

FIGHTING THE PEAKS AND VALLEYS

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Course maintenance requirements are not uniformly distributed throughout the year. So, with a regularly employed labor force there will always be periods of excess work and periods of excess labor.

The following is one method of allocating labor resources in an orderly and planned system. It is based on a hypothetical 18-hole, par 72 course typical of southern California.

The purpose is a suggested methodology for analyzing labor, equipment and material needs and then developing a flow chart to manage timing. The emphasis is on helping a superintendent identify each task to be performed so they can develop specifications or standards for their own situation. Once this has been developed or even estimated, then a labor flow chart can be built. This flow chart is designed to permit more effective utilization of the labor force and identify tasks and times for which extra labor or contract performance may be more economic.

In other words, it will help him adapt a program that will keep the peaks and valleys of his yearly work load at a minimum.

Flower beds. Care and maintenance of the 230 square feet of flower beds follow a plant that provides year-around color. Their maintenance and refurbishment in spring, summer and fall, based on a performance standard of one man-hour of labor for each 13.3 square feet of bedding area, totals 50 manhours a year.

Trees. The 3,000 trees on the course are pruned and shaped by hired labor on a contract basis. However, usually in late fall and early spring, they are lightly trimmed and when necessary sprayed by the course labor force during convenient work periods. Based on a time and motion standard capability of 3.5 minutes per tree, about 175 man-hours are allotted throughout the year to spray the trees. To keep the trees in good trim and aesthetically pleasing requires 1,230 man-hours annually, based on an established standard of 24.6 minutes to lightly trim a tree.

Litter and tree trimmings are placed into a dump trailer that a supplier places in a convenient location and removes for \$50 per trailer. Generally, an experienced tree pruning crew using a clipper to work on mature trees can fill a single trailer within three days. On this basis of work and hauling capacity, the time required to fill a trailer amounts to 128 man-hours.

Trees are frequently subjected to ball damage, damage from storms, and other injuries. Fifteen trees must be replaced annually. The time required for this task varies with the type of tree.

Lakes. The lakes are treated twice a year for aquatic weed control and four times a year for algae control. The aquatic weed control totals 16

man-hours annually while algae control totals 32 man-hours.

Fences, service roads and cart paths. Slightly over 18 man-hours are recorded annually to spray chemicals for weed control along the 16,000 feet of fencing surrounding the course. This is done twice a year. The equipment used is that used to spray trees. The man-hours budgeted are based on a standard of one hour to spray 1,752 feet, using a power sprayer.

The maintenance of the two miles of service roads accumulate eight man-hours. This is based on time and motion studies reporting a four man-hour per mile standard for such roads.

The walkways and cart paths must be maintained and edged. To edge both sides of the 15,000 feet of walkways and cart paths six times throughout the year as needed, 184 man-hours are budgeted on the basis that 7,690 feet of walkways and cart paths can be edged in an eight-hour period with a power edger. This includes debris cleanup.

Besides edging, the cart paths and walkways must be maintained and repaired. Based on standards established for the roadways, 11 additional man-hours are budgeted for these required tasks.

Sand traps. Checking, repairing and edging sand traps is done once a week. At a rate of about 29 minutes per trap, an annual total of 905 man-hours are needed to edge the 36 traps. Each day the sand must be raked. Based on a rate of 12 traps every two man-hours, six days a week, a total of 1,972 man-hours are recorded for this task. In addition, three times a week, the traps are

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checked for weeds and the sand is loosened. Based on a time requirement of four man-hours for 36 traps, another 624 man-hours must be budgeted for these tasks.

Greens and aprons. Golf course greens are mowed six times weekly at a height of cut between 7/32 and 9/32 of an inch using a triplex greens mower. The task is performed in three hours per mowing for a total of 18 man-hours weekly. If the practice putting green and nursery green are added, another two hours are required totaling 20 man-hours per week. Annually this amounts to 1,040 man-hours plus allowance time, or 1,196 man-hours budgeted for mowing greens.

