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103	115	127	139	151	163	175	187	199	211	223	235	247	259	271	283	295
104	116	128	140	152	164	176	188	200	212	224	236	248	260	272	284	296
105	117	129	141	153	165	177	189	201	213	225	237	249	261	273	285	297
106	118	130	142	154	166	178	190	202	214	226	238	250	262	274	286	298
107	119	131	143	155	167	179	191	203	215	227	239	251	263	275	287	299
108	120	132	144	156	168	180	192	204	216	228	240	252	264	276	288	300
109	121	133	145	157	169	181	193	205	217	229	241	253	265	277	289	301
110	122	134	146	158	170	182	194	206	218	230	242	254	266	278	290	302
111	123	135	147	159	171	183	195	207	219	231	243	255	267	279	291	303
112	124	136	148	160	172	184	196	208	220	232	244	256	268	280	292	304

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105	117	129	141	153	165	177	189	201	213	225	237	249	261	273	285	297
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107	119	131	143	155	167	179	191	203	215	227	239	251	263	275	287	299
108	120	132	144	156	168	180	192	204	216	228	240	252	264	276	288	300
109	121	133	145	157	169	181	193	205	217	229	241	253	265	277	289	301
110	122	134	146	158	170	182	194	206	218	230	242	254	266	278	290	302
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112	124	136	148	160	172	184	196	208	220	232	244	256	268	280	292	304

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- 0005 Golf courses
- 0010 Sport complexes
- 0015 Parks
- 0020 Rights-of-way maintenance for highways, railroads & utilities
- 0025 Schools, colleges & universities
- 0030 Industrial & office parks/plants
- 0045 Condominiums/apartments/housing developments/hotels/resorts
- 0050 Cemeteries/memorial gardens
- 0060 Military installations & prisons
- 0065 Airports
- 0070 Multiple government/municipal facilities
- Other type of facility (please specify) _____

B. CONTRACTORS/SERVICE COMPANIES/CONSULTANTS:

- 0105 Landscape contractors (installation & maintenance)
- 0110 Lawn care service companies
- 0112 Custom Chemical Applicators
- 0125 Landscape architects
- 0135 Extension agents/consultants for horticulture
- Other contractor or service (please specify) _____

C. SUPPLIERS:

- 0205 Sod growers Other supplier (please specify) _____
- 0210 Dealers, Distributors _____

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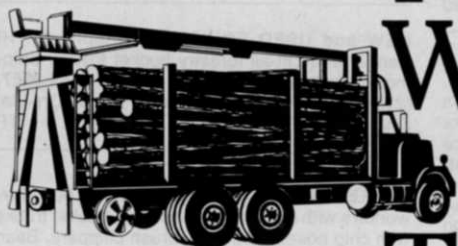
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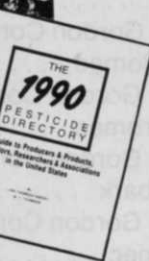
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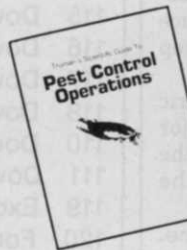


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ADVERTISER INDEX



Savage Heat Waves, Water Shortages, Parched Farms Year After Year After Year

The National Arbor Day Foundation Urges You to Plant Trees to Fight the Greenhouse Effect

The Earth is heating up. "The Greenhouse Effect," says James E. Hansen, Director of NASA's Institute for Space Studies, "is here...it's time to stop waffling."

A sharp increase in atmospheric carbon dioxide (CO₂) is a major cause. Two things contribute — the burning of fossil fuels and the destruction of forests.

You can make a difference. Trees you plant may be our best line of defense.

Free Booklet. The National Arbor Day Foundation has published a guidebook titled *Conservation Trees*. I'll send your free booklet by return mail.

John Rosenow, Executive Director
National Arbor Day Foundation



Yes, I want to help fight the Greenhouse Effect. Send my free *Conservation Trees* booklet.

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Mail to: Conservation Trees, National Arbor Day Foundation, Nebraska City, NE 68410

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Now Sevin® gives you two ways to control tough turf pests.

Now SEVIN® brand carbaryl insecticide is available in an easy-to-handle granular formulation. So you have two ways to apply the effective, economical and environmentally sound control of SEVIN® brand carbaryl on your toughest turf pests.

