

LANDSCAPE MANAGEMENT

COVER STORY

Water, pesticides & conservation



Advances in technology will better equip landscape managers to deal with the 'Decade of the Environment.'

Water...

by David Kopec, Ph.D., University of Arizona

■ In the 1990s, water conservation and water quality on turfgrass will become more important issues for landscape managers.

In some areas of the country like the Southwest, legislators have set limitations on water allocations for turf. With increased water rates, too, turfgrass irrigation becomes an extremely costly line item in a management budget.

What can be done about the high cost and "visibility" of maintaining turf?

1. New/alternative grasses, like buffalograss, are being developed.

Buffalograss (*Buchloe dactyloides*) breeding programs are unleashing improved turf-type cultivars. The initial releases will be available as sod or plugs, much the way hybrid bermudagrasses are established.

Buffalograss has a lower water requirement than Kentucky bluegrass, and has thus survived in the low desert areas of the Southwest. It is starting to be used in the Midwest and South Central states in low-traffic areas.

Also, other native grasses may potentially be used as low maintenance, low

water-use turf species. These include some of the grama grasses (side oats, blackgrama, and bluegrama), some of the lovegrasses, and curly mesquitegrass (*Hilaria belangeri*). Turf-type selections of the latter are being evaluated to see if superior characteristics can be passed on to future generations through seed. This grass is adapted to Texas, New Mexico and Arizona.

2. New irrigation systems have been designed to irrigate turfs more precisely, with less waste. They also offer excellent record-keeping, thanks to micro-chip technology.

Compared to the mechanical clocks used in the past, solid state controllers offer greater versatility in start/stop features and irrigation scheduling options. Some even offer plug-in, plug-out storage chips, which record irrigation station run times for permanent water use records. Many of the new controllers can be hooked up to soil moisture sensors and rain or wind switches.

Weather station networks in many states can provide turfgrass growers with estimates of turfgrass water use based on local weather conditions. Weather stations can calculate a daily atmospheric demand for water, called a reference ET (Ref-ET).

Local researchers can mathematically adjust the Ref-ET value for turfgrass water use. That value can then be used to determine how much to irrigate.

Weather networks are available through the university system. Check with the Division of Cooperative Extension in your state to see if an "ET" program is available.

Irrigation companies now offer weather station and controller packages which calculate the Ref-ET from conditions on the golf course, and then apply irrigation based on the previous day's ET. Added features include flexibility in irrigation scheduling (days on/days off), irrigation amounts (relative to the Ref-ET), automatic data storage, and multiple start/stop cycles which can help prevent further runoff or puddling.

3. Using secondary water is becoming more popular because the use of potable water for landscape irrigation is becoming a sensitive issue—even in places where water supplies are plentiful. This makes a lot of sense since there are generally large amounts of effluent produced daily, and turf is an efficient filter of effluent.

Logistics of having large turf facilities next to water treatment stations need to be worked out to keep costs practical. Users need to be aware that the suitability of the

irrigation water can be determined by a water quality test.

4. Xeriscaping involves five or six principles using landscape plants and groundcovers for water conservation, energy savings, or both. Water catchments, tree and shrub placements for shading and protection, and the selective use of plant materials are part of the program.

Xeriscaping is being developed even in areas which receive large amounts of rainfall.

Original concepts in xeriscape programs called for eliminating turfed areas. But research should be conducted to determine if actual water use of trees in mesophytic or xeriphytic settings have a lower requirement (on a ground basis area) than turfs.

My guess is, some will and others will not.

Pesticides...

by Roch E. Gaussoin, Ph.D., University of Nebraska

■ Many successful landscape operations use pesticides as a necessary component of their programs.

With the 1990s being called "The Decade of the Environment," people in the industry are apprehensive about where pesticides will fit. Yet many indicators point toward a landscape industry which includes continued, though more conscientious, pesticide use.

One aspect of Federal Insecticide,

Fungicide and Rodenticide Act (FIFRA) amendments passed in 1988 is the re-registration of most pesticides. Manufacturers, in addition to new data acquisition, are required to pay a fee to the EPA for re-registration. So it is reasonable to expect that some of the "older" chemicals now available for turf and ornamentals might not survive the re-registration process. The end result will be fewer, but safer, pesticides.

Some future considerations and how they relate to pesticide use:

1. Signs cautioning consumers of a pesticide application are becoming a common sight all over the country. Posting treated lawns is law in eight states, with more possible in the not-too-distant future. It is here to stay; applicators may want to consider posting at their location *before* it becomes mandatory.

Although pre-notification of pesticide-sensitive individuals is law in only one state (Maryland), many states are considering such legislation. This legislation, if passed, would require the notification of individuals who claim to have had allergic reactions to pesticides.

