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COMPUTERIZING CAREFULLY

Thinking of computerizing your business?
 Here's some tips to follow before investing money.

Computerizing may help ease business management, but it takes time and money to get it under way.

"To say one system is best is inappropriate," says Sally Kujawa, vice president of Kujawa Enterprises in Cudahy, Wisc. "There is no state-of-the-art in the computer world."

Kujawa says the lifespan for a system is three to five years. "You change not because it break downs, but because computer technology changes so rapidly," Kujawa says.

The first step in choosing a system is to appoint a committee, says Kujawa. That may mean a committee of one—you.

The next step is to appoint a chairman of the committee. The chairman's job is to investigate the company's needs. The function of a computer system is to provide management with a tool and to crunch numbers.

The chairman can ask questions of employees: Is the company losing money because bills aren't sent on time? Is there a way to track past-due accounts? Are there calculation errors? What the chairman reports will influence the type of software chosen.

The chairman should read through magazines and books to completely understand the way software and hardware fit together to form a system. Companies with different needs require different types of systems.

"A great benefit of computers is

their ability to rearrange the facts stored in their memories," Kujawa says. "With the spreadsheet software available today, it is a simple process to analyze sales, profit centers, cash flow, customers, vendors and almost anything else you choose."

When choosing software, pick a software that will fit your hardware system. If you don't already have hardware, check your software needs first. Make sure it can fit within the budget. Get a system the staff can operate easily and will work with the company's future needs.

All office procedures are integrated to some extent. Therefore, choose a software program that can be integrated. "You'll find a lot of packages which will do 85 to 90 percent of what you're asking," Kujawa says. "That's a good match. I doubt if you'll find 100 percent."

When buying software, Kujawa says to always stick with the brand name. Go to a reputable software/hardware dealer. Once you know about software, ordering by mail through software magazines can save money.

Kujawa says four points should be kept in mind no matter what system you choose:

- Software should be well documented, with easy-to-follow instructions. It should be backed by training and duplicate copies should be available at little cost.
- Hardware should be well-built

with an easy-to-read screen and little glare.

- The keyboard should be standard typewriter arrangements with well-marked function keys.

- The system should be expandable by adding external memory, screens, printers and programs.

A good printer is a must, says Kujawa. Choose carefully from the three types available: matrix, laser or daisy-wheel. A laser is necessary for desktop publishing of sales literature or newsletters, while a daisy-wheel works slowly like a typewriter.

A good personal computer will allow for expansion in the memory and will do graphics.

"There's no such thing as a \$500 computer," Kujawa says. "\$5,000 is a good beginning budget." That, of course, includes hardware, printer and software.

Kujawa says one thing to remember in choosing a computer is that it probably won't cut back on hours. If the bookkeeper spends three hours working now, it will still take three hours to input information into the computer.

She also warns that computers don't eliminate paper, but generate more paper. Converting from a manual operation to a computer system takes time. Kujawa says it's best to input receivables first, then accounts payable, then payroll.

"I can't stress enough to give yourself plenty of time," she says. **LM**



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RESEARCH UPDATE

Giant must awaken and smell the coffee

by Kent W. Kurtz, Ph.D., Cal Poly-Pomona

The sports turf profession in the United States, with the exception of golf, has not been overly active in funding or conducting research for the improvement and development of safer natural grass surfaces. Many ideas, techniques and cultural practices currently used to maintain sports turf can be traced to research originally funded by the golf course industry.

Sports turf research in the United Kingdom has been very successful and productive. The Sports Turf Research Institute (STRI) located in Bingley, England, is an example of a cooperative effort that has made significant contributions to the sports turf industry.

Several sports-related organizations, including golf, have joined in an effort to conduct research for the betterment of the industry. These groups provide the guidelines and funding, and the results of the research are shared by the total industry. The sports turf industry here in the United States could learn a great deal from our colleagues at the STRI, and observe the manner in which these professionals go about their research activities and cooperate in the implementation of the results.

Turf research

Even though research on sports turf has not kept pace with other areas in the turfgrass field, several significant contributions and applied projects are worth mentioning.

Field paints and colorants. It is now possible to wipe out an old logo or endzone name, paint in the new one and not have to wait for grass seed to germinate and grow in to cover over the old paint.