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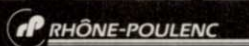
Tests prove that SEVIN® brand carbaryl insecticide delivers effective control of white grubs, sod webworms, chinch bugs, bluegrass billbugs, cutworms and more than two dozen other turf pests. Plus, the liquid formulation can be used to control 86 troublesome insects on trees and ornamentals.

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Contact your turfcare chemicals distributor today, and put the proven performance of SEVIN® brand carbaryl insecticide to work for you. Now available in a quality granular formulation.

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Brand Carbaryl Insecticide



As with all crop protection chemicals, always read and follow instructions on the label.
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Circle No. 275 on Reader Inquiry Card

PROBLEM MANAGEMENT

by Balakrishna Rao, Ph.D.

Can courses afford a day off?

Problem: Has any study been made of the extra expense that we probably absorb by keeping our golf courses in use seven days a week instead of six? (New Jersey)

Solution: I am not familiar with any studies dealing with golf course maintenance expenses. I was also unable to obtain any pertinent data for your question from the National Golf Foundation (NGF), Golf Course Superintendents Association of America, or USGA Greens Section.

A representative of the NGF said, "They prefer six days of play instead of seven because of concentrated maintenance schedule and then having a day of rest. If the golf course is shut off a day, the turfgrass quality will be improved. The players are likely to pay higher greens fees. Some people may prefer to keep the courses open seven days per week. In this situation it is difficult to maintain the quality. Many of the public courses are under this pressure without choice. They keep the courses open seven days a week."

From this discussion it appears that from an agronomic standpoint, it is better to have at least a one-day rest period to produce a quality play area. The anticipated extra revenue from one extra day of play may break even with the expenses for maintenance and wear-and-tear on the course. My general feeling is that it is best to keep the course open for six days instead of seven.

We will keep you updated if any of our readers respond with statistical data.

Replenishing 'other' nutrients

Problem: A lot of research has been done on nitrogen fertilization of cool-season turfgrass, particularly amount and timing of nitrogen. But what about phosphorus and potash and the micro-nutrients? After testing for these nutrients, do we correct the soil pH? Should we deep-place the nutrients after aerifying? Or do we topdress with a commercial fertilizer blend that comes close to the recommendation? (Minnesota)

Solution: If the nutrient analysis indicates that there is a deficiency of phosphorus, potassium and micro-nutrients, then they should be applied to correct the problem. Most people use fertilizer with nitrogen, phosphorus and potassium at a 4:1 or 4:1:2 ratio. Macro-nutrient deficiencies are most commonly found in the Pacific Northwest or the Gulf States and are rarely found in other areas.

As far as the second question, the answer is yes; pH correction is needed after testing for these nutrients. Having the pH in the proper range (pH 6.0 to 7.0) will maximize the availability of nutrients.

In many situations, correcting the pH alone may not be sufficient to remedy the problem. A supplemental fertilizer application would be beneficial. Applications at the recommended rate can be made

after aerifying for deeper placement or can be broadcast on the surface.

Remember that a surface application of phosphorus is not beneficial because it doesn't move readily. Therefore, deeper placement of phosphorus would be beneficial to turfgrass. Topdressing fertilizer would be all right except for phosphorus for the above-mentioned areas.

Adding iron to fertilizer

Problem: What iron can I add to my granular fertilizer to avoid staining concrete surfaces? (New Jersey)

Solution: From your question, I understand that you are interested in adding a granular formulation of iron to granular fertilizers. I am not familiar with any granular formulations of iron currently available. Lesco Inc. is currently working on a dry granular formulation of iron which they hope to market by late 1990 or 1991.

As you may be aware, there are a number of granular fertilizers that contain iron. You could consider using them if they meet your need.

All of the iron-containing products on the market now or the one Lesco is going to produce will have the staining problem on porous surfaces such as concrete. Although this is difficult and time-consuming, these stains can be removed by cleaning with materials such as muriatic acid, citric acid or sulfuric acid. Reports indicate that you have to be very careful in handling or using these. If these products come in contact with turfgrass they can be phytotoxic. A representative from Lesco indicated that they will have a product called "stain eraser," a stain-removing compound, by spring.

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Balakrishna Rao is Manager of Technical Resources for the Davey Tree Co., Kent, Ohio.

Questions should be mailed to Problem Management, LANDSCAPE MANAGEMENT, 7500 Old Oak Boulevard, Cleveland, OH 44130. Please allow 2-3 months for an answer to appear in the magazine.