The same operator who mows the greens also mows the aprons three times a week. This requires 1,014 man-hours annually.

Daily, on each green, the cup must be changed, the area cleared of debris, the divots raised, and the green inspected. Some of these tasks are performed by the mower operator, others are done by the day section man. Based on a time study indicating 10 minutes per green to provide this service, another 1,156 man-hours are needed annually in addition to the mowing time. Thus, an annual total of 3,366 man-hours are required to mow, inspect, and make light repairs to the greens.

Fertilization. The greens are fertilized at varying intervals depending on their appearance and growth rate, as well as weather, and other factors affecting the conditions of turfgrass. Fertilizer applications spaced three or four weeks are common.

Using manually operated spreaders, a green is fertilized in seven minutes. On that basis 56 man-hours will be recorded for fertilization of the 18 greens plus the putting and nursery greens.

Pesticide treatments. Application of pesticides cannot be predicted and yet must be accounted for in a planning method. Budgeted on an as-needed basis it is estimated applications of pesticides applied in liquid formulation requires 235 man-hours annually for the 18 greens, putting greens and the nursery area.

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Generally, not all the greens are treated each time, but when material is applied each treatment accounts for 10 man-hours. The equipment used is a light tank sprayer with a hand gun or a small spray boom mounted on wheels.

Irrigations. The greens are intermittently irrigated by an automatic irrigation system controlled by clocks during the early morning hours before sunrise and before the appearance of early players. The superintendent programs the application of water. An employee trained as a system specialist is assigned on a full-time basis to trouble-shoot the system during the daylight hours, and makes all needed repairs and adjustments. It is estimated two-thirds of this time is devoted to the operation and maintenance of the sprinklers providing water to the greens, or 1,386 man-hours are allocated annually to irrigate the greens.

Aeration. Aeration is performed on a regular basis. Mechanical aerators equipped with quarter- to half-inch tines are used. Four man-hours are needed per green including core removal. On this basis a total of 87 man-hours will be needed to aerate the entire 130,000 square feet putting surface of the course. Repeated four times a year, a total of 348 man-hours are spent on this task.

Topdressing, dethatching, overseeding. To improve play and reduce thatch, the greens are topdressed immediately following an aeration (although not necessarily after each aeration). Generally, the topdressing is done twice a year, once during the spring and again in fall. The material used is identical to the original mix used in the construction of the green. It is estimated 25 cubic yards of mix are needed annually. Topdressing is performed in 45 minutes by two men using a mechanical spreader. At that rate, 33 man-hours are required to topdress all the greens including the putting green. Performed twice a year, this totals 66 man-hours annually.

Overseeding takes about 30 minutes per green when the seed is placed by hand. This is reduced by half when a manually operated rotary seeder is used. Annually, five man-hours are budgeted to overseed the greens.

To assist in reducing thatch ac-

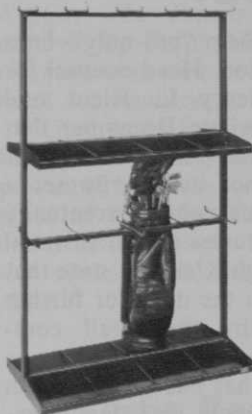
cumulations, "true-up" the putting surface and eliminate as much of the grain as possible, the greens are given a light vertical mowing. Cutting and removal is done by two men during cool weather months, it requires 45 minutes. It is generally done four times a year, and takes 136 man-hours annually.

Edging, dew removal and repair. Periodically, the greens are edged to reduce the encroachment of ber-

mudagrass. This is a bi-weekly task and is done in the summer during the growth period of the warm season grasses. Done mechanically, it requires seven minutes per green for about 62 man-hours annually.

