turf manager knows, nitrogen is not the only way to make turf a uniform dark green. Iron is a valuable tool for providing that color.

If nitrogen is in adequate supply, an application of soluble iron (0.25 lb. Fe/1000 sq ft) such as ferrous sulfate will almost always darken the color of the turf within two to three days. Because ferrous sulfate will easily burn the turf, irrigation should follow application immediately. Application on a hot day or at a high rate will cause burn where the applicator tires scuff the turf.

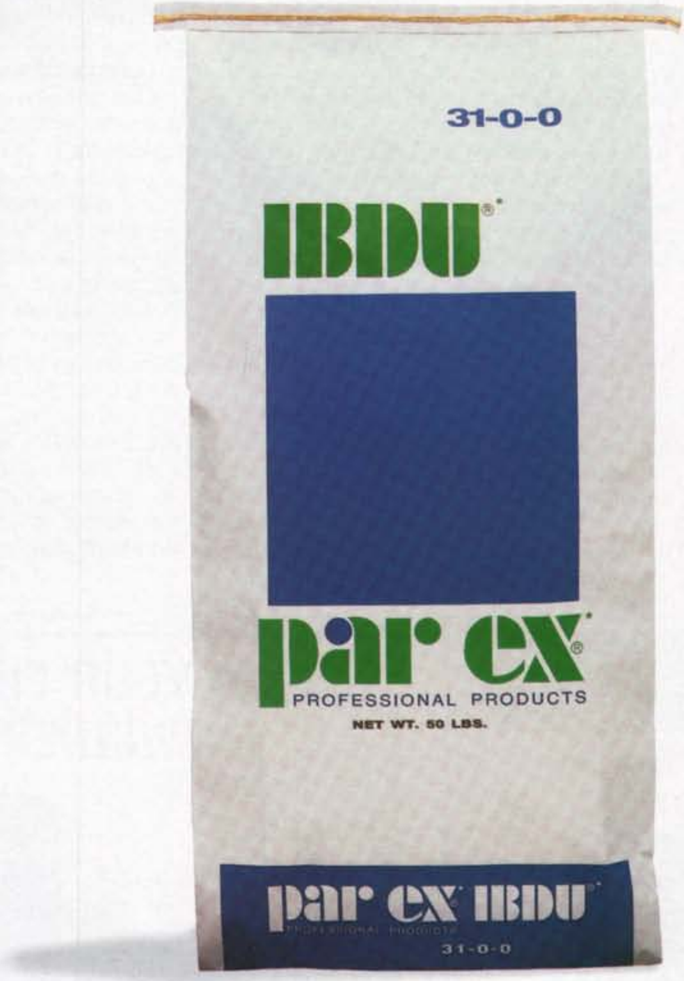
The primary plant nutrient elements (N, P, and K) are seldom applied singly. When all three are in one fertilizer product, it is called a complete fertilizer.

In the fertilizer product, the nutrients are balanced in ratios to each other depending upon the local climate, soils, and grass needs. A starter or preplant fertilizer may have a ratio of about 1:2:2, which might be an analysis such as 5-10-10 or 10-20-20. The N is low, while the P and K are high to stimulate seedling development. A common maintenance ratio for complete fertilizers might be about 3:1:1, which might be an analysis such as 15-5-5.

Sports turf, regardless of species, should be fertilized with N every month of the growing season. One or two of these applications should be with a complete fertilizer with a 3:1:1 or 2:1:1 ratio. The rate is usually calculated using the percent N in the formulation.

continued on page 24

Think Of Us As Turf Insurance.



To insure the health of next year's turf, Fall fertilization with Par Ex® is your best policy.
Fall is your root feeding season. The only time of year when the foundation of your turf can be expanded and strengthened with less competition from leaves for available carbohydrates.

IBDU: the only slow-release nitrogen source that doesn't rely on bacterial action or temperature.
It is activated only through moisture (hydrolysis) to slowly release nitrogen all through the Fall and early Winter. Right up to the time the ground freezes, extending the greening of your turf much later than conventional slow-release fertilizers can. While it works to build a strong and healthy root and rhizome system in preparation for next year's Summer stresses.

