

two men mow fairways or repair equipment or spray chemicals, and one or two men work nights on irrigation. About 6 of 12 men are engaged all day in basic work and the remainder are available for half the day for the other 1001 jobs needing attention. When we analyze the situation we have about a dozen men caring for 160 acres of fine turf, or an equivalent of about 13 acres apiece. If we didn't use work analysis studies I don't know how we would get along as well as we do.

#### *Routing and Assignment*

Job assignment is part of the answer to efficiency, but a point not to be overlooked is the routing of the men and equipment. Here again there are about as many variations as there are golf courses. My experience has covered 18, 36, and 54 hole operations of square, rectangular and random property outlines. All this enters into the picture of the studying and analyzing of operations. Sometimes the centralized system of having one centrally located service building is the answer to greater efficiency. At other times the decentralized system with several outlying tool sheds may help to reduce excessive unproductive travel time to and from assignment areas.

#### *Equipment Studies*

We have thus far concerned ourselves mainly with the use of men. What about some of the major equipment items? Do they also need to be studied for efficiency? Yes, perhaps more than they have been. A few years ago at the Beverly in Chicago, I realized that I was fighting a losing battle in the maintenance of close cut bent and poa annua fairways.

The irrigation system had a capacity of 450 gpm, meaning we could probably water fairways about once every three nights. I often saw short-rooted poa annua grass wilting before my eyes for the lack of moisture. Still I knew it would be at least another 24 hour before we could give relief with another watering. I felt that we had only one alternative to improve the situation — by changing our irrigation system so that we could water all tees, greens and fairways in one night. Investigation revealed that by installing a second pumping station, we could accomplish this. Upon presentation of our findings to the committee and board, the wisdom of the study was understood and accepted. There has been a considerable improvement in the fairways with a minimum loss of poa annua from lack of water.

#### *Study Mowing Operation*

Mowing of the various areas of the course is another item of equipment usage that should be constantly noted with an eye towards eliminating waste of time and effort. A simple example might be taken from the mowing of the collar adjacent to the putting surface. I noted that my men were making as many as four complete circles around the greens to mow variable width collars. It appeared that by reducing collars to a uniform width we could cut the mowing in half with only two mower widths for the collar. It worked and we have made this standard procedure ever since. Another thought on equipment is the use of multiple units. I find, for instance, that by using two 7-gang fairway mower units, we reduce an over-all job from about 8 hours to a 3½ hours.

#### *Fairway Fertilization*

Fairway fertilization is another operation that has always taken its toll of hours. It required about three days with an old conventional 6- or 8-ft. spreader to

fertilize our 18 fairways. Weather changes, play, and other factors sometimes entered into the picture, too, and we found it was taking a week or more to get the job done. We needed a more efficient method of fertilizer distribution. We came up with an improved technique of using a cyclone type spreader covering approximately 40 to 50 ft. to a swath and a three-day job was reduced to no more than six hours or less. We also worked out a plan for using the same machine on our tees and now all 18 are handled in about 50 minutes by one man instead of two working all day.

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#### REVIEWING THE "HEIGHT OF CUT" WITH *CHANGING TIMES*, THE KIPLINGER MAGAZINE

Mowing the lawn takes brains. If that sounds like a joke, okay. But don't joke about it with anyone who is a professional grass cutter. People like superintendents of golf courses take their mowing mighty seriously. They will tell you that by using your head as well as the mower you can thicken the turf, outwit weeds and cause crab grass to commit suicide - maybe.

To get their reasoning, look at it for a moment from the grass's point of view. The grass leaves take the raw nutrients furnished by the roots and convert them into food. Sunlight is necessary for this process, known as photosynthesis, so the upper parts of the leaves do most of the work. During good weather the leaves produce food faster than necessary and store up the surplus. Some is stored in the leaves, and some in the stolons and crown.

Now, you can see what happens when you lop off a big part of the leaves. You slow down the food-manufacturing process and also destroy some of the stored-up food. It is a real shock to the grass's system. The way to lessen the shock is to take off only a little bit of the leaves each time, and that, of course, means mowing frequently.

How often you should mow is an arithmetical function of the height of cut. Here is how the Green section of the U.S. Golf Association has worked the problem out. To give the grass a chance to recover from each mowing, no more than a third of the leaf surface should be clipped off at a time. That means that if you have the kind of grass that thrives when cut at one inch, you should mow it as soon as it has grown to a total height of an inch and a half. But if you have grass that does better at two inches, you can wait until it has grown to a total height of three inches. Since it takes half as long for grass to grow half an inch as it does for it to grow a full inch, one-inch grass should be mowed twice as often as two-inch grass. In other words, the shorter the height, the more frequent the cut.

The chief grasses that will thrive at a height of two inches are the bluegrasses and the fescues. They produce only a limited number of leaves, and these leaves tend to grow upright. Close cutting is bad for two reasons. First, it removes almost all the food-manufacturing capacity and much of the stored food. Second, it drives such diseases as leaf spot from the leaves down into the crown. So bluegrass and fescue should not be cut to less than an inch and a quarter, and most experts recommend an inch and a half to two inches. The two-inch cut, as shown above, requires the least mowing.

**Next Month:**

**PURDUE FIELD DAY**