Forecast: Peace of Mind Fertilizing

# EXTRA

Forecast: Peace of Mind Fertilizing

Milorganite . . . America's Foremost Naturally Organic Fertilizer

# "The Peace of Mind Fertilizer"

Naturally organic Milorganite is the safest and easiest to use all-purpose fertilizer. It is easy to apply and does not burn because there are no salt problems as with chemical fertilizers.

Milorganite is no longer used only on lawns. The 4 units of iron found in Milorganite give excellent color to all plants. It has been very successful in the fern industry. Milorganite can also be premixed with soil. Best results are obtained by mixing 50-100 pounds per cubic yard. When soil has been mixed with Milorganite it will go through a heating process and should be turned twice at two-week intervals. The soil will be ready to use in six to eight weeks.

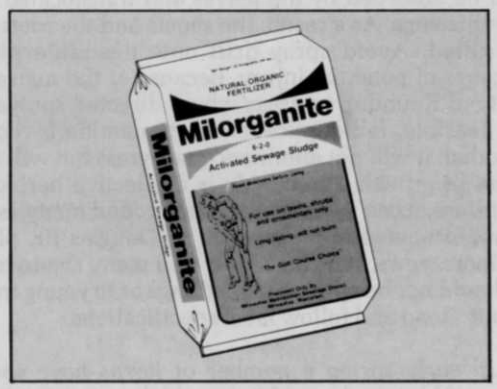
Milorganite can be used in beds, on rooted cuttings, while transplanting, or on top of containers in the following amounts:

| | |
|---|---|
| 2" - 4" pots — | 2-4 Tablespoons |
| 5" - 6" pots — | 4-6 Tablespoons |
| 8" pots — | 8-10 Tablespoons |
| 10" pots — | 15-20 Tablespoons |
| 12" - 14" pots — | 20-30 Tablespoons |

Lighter or heavier amounts may be used depending on fertilizing intervals.

Milorganite breaks down slowly and will not leach through soil like most chemical fertilizers. Milorganite helps establish excellent root growth in beds and is easy to use in hanging baskets because there is no worry about burning the leaves.

Milorganite is definitely "The Peace of Mind Fertilizer" for all growers.




| | | | |
|---|---|---|---|
| Nitrogen | 6.9% | Calcium | 0.7% |
| Phosphorus | 2.9% | Magnesium | 0.3% |
| Potassium | 0.6% | Iron | 4.4% |
| Sulfur | 1.0% | Zinc | .11% |

Trace amounts of boron, copper, manganese and molybdenum are also present.

Nutrients other than nitrogen, phosphorus and iron cannot be guaranteed because their percentages are below minimum required by state law. The above numbers represent the average in 1982 production only.

**Milorganite®**

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Circle No. 119 on Reader Inquiry Card

# VEGETATION MANAGEMENT

By Balakrishna Rao, Ph.D., and Thomas P. Mog, Ph.D., Davey Tree Expert Co.

**Q.** *What kind of herbicide can be used to control quackgrass in landscaping areas? We are interested in treating the area around a number of different conifers and shade trees. (Massachusetts)*

**A.** Quackgrass (*Agropyron repens*) is a creeping, grass-type perennial weed. It spreads vegetatively by the production of stolons and rhizomes, and thus presents a serious problem once it is well established. Hand-digging removal is not satisfactory. For best results, the herbicides such as glyphosate (Roundup) or pronamide (Kerb) should be applied when the quackgrass is actively growing in the fall.

Glyphosate is a systemic, nonselective herbicide. It will be absorbed by the leaves and translocated into the rhizomes. As a result, the shoots and the roots will be killed. Avoid spray drift onto desirable plants because of potential injury. Because of the nonselectivity of Roundup in areas where directed sprays are not feasible, fall application of pronamide is recommended; it will not eliminate quackgrass but will suppress its growth. Pronamide is a selective herbicide; therefore, it can be safely applied around many established ornamental plants such as Douglas fir, pines, junipers, yews, forsythia, holly and many shade trees. It should not be applied to seedlings or to young transplants. Read and follow label specifications.