An opaque paint is used to cover the old paint and the new color is applied over the same area. This is done using natural earth colors and pigments, i.e., burnt and raw sienna plus white paint—colors that change the area to look like dormant grass when they are applied correctly and allowed to dry.

Colorants can look natural. Several turfgrass colorants are on the market but very few have true natural grass green colors. One developed in California is so close to the natural green that it can't be detected easily.

These colorants are used in climates where natural grass goes dormant or in situations where weak spots develop in cool-season grasses

and a cosmetic touch-up is necessary. These colorants consist of blue-green pigments resembling the true color of Kentucky bluegrass. They are color-fast, and will not rub off on player uniforms.

Pre-germinated seed. Turfgrass seed is pre-germinated to encourage faster establishment, particularly when time is a factor or where cold weather may increase the germination time. Different methods of seed pre-germinations are used by professional field supervisors at major stadiums to accelerate the growth of perennial ryegrass and Kentucky bluegrass.

A senior project by Nicholas Spardy at Cal Poly University-Pomona evaluated all the known methods of seed pre-germination. Each of the methods produced viable seedlings, though some were slower than others. Here is the procedure found superior:

Perennial ryegrass seed is taken out of the seed bag and placed in a large container of water. The water is changed every six hours and air is bubbled through the hose continuously using an air hose placed in the bottom of the container. The oxygen in the air replaces the carbon dioxide which is given off by the respiring seed; the constant oxygen supply increases the metabolic process in the seed and it germinates more rapidly. Within seven days more than 90 percent of the perennial ryegrass seed had germinated and green leaves $1\frac{1}{4}$ to $1\frac{1}{2}$ inches long were visible on the seed.

Once the seed has germinated it can be mixed with a carrier such as medium-to-fine sand or an organic material and then distributed onto a prepared surface on the playing field (surface can be vertical mowed, sliced or aerified).

Once the pre-germinated seed is placed onto the field it can be top-dressed with sand or an organic material and kept moist until well established.

Seed Combinations for the Transition Zone. In order to achieve faster spring green-up, produce a wear-tolerant athletic surface and extend green color later into the fall season, combination seedings using seeded zoysiagrass and tall fescue show great promise.

Jack Murray at the U.S. Department of Agriculture at Beltsville,



Rose Bowl field supervisor Richard Gonzales (left) and the author examine the turf at the Rose Bowl after a geotextile was used to protect it from fans at a Bruce Springsteen concert.

Md. feels that seeded zoysiagrass (1 lb./1000 sq.ft.) combined with the new turf-type tall fescues (2-3 lb./1000 ft.) and grown and sold as sod may meet the needs of many sports field managers, particularly in the transition zone.

Field Warming Covers. The introduction of field warming covers has made the job of establishing new seedings faster and easier. Several companies have introduced covers made of either polyester or a plastic material. Purpose of the cover is twofold: to accelerate seed germination or the spread of stolons and to increase the soil temperature for better turfgrass establishment. They can also be used to prolong green color on warm-season grasses in the fall or to bring dormant turf out of winter dormancy sooner.

These new covers are superior to the polyethylene materials used in the past. They are easier to spread out on a field surface, and they can be re-used several times because the ultraviolet rays from the sun will not crack the material.

Research conducted at both Cal Poly-Pomona and at the Rose Bowl indicates a soil temperature increase from seven to 15 degrees Fahrenheit compared with a surface not covered.

continued on page 76



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TAKING A TOLL

Tolls from the Ohio Turnpike take a toll on weeds and otherwise help keep the east-west byway looking sharp.

Danon Kramp and Dan Castrigano have the best of both worlds. They not only are responsible for maintaining 241.2 miles of roadside vegetation, they also have a nice budget—a total of \$20 million—to do it with.

How do they come by so much financing? Because the road they maintain happens to be the Ohio Turnpike, a smartly-kept toll road through northern Ohio that joins on the east with I-80 in Pennsylvania and on the west with the Indiana Toll Road.

They've divided the highway into eight zones of about 30 miles. Each zone uses three or four tractor units, Brouwer five-gang reel mowers that have 11-foot swaths, and 30 employees.

