



## *Tailoring contracted maintenance to fit municipal needs*

By Brad Park

**D**ue to increasing labor costs, the need for specialized equipment, and the lack of adequately trained personnel, municipalities throughout the Garden State are increasingly relying on commercial contractors to apply pesticides, fertilizer, and lime, perform aerification, and conduct overseeding on sports fields.

Municipal administrators are often provided with a one-size-fits-all maintenance plan developed by contractors that involves redundancy, poorly timed applications, use of unadapted turfgrass species and/or varieties, and applications of nutrients and lime without soil testing.

Municipalities are challenged to maintain safe playing surfaces under intense field use and, combined with heightened public concern over pesticides applied on municipal properties, it is imperative that contracted maintenance plans be site-specific. These plans ensure that cultural practices are such that good turfgrass cover can be maintained

and that pesticide applications are part of an integrated pest management (IPM) program.

### **New Jersey case study**

An elected municipal official contacted me in the summer of 2006 to evaluate a maintenance plan provided by a contractor. This plan had been in place for several years on a high profile sports field. The municipal official wanted to determine whether the protocol for the field should be continued or adjusted for 2007. Furthermore, a similar plan was needed for a neglected field in the municipality.

Soil testing had not been performed recently on either field and the protocol submitted by the contractor did not provide for it. Thus, applications of fertilizers containing phosphorous (P) and potassium (K) as well as lime were being made in the absence of soil testing (Table 1).

Soil samples from the two municipal fields were analyzed by the Rutgers Soil Testing Laboratory with results indicating that soil P and K were 286 and 359 lbs/acre, respectively, and soil pH was 7.7 for the high profile field

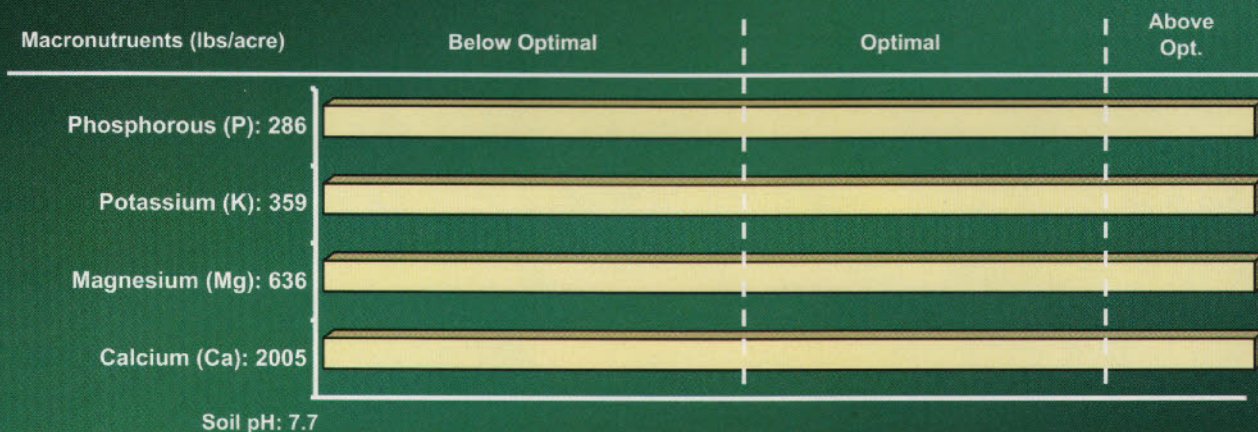
(Figure 1). The repeated applications of complete fertilizer (nitrogen [N], P, and K) and lime increased soil P, K, and soil pH to above-optimal levels.

In contrast, soil test results for the neglected field indicated below-optimal soil P and K levels (11 and 134 lbs/acre, respectively), and an acidic soil pH (5.2)(Figure 2). Additionally, soil calcium (Ca) was below optimal (1291 lbs/acre) and soil magnesium (Mg) was in the optimal range (254 lbs/acre).