**Q.** *In early spring a number of lawns have shown areas of bleached grass blades which generally disappear after mowing. What causes this, and is there something we can do to minimize the problem? (Indiana)*

**A.** From your statement, it appears that the problem of bleached grass blades is related to winter injury, particularly to winter desiccation.

Cool-season turfgrass survives the winter in a dormant or semidormant state. As moisture and temperature become favorable in the spring, new roots and shoots are initiated. Heat and drought stress during midsummer followed by adverse winter conditions can injure root systems of cool-season turf. Factors such as low temperature, winter desiccation, heaving, and deicing salt can cause winter turf injury.

Winter desiccation occurs when insufficient moisture is available to turfgrass because of dry or frozen soils. After the snow cover thaws, turfgrass may appear green, then the leaves normally bleach to a characteristic shade of white or brown. This is called "windburn," due to atmospheric desiccation. Superficial foliar windburn is not critical as long as the water deficit does not injure the meristematic tissues of the crown. Severely affected crowns may not recover except from the nodes of rhizomes and stolons.

Damage from winter desiccation usually occurs on exposed sites that are subject to drying winds or areas that do not accumulate protective snow cover. Fencing or planting shrubbery to direct and accumulate snow, as well as judicious fall watering, may help prevent excessive drying. Some managers use brush from pruning, mulches or topdressing to prevent winter desiccation. Antidesiccants can be used to ensheath grass blades and keep them from drying.

Applications of quick-release fertilizers, such as urea, should not be applied to dormant turf which is prone to winter desiccation. Applications should be timed early enough in the fall to allow the fertilizer to be washed into the soil and be utilized by the plant, minimizing the potential for foliar burn or physiological drought.

**Q.** *I have planted many trees very successfully without pruning to compensate for root loss. Why do nurserymen recommend pruning the branches when they transplant a tree? (New Jersey)*

**A.** Transplanted trees are pruned to keep a balance between the top of the tree and its roots and to provide a sturdy framework of branches. A healthy tree has just enough shoots to manufacture food and just enough roots to take in water and nutrients; the shoots and roots are in equilibrium.

When a tree is dug for transplanting, many roots are lost. Some nursery stock has been root-pruned several times, and the roots are pruned again during digging for transplanting. Any reduction of the root area could result in death if the remaining roots are not able to supply the crown with enough water. Thus, it is a common practice to slightly prune back the top of the tree to re-establish a healthy root-to-shoot relationship.

Pruning may also result in desirable side branching. The planting stock may be leggy or spindly because of crowded conditions where it was grown. Selective pruning of the branches aids in the development of a shorter-stemmed, more stocky and structurally stronger tree.

The fact that you have successfully transplanted trees without pruning may mean that you have provided other special care, such as a regular watering program, which reduced the water stress.

**Q:** *What is the best control for bagworms on junipers? (Missouri)*

**A:** The young larvae are easiest to kill in early to mid-June with carbaryl (Sevin), diazinon or malathion.

---

**Balakrishna Rao is plant pathologist and Thomas Mog is pest management specialist for Davey Tree Expert Co., Kent, OH.**

**Questions should be mailed to Vegetation Management, Weeds Trees & Turf, 7500 Old Oak Blvd., Middleburg Heights, Ohio 44130. Please allow 2-3 months for an answer to appear in the magazine.**

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DESIGN CONSIDERATIONS

# INTERIORSCAPE PLANNING INVOLVES BUILDING AND PLANT SPECIALISTS

BY JOHN MINI

**ChemCourt** *on Park Avenue in New York City depends more on its interior landscaping than its exterior landscaping.*

Amidst the towering buildings and traffic clogged streets of New York City are lushly landscaped interiors exemplifying the "state of the art" in Indoor Landscaping. Projects like Olympia & York's Park Avenue Atrium and Chemical Bank's gift of greenery to New York-ChemCourt.