Castrigano, with the Ohio Turnpike Commission since 1982, says, "We mow before the grass is six inches high. That means an average of 11 to 13 mowings per year.

"We pride ourselves on the appearance of the zones. We're trying to have a golf course fairway look on the medians."

Among the herbicides they use to try and control growth are PBI-Gordon's Embark plus 2,4-D and Mon-

santo's Manage plus Du Pont's Oust. They're thinking about testing Du Pont's Telar, with which Indiana and Michigan have had good results. The Embark/2,4-D combination was applied in early May last year. "We were fairly pleased with what we saw," admits Castrigano, "no growth until September."

Augmenting the PGR applications

One of the biggest problems they encounter are cattails in ditches.

and mowing are applications of Spike and Surflan from Elanco Products for weed control under guardrails, which they have used since 1981. Du Pont's Krovar may be tested soon.

This spring, they planned to implement herbicide spraying on shoulder and back slopes at interchanges. (They define shoulder slopes as "asphalt to ditch" and back slopes as "ditch to fence.")

Most herbicide applications are

contracted, but hydroseeding jobs aren't. The O.T.C. has two large 1200-gallon hydroseeders that it uses.

Gravelly tractors are used to mow around service plazas and ramps to the plazas. All plazas are treated with insecticides and Vertac's Dowpon M broadleaf weed control. During the summer, college students are also hired for weeding at plazas and interchanges.

Kramp and Castrigano work well together. She with a degree from Ohio State University in horticulture, and he with a degree from the University of Toledo in civil engineering. She on the road most of the time (68,000 miles in the last two years) and he behind the desk (except for special maintenance projects). And both enjoy what they do.

"I'm not a desk person," claims Kramp, who is a certified pesticide applicator in Ohio, like two other O.T.C. employees. "I like being outside."

"I enjoy my job," adds Castrigano. "I get involved in a lot of different aspects of highway management."

One of the biggest problems they encounter are cattails in ditches. They have used Monsanto's Roundup in the past, and are considering testing Rodeo. Another is plumegrass in ditches and slopes where there's a lot of moisture. Dowpon is used, but is sometimes ineffective.

Of the \$20 million budgeted the department, about five percent is used on mowing and spraying. Another 10 percent is used for control of snow and ice, which is a heady problem in this part of the country.

Pre-treated sodium is used when the snow falls: solid sodium chloride with liquid calcium chloride, which works more effectively in lower temperatures. All winter, weather reports are monitored six times a day. When a possible snowfall exists, crews are halved with each crew on duty 12 hours a day.

"With a heavy snow, we actually put some men up in hotels close to the turnpike," notes Castrigano. "There are no complaints. We have dedicated employees; when we have a heavy snow, they rise to the occasion." **LM**



Danon Kramp and Dan Castrigano are the Ohio Turnpike Commission's version of "Ms. Outside and Mr. Inside."

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New turf 'groomer' keeps greens healthy

by Bill Webster

Seattle Golf Club wanted it all: faster greens for members and healthy turf, which means not lowering the cutting height. On the course's 19 sand-based greens, we use a variety of sound turf management techniques to promote the vigor of turfgrass plants while also aiming to improve the smoothness and speed of the green.

But in 1986, we introduced a new technique called grooming that played a major role in our quest for both green health and green speed. This grooming was performed with a new greens conditioner, called the Turf Groomer, a product of the Jacobsen Division of Textron Inc.

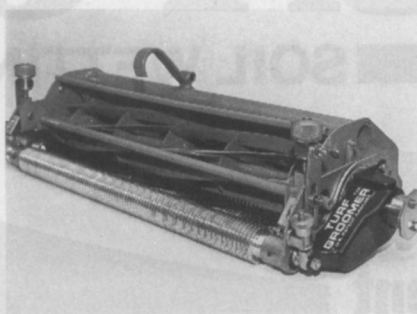
Grooming promotes the vertical growth of grass and eliminates grain by cutting horizontally-growing grasses and runners. Unlike verticutting, grooming does not disturb the soil surface. The material removed in grooming helps control thatch build-up. Grooming, in addition to many proven turf management techniques such as aerification, verticutting and topdressing, helped us to raise our mowing height without sacrificing green speed.

