

Municipal Course Maintenance

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Keller Golf Course, Saint Paul, Minn.

Reprinted from address delivered at the Annual Greenkeepers' Educational Conference in Chicago

MUNICIPAL course maintenance has characteristics of its own, and many that you are familiar with on your course. The greens range from sand to fine strains of bent. The sand greens are gradually being changed over to grass because of public demand.

Washington bent is the grass used on most courses. The course I am connected with has Seaside bent. Regardless of the type of bent it has to be brushed at least three times a season. If the greens are not brushed they become grainy and the better players dislike that. A power mower with brush attachment is the equipment used by most of the greenkeepers. Some courses keep this brush on their power mower all the time. It makes the grass upright and finer. It is the practice to brush and cut the greens closely before top-dressing.

When the grass is upright, the old branches are cleaned, and the dressing has to go down to the roots. Most courses top dress by hand, although mechanical spreaders have been tried. Monday is usually the day for dressing because play is quiet after Sunday and Saturday. The players object to paying the regular price when the greens are dressed. It is always an unpleasant job when the players complain. Topdressing can be done in a day when everything goes right. Sometimes the greens are not dressed as often as necessary because of interference to play. Three times a season should be the minimum for dressing.

The dressing can not be watered in immediately because it makes a mess for putting. For this reason fertilizer is only put in the dressing in the spring and fall. The weather is cool and there will be no



Mr. Stodola, young in years but old in experience, has made an intensive study of municipal golf course maintenance. He has succeeded, where others often fail, in conditioning his course above the average and within the budget. Good work and more power to him.

burning before water is applied. The first night after dressing, the water is applied by a hand spray. A sprinkler would splash the dressing away from the roots.

After that, it can be watered in with sprinklers. Usually one man does the watering at night. That means nine greens every other night, tees about three times a week, the practice green and nursery as often as necessary. The players stay around until dark and arrive at sun-up so it is impossible for the night man to get an early start or water late in the morning.

MUNICIPAL COURSES USE POWER MOWERS

MANY of the municipal courses cut their greens with power mowers. The men that do the buying for the city are interested in getting the greens cut fast. They do not look beyond that. The greens are cut closely with a power mower. In this way the greens can be missed every other day. The municipal standards of turf are judged by the play. As long as play keeps up to capacity the greens are all right. But in 1932 the play did not stay up to normal. Fees were cut but that was not the solution. The private courses lowered their green fees and encouraged outsiders to play. They got a taste of fine putting greens and now they expect it on municipal courses.

With increased competition from individually-owned fee courses and private courses, the municipal courses have to raise their standards instead of lowering their prices. Some courses have maintained this policy and use hand mowers on their putting greens. They claim that it is easier on the

greens. It helps to keep them the right softness for good growth and fine turf.

Hard greens cause pitch shots to go over and putts to skid. That takes time and holds up players. Our observation has been that public players like average speed greens. This is accomplished by a thick stand of grass. Proper feeding keeps the grass this way.

GREENS ARE FERTILIZED SPRING AND FALL

THE greens are fertilized with a complete fertilizer spring and fall. This fertilizer is mixed in the topdressing. It is applied early in the fall to build up the plant to carry over winter, and late in the spring to carry through the playing season. During the summer light applications of ammonium sulfate are applied in liquid form. Three pounds per thousand square feet. The sulfate is put on at night on account of the players. One man does the spraying while the other keeps the sulfate well stirred in the barrel. He also moves the hose around and watches closely for broken hose. They cover all the greens in one night.

But the greens need more than nitrogen and it is important to know what they need in the way of a complete fertilizer. This can be learned by testing the soils of the greens for nitrogen, phosphorus and potash, the three elements that are needed. There are testing outfits on the market that are simple and accurate. In the fall six-inch plugs can be taken from the greens. They should be marked and placed in a box of soil. In the winter, tests can be made. Phosphorus, nitrogen or pH, and potash content is found out.

A good green should test about 150 pounds of phosphorus and four hundred pounds of potash per acre. For bent grass the acidity or pH should be 5.5-6. Compare the soil tests with these figures and see how you stand. If the phosphorus and nitrogen are good but the potash is low, more potash can be added during the coming season. Tests can again be made the following winter to actually see if your soil shows more potash. You can also watch your greens in the summer and see if the additional potash has improved the tone of the grass.