These spaces have become focal points with thousands of people enjoying the gardens everyday. Because of these interior plantings' critical importance, the necessary careful planning is being carried out earlier in a project than ever before. This planning must be a cooperative effort between all parties involved; the project architect, general contractor, lighting engineer and sometimes even the plumbing contractor must work together with the interior landscape contractor to insure a successful, trouble-free interior planting.

One of the first planning steps of the entire project should concern the first phase of an interior landscape project. Certain critical aspects, which are often overlooked until building design is too far along, should now be considered. Proper design of the space in which the foliage will be placed begins now, and certain design factors must be incorporated into the early phases of the architectural drawings. Sufficient lighting, accessible water sources, positive drainage and adequate access must be examined and found sufficient to complete the project.

These examinations are carried out by the architects in the early design stages. Professional consultation must be utilized to insure the success of the project. Selection of the proper foliage material to suit the design space should be a joint accomplishment, as in the Park Avenue Atrium, 466 Lexington Avenue, New York City. The designer, Edward Durrell Stone Assoc., and my firm, Indoor Landscapes Ltd., worked closely together on the plant specifications as well as the other critical aspects of the project.

The plant specifications for this 23 story atrium were carefully drawn up to insure the proper selection of material that would both fulfill the aesthetic requirements set by the designer and provide the health and longevity wanted by all concerned. The 1400 vining *Philodendron* were chosen to match the polished chrome finish of the balcony floors. The solid gray-green leaf of the *Philodendron* along with three and four foot long runners were individually potted for lushness and fullness. The designer felt the *Philodendron* would create a less harsh effect than a variety with a variegated leaf.

Plants such as these *Philodendron* must be grown by contract and the interior plantscapers must be able to project the replacement rates in the upcoming months and years to handle normal deteriorations, as well as losses due to insect and disease infestations.

Plant needs must be incorporated into architectural drawings.

In the Park Avenue Atrium for example, the lighting dropped off considerably towards the lower balconies. The faster deterioration of the vines on the lower balconies was anticipated and many options were considered to insure a uniform look at all the balcony levels. Artificial lighting and rotation were considered but a greater replacement rate was ultimately planned as the solution to this particular problem.

The eighteen foot *Ficus benjamina* which were selected for the Park Avenue Atrium were specified with thirteen foot spreads and designed to have the tree crowns placed "tip-to-tip" to create a pleasant canopy effect.

Foliage material of this size is sun-grown in Florida nurseries and must be acclimatized by first being placed in grow pots, and later under shade houses to prevent excessive shock and to allow the plant to adapt to the interior environment. Plant inspection at the nurseries by both the designer and interior plantscapers is recommended.

In addition to approving the actual specimens, the designer should also understand that the sun-grown material will change its aesthetic appearance once it becomes fully acclimatized. The trees are selected and tagged to begin the acclimatization period at least six months prior to installation. The benefits of a thorough acclimatization period were clearly shown in Chemical Bank's ChemCourt on Park Avenue in New York City. Because of the unusual nature of much of the plant material it was chosen early. Early selection provided an acclimatization period of three to six months. Because of the ideal length of this period, the predictable shock to the plants was greatly reduced. One variety, the *Bucida Buceras*, or Black olive tree, defoliated far less than anticipated.

A major factor which must be considered in the early phases of any project is the lighting. Lighting for plant maintenance must be examined in terms of intensity, duration and quality. Minimum lighting intensity for any interior plantscaping should be no lower than fifty footcandles on the ground plane.

It is important that lighting intensity for selected plant material should be planned early in the design process. Duration should be planned for a continuous 12-16 hour day, seven days per week. Artificial and natural lighting must be incorporated in the design space to efficiently provide a consistent, effective, lighting environment if the plant material is to survive.