Yes. You can buy a cheaper fertilizer this Fall.
But don't expect it to perform when your turf cools down below 55° and microbial activity stops. Then, only Par Ex can really get to the root of the matter. And anything that doesn't is no bargain.

So call your Par Ex representative today and find out exactly how affordable Par Ex is. We guarantee you'll rest a lot more comfortably all year round.

par ex®
THE EX STANDS FOR EXCELLENCE

PAR EX® and IBDU® are registered trademarks of Vigoro Industries, Inc., P.O. Box 512, Winter Haven, FL 33882 813/294-2567.

Circle **107** on Postage Free Card

Fertilizing High-Traffic Turf
continued from page 22

Application rates—For maintenance of sports fields with any of the grasses, nitrogen is applied at the rate of one pound per 1,000 square feet per month of growing season. If slow release nitrogen fertilizers are used, apply one pound N per 1,000 square feet/month of release period. A rate of 2.5 to 3 pounds per 1,000 square feet of product should be a minimum applicationof slow-release materials.

In the early spring, it is often possible to "jump start" bermudagrass with a one-time application of two to three pounds N per 1,000 square feet in a soluble form.

The overseed species seldom root through the thatch of the base species and draw from whatever nutrients are available in the thatch. Light, frequent N applications (0.5 pounds N/1,000 square feet monthly) may be adequate. If a vented plastic tarp is used to maintain soil temperatures, care should be exercised in the use of N fertilizers. Free ammonia released by fertilizers under a tarp will cause considerable injury to the turfgrass foliage.

Winter use of fertilizers depends upon the growth of the turf. As soil temperatures drop below 50 degrees F, bermudagrass stops needing fertilizers. For the cool season species the magic soil temperature is around 40 degrees F. When the trend of the soil temperatures is up in the spring and passes these temperatures, it is time to begin fertilization again.

On cool- and warm-season turfgrasses, phosphorus is applied at the rate of one to two pounds of P per 1,000 square feet per year. Potassium applications on sports fields can be a little heavier than on other turf. Potassium is applied at 0.5 to one pound of K per 1,000 square feet per month of growing season. On sandy soils and sands use the higher rate.

Application of N and K is possible through the irrigation system. Using liquid fertilizers and injector pumps the nutrients can be applied every time the field is irrigated. The nutrient application rate should be very dilute with the intent of putting on about one lb. of each nutrient per 1000 sq. ft. over the period of a month.

Sports turf fields require aerification to relieve compaction. There is some benefit to fertilizing immediately after aerifying. Some fertilizer will get down in the holes either as a whole particle or in solution as it dissloves in rain or irrigation water.

Turf can visibly respond to rates of iron as low as 0.1 up to 1.0 pound of Fe per 1,000 square feet within a few hours after an iron application, particularly if nitrogen is applied at the same time. Iron applied at the high rate has a very high burn risk, and it should be used only with great care—don't use it in hot weather, don't walk or drive on the sprayed area until it has been watered, and water immediately after application.

All sports turf facilities have budget limitations, but it is important that the budget not skimp on fertilizer. For the benefits it provides to a sports field, fertilizer is a low cost supply item.

For example, a sports field of 2.5 acres, which is a reasonable size for one field (football or baseball), would use less than $4,000 per year (four cents/square foot/year) for the highest application rates of the most expensive coated slow-release fertilizer. A good fertilizer program, depending upon field demands, might spend ten to 25 percent of that on fertilizer.

Scheduling fertilizer applications around events can be a major challenge. A set program for maintenance including fertilizer treatments is often impossible to keep. The sports turf manager seldom has any input into events scheduling. Events that require covering the field, such as concerts, can cause irrigation and fertilization to be postponed, or a very heavy schedule of athletic events may not leave time for field work. The sports turf manager must be flexible, decisive, and opportunistic to get the work done and to maintain a safe, attractive field.

Editor's Note: The authors from the University of California, Riverside, (in order) are superintendent of Ag. Operations, extension environmental horticulturist and staff research associate.