On occasion, dew must be removed from the greens. This is done manually with sweeps, basin brooms or specialty products. Studies show that eight minutes are

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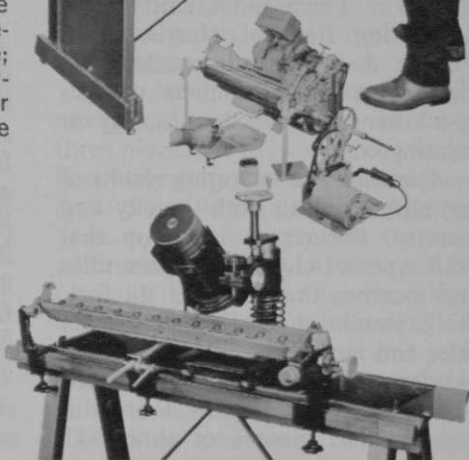
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required per 6,400 square feet of putting surface. Based on this rate, to remove dew from 130,000 square feet of putting greens requires 2-1/3 man-hours. Repeated 30 times a year, 81 man-hours are needed annually.

Dew may be removed by water. Watering may be preferred to mopping as it dilutes the guttation dew, exuded from grass blades and high in salt content. It is a uniform, quick, and easy method occasioning minimum injury to the grass sward. Generally, mopping or watering-in is performed whenever the greens are not mowed.

At times the greens and aprons require sod replacement. Such maintenance requires about 300 manhours annually. A standard quoted for such operations is 1.5 minutes per square foot when the sod it cut by machine and laid by hand.

Tees. Tees are mowed with a triplex greens mower. The hybrid bermudagrass tees are mowed more frequently in summer than during winter. Over a year, tees are mowed an average of twice weekly. In addition, the tees must be serviced. The appearance of about 120 feet of golf cart paths near the tees must be checked, markers must be removed daily, ball washers attended, towels changed, benches cleaned and moved, and rubbish cans emptied. As with the greens, some of these tasks are done by the mower operator and others by the section man. Combining these tasks, nine hours are required each time the tees are mowed totaling 936 man-hours per year.

Tees are mowed vertically during spring and late summer. Each year 35 man-hours are budgeted for this task.

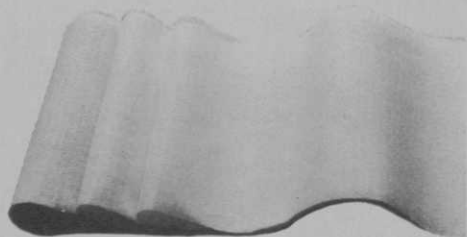
Fertilization. Tees are fertilized six times a year. The equivalent of one pound of nitrogen is applied per 1,000 square feet.

Occasionally a balanced fertilizer is used. The fertilizer is applied using a manually operated rotary spreader. It requires about 17 minutes per tee or slightly over five man-hours per application. Applied six times a year, almost 31 man-hours are required for the task.

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Aeration. The large tees are aerated by two men using an aerator equipped with half-inch tines. Cores are removed and the entire task is done in one hour per tee. This totals 41 man-hours when all tees are aerated. Performed four times a year, 164 man-hours are needed for this task.

Pesticides. Seldom are insecticides, fungicides or herbicides applied to the bermudagrass tees, but on occasion they are needed. To apply pesticides as needed, two man-days are allotted annually. The materials needed are those supplied for the greens and aprons.

Overseed. As with the fairways, tees are often overseeded for winter color. Costs and methods are comparable to those used for overseeding fairways.

Topdressing. Tees are occasionally topdressed, usually during spring and fall. It is done mechanically, and the areas, are dragged following the topdressing. The entire operation requires about two man-hours per tee or a total of 36 man-hours. The task is performed twice a year, so 83 man-hours are scheduled to topdress the tees.

Irrigation. The tees are irrigated about three hours weekly during the summer months with lesser amounts of water applied during the remainder of the year. The man-hours needed for irrigation are based on the labor required to check and maintain the sprinklers. This requires 20 minutes per tee or six man-hours weekly for all 18 tees; on a yearly basis, it amounts to 312 man-hours.

Service and repair. Throughout the year, divot marks on the tees need attention. This requires 14 man-hours. Also, 340 man-hours are required for sod replacement.