Coordination between the designer, interior landscape contractor, and lighting engineer may be necessary to achieve both the necessary light levels for plant maintenance and a pleasing color rendition. With the wide variety of high output incandescent and H.I.D. (high intensity discharge) fixtures available, excellent results can be achieved.

Another condition to consider when selecting a variety is the temperature of the space. Normal

*continued on page 66*

**John Mini is president of John Mini, Indoor Landscapes, City Island, NY. He is also education coordinator of the Interior Landscaping Program at the New York Botanical Garden.**

# LAWN CARE CUSTOMER WANTS DON'T MATCH NEEDS

BY CHARLES DARRAH

Managing turf fertility programs in commercial lawn care presents a unique set of problems. The strategies for fertility management developed by the lawn care agronomist must operate under various constraints. In addition, research to date in turf fertility has not adequately explored the options which are often necessary to use in lawn care programs.

Much of the past fertility research, for example, has defined the optimum nitrogen source to use under defined environmental and management programs, while lawn care agronomists are confronted with diverse management programs on home and commercial lawns. Past research has also defined relatively narrow time frames for fertilizer applications. Rates of application have been defined to produce optimum agronomic results.

The first constraint faced by lawn care agronomists is the expectations of the customer. If we don't satisfy the needs and wants of our customers we cannot sell our service. Customers demand a dark-green, dense, pest-free lawn. They want this dark green color in the spring and summer, times which go against agronomic optimums when it comes to fertility programs for cool-season turf.

The customer also expects to see something for his money; and unfortunately, nutrients like phosphorus and potassium generally don't produce visual effects or other responses the homeowner can readily observe. Likewise, applications of lime and sulfur to correct soil deficiencies usually produce negative visual effects.

Lawn care agronomists must also function under special operational considerations. There is a large capital investment in a lawn care business. The employment of a workforce and a commitment to a payroll must be considered. Capital and payroll commitments demand productivity from the workforce, at least on a seasonal basis. The eight-week round, very common in lawn care programs, probably evolved as a balance between the fertility needs of turfgrasses and production loads that produce adequate returns on capital and payroll investments. Certainly we can provide other services when no fertility round is dictated by agronomics, such as insect control.

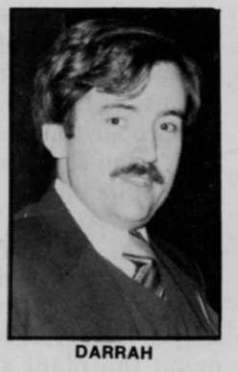
More specific to fertility programming, the lawn care agronomist has a contraint on materials selection. Each source of plant nutrient has its advantages and disadvantages in producing the agronomic optimum results. Material selection is most often based on the efficacy of the material. However, at certain times the most efficaceous material cannot be used because it's not in the form (liquid or dry) that would be most compatible with equipment or other operational considerations, including cost. Agronomists often put cost at the bottom of the list. However, our operational people will put cost at the top of the list, especially in material selection. We must keep lawn care affordable.

> Turf fertility research has not adequately explored the options often needed in lawn care programs

A good example of some of these trade-offs exist in selecting a liming material. Granular limestone has operational advantages because of its ease of spreading. However, in most cases it is not the optimum form of lime to use from an agronomic viewpoint. The other alternative, fine-ground limestone, is difficult to spread on a large number of lawns. Pelletized limestone is a compromise even though it costs three to four times as much as granular or fine-ground limestone. We've tried fluid limestone, but there are storage problems.

It is the programmed use of fertilizer nutrients that give the lawn care agronomist the most difficulty in trying to achieve agronomic optimum results. In nitrogen programming, there must be a balance between agronomic optimums and customer expectations. Nitrogen effects the color and density of turf to a dramatic degree. The agronomist is under pressure to give customers the dark-green dense lawn they want at all times. A balance between agronomic optimums and customer expectations is necessary.