NEGOTIATIONS PROGRESS FOR REDSKINS STADIUM

Despite the success of the Washington Redskins on the field, the team's success at the bank has been disappointing to owner Jack Kent Cooke. Restricted by the 55,000 seats and lack of luxury suites at RFK Memorial Stadium in Washington, DC, Cooke has made no secret of his wish to build a second stadium in the city.

Bolstered by the hope of obtaining a National League Baseball expansion franchise to occupy RFK if the Redskins leave, Washington Mayor Marion Barry is cooperating with Cooke to reach an agreement on building a new 80,000-seat stadium next to RFK. As Joe Robie proved in Miami, the 300 proposed luxury boxes could make the payments on a new stadium, whether financed by the city or Cooke himself.

Regardless of who picks up the tab, one thing is clear. Cooke would like "an open-air stadium with natural grass." Tony Burnett, head groundskeeper at RFK, expects to make a few changes if the Redskins move to their own stadium: "We resod the field every summer with Tifway II bermudagrass to give it a good base for football. That wouldn't be necessary for baseball, soccer or other events that use the stadium." Burnett converted the field to bermudagrass overseeded with perennial ryegrass in 1977, two years after it was reconstructed to the PAT System.

To keep the bermuda active in the fall, Burnett covers the field with a vented geotextile to keep soil temperatures up. This also pushes the overseeded ryegrass.

For the new stadium to be located next to RFK, nine holes of a neighboring golf course would have to be relocated to make room for additional parking. When asked what the new stadium will look like, Burnett answered, "All I know is Mr. Cooke loves Giant Stadium in the Meadowlands (New Jersey). He also likes natural turf. If they do build it here, I hope I can be involved with the field."

"NUMEX SAHARA" CLOSE TO COMMERCIAL USE

Seed yield on a variety of bermudagrass developed at New Mexico State University has brought the grass a step closer to commercial use.

Arden Baltensperger, professor of agronomy and horticulture in NMSU's College of Agriculture and Home Economics, who developed "NuMex Sahara," said the grass produced a good seed yield on a breeder field of about two and a half acres. Development of the variety has taken about ten years and the assistance of several graduate students.

Since June, approximately 100 acres of foundation field were planted in Arizona and Southern California. The foundation fields are the second phase toward certification of the seed, a "seed increase phase," Baltensperger said.

"I hope this new variety will be of good use on golf course fairways, city parks and other large areas where seeding is the preferred method of establishment," he added.

The variety has several advantages over "Common," the current primary seed-producing variety of bermudagrass available commercially. Baltensperger said it has better turf quality, is denser, experienced less stunt mite damage, and is credited with better summer color.

NuMex Sahara was granted plant variety protection in March by the U.S. Secretary of Agriculture through the New Mexico Crop Improvement Association (CIA).

Farmers Marketing Corp. (FMC) of Phoenix, AZ has the exclusive right of increasing NuMex Sahara seed and marketing it. The firm pays royalties for the privilege to the CIA that find their way back to NMSU and the U.S. Golf Association.

Royce R. Richardson, president of FMC, noted that in 1987 some 70,000 NuMex Sahara plants were hand-planted on the two-and-a-half acre breeder field, "to ensure the genetic purity of that field."

"It's all up and it looks very good," Richardson said of the grass. "We will have certified seed available to the public in July 1989."

Football and soccer share the same lighted fields during the summer.

IRRIGATION ALLOWS SASKATOON TO CELEBRATE SUMMER

There is a misconception in the turf and landscape industry that irrigation is important only to communities in the Sun Belt and desert Southwest. In reality, few U.S. or Canadian communities can provide durable recreational turf for their citizens without it.

For example, take Calgary, Alberta. Few people appreciate the fact that without snowmaking equipment, this Canadian city would not have been able to host the Winter Olympics. There just isn't enough natural precipitation in the area during the year to support ski resorts, much less keep high-use recreational turf growing between April and September.

Henry Lesser, president of Eljay Irrigation Ltd., supplies Alberta and neighboring provinces with the components to make golf courses and sports turf exist. One of his favorite examples of the difference irrigation has made in his area is the city of Saskatoon, 400 miles to the east in the province of Saskatchewan. In the past ten years, the city has become a shining example of the growing appreciation of automatic irrigation. Eljay had to open a branch in the city to meet the exploding demand for irrigation.

