

Reducing Thatch Brings Back Healthy Turf

By WARREN BIDWELL

When our population began moving westward in the early 1800's, the pioneers who chose the prairie lands for their new homes found a difficult task confronting them. The rich land was covered with thatched and matted grasslands sod, which had defied for centuries the efforts of tree seedlings to become established. The pioneers were men of the soil who realized that the sod must be incorporated with the soil if they were to see their dreams of abundant crops come true. The thick blanket of organic waste covering the soil was a rich storehouse of soil organic matter when put to work through the action of micro-organisms.

The pioneers did not know the scientific explanation of the soil's productivity. We know today the importance of the micro-organisms in changing raw vegetable waste into soil organic matter. Even the aerial portions of plants under normal conditions are covered with a varied mixture of beneficial organisms. When plants die — are cut — as in the case of modern turf production, this varied population of organisms is ready to begin the biochemical processes that change vegetable waste into the finished product — soil humus.

Certain conditions must be met if the organisms are to begin work. We have scientific proof that there is very little decomposition of grass clippings or roots during the winter months. Vigorous activity of the micro-organisms develops during the growing season, beginning about the time of the spring vegetative period. If the growing season should be unusually dry, very little decomposition of the accumulated clippings and roots will be ac-

complished. Equally important is the need for oxygen in the soil to promote an adequate supply of aerobic organisms — that is, bacteria that must have oxygen in order to function. The great bulk of decomposition of organic waste in soil is carried on by the aerobic organisms. We know that favorable temperature and moisture are necessary for nature to carry out the complicated processes of breaking down the accumulation of grass clippings and roots. Just as important for breaking down the thatch and mat found on many turf areas is the need for aeration to ensure the continued presence of aerobic bacteria in our turf soils.

Shuts Out Moisture

Many turf men have experienced the time when they have gone out to old number six fairway after a prolonged rain expecting to find the moisture all the way down to China. Upon taking out their favorite watermelon knife and cutting the familiar triangular plug, disappointment has usually been their reward, for it was found that only one-quarter or maybe one-half inch of this thatched turf was moist. Why? Organic material of this type is known to possess a water-holding capacity up to twenty times that of a mineral soil on a percentage by weight basis. Equally true is the fact, that the ability of this organic material to absorb water rapidly is about the reverse in ratio as compared with the same mineral soil. So, we observe that if the next wetting period is five to ten days later, the small amount of moisture that penetrated the thatch has been of absolutely no use to the plants. The water held near the surface by the



F-G '51 Aerifier Triplex Gang in operation on fairway at Seaview CC.



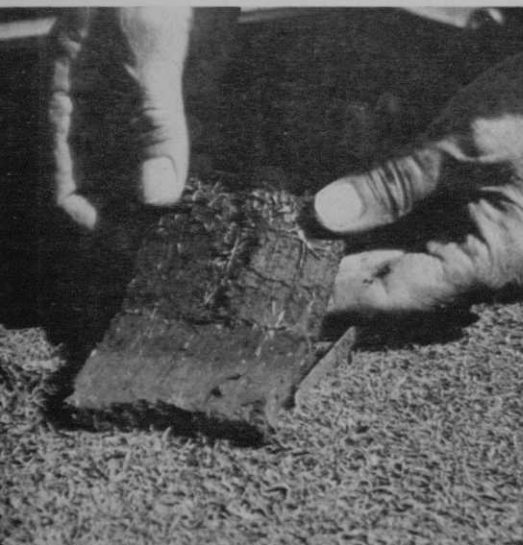
Fairway soil sample taken prior to aerification program; note thatch formation at surface.

organic waste simply evaporates instead of soaking into the soil to be used by the grass roots.

Why do we as turf men fret ourselves about thatched turf? Generally speaking, it looks good at most times of the year, it plays well and certainly it feels as luxurious, when we walk on it, as the famous Waldorf-Astoria rugs.

We know that thatch prevents much needed moisture from reaching the root zone of the soil and encourages shallow root development. That it is almost impossible for fertilizer to penetrate to the root zone where it belongs is another good reason for eliminating thatch. It stands to reason, that if this material prevents penetration of moisture and plant food, then the same handicap is being applied to the oxygen supply which is so vital for func-

With aerification program in progress thatch has begun to break down and root penetration is improved.



tional processes in the soil. If you have ever experienced a severe attack of dollar-spot on thatched turf, then you will recall how difficult it was to get rid of it. Even more noticeable are the deep and lasting scars and the extreme slowness with which they filled in with new grass. Thatch is a haven for fungi.

During the 1949 season, when heat and high humidity records were being broken everywhere, large areas of our Pines Course fairways did the old fade-out act. I call it smothering, for actually it is just that. A blanket of thatch as shown in two of the accompanying photographs is representative of not only some Seaview fairways at that time, but of many turf areas that have been established for years. Such a blanket with its disastrous filtering qualities, sets up even more complications to the maintenance program, than I have mentioned here.