Timing of nitrogen applications within an eight-week round often falls short of agronomic optimums. On the other hand, fall fertility programs on cool-season turfgrasses often don't meet customer expectations during the spring and summer months.



DARRAH

*Continued on page 30*

**Chuck Darrah is agronomist for ChemLawn Corp., Columbus, Ohio. This article is derived from a speech he gave at the recent ChemLawn symposium.**

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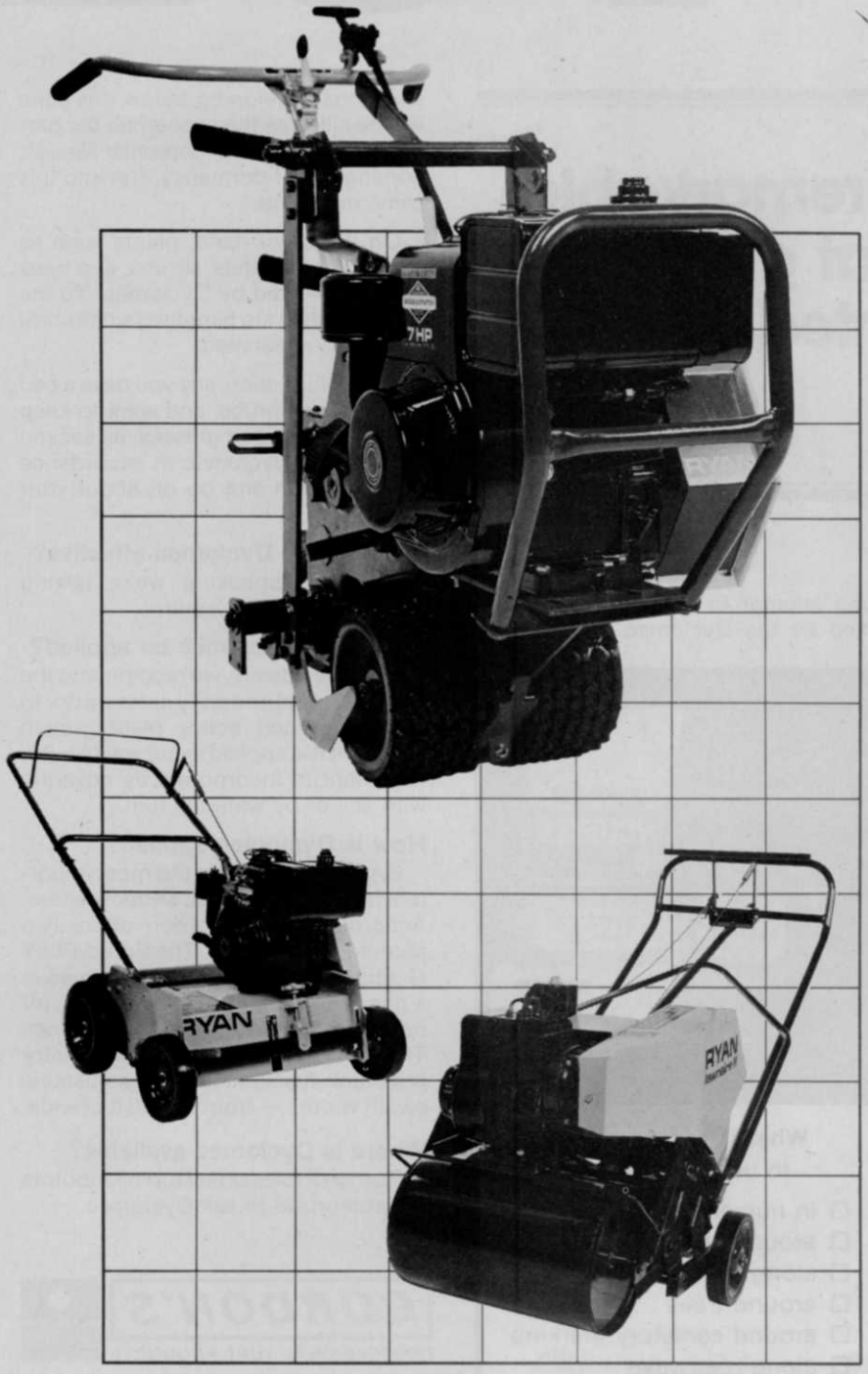