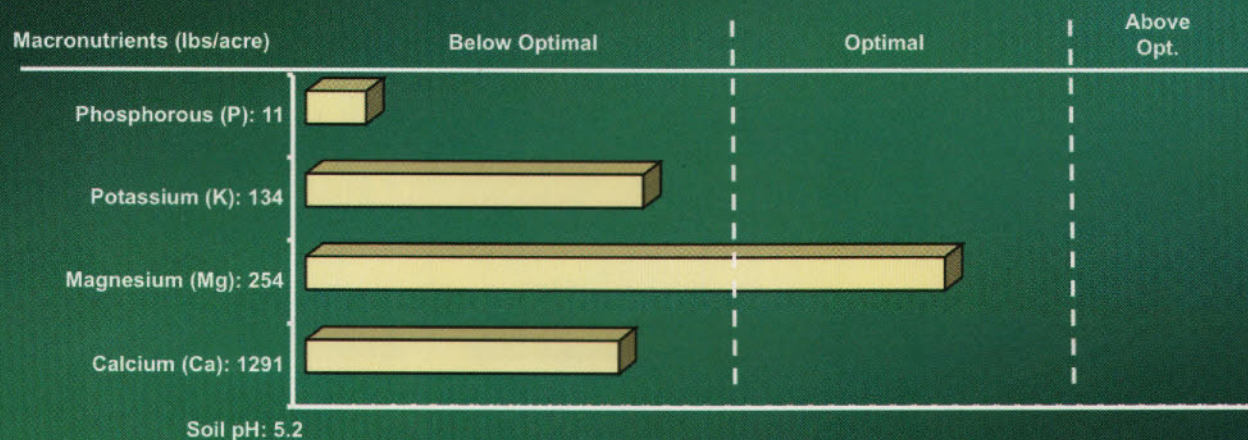
As a result, the revised maintenance plan does not specify routine applications of P, K, and lime to the high profile field; however, the plan does allow a complete starter fertilizer at the time of overseeding (Table 1). The new fertilization plan focuses on N to ensure adequate turfgrass growth and recovery. The revised plan for both the high profile and neglected fields specify applications of a 30% water insoluble nitrogen (WIN) fertilizer. This is a more effective method of applying N at a rate of 1.0 lb N/1000 ft<sup>2</sup> compared to a completely water-soluble N source. Fertilizer and lime quantities



## Figure 1. Soil Test Results: High Profile Municipal Field



## Figure 2. Soil Test Results: Neglected Municipal Field



for the neglected field were based on recommendations made in the soil test reports. Calcitic lime (as opposed to dolomitic) was specified for the neglected field as the soil test indicated soil Ca to be deficient.

### Addressing pesticide applications

The initial contract specifications called for four applications of a broadleaf herbicide between late spring and early fall (Table 1). The initial contract did not, however, provide for preventative control of white grubs. In recent years, New Jersey sports fields have been decimated by white grubs and animals that forage for grubs in early fall; thus, new specifications that replaced redundant broadleaf applications with a preventative white grub control application was clearly justified.

The initial contract plan for preemergence crabgrass control did not fit the municipality's needs given the differences in turfgrass cover present on the high profile and neglected fields. The high profile field had been re-established with sod within the last year and turfgrass cover was greater than 90%; thus, a preemergence herbicide applied in the spring made sense because spring overseeding was not required (Table 1). However, the second (split) application specified in the initial plan was eliminated because of perennial ryegrass overseeding scheduled for late summer, taking note that the preemergence herbicide label stated that overseeding was not recommended until 4 months after a split application.

In contrast, the neglected field had less than 50% cover and a spring overseeding was needed; therefore, a preemergence herbicide that



**Table 1. A contracted maintenance plan that included redundant herbicide applications and fertilization without soil testing was amended to include site-specific practices to better suit the needs of a New Jersey municipality.**

Original specifications provided by contractor	New specifications for High Profile Field	New specifications for Neglected Field
<b>Early Spring:</b> Preemergence for crabgrass control Complete fertilizer (N, P, and K)	<b>Early Spring:</b> Core aerification Preemergence crabgrass control N Fertilization: 1.0 lb N/1000 ft <sup>2</sup> ; 30% N WIN	<b>Early Spring:</b> Core aerification Perennial ryegrass overseeding at 6.0 lbs seed/1000 ft <sup>2</sup>
<b>Late Spring:</b> Preemergence for crabgrass control Complete fertilizer (N, P, and K) Broadleaf weed control	<b>Mid Summer:</b> Preventative white grub control	Fertilization: 12.5 lbs 8-20-10 + 1.5 lbs 0-0-50/1000 ft <sup>2</sup> Calcitic Lime: 50 lbs/1000 ft <sup>2</sup>
<b>Early summer:</b> Complete fertilizer (N, P, and K) Broadleaf weed control	<b>Late Summer:</b> Core aerification Perennial ryegrass overseeding at 6.0 lbs seed/1000 ft <sup>2</sup> Complete starter fertilizer (N, P, and K): 1.0 lb N/1000 ft <sup>2</sup>	<b>Early Summer:</b> Postemergence application of quinclorac (Drive®) or fenoxaprop (Acclaim® Extra) for control of crabgrass
<b>Late summer:</b> Broadleaf weed control	<b>Early Fall:</b> N Fertilization: 1.0 lb N/1000 ft <sup>2</sup> ; 30% N WIN	<b>Mid Summer:</b> Preventative white grub control
<b>Early Fall:</b> Broadleaf weed control	<b>Late Fall:</b> N Fertilization: 1.0 lb N/1000 ft <sup>2</sup> ; 30% N WIN Spot treatment of broadleaf weeds Soil test	<b>Late Summer:</b> N Fertilization: 1.0 lb N/1000 ft <sup>2</sup> ; 30% N WIN
<b>Late Fall:</b> Complete fertilizer (N, P, and K) Aerification & Overseeding Lime		<b>Early Fall:</b> N Fertilization: 1.0 lb N/1000 ft <sup>2</sup> ; 30% N WIN <b>Late Fall:</b> N Fertilization: 1.0 lb N/1000 ft <sup>2</sup> ; 30% N WIN Spot treatment of broadleaf weeds Soil test