Saskatoon is a city of 200,000 situated in the middle of the flat Canadian prairie. With less than eight inches of rainfall in an average year, only dryland grasses such as Russian wild rye and crested wheatgrass can survive. The soil is a patchy mixture of minerals left behind by glaciers and silt from the Saskatchewan River.

The city started out as a railhead for the cattle industry. Ranchers rounded up their herds of cattle grazing on the prairie bordering the river in July to be loaded on trains in Saskatoon. Discovery of vast deposits of potash in the '50s gave the city a new industry to feed its growth. Millions of tons of the mineral are shipped each year by rail from Saskatoon across the continent to be processed into fertilizer for the farm and landscape industries. With the advent of center pivot irrigation, ranchers in the area became farmers as well.

As a result, the population boomed in 30 years from less than 50,000 to more than 200,000. The demand for parks, golf courses and ball fields has grown at the same rate.

Phil Kabatoff, general foreman of construction and project manager for the city, has witnessed the changes in both growth and irrigation during the period. When Kabatoff started out in his father's landscaping business more than 35 years ago, he could not have imagined the role he would eventually play in the improvement of irrigation in the city. His twin brother, Peter has served an equally important role in Prince Albert, 90 miles north of Saskatoon.

Kabatoff has pioneered the improvement of the city's irrigation, taking it from portable sprinklers to automatic control. "When I started out with the Parks and Recreation Department as a laborer, we used aluminum surface pipes like they do in farming to get water from hydrants to the fields," he recalls. "We'd connect portable sprinklers to the pipes with hoses and move them every few hours.

"It was a full-time job for one man at each park just to handle irrigation. Every day the sprinklers and hoses had to be brought out and put away. Beginning in August, we had to break down all the pipes and store them until the following spring."

When Kabatoff was promoted to assistant foreman, irrigation became his responsibility. He learned quickly that not only was the labor involved with portable irrigation extensive for a growing park system, but the pipes and sprinklers were also prone to damage by park users. Repair costs added to the labor burden.

"The city has traditionally restricted water use," he adds. "Until four months ago, half of each park had to remain as unirrigated prairie grass. It took us ten years to prove that with automatic controls and low volume sprinklers we could double the amount of irrigated acreage without doubling the amount of water we use. The city has grown so much that we need every acre we've got for recreation during the summer."

Understanding the benefits of automatic irrigation was a learning process for Kabatoff as well. After seven years with the parks department, he rejoined his father's growing company, Kabatoff Landscape Contractors, Ltd. He travelled over three provinces building parks, golf courses, and commercial developments.

"Irrigation technology was changing rapidly," he recalls. "We'd install automatic irrigation with pop-up heads on a golf course one month and a manual quick-coupler system in a park the next. How up-to-date the system was depended upon the budget for the project and the architect on the job. But irrigation was coming on strong and we had more work than we could handle."

After eight years, the pace became unbearable — and Kabatoff didn't like being away from his family for weeks at a time. When Saskatoon offerred him the general foreman position in 1977, he said yes.

The city's irrigation system had changed only slightly since he left. The revenues from the city's golf courses were separate from the parks budget, but a tax levy to support park development had been passed two years before. City council mandated that one 20-acre park had to be built for each 1,000 new homes. To pay for these parks, each home builder was assessed roughly $4 per foot of frontage. During the first two years of the program, quick-coupler systems had been installed in a portion of the parks.

"Irrigation technology changed considerably between the time I left in 1969 and when I returned," he recalls. "The park system had grown to almost 2,600 acres. Our old method of irrigation just wasn't practical anymore."

Kabatoff put together a proposal to retrofit 300 acres per year. That's the equivalent of two 18-hole golf courses each year. "We had to do in ten years what other communities had done in over 30 years." Instead of using park staff to install the irrigation, all

continued on page 30

"I SWITCHED TO RAIN BIRD... Because Life's Too Short."

"I had tremendous problems with my other system. Now, MAXI®-ET is as close to having my own custom control system as there is. It didn't take long to see that the satellite is far superior to the other system. And the central unit is light years ahead of it, too.