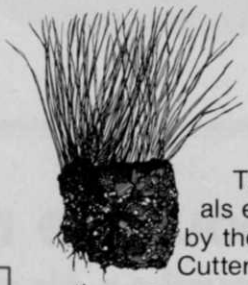

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### What is Dyclomec?

It is a granular formulation of Dichlobenil herbicide especially designed to be used by turf professionals to achieve positive and precise control of weeds and grasses.

### How does Dyclomec work?

Applied on the surface, the active chemical penetrates to a depth of 2 inches — no more. In this 2-inch zone it creates a barrier in which no plant cell division can occur.

Thus any vegetation such as grasses or shallow-rooted annual weeds which have their root structure within this 2-inch barrier will die because the Dyclomec interferes with the growing tips (roots and shoots).

Furthermore, as weed seeds in this zone attempt to germinate, they are killed by the Dyclomec. In addition, seedlings developing below this zone will be killed as they penetrate the barrier. A number of perennial weeds, coming out of dormancy, run into this same dead-end.


**Where are you going to use Dyclomec?**

- ☐ in nurseries
- ☐ around shrubs
- ☐ along fences
- ☐ around trees
- ☐ around cemetery markers
- ☐ along roadways
- ☐ you name it

On the other hand, plants such as woody ornamentals, shrubs, and trees are not affected by Dyclomec. To the contrary, they are benefited since competition is eliminated.

As an illustration, say you have a bed of desirable shrubs, and want to keep out the weeds and grasses all season long. Apply Dyclomec in accordance with the label and go on about your other tasks.

### How long is Dyclomec effective?

Generally speaking we're talking about season-long control.

### When can Dyclomec be applied?

Anytime. Ideally, we recommend the winter months and early spring, prior to the time when active plant growth occurs. If it is applied in hot weather it is important to incorporate by covering with soil or by watering it in.

### How is Dyclomec applied?

Even distribution is the most important factor in Dyclomec's effectiveness. Accordingly, PBI/Gordon offers two patented applicators. The Spred-Rite® G, especially designed for Dyclomec, is a hand-carried gravity-flow model, for band widths from 2 inches to 3 feet. The Spred-Rite® C strap-on applicator is a crank-type unit offering adjustable swath widths — from 3 to 10 feet wide.

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• Robisons Lawn & Golf Course Supply
**Kansas City**
• Bartels & Shores Chemical Co.
• Champion Turf Equipment
• Pest Control Supply
• Pueblo Chemical Co.
• Standard Seed Company
• Tobin Seed
**Maryland Heights**
• Outdoor Equipment Company
**St. Louis** • Crown Chemical Co.
• A. H. Hummert Seed Company
• Link's Nursery, Inc.
• Mangelsdorf Seed Company
• Turf Products Company

## MONTANA
**Billings** • Turf Aid Distributing Co.

## NEBRASKA
**Kearney**
• Growers AG Service Special Products Group
**Morrill** • Jirdon Agri Chemical, Inc.
**McCook** • Cornbelt Chemicals
**Omaha** • Big Bear Equipment, Inc.
• Eagle Green Corporation
• Midwest Toro
• The Yard Company