would negate overseeding efforts could not be recommended. Given the history of the field and prevalence of crabgrass, it was determined that a postemergence herbicide applied in early summer was the best option for crabgrass control. The labels for quinclorac (Drive) and fenoxaprop (Acclaim Extra) require 28 days between emergence of perennial ryegrass and herbicide application.

### Choosing turfgrasses for overseeding

Municipal Department of Public Works employees described the annual overseeding conducted by the contractor as unsuccessful. While intense field use contributes to the difficulty in maintaining turfgrass cover, the use of turfgrasses not adapted for sports fields only compounds the problem. Records provided by the contractor to the municipality indicated that the seed used for overseeding was comprised of nearly 40% annual ryegrass and 20% creeping red fescue by weight (Table 2). The mixture did contain perennial ryegrass and Kentucky blue-

grass but the varieties were not stated.

The lack of overseeding success was at least partially attributed to this seed mixture. Annual ryegrass is a poor choice for sports field use given the expectation for perennial turfgrass cover. The poor traffic tolerance of creeping red fescue also makes this seed mixture a poor choice for these municipal fields.

Because heavy use on the neglected field was anticipated soon after spring renovation procedures, perennial ryegrass was the only species that could be used successfully. The slow establishment rate of Kentucky bluegrass and tall fescue make the successful use of these species unrealistic for this field. Additionally, the rapid germination and establishment rate of perennial ryegrass is highly desirable for a spring seeding to compete against simultaneously germinating summer annual weeds.

Fortunately, the municipality was willing to close the neglected field during the spring to aid turfgrass establishment. Field use was to be transferred to the high profile field; thus plans

for the greater-than-normal use on the high profile field were needed. Consequently, overseeding in conjunction with core aerification was scheduled in late summer on the high profile field (Table 1).

A commercially available perennial ryegrass seed blend that contained the traffic tolerant varieties "Citation Fore" and "Manhattan 4" was located (Table 2). These are top performing perennial ryegrass varieties based on tests of simulated wear and compaction in Rutgers turfgrass trials during 2002-2003. Gray leaf spot disease can devastate young stands of perennial ryegrass; therefore, it was necessary to consider gray leaf spot resistance in variety selection. "Paragon GLR" perennial ryegrass was recommended for the seeding blend since this variety has good resistance to gray leaf spot, and the variety was available at a local distributor.

It was strongly recommended that the municipality assume responsibility for overseeding these heavily trafficked fields with the perennial ryegrass blend mentioned and that over-



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seeding be conducted as a routine practice. Sports field managers across New Jersey are successful at maintaining turfgrass cover on high-traffic fields by repeatedly overseeding perennial ryegrass with rotary-type spreaders and allowing athletes to "cleat-in" the seed.

The revised contracted maintenance recommendations will increase the budget requirements for the Municipality. Increased labor costs and municipal budget shortfalls often result in either spending freezes or cuts to sports field maintenance budgets. However, public expectations for playability, safety, and aesthetics, as well as substantially greater field use, require municipalities to consider increased expenditures and/or redirection of existing expenditures. ■

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**Table 2. A perennial ryegrass overseeding blend was recommended for sports fields in a New Jersey municipality based on traffic tolerance and gray leaf spot resistance data from Rutgers University.**

**Seed mixture used by contractor to overseed municipal fields:**

39.75% Annual ryegrass\*  
29.70% Perennial ryegrass\*  
19.63% Creeping red fescue\*  
8.05% Kentucky bluegrass\*

Weed seed 0.05%  
Other Crop 0.17%  
Inert matter 2.65%

\* Variety not stated

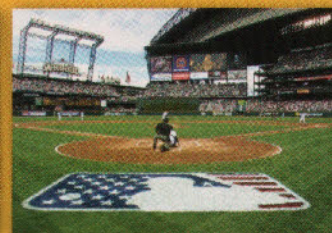
**Recommended overseeding mixture:**

*Perennial ryegrass blend available at a local distributor:*  
25% 'Citation Fore' perennial ryegrass  
25% 'Quicksilver' perennial ryegrass  
25% 'Manhattan 4' perennial ryegrass  
25% 'Salinas' perennial ryegrass  
+  
Bulk seed  
100% 'Paragon GLR' perennial ryegrass

*Mix at 4:1 ratio (4 parts commercial blend: 1 part Paragon GLR)*

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