GET AWAY FROM HIT OR MISS FERTILIZING

WE HAVE to get away from our hit and miss fashion of fertilizing. Some clubs use ammonium sulfate exclusively. Others use what the municipal purchasing agent buys for them. This is not sound

turf culture. The body must have well-balanced rations. Grass plants are the same. Successful farmers make tests for soil deficiencies. Good greenkeepers can do likewise. The science of turf culture has just been touched. By proper feeding the municipal greenkeeper should be able to produce a fine textured, upright grass, with toughness to stand traffic.

It is necessary to roll the greens in the spring. It is done before they dry out to take care of heaving from the frost. During the summer, spike rollers are needed to loosen the ground because of the continuous trampling of the players. When the greens get hard and packed the bent is forced out and poa annua comes in. It is a losing game to try and plug out poa annua. The man that changes cups does not have the time. Besides his cups, he is kept busy plugging out divots that are made by the players. The municipal player is realizing, however, that he can help keep the greens in fine shape. He is also becoming more considerate of the fairways and replaces his divots.

MANURE AND MUSHROOM SOIL FOR FAIRWAYS

MUCH-USED fairways need to be dressed with manure and mushroom soil in the fall. In the early spring the dressing is dragged in with a tractor. The stones, cinders and horseshoe calks are picked up by hand. Then it is time to roll the fairways before they have dried out. Sodding and reseeding is done before the spring rains.

Cutting is the biggest item on fairways, especially on municipal courses. Many of them have no roughs and cut most of the courses with fairway mowers. Seven unit mowers are used to save time. The players come from early morning until late at night so it is a job for the mower man to keep his fairways cut and not interfere with the players. Some clubs cut twice a week and others three. The courses with roughs have less fairway area. They have even narrowed these fairways one mower's width on each side. This saves on fertilizing, cutting and watering.

Some of the municipal courses have fairways which, during the dry seasons, have cracked so that it was impossible to drive over them with the mower. They filled them with peat because that was most available. The fairways are not cut until late in the spring so the roots can develop. They are

left long in the fall to more easily carry through the winter.

SOME COURSES DO NOT WATER FAIRWAYS

SOME courses do not water their fairways. That gives them less to cut. However, with watered fairways on other courses, municipal ones have to do the same. They are watered in the daytime by the hose system. Three-quarter inch hose is used because it is cheaper and because it is easier to handle. Two, three and four sprinklers are on each hydrant. This requires considerable pressure.

It keeps one man very busy to water the fairways properly. The golfers take no caddies and when their ball is under a sprinkler they pull the sprinkler by the hose until the ball is clear. They most likely leave the sprinkler on a place that has been watered before. It is inconvenient for the player and the waterman, but until the fairways are watered at night the best will have to be made of it.

The approaches are cut with power mowers. Most municipal courses have small clubhouses with simple lawns to take care of. Other courses have an elaborate clubhouse with a formal bent lawn, walks, and flower beds. This takes much more care and requires an active man that has pride in his work.

Fairway fertilizing and dressing is practically nil on a municipal course. Up to 1932 the courses have been earning at least 20% on their investment. Part of this profit should have gone back into the course but it did not. It went into a general fund to support the Parks. Municipal courses have much work to do on their fairways.

Our fairways, which are three years old, have been dressed twice with mushroom soil and fertilizer. They were missed last fall. Every penny I can save next season will be spent in the fall for fertilizing the fairways and trees.

TEES ARE A PROBLEM

TEES on a public course are a problem. In 1932 the municipal courses I have seen have given up hopes of maintaining grass tees. The players always shoot from the front of the tee and keep digging up the sod. To try to keep resodding them would be an endless job.

But on the Keller course grass tees are demanded. It has been a problem to educate the players to pay attention to the markers. If they would pay atten-

tion to the markers they would move from one end of the tee to the other. Then with dressing and fertilizing they could be maintained.

This is what we do. A six-foot strip across the tee is cut short between the markers. The rest of the tee is cut at least one-half inch higher. If they do not play from the strip they have to shoot off the long grass which they would rather not do. In addition to the closely cut strip between the markers we have a neat sign on every tee. It asks the players to please play between the markers. You can see our purpose. We are trying to educate our players to observe the markers. We even put an article in the Sports Section of the local paper thanking the players for their cooperation.

This educational program, of course, raises the cost of cutting tees. The man has to cut a new strip when the first one is worn. The grass is long so he has to cut several times to get a close cut. He moves the markers to the new strip. Then he has to raise his mower to cut the rest of the tee. When the markers are observed we can cut the entire tee the same length.

The tees are rolled in the spring and then resodding and reseeding is done. The topdressing contains the fertilizer. The tees are watered just enough to keep them alive because soft tees would soon be cut to pieces. Some courses cut the tee banks with hand mowers, others with scythes. It makes a much neater tee when the banks are trimmed every week. We believe in maintaining grass tees even though the costs are high. We also believe in roughs on a municipal course instead of all fairways. What extra we spend on our tees we save on our roughs.