## NEVADA
**Las Vegas**
• Clark County Wholesale Merc. Co.
**North Las Vegas**
• Las Vegas Fertilizer Co., Inc.

## NEW HAMPSHIRE
**Hooksett** • Turf Specialty, Inc.

## NEW JERSEY
**Boundbrook** • Loft Seed Company
• Vaughan Jacklin Seed Company
**Cranbury**
• Chamberlin & Barclay, Inc.
**Clifton** • The Terre Company
**Dayton** • Lebanon Chemical Corp.
**Freehold** • Green Hills Turf Supply
**Maplewood** • Pierson Mill Company
**Paramus** • Pro-Lawn Products, Inc.
**Rahway** • Fertl-Soil Company
**Rivervale** • Mesker, Inc.
**Shrewsbury** • Raycroft Distributors, Div. Lawes Coal
**Springfield** • Andrew Wilson, Inc.
**West Caldwell**
• Rockland Chemical Company

## NEW MEXICO
**Albuquerque**
• Albuquerque Chemical Co., Inc.
**Clovis** • T-E Agri Supply
**Mesquite** • Agricultural Products Co.
**Roswell**
• Roswell Seed Company, Inc.

## NEW YORK
**Bergen** • Lawn Medic
**Brewster** • Herbst Bros.
**Dix Hills** • Island Golf & Turf
**Farmingdale** • Wagner Seed Co, Inc.
**Hamburg** • Eaton Equipment Co.
**Hauppauge** • Maxwell Turf, Inc.
**Hawthorne** • Metro Milorganite
**Jamaica** • J & L Adikes, Inc.
**Latham**
• Grassland Irrigation & Equipment
**Lincolndale**
• Westchester Turf Supply Company
**Syracuse** • Eaton Golf & Tractor, Inc.
• Pro-Lawn Products, Inc.
**South Hampton**
• James H. Lynch, Inc.
**West Henrietta** • S. V. Moffett, Inc.

## NORTH CAROLINA
**Charlotte** • E. J. Smith & Sons
• Forshaw Chemicals
• Seedmen, Inc.
**Fayetteville** • Eastern Turf Equipment
**Shelby** • Porter Brothers, Inc.
**Winston-Salem** • Goltra, Inc.
• Allen Supply Company

## NORTH DAKOTA
**Fargo** • Minnesota Toro
• Tessman Chemical Northwest

## OHIO
**Canton** • Letherman's Seed Company
**Cincinnati** • Century Toro Dist., Inc.
• Forshaw Chemicals, Inc.
• Van Atta Seed International
**Cleveland** • Larry's Garden Center
• U. S. Garden Sales, Inc.
**Dayton** • Garden Aid
**Elyria**
• Lakeshore Equipment & Supply Co.
**Findlay** • Desco Chemical Company
**Mantua** • John R. Skinner Company
**Maumee** • The Andersons
**Solon** • Sidney L. Dryfoos Company
**Tiffin** • Earl J. Crane, Inc.
**Toledo** • Century Toro Dist.

## OKLAHOMA
**Oklahoma City** • Paul Blakney Co.
• Estes Chemical, Inc.
• Tufts & Sons of Oklahoma
**Tulsa**
• Estes Chemicals, Inc.
• Nick Knott Turf Equipment
• Thompson-Hayward Chemical Co.
• Wait Mfg. & Sales Company

## OREGON
**Portland** • The Chas. H. Lilly Co.
• Wilbur-Ellis Company

## PENNSYLVANIA
**Collegeville**
• Mid-Atlantic Equipment Corp.
**Hanover**
• Miller Chemical & Fertilizer Corp.
**Harleysville** • Geiger Corporation
**Horsham** • Pocono Supply Co.
**Kulpsville**
• Green Baron Garden Supply
**Lebanon** • Lebanon Chemical Corp.
**Malvern**
• Fisher & Sons Company, Inc.
**Manheim** • Pro-Lawn Products, Inc.
**Philadelphia**
• Farm & Golf Course Supply Co., Inc.
• Pro-Lawn Products, Inc.
**Phoenixville** • Lawn & Golf Supply
**Pittsburgh** • E. H. Griffith, Inc.
• Krigger & Company
• Pro-Lawn Products, Inc.
**Reading** • Reading Bone Fertilizer
**Wycombe** • Histand Supply

