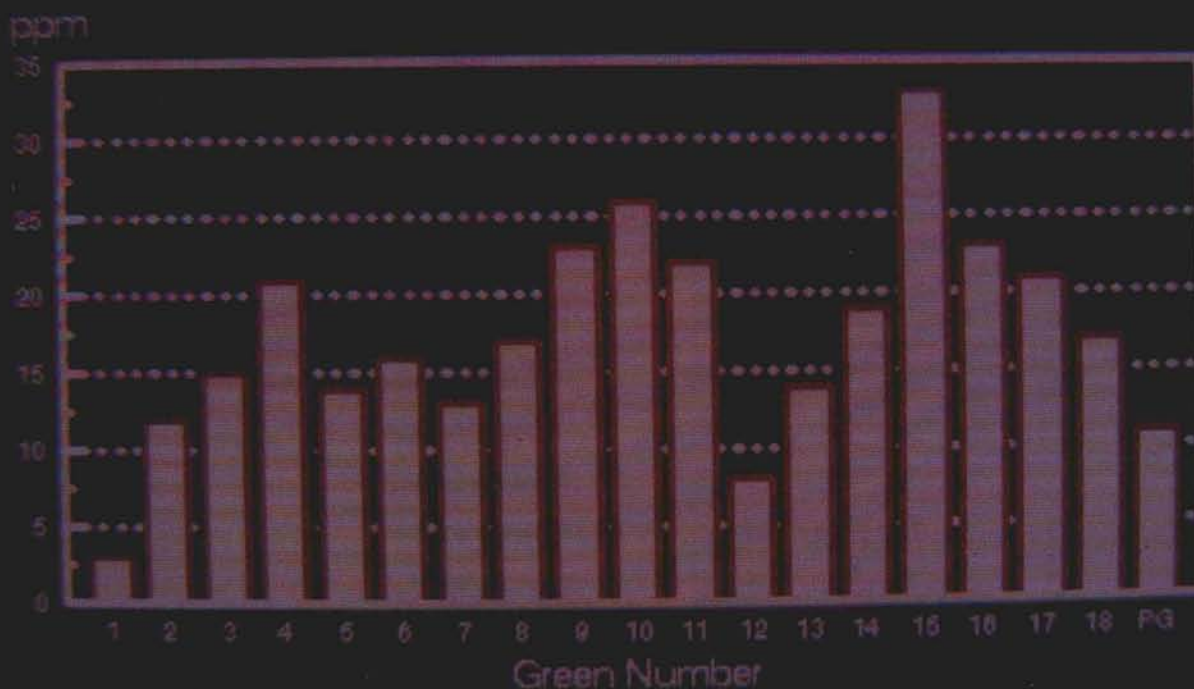


Phosphorous Levels

1990



Graph 1

GRAPHIC GOLF COURSE MANAGEMENT

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HOW OFTEN have you heard a superintendent say, "Growing grass is the easy part most of the time." Many of today's superintendents spend more of their time dealing with the business end of managing the course than they do the agronomic side of things. Or at least they do until something goes wrong on the course. It is often a simple matter of priorities. The

superintendent juggles his time back and forth trying to stop the bleeding. This problem is not unique to the golf course superintendent. In fact, managers in many industries find themselves in exactly the same situation.