Fairways. Fairways are mowed two to three times a week during optimum growth conditions but once a week is sufficient throughout the remainder of the year. A hydraulic seven-gang mower is used. The mowing capacity ranges from 45 to 62 acres per day. Based on an average of 5.7 acres per hour including allowance time, fairway acreage requires about 1,071 man-hours yearly.

Fertilization. Fairways are fer-

tilized at least four times during the year. About four pounds of actual nitrogen per 1,000 square feet are applied annually. The fertilizer, 26 tons of 20 percent nitrogen fertilizer generally pelletized is applied with a tractor-drawn rotary spreader having an operating capacity of six acres per hour. An equivalent of 10 man-hours is used to fertilize the fairway acreage. It is estimated 47 man-hours must be budgeted for this task.

Aeration. A six-foot-wide fairway aerator is used to aerate the fairway twice a year. This unit, equipped with ¾-inch tines is followed by a wire mat. Based on a rate of 1½ acres per hour, 40 man-hours plus allowance time are needed to aerate the course. Performed during spring and in late summer, 92 man-hours are budgeted yearly for this task.

Pesticides. Herbicides are occasionally needed on the fairways. It is estimated 10 man-hours annually are sufficient for this task provided only as needed. The time allotted is based on the capacity of the equipment used. Either a tractor-drawn sprayer for liquid materials or a rotary spreader capable of covering two acres per hour when dry materials are used.

Irrigation. The fairways are irrigated by the automatic full-coverage irrigation system. Fifty-two man-hours are estimated annually to service the system supplying the fairways with water.

Overseeding or coloring. The bermudagrass fairways turn brown during cold weather periods. To maintain a green color during that time, the fairways can be overseeded with a cool season grass or colored. Generally, overseeded fairways are given a very close mowing, swept, and then seeded. To establish the overseeding, 21 man-hours per acre and 12 tons of seed must be allotted. With 60 acres in fairways, the overseeding task will require, including allowance time, almost 1,450 man-hours or slightly in excess of 181 man-days per year. If the fairways are to be colored instead of overseeded, almost 3½ man-hours are needed per acre of fairways. Including allowance time, this totals 242 man-hours or slightly over 30 man-days.

Service and repair. To maintain the appearance fitting that of a quality course, 216 manhours are

budgeted yearly to mechanically sweep the fairways. The frequency and time required for this operation varies with the amount of play, wind velocity and other factors.

Because of damage by foot and equipment, various portions of the fairways must be repaired annually. The time required to repair these areas can be estimated on the basis of the times needed to repair tees and aprons. Accordingly, 340 man-hours are allocated to repair fairways.

Roughs. The 65 acres of roughs are mowed at a height varying from 1½ to 2½ inches. The equipment used is a five-gang pull-type rough mower. Roughs are mowed from April through September and about 11 times thereafter from October through March. Based on equipment capacity it is estimated about 38 man-hours are needed each time the roughs are mowed, totaling 1,330 man-hours annually.

Sweeping. During the year the roughs are swept about a dozen times. The equipment used is similar to that used on the fairways. Based on the time allocated for the fairways, 108 man-hours are needed for sweeping roughs.

Pesticides. As the roughs are mowed or swept, they are also inspected for the presence of weeds. Herbicides application requires 40 man-hours annually.

Irrigation. Roughs are periodically irrigated. Taking the irrigation of the fairways as a basis, 30 man-hours annually are assigned for servicing this portion of the irrigation system.

Fertilization. Portions of the roughs adjoining fairways are fertilized. This is done mechanically using bulk fairways spreaders. Based on the capacity of this equipment and a frequency of application of one-quarter that of fairways, about 12 man-hours are needed annually.

Complete fertilizers are generally used for roughs. Considering a fertilizer complex such as 16-20-0, the 65 acres would require eight tons of fertilizer based on an annual requirement of six pounds of material per 1,000 square feet.

Repair. Areas in the roughs sometimes need repair. Based on a frequency estimated to be one-fifth that of the time needed for repair of fairways, a total of 70 man-hours are assigned for this task. □