## RHODE ISLAND
**E. Providence**
• Old Fox Chemical, Inc.

## SOUTH CAROLINA
**Inman**
• Woolfolk Chemical Works, Inc.
**Orangeburg**
• Ramar Laboratories, Inc.

## SOUTH DAKOTA
**Sioux Falls** • C & R Supply
• Dakota Turf

## TENNESSEE
**Clarksville**
• Security Seed & Chemical Co., Inc.
**Knoxville** • Central South Turf Dist.
**Memphis** • The January Company
• Turf Aid, Inc.
**Nashville** • Central South Turf Dist.
• Ernest Hardison Seed Co., Inc.
• Tieco, Inc.

## TEXAS
**Amarillo** • T-E Agri Supply
• Tufts & Son
**Dallas**
• Agricultural Chemicals of Dallas
• Chemical & Turf Specialty Co.
• Nortex Wholesale Nursery
• Van Waters & Rogers
• Watson's Distributing
**El Paso** • El Paso Turf Supply
**Houston** • Van Water & Rogers
• Watson's Distributing
**Paris** • Estes Chemical, Inc.
**San Antonio**
• Van Waters & Rogers
**Waco** • Estes Chemicals, Inc.
**Wichita Falls** • Estes Chemicals, Inc.

## UTAH
**Salt Lake City** • Steve Regan Co.

## VIRGINIA
**Chesapeake** • Turf & Garden Division
**Harrisonburg** • Wetsel Seed Co.
**Richmond** • Forshaw Chemicals
• Wilson Feed Company, Inc.
**Roanoke**
• Agri Turf Products Company, Inc.

## WASHINGTON
**Pasco** • Wilbur-Ellis Company
**Renton** • Pacific Agro Company
**Seattle** • The Chas. H. Lilly Co.
• Wilbur-Ellis Company
**Spokane**
• The Charles H. Lilly Company
**Tacoma** • NuLife Fertilizers

## WASHINGTON, D.C.
• Lea's Green Meadow, Inc.

## WEST VIRGINIA
**Charleston** • Young's, Inc.

## WISCONSIN
**Chilton** • Horst Distributing Co.
**Elm Grove**
• Reinder Bros. Turf Equipment
**Janesville** • Wisconsin Turf
**Madison** • Crown Chemicals
**Milwaukee** • Kellogg, Inc.
**Sun Prairie**
• Turf Management Supply

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Another consideration in nitrogen programming are the commercially available nitrogen sources. Several new sources have evolved principally to serve the liquid lawn care market. Many of these materials are similar to the more traditional materials in dry form. Additional research is needed to determine the performance of these materials.

Programming phosphorus and potassium also presents some difficulties. Better calibration of soil test results and soil test recommendations are needed to provide lawn care customers with adequate maintenance levels of phosphorus and potassium. I've seen soil test levels for correcting deficiencies of potassium in heavy clay soils that recommend rates of 18 lbs. per 1,000 square feet. We face similar problems with soil pH correction.

Timing of phosphorus and potassium applications in another area of limited knowledge. Because of multiple round applications lawn care programs may do a better job of timing phosphorus or potassium nutrition than traditional single-application programs.

Micronutrient sources are also important to lawn care programming. Organic micronutrients are generally more expensive than inorganic materials. We need to consider rates to provide those materials to our customers at affordable prices. Timing of micronutrient application may again favor the lawn care program over traditional programs.

Compatibility of micronutrients with other chemicals and the equipment is important. The micronutrients delivered in lawn care applications are either mixed with dry or liquid NPK materials. The liquid solution presents the greatest hazard for chemical incompatibility and it has also been recognized in dry mixtures. There are some problems when tank trucks are exposed to micronutrients on an extended basis.

In order to make this industry continue to grow it is imperative that research be conducted within the constraints of business. We must broaden our agronomic base to provide for alternative fertility programs which will benefit both the customer and the industry.

 