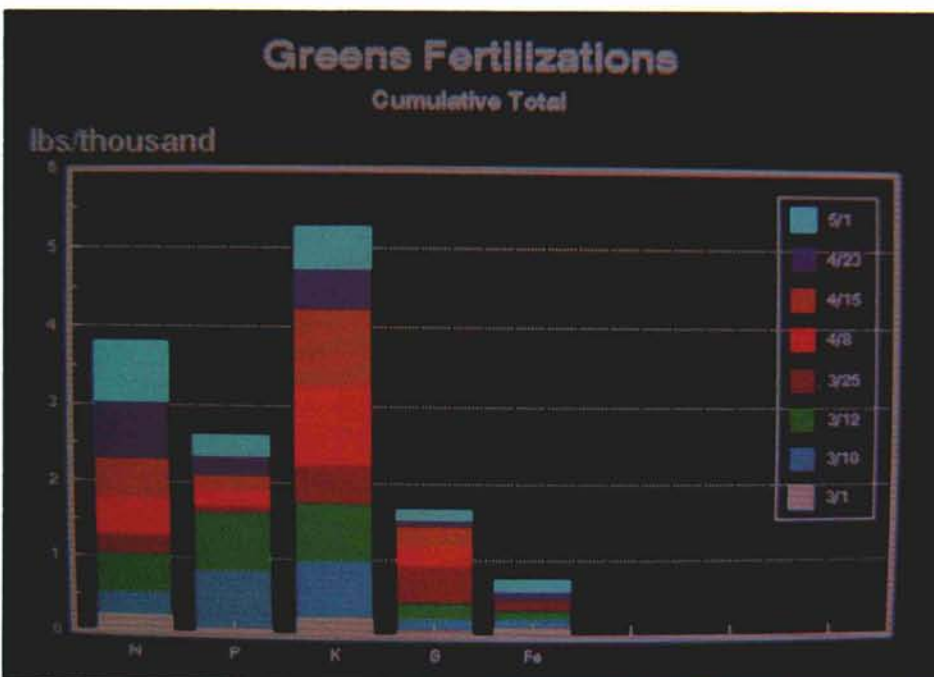
The crux of the dilemma is that a manager often receives information faster than he can process it or use it to his advantage. He receives input from

many directions at once; his crew, the equipment, the turfgrass, the climate, the members, etc. It becomes nearly impossible to keep track of so many variables at once.

To better cope with information overload, managers in other industries have learned to use a simple technique — graphs. Graphs or charts allow you to keep tabs on many things at once and



Graph 2



Graph 3

quickly spot trends. Identifying such trends can help you avoid trouble before it happens, identify programs that are working, and better stay in touch with your operation. Let's examine how five simple graphs can help in a few specific areas of golf course management.

Soil Test Results (Graphs 1 and 2)

While most superintendents recognize the value of soil tests, they also know that the tests can be a source of frustration. Occasionally, a superintendent decides to "test" the laboratories by sending the same sample to two different labs. Often the tests come back with different results. Since laboratories often use different testing and extraction techniques, this is not a fair test. (If you really want to test a lab, submit six samples, two of which are actually composed of exactly the same material but labeled differently.) Also confusing are the labs' comments such as "high," "excessive," "deficient," etc. From a practical standpoint, you should be more concerned with the changes from test to test rather than the exact numbers on any one test. The changes represent trends in soil fertility that are brought about by your programs. These trends are best identified by graphs.

Two types of graphs should be kept for soil tests. The first, a bar graph, identifies specific greens (or other areas) that stand out from the others when it comes to a nutrient surplus or deficiency. It's a good idea to keep one such graph for each specific aspect of soil fertility with which you are concerned. For example, graphs should be kept for phosphorus, potassium, and soil reaction (pH). Additional graphs are justified if your greens have a history of problems with magnesium, sodium, iron, or any other nutrient.

The second type utilizes a line graph and is helpful to track nutrition trends in a specific green over time. One good

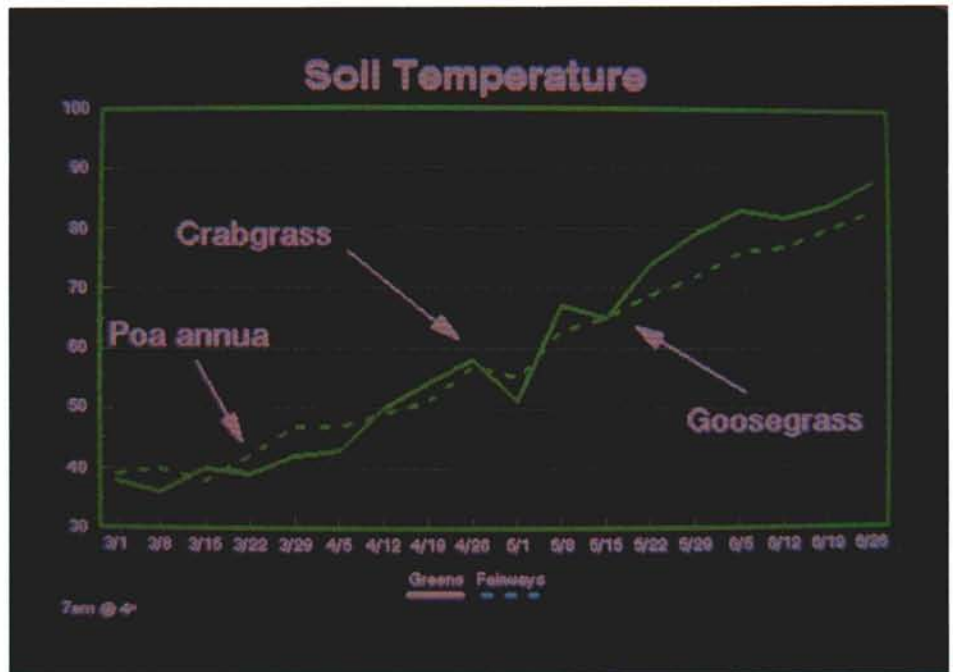
program is to test greens in the spring, prior to developing your fertility program for the year. Testing again mid-season gives you an idea of how well your program is working. A line graph kept over several years quickly summarizes your efforts. Obviously, it is critical to use the same laboratory throughout all of the testing.