"And, there's a big difference in flexibility. MAXI-ET doesn't tie you down to a closed set of parameters. MAXI-ET can solve many problems in irrigation by letting the superintendent use all the innovative tools available to him and letting him make the decisions.

"MAXI-ET is dependable. It works. Repair and maintenance is as much as 3 to 4 times lower per year.

"After installing the MAXI-ET system, we also changed all 27 greens, 5 tees, and 2 fairways to Rain Bird's 51DR rotors and they're here to stay! I'd say we'll save $3,000 to $4,000 in repair and labor this year by switching to the DR rotor.

"I highly recommend the Rain Bird system to anyone, anywhere!"

Gregory W. Graham, Golf Course Superintendent
The Tucson National Resort and Spa, Tucson, Arizona

Make Rain Bird your first choice.

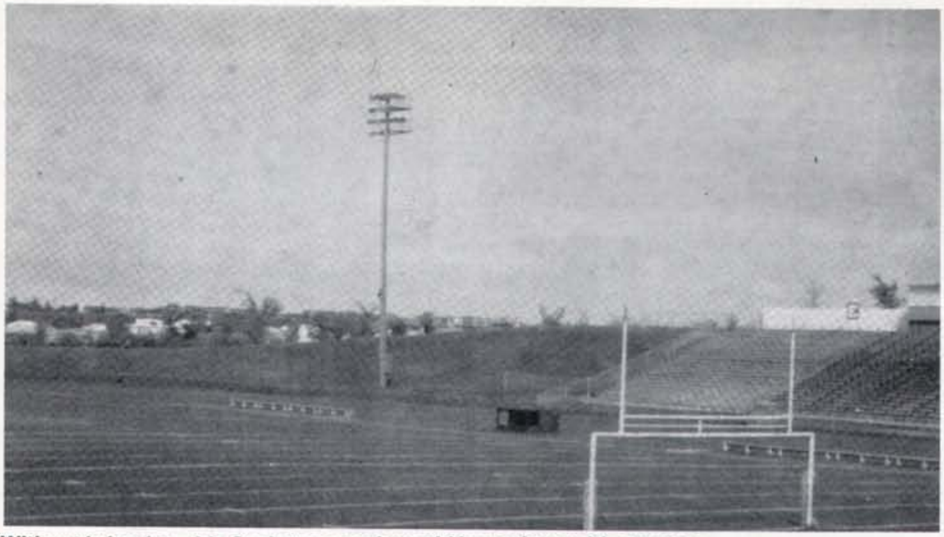
See for yourself how this complete irrigation and environmental management system with a state-of-the-art, on-site weather station will save you time, energy, money *and* headaches. Remember, life's too short.

Ask your distributor about convenient Rain Bird financing.

RAIN BIRD®

Rain Bird Sales, Inc., Golf Division
145 North Grand Avenue, Glendora, CA 91740
(213) 963-9311

Circle **116** on Postage Free Card



Without irrigation, this Saskatoon park would be native prairie grasses.

Irrigation Allows Saskatoon
continued from page 26

work was to be contracted out.

The first step was to get the mains and laterals in the ground with impact heads on a 40-foot triangular spacing. The first group of systems were controlled manually. Kabatoff required each contractor to provide accurate as-built drawings, because he planned to add electric valves and controllers as his budget allowed.

Since these systems were connected to municipal water lines, pressure varied across the city. "One park would have 95 psi, while another had 28 psi," says Kabatoff. "It's worse when we don't get rainfall. Water pressure city-wide can drop to as low as 25 psi." Since the sprinkler heads are designed to operate at a certain pressure, booster pumps had to be installed in some of the parks.

Technology continued to changed. Each year Kabatoff had new options to consider. When Toro introduced its 600 series of low-gallonage heads, he saw an alternative to high-pressure heads for the parks. These smaller, gear-driven heads require less pressure to operate, yet still cover the same amount of area as impacts.

But Kabatoff was most interested in the rate at which these heads apply water. "Our silty soil can take water in only so fast," he adds. "Since there is little to no moisture in the subsoil, we need to water deeply with at least one inch per week. Low-gallonage heads more closely match the soil's infiltration rate. One year alone we purchased 15,000 heads."