By maintaining a higher cutting height, we have also increased the effective rooting depth of the turfgrass, resulting in a healthier turf that is better able to withstand wear and environmental stresses.

Using the new greens conditioner, we have been able to get a smoother putting surface and faster speeds throughout the summer season, and we've been able to accomplish this while maintaining a mowing height of $\frac{5}{32}$ of an inch. In past years it was necessary to lower cutting height to $\frac{1}{8}$ of an inch or less to get the same speed characteristics.

Initial use of the Turf Groomer increased our Stimpmeter reading 11 percent. It also removed nearly three times the amount of clippings than had been removed by double-cutting at a lower height with a conventional greens mower.

These clippings included horizontally-growing grasses as well as a great amount of thatch-forming biomass. Throughout the summer months, the Turf Groomer was used twice a week, with the greensmower bedknife set at $\frac{5}{32}$ and the groomer depth varying from $\frac{1}{16}$ to $\frac{5}{32}$ below bedknife. At no time did we set the cutting depth below the soil surface. We were able to maintain green speeds of about nine



Some of the 522 blades that make the Turf Groomer a reliable means for increasing green speed without cutting greens lower.

feet with a single mowing six days per week.

No one tool is going to provide you with a superior quality green by itself. At Seattle Golf Club we use light but frequent (as often as every two weeks) liquid feeding applications of various nutrients on the fairly infertile sand-based greens.

We aerify two to three times per year and apply light, frequent sand top dressings. While we avoided verticutting during 1986 in order to effectively evaluate the use of the new greens conditioner, we will normally do this once every two or three weeks.

Grooming is not verticutting, as the knives are not meant to go below ground level. We maintain a regular schedule of verticutting to get down deeper into the turf and get out older leaves that have subsided into the crown area.

The smooth turf surface from the Turf Groomer's use is chiefly the result of more upright growth of the grass plants. Also, since the greens at Seattle Golf Club are more than 90 percent poa annua, we have seen significant improvements in green putting quality because grooming eliminates many of the poa seedheads in the turf.

When seedhead development is highest, we have used the Turf Groomer three to four times per week to control seedhead development and get better putting characteristics. Just as with any tool, use of the Turf Groomer should be governed by the principles of good turf management. By maintaining a higher cutting height and healthier turf, and by carefully controlling the depth setting, the Turf Groomer can be used often without any adverse effects. Of course, common sense tells us that this tool should not be used frequently at ag-

gressive settings during periods of environmental stress.

The Turf Groomer is a new product, so machine operators need to be educated in its proper use.

The first point to make is that the Turf Groomer is for use above soil level, and the verticutter remains the tool of choice for deeper penetration into the soil. While grooming does provide some of the benefits of verticutting and can be used to reduce the frequency of verticutting, it was never intended to replace the practice.

Another consideration is visual inspection of greens prior to mowing. This has always been of prime importance in order to reduce wear and tear on reels, but it becomes even more critical when using the Turf Groomer.

Debris such as rocks or spikes can bend the blades. If a blade is bent, the bent tip should be removed before damage is done to the roller. The loss of a few blades does not affect the performance of the groomer; there are 522 blades on the powered shaft.

Use of the Turf Groomer can increase the efficiency of the turf maintenance crew in a number of ways.

Since grooming works while you mow your greens, no additional labor costs are associated with it other than the time needed to change depth settings on the machine. Also, the grooming technique can easily be used on tees, which are often neglected due to labor limitations. Grooming immediately before topdressing applications increases their effectiveness. With two triplex greens mowers equipped with Turf Groomers, we are also able to adjust consistency from green to green.

Rather than simply increasing the speed of every green, we are grooming some greens more and others less in order to get a consistent green speed throughout the entire course. After more than a year of using the Jacobsen Turf Groomer, Seattle Golf Club members, Dr. Roy Goss of the Western Washington Research and Extension Center at Washington State University and Larry Gilhuly of the USGA Green Section have all had very favorable comments regarding the condition of the putting greens at the course. All agree that the grass density is as good as they have seen it in the past 10 years.

Webster is superintendent at Seattle Golf Club, Seattle, Wash.



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