2. Applicator training requirements will probably become more strict. Requirements to become a certified pesticide applicator may involve more frequent and rigorous testing and/or training. Individuals applying pesticides under the direct supervision of certified pesticide applicators may also be required to undergo documentable and verifiable training exercises.

3. Ground and surface water contami-



Monsanto markets a closed application system called Expedite, a backpack sprayer with pre-mixed pesticide containers.

nation and the environmental fate of pesticides will continue to be an important topic. Current research results indicate that application of pesticides to turf may not be detrimental, and—under certain circumstances—actually protect groundwater sources. The United States Golf Association (USGA) has committed over a million dollars for environmental fate research to be conducted in the early '90s.

4. New technology has or is being developed to make pesticide applications safer for humans and the environment. Most chemical companies have divisions or sections solely to target the turf and ornamental market, resulting in products becoming available for use much faster.

Pesticide formulation and packaging has resulted in products which are safer to handle and apply. Many companies package pesticides in pre-measured water soluble packages which dissolve in the spray tank. Not only does this eliminate measurement errors and exposure to the undiluted pesticide, but it solves the problem of pesticide container disposal.

Dry flowable and water dispersible granule (WDG) formulations are also becoming more prevalent. Dry formulations do not contain organic solvents, which can reduce phytotoxicity and odor problems as well as eliminate a potential fire hazard.

Pesticides are also being developed which are less toxic and can be used at lower rates than their predecessors. The net benefit for both the applicator and the environment is obvious.

Other developments which should prove beneficial to the continued use of pesticides include closed delivery systems and returnable pesticide containers. Monsanto markets a closed application system called Expedite, a backpack sprayer with pre-mixed pesticide containers. Applicator exposure is minimized and calibration is simplified. DowElanco has small volume returnable containers (SVRs) which can be returned to the distributor to be refilled. This approach could help alleviate part of the solid waste disposal problem.

5. Integrated Pest Management (IPM) will become more refined in the future, with pesticides.



David Kopec (left), Roch Gaussoin (center) and John Doyle during the Nebraska Turfgrass Conference, at which they gave the speeches these articles are taken from.

Though pesticides, either biological or chemical, will continue to be an integral component in most landscape systems, some changes in how business will be done is inevitable.

Steps landscape managers must consider taking to respond to the market are:

- Stay informed about pesticide risks and benefits and convey this information to clients and other appropriate audiences. Seriously consider joining community associations or non-extremist environmental groups, and become involved in the political process.

- Because product availability, due to the re-registration process, may be questionable, be well trained and informed about industry developments. This will require joining regional and national organizations and attendance at university conferences and field days and industry trade shows.

The outlook for continued pesticide availability is good. It becomes the responsibility of the landscape manager to adhere to federal and state regulations, apply pesticides correctly and judiciously, and be conscious of the environment.

Fertilizers...

by John M. Doyle, Ringer Corp.

■ Glancing into the crystal ball at the future of turfgrass fertilizers is not easy. Who would have predicted 10 years ago that environmental issues would play a significant role in shaping management practices?

However, here are issues to consider:

1. Public perception concerning fertilizers and the environment is being shaped

by information such as the EPA drinking water survey.

The results of the study revealed nitrate contamination in 52.1 percent of community water systems and 57 percent of rural domestic wells. Even though the EPA has not yet determined how much nitrate contamination can be traced to fertilizer use, this information still raises concern among the general public about turf fertilizers.

Issues concerning pesticides have spilled over as concern about exposure to fertilizers. Other issues gain-

ing in public awareness are the closing of landfills or the restriction of materials that can be dumped.

Natural resources like water are no longer generally looked at as "renewable," so modifications in water use will have an effect on the nutritional management of turf.

2. Changes in product technology and management systems are imminent as understanding of plant growth systems increases. Turf managers will become more reliant on data concerning the turf growing environment. Turf management will become more of a science and less of an art.

For instance, in the last 20 years, fertilizer sources have changed from ammonium nitrate and urea to slow-release sources such as various coated ureas and urea formaldehyde reaction products.

3. Synthetic organic fertilizers engineered with turf management practices in mind will continually be developed. For example, recently-released materials provide a season's entire nutritional program in one spring application. Also, fertilizers will have release characteristics specifically based on the growth and development demands of turf. The release patterns of these materials will be more predictable.

With all the environmental pressures the industry is dealing with, public perception still holds that "organic" is safe. This will definitely have an impact on the market, especially the homeowner, as to what types of products are in demand.

Familiarity of materials listed as nutrient sources on packaging (bone meal, blood meal, etc.) also offers relief to consumers about the safe handling of materials.

As a nitrogen source, natural proteins provide slow-release, non-burning nutrition to turf. There exist numerous materi-

als that have not been evaluated or even discovered yet that may have a good fit as turf fertilizers.