MOST MUNICIPAL COURSES HAVE NO ROUGHS

MOST municipal courses have no roughs, but cut the entire course fairway length. Our course has roughs which are cut once a year with a hay mower. The grass is raked up and put in the compost pile. The dead trees in the roughs are given to the public who grub the trees out and haul the wood away.

Roughs are cheaper to maintain than fairways. They also teach the player to shoot straighter and improve his game. The reason municipal courses do not have roughs is to avoid lost balls. Lost balls hold up play and irritate players. In fact the policy has been to make municipal play as easy as possible so the players can score well and kick less.

TRAPS ARE SMALL AND SHALLOW

THAT is why there are few traps. The traps they have are small and shallow with little or no sand. Keller course has one hundred traps. They should be cleaned and raked. We plan on using a salt solution to kill the weeds in our fairway traps. If this works we will use it in our traps near the greens.

Raking traps on a municipal course is a disgusting job. The players have no caddies to smooth the tracks. They not only leave their own marks but deliberately walk through the traps when it is not necessary. We just rake for the tournaments. The rest of the time there is a sign in the golf shop giving the players the right to improve their lies in the traps. That satisfies the players and gives the greenkeeper additional help where it is badly needed—the turf nursery for instance.

TURF NURSERIES ARE SCARCE

VERY few of the courses have good turf nurseries. They barely get enough help and material to take care of the greens. It is important to have turf for patching in case of disease or injury.

Repairing equipment is not done in the golf course toolhouse. It is sent to the City shop and repaired there. Usually equipment is not repaired until it can't be used. Then work is delayed until it is returned. Equipment is used on the golf course today and in the parks tomorrow. It is hard to exchange equipment and then have to wait for it. It is an advantage to be able to have the equipment repaired in your own shop.

Preparing of topdressing can stand much improvement. Very few municipal courses have a far-sighted compost plan. They just make compost from season to season. The greenkeeper is not given enough leeway to build for the future. The policy is to make all they can on the golf course and spend it elsewhere. Municipal courses can not topdress any more than necessary.

KELLER COURSE HAS THREE YEARS OF COMPOST

THE Keller course is ahead of itself three years on compost. It has a compost field that is planted to leguminous plants and grains. It is plowed under twice a year. One compost pile is two years old. A new pile was started last year. These piles contain manure, sod, and loam. The sand is added later. The piles are in one foot layers, six to eight feet high,

hollow on top to catch and hold water. Each year they are turned over with a steam shovel.

At our tool house is a long shallow pile of peat. The tool house contains a topdressing plant.

HOW OUR TOPDRESSING IS MIXED

ON THE first floor are two bins for finished topdressing, holding fifty-six yards. There is also a bin for compost, two bins for peat and one for washed sand. The truck hauls in compost which is at least three years old. This is dumped near a hopper where it is shoveled into a hammer mill to be ground up. A small elevator carries the ground compost into a bin. When this is filled, peat is hauled to the same hopper. It is shoveled into the hammer mill, ground and elevated into the two bins for peat. Sand is hauled in, shoveled in the hopper and elevated to the sand bin. It is washed sand and does not go through the hammer mill because it is fine enough already.

Now on this floor is a bin of ground compost, two bins of ground peat, one bin of washed sand. There is a metal hopper with opening at the bottom of each bin. On the basement floor under this row of bins is a narrow track. A four-wheeled dump cart with a scale on it can be pushed under these bins. First a hundred pounds of compost is taken in to the cart, just by opening with a lever. Then two hundred pounds of peat and one hundred pounds of sand. Now the truck is at the end of the track next to a large concrete mixer. Here the Calomel, complete fertilizer, and arsenate in the proper proportions are added to the load. Then a side door is opened and the truck is emptied into the mixer.

A perfect mixture is obtained, which falls into elevators that carry it upstairs to the topdressing bins. These bins have shoots leading to the outside, where the truck can be quickly loaded. The advantages of this topdressing plant are 100% efficiency in grinding because all of the raw material is used, proper proportioning because everything is weighed, perfect mix because of the mechanical mixer, and dry topdressing because of the storage bins.

We use one part compost, two parts peat, and one part sand in our topdressing mixture because it has given us good results. Calomel is used in the fall dressing for snowmold. It is used in the spring and midsummer dressing for brown patch. Arsenate of lead is used for grubs, angle worms, and weeds.