Fertilization History (Graph 3)

Another type of graph can prove extremely valuable in tracking how much you have fed your greens. This type of graph is called a cumulative bar graph. Each time the greens are fertilized, the bar for each nutrient is extended. This graph provides a quick reference concerning the amount of fertilizer applied so far this year, the increments in which it was applied, and the date of each application. It is well worth your time to keep such a graph for greens, tees, fairways, and other specific areas of the course.

Soil Temperature (Graph 4)

Soil temperature is another piece of information that many superintendents find quite valuable. A graph of the rise and fall of soil temperature is particularly useful when notations are included concerning the occurrence and activity of various pests. As data accumulates over several seasons, you will find yourself better able to predict events such as the germination of *Poa annua* or goosegrass, and when an application of an insecticide for grubs would be most effective. Soil temperature can also lend insight as to ideal planting dates of your course. One superintendent recorded both soil temperature and Stimpmeter readings from the same green throughout the year. He found that on his course the growth rate of the turf affected green speed more than cutting height. Since growth rate closely followed soil temperature, he was able to anticipate



Graph 4

changes in green speed and adjust other cultural programs accordingly.

Like soil testing, the key is to be consistent in how the temperatures are taken. A good method is to read the temperature at a depth of 4 inches at approximately the same time each morning. You might also check greens and fairways since the soil types are usually radically different. Graphically tracking soil temperature can be done best using a line graph.

Inventory (Graph 5)

A common complaint among superintendents is that it is difficult to track their inventory. A cumulative bar graph can provide an easy, quick means of checking what is on hand and if there

is enough for a typical application. Each time a purchase of a product is made, the respective bar is extended by that amount. Likewise, whenever some of the product is used, the bar depicting use is extended. Notice that the "used" bar also displays the increments of use. By comparing these increments against the length of the "on-hand" bar, the superintendent can quickly estimate how many more uses he can expect before making another purchase. (For example, a quick look at the Captan bars shows there is not enough on hand for another application.) Since both dry and liquid measure materials are probably used, keep separate graphs for each. You also might use separate graphs for fertilizers and various types of pesticides. This particular graph is a

budget tool, too, since at the season's end you know exactly how much of each material you have purchased and used.

Obviously, there are many other types of graphs that would prove useful. You might decide to graphically follow climatological information such as rainfall, humidity, and daily temperature extremes. This information can be compared to previous years or what is considered "average" for your area. Managers of all types often use graphs to better monitor expenses. Graphs for your major budget accounts comparing the amount budgeted against the

amount spent can help you adjust spending habits.

In spite of the usefulness of graphs, it is important to keep in mind your original intent. Remember, the idea was to help you keep track of information in a manner that is easy and makes the information readily available. Do not begin keeping so many graphs that you find yourself spending more time updating them than using the information they depict. Also, do not attempt to keep too much information on any one graph. Three simple graphs are far more useful than one complex graph.

While the graphs depicted in this article were made using a computer, it absolutely is not necessary to have a PC to keep good graphs. Graphs should be posted on a wall in your office and updated routinely. In this manner they will jog your memory and help you keep in touch with many aspects of your operation with relatively little effort. Most superintendents already keep much of the information discussed in this article. Graphs simply get this information out of the file cabinet and present it in a manner that is easily understandable and therefore far more useful.

Graph 5