4. Recycling of organic residues will provide new products in the future. There are currently thousands of tons of finished municipal compost piles with nowhere to go—but with the potential to become nutrient-rich, slow-release liquid fertilizers. As long as oil prices keep rising, so will the price of petroleum-based fertilizers, causing the use of organic residues and other materials in the waste stream to become more economically appealing as turf nutrient sources.

5. Computer technology will allow turf managers to more accurately predict levels of fertilizer to be applied, based on the measured rate of nutrient use in the soil during the growing season.

6. Methods of application will con-

stantly be improved to maximize availability and longevity of nutrient uptake. Foliar application technology will allow spoonfeeding, reducing the potential impact on the environment by minimizing exposure to leaching and/or volatilization conditions. As irrigation systems improve their accuracy, the opportunity to reduce fertilizer application costs through fertigation grows. Granular product application methods have also constantly been improving.

7. Combination products have a fit for the future as well: combinations such as fertilizer with plant growth regulators that could control uptake, storage and use of nutrients within the plants. Soil organism inoculants could be another, or perhaps the addition of a nitrogen fixing bacteria that would colonize the rootzone and be able to turn atmospheric nitrogen into a

form that the plant can use.

8. Soil testing will definitely become a more common practice in turf management. Information generated regarding the levels of nutrients needed at different stages of the growth cycle will help turf managers specify more accurate quantities and ratios of fertilizers.

9. Better service. Fertilizer companies will become even more responsive to the individual turf manager's needs, such as providing a greater ability to deliver custom blends, expedited delivery, etc. Sales representatives will also achieve a higher level of expertise, offering more product information and turfgrass management.

The future is difficult to predict, but there is one aspect that we can surely look forward to favorably: Information, products and service will make the job of managing turf an even more rewarding one.

LM REPORTS

Seed: Production exceeds demand

A bumper crop of turfseed, combined with decreased demand, means good prices for those buying turfseed this year.

■ Heavy rain and cool weather during much of May and June resulted in a late West Coast turfseed harvest. On a positive note, the harvest was a good one, with some companies reporting surpluses for select species.

The cool spring/early summer weather was called a first by some in the seed industry, and caused crops to come in about two weeks late, depending on the species.

Fine fescues were reported as experiencing a slight imbalance between supply and demand, light, with production giving way slightly to a higher demand for hard fescues.

It's also a good year for new varieties, with companies reporting numerous new offerings. (See story on page XX.)

Tall and fine fescue yields were considered to be below average, with yields varying, depending on the region. In the southern valley near Albany, Ore., tall fescues were reported as no more than average.

Bentgrass yields appeared to be about average.

Yields for common Kentucky bluegrass were down a bit. Prices for common were also down between 10 and 20 cents per pound.

Prices for creeping red fescue and common bluegrass are up. Creeping red fescue acreage in Canada is down, and common Kentucky bluegrass is feeling the effects of last year's sell-out and the fact that farmers last year plowed out much of their bluegrass acreage.

Conditions are reported to be "ideal" for fall planting.

SEED AVAILABILITY ESTIMATES, 1991-92

The following information is based on surveys conducted in July-August, 1991. Supply and price estimates may have changed since publication.

(A=Surplus/B=Adequate/C=Limited)

BENTGRASS

Variety	Marketer	Supply	Price
Carmen	Vander Have	B	Stable
Dominant blend	Seed Research	B	
Exeter (colonial)	Pickseed West	C	Stable
National	Pickseed West	B	Stable
Penncross	Lesco/Northrup King/ Tee-2-Green/Roberts Seed	B/A/B/B	Stable
Penneagle	Lesco/Northrup King/ Tee-2-Green	B/A/B	Stable
Pennlinks	Lesco/Northrup King/ Tee-2-Green	B/A/B	Stable
Pennway	Lesco/Tee-2-Green	B/B	Stable
Prominent	Seed Research	C	Stable
Providence	Seed Research	B	Stable
Putter	Jacklin Seed Co.	B	Lower
Reston (red top)	Pickseed West	B	Lower
SR 1020	Seed Research	B	Stable
Southshore**	Lofts Seed, Inc.	C	Stable
Tracenta	Van Der Have	B	Stable
V.I.P. blend	Turf Merchants	B	Stable to Lower

KENTUCKY BLUEGRASS

Variety	Marketer	Supply	Price
Adelphi	J&L Adikes/Northrup King Jacklin Seed Co.	B/A/B	Stable
Alpine	Pickseed West	n/a	n/a
American	Pickseed West	C	Higher
Amazon	Jacklin Seed Co.	C	Stable
Argyle	Roberts Seed Co.	B	Stable
Aspen	Northrup King	A	Stable