Some desperate superintendents have followed the example set by the pioneers already mentioned; they have turned under their thatched fairways with the plow and started all over again with new seed. Such drastic action is never taken without the consent and full knowledge of the governing body. Regardless, criticism is still heard. What golfer will take time out to think the situation through? Even if he did, chances are that he wouldn't understand that this condition has been building up for many years as a direct result of his demands for thicker, greener and better turf. As a result of this attempt to please, we have been cutting and depositing far more clippings than Mother Nature can dispose of through the normal process of decomposition. So we have contributed to the thatch situation.

Keeps Turf In Service

Only in the last few years has a tool been available that gives us an alternative to the plow — one that will allow us to keep turf areas in service while carrying out a planned program of thatch reduction. This tool is the Aerifier. Primarily, the Aerifier was to fulfill a specific purpose, that of cultivating compacted turf areas without taking the areas out of use. The challenge to correct compacted turf soils by cultivation is being met with an increasing degree of success.

The application of the Aerifier to our thatch was accidental. Those of us who, out of sheer desperation, have aerified thatched turf have been encouraged from the very beginning. The curved spoons penetrate the thatch and break the organic fibers over a larger area than the diameter of the spoon. Also, the open spoons scoop out a portion of soil. The soil brought to the surface and left in contact with the undecomposed organic material helps to maintain moisture in the critical area and

aids the bacterial activity by allowing oxygen to circulate.

By a countless number of tests with the watermelon knife and the triangular plug I have observed that the entire area around the Aerifier hole was moist to the full depth of penetration after a rain or thorough artificial watering. With such encourage-



Inspecting turf at Seaview—Warren Bidwell, Supt. Seaview CC (L) and Ed Stieniger, Supt. Pine Valley GC (R).

ment we set up an aerification program with one Aerifier three years ago. That has begun to pay off in a definite reduction of thatch. One aerification? No. After fourteen aerifications during this three year period, followed by lime at one ton per acre on two different occasions, and rather liberal amounts of fertilizer in spring and early fall, we are observing such progress that we recently purchased the triplex set of Aerifiers to cover our twenty-seven holes with a more efficient program.

Plant Food Gets Through

Subsequent examinations after the program was in operation showed ample evidence that moisture and plant food were getting into the numerous Aerifier holes and passing through the thatch into the area where bacterial activity is greatest. Thus, a noticeable reduction of thatch was not surprising, for three of Nature's most important requirements, moisture, available food and oxygen, were being supplied to the bacteria through the aid of the Aerifier.

The plow which has been standing by, just in case, will continue to gather rust except for occasional use in preparing our soil bed or nursery.

Sound Northern Practice Is Successful Basis in South

By TED BOOTERBAUGH

Supt., Lakewood Golf Club course,
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(GCSA convention paper)

The improvement which we have been able to make on the turf at Lakewood Golf course at Point Clear, Ala., has been accomplished by the strict application of the practices and theories which we all have learned at these turf conferences. These practices and theories all lead to one major objective, which is to develop a deep healthy root system on greens, tees and fairways.

The big problem before the golf course superintendent today is how to develop a deep root system and hold it. I believe we can learn a good lesson from nature by observing the frost action on soil. This repeated freezing and thawing of soil in the spring of the year is the best conditioner we have in preparing the soil for deep root penetration. We have all seen good healthy root penetration on northern greens in the spring, but when we start rolling and skinning our greens at 3/16 in. seven days a week, and with the added impact of rains, spray from sprinklers and the ever increasing compaction by golfers, we end up with a shallow, sickly root system during the hot months when we really need deep roots.

I believe the conclusion we should draw from this observation is that the best time to aerify is during the hot humid months. I also believe that greens should be cut 1/4 in. during the trouble months, and if your root system becomes shallow, cut your greens five times per week instead of seven. Our members will tolerate a slow healthy green a lot better than they will a sick fast one.

Having observed the beneficial results from the repeated freezing and thawing action on turf in the north, I took this lesson with me to Lakewood, and started an aerifying program second to none. I will bet you that we have the "holiest" course in the country. I think O. J. Noer, Charles Hallowell and Tom Mascaro will verify this.

The following program has given satisfactory results at Lakewood on sandy soil.

GREENS: Cut at 3/4 in. to 3/16 in. seven days per week. We skip cutting when possible. We fertilize every two weeks with light applications, followed within three days by a combination spray for disease and insect control. We change cups three times per week. We plug out weeds when they appear. Water as needed. Aerify and topdress Bermuda greens, once per month, rye greens as needed.

TEES: Cut three times per week at 5/16 in. Fertilize once per month with