Market Place and Buyers' Guide---

Top Dressing

Hyper-Humus Company
The Ohio Humus Company
Atkins and Durbrow, Inc.

Tractors

E. G. Staude Mak-A-Tractor Co.
Toro Manufacturing Company
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Ideal Power Lawn Mower Co.
Roseman Tractor Mower Co.
R. S. Horner
Gravelly Mower & Cultivator Co.

Tractor Wheels and Spuds

R. S. Horner

Trees
Blue Ridge Evergreen Supply Co.

Turf Fertilizers
Armour Fertilizer Works

Underground Hose Locker
McClain Brothers Company

Urea
Synthetic Nitrogen Products Corp.

Water Pipe
McWane Cast Iron Pipe Co.

Wood Charcoal
Wood Charcoal Research Bureau

Worm Eradicators
Peter Henderson & Co.
C. B. Dolge Company
Reade Mfg. Company

greenkeepers. It is what we call welfare labor. The city issues grocery orders to many unfortunates and they have to work them out on the golf course. They stay three or four days and then new ones are sent out. A crew may consist of bank clerks to bricklayers. Many of them are too weak to work. Many can never learn to do manual work. Others will not work. You have to be with them all the time, because they have a habit of picking up golf balls. You can not let them go. It is trying to do things well under these conditions, but we appreciate that the other fellow may have it just as hard or harder on his course.

The municipal course has to be self-maintaining. Golf receipts have dropped off. Competition has increased. It will be necessary to maintain good courses on less money. All we can do is work hard and intelligently, hoping that Mother Nature will stick with us.

Rehabilitating Old Courses

(Concluded from page 7)

If your club board of directors has in mind any extensive alteration of your golf course, study the problem yourself, then go to your chairman of greens, or whoever you deal with, and make yourself heard. If he has in mind hiring some alleged authority on golf construction who you know to be what in legal parlance is called a "shyster" (a fellow who doesn't know his stuff), tell him the danger of such a procedure.

Go over the course with your chairman, and show him how much money it will cost to do the job well—to have interesting greens and hazards, and to carpet the fairways with real turf. Try to find out how much the club intends spending, and figure out for yourself whether it will do the job. If you are convinced the money allotted will not cover materials and labor, speak your mind. Better to have an old-fashioned course, well kept up, than a fancy new one with only a few blades of grass here and there.

ALVES DOES NOT ADVISE RECONSTRUCTION

I DO not advise any reconstruction. Far from it. I hope that there will be much rehabilitation in the next few years; it

will make more work for the bona fide architects, seed salesmen, and the equipment manufacturers, and the wideawake and progressive greenkeeper. But, being an architect and greenkeeper myself, I would be a poor business man, if, even in these times, I attempted to encourage haphazard jobs and slipshod work that, in the end, would help none of us. If the club has the money and if conditions are correct—go ahead; if not—forget it.

Municipal Maintenance

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Complete fertilizer is mixed in the top-dressing with the mixer because a uniform mix is obtained. This plant puts our top dressing program on a business-like basis.

Progress can be made by the greenkeeper when he is responsible to one man. He happens to be the County Engineer on my course. That is not the case on the average municipal course. There is a manager of the clubhouse who likes to tell the greenkeeper what to do. Then there is the Park Foreman, Recreation Supervisor, General Superintendent and Park Commissioner. The greenkeeper is responsible to all of them. He can not buy his own material. He can not hire his own men. No one takes a personal interest in him, no one encourages him. He works hard and tries to make his course the best he can.

WELFARE LABOR IS A PROBLEM

A NEW problem reaches the municipal greenkeeper that does not affect other

Turf Culture News

(Concluded from page 23)

Association have disbanded or gone bankrupt in the last three years, golf continues to boom in Cincinnati, for it was learned Tuesday that plans are under way for the building of another golf and country club in this district.

The proposed new club may be built on a site overlooking the Little Miami River above Remington. Besides an 18-hole golf course facilities will be provided for tennis, aquatic and equestrian sports.

Charles E. Dornette, attorney, is one of a group organizing the club.

Stewart & Stewart, architects, are designing and receiving bids on the clubhouse, which will cost \$60,000.

* * *

PAMPA, TEX.

All that is needed to place the Country club golf course in the best condition of the year is a nice heavy rain. The rough is clear of weeds and the fairways have been rolled until the ball has a long, straight roll after flight.

Greens and tee boxes have been worked over and the putting surfaces are deep and even. The new drags give any kind of surface desired.

Caretaker Autry is waiting for the rain to make the grass green before he rolls the course again.



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