Dave Desmond, Eljay's branch manager in Saskatoon, convinced Kabatoff to try out Hunter gear drive heads when they were introduced. "Ed Hunter designed the Toro head before going out on his own," explained Desmond. "Since all Hunter makes is sprinkler heads, it has developed some features which make the grounds manager's job easier." Desmond had more than 12 years' experience in irrigation in the prairie country, so he has been able to provide some helpful advise to Kabatoff.

"We currently have about 200 baseball fields, both slow pitch and fastball, and 80 football/soccer fields," Kabatoff explains. He estimates 500 acres of new park land have been added in the past ten years, for a total of 3,100 acres. But that has still not been enough. To get the most use out of each field, lights were installed in some of the parks. During the summer, the lighted fields are used from sunrise to late at night. As a result, soccer and football fields can wear out and become compacted in a matter of weeks.

Sod is used to repair the worst spots, while a program of aerification and topdressing addresses compaction on the remainder of the turf. The fields are aerified to a depth of more than six inches deep with a Verti-Drain aerifier imported from Holland and topdressed with a mixture of sand, topsoil and composted sewage sludge once in the spring and again in the fall. "We have to make all our own topdressing using a soil shredder," Kabatoff adds.

The parks department tries to rotate use of football/soccer fields when possible during the summer to grab two to three weeks for renovation. The center and goal mouths are resodded, while the rest of the field is reseeded with a mixture of Kentucky bluegrass, turf-type tall fescue, creeping fescue and perennial ryegrass.

If major renovation is required, the field is fertilized after a soil test and rested for up to three months. Soil tests normally indicate a need for a high rate of phosphorus and 11-51-0 is applied. "The soil is rich in potassium so we rarely need to apply it," Kabatoff explains.

The height of cut changes with the sport. During soccer season the fields are mowed at 1¾ inch with riding outfront rotary mowers. The height is raised to 2½ inches for football.

The parks department is experimenting with sand to counteract compaction. Four high-sand fields (60 percent sand, 30 percent topsoil, 10 percent sewage sludge) were built and another group of six fields receives a topdressing of sand every six to eight weeks.

The four high-sand fields were constructed in the fall of 1987. The soil on these fields is tested every six weeks followed by an application of fertilizer as recommended by the test results. "At present, we do not know what the wear tolerance will be on these fields," says Kabatoff, "as they are only starting to be used."

Two of the fields are irrigated with high-pressure Rain Bird heads supplemented by a pumping system, while the other two fields have Hunter low-gallonage, low-pressure sprinklers. Kabatoff hopes that this will provide the parks department with information to help it plan irrigation design and maintenance in the future.

"Now that we can irrigate 100 percent of each park, the number of fields could double in the next three to five years. I'll have to find new ways to keep the fields and parks in shape and in play." That's why Kabatoff attends as many park and turf conferences in the winter as he can. He wouldn't think of starting the busy season without attending the annual short course at the University of Saskatchewan every spring.

The city's capital expenditure budget for parks has grown in 12 years from $63,000 to $3.7 million. His annual equipment budget alone is $500,000. "The support from the city has been remarkable," says Kabatoff. "They want a greenbelt that they can be proud of, so that's what we're trying to give them."

One major factor lately in the park budget is that Saskatoon will host the 1989 Canada Summer Games in August. "We have upgraded many of our sports facilities and also constructed some new ones to accomodate these games," he states. A new field hockey facility and five-field baseball complex are being installed this fall for the games next summer. The field hockey facility will also be an irrigation test site. Hunter and Eljay have donated the irrigation system to see how it performs under the rigors of the cold, dry climate in Saskatoon.

In late August, when irrigation systems down South are in full operation, Kabatoff and his crew begin the two-week-long process of blowing out the water from all the park irrigation systems. By mid-September, the Saskatoon Park Department is nearly prepared for the long winter. The growing season draws to a close until the following May.

"We've learned to make the most of our short summers here," concludes Kabatoff. "Automatic irrigation has made a big difference to the residents of Saskatoon for that very reason. Without it, summer wouldn't be the celebration it is here. We've come a long way in 20 years and plan to go even further the next 20. Keeping up with technology has certainly improved the quality of life in Saskatoon."