

WHY TOP-DRESS?

Following are three important discussions on top-dressing techniques you will want to review. They are particularly concerned with putting green practices and the important role of top-dressing in good turf management. (Editor)

by **CARL SCHWARTZKOPF**, Mid-Continent Agronomist, USGA Green Section

To be sure we understand what is meant by top-dressing, let's start with a definition. Top-dressing is the application of a thin layer of soil or prepared soil mixture to a turfgrass area. Top-dressing is used to smooth and level the putting surface and/or modify the soil condition under the turf when used in conjunction with coring. It is an excellent help in restoring turf quality.

The need for and value of applying top-dressing should be determined by its usefulness in rejuvenating turfgrass. It may be essential to top-dress some greens that have been subjected to winter damage in order to restore putting surfaces that have become uneven due to winter play and frost action. When play or frost has

been severe, several top-dressings may be required to get the turfgrass areas, especially greens, in top condition. When turf has become thin because of disease, insect injury, or loss of annual grasses, top-dressing is necessary. When the turf is thin and slight surface irregularities have a pronounced effect on the putting quality, top-dressing is needed. When preparing bermudagrass greens for winter overseeding, top-dressing is important.

Top-dressing has been proven very successful in renovating turf that has become stemmy or matted. Prior to the application, it may be helpful to power rake, vertical mow, or groove the turf. Where surface compaction is a problem, a regular program of coring and top-dress-

Mechanization is making more frequent and more accurate top-dressing possible and at reduced labor costs.



ing has been used to build a layer of improved soil under the established turf. But top-dressing will not permanently improve or correct poor turf resulting from poor surface drainage or other built-in problems. Top-dressing can require expensive soil mixes and can be time consuming. Therefore, it is advisable to use good judgment in determining where and when top-dressing can be used effectively. Although an exception to the rule, conditions exist where greens have been well constructed and established with a good strain of grass and have not been top-dressed in the last 28 years. Good day-to-day care has kept these greens in very satisfactory playing condition.

The quantities of material used and the frequency of top-dressing must be adjusted to the requirements of each green. If a single top-dressing application will not produce the required improvement or desired results, then plan on several applications. Heavy, uneven applications will cause severe injury; minimum quantities of material must be used when the turf is thin. Heavy top-dressing applications should not be used because there is not sufficient grass to stabilize the material that has been applied. Applications of top-dressing are usually made at three to four-week intervals. In sections of the country where summer temperatures are high, top-dressing should be limited to very light applications or discontinued until cooler weather prevails. During the spring, some Golf Course Superintendents top-dress with a dark colored material to absorb daytime heat and initiate growth when the evening temperatures and soil temperatures are still low. However, top-dressing with a dark colored material is not advisable for the newer greens that have a high sand content because of the likelihood of a layering or strata condition developing.

There are other benefits of top-dressing as well. These include thatch control, improved water and nutrient utilization, protection

against winter injury, alleviation of compaction, and control of grain.

Let's spend just a moment looking at each one of these benefits in detail:

A—Thatch Control: With increased fertilization, vigorous varieties of grass soon form a spongy layer of thatch or mat. The light applications of top-dressing material intermixed with the plant material help to minimize the thatch or mat buildup. Top-dressing applications also encourage new microbial activity that breaks down the thatch and/or mat and converts it into valuable organic material.

B—Less Disease: The thatch, or mat, is an ideal environment for pathogenic organisms and undesirable insects. With a proper top-dressing program used to control thatch and/or mat, disease and insect activity is minimized.

C—Improved Water and Nutrient Utilization: Since top-dressing checks thatch and mat from accumulating by separating the plant residues, tight turf matting is prevented. Therefore, it is possible for air, water, fertilizer and chemicals to infiltrate the soil profile.

D—Protects Against Winter Injury: Top-dressed greens have fewer problems from desiccation and related forms of winter injury. It is believed that top-dressing protects the crown of the plant from the winter's drying winds and varying temperatures.

E—Alleviates Compaction: Greens that have been top-dressed have better "holding qualities" for the golfer. The top-dressing material physically supports the grass plant, thereby absorbing compacting forces. Top-dressing helps develop resiliency on heavily-played greens.

F—Controls Grain: Certain cultivars of grass, whether bentgrass, bermudagrass or *Poa annua*, will be more vigorous, more inclined to be prostrate than others. Light top-dressing will help encourage upright growth and discourage grain.

Materials and Make-Up

by STANLEY J. ZONTEK, Eastern Agronomist USGA Green Section

With today's traffic and player demands, more thought than ever must go into the type of soil used for top-dressing greens. It would be a mistake to top-dress and not know what makes up the material you are using. As pointed out earlier, top-dressings can do much good for greens. However, top-dressing with the wrong type of soil can also do harm, especially with layering of a heavier soil (with high percentages of silt and clay) over a lighter soil (high sand content). The top-dressing soil should first be

tested regardless of whether you make it yourself or purchase it premixed or custom blended. A mechanical analysis can easily be done by almost any state university for only a few dollars. It will yield a wealth of information that would otherwise be only a guess. I have heard it said, and I have said it myself when making top-dressing, "this soil looks pretty good." But what exactly is, "looks pretty good?" A mechanical analysis will tell us.



New matting equipment reduces manhour requirements and provides smooth putting surfaces.

A mechanical analysis will only tell us what the particle size distribution is, i.e., the percentages of silt, sand particle sizes and clay within the mix. It will not tell us what type of soil to use. This depends on the type of greens in question and what you would like to accomplish with the top-dressing program (thatch control, southern winter overseeding, etc.). Basically, there are two and perhaps now three categories of top-dressing soils to use on greens. Remember, the type of greens that you have and what you want to do with them will determine what category of top-dressing soil to use.

1—Good Greens From Their Original Construction. In this case we should continue to top-dress with the same soil mixture with which the greens were originally constructed. We don't want any layering caused by a different top-dressing mixture. In the long run, this could hurt the green. We want the same type of soil used so that the good homogeneity the green already enjoys will continue. This is where a mechanical analysis of the actual putting green soil itself is all-important. If we know what the greens' soil is made of, we can attempt to match the top-dressing to it.

2—Poor Greens. Generally the soil in this type of green has excessive amounts of silt and clay. It is hard underfoot, won't take water, suffers from ice damage during the winter and

wet wilt in the summer. The turf is usually weak and shallow rooted. We know these greens all too well. They are our failure greens during stress periods in both the cool and warm season grass areas. If the situation is not completely intolerable, and if a diligent top-dressing program is followed using the right soil mixture, properly applied top-dressing may be an alternative to the work and membership inconvenience of reconstruction.

In this case, we would want to top-dress on an especially diligent program with a very sandy, well-drained soil. In essence, we are trying to build up a good soil profile on top of the poor one. The sandy soil mixes are basically the same as the soil used in the Green Section Specification green. We are essentially trying to build up a USGA type green *on top* of the old green. In some cases, this program may help save certain greens.

3—Recently some turf managers have felt that they could correct poor greens by frequent, light top-dressings with a "dirty sand,"—sand that contains a very small amount of silt and clay.

It is a critical procedure, and its success depends to a large extent on what type of "dirty sand" is actually used. The objective is the same: to build up a better soil profile for grass growth. Some work in this line is being tried now, both in the field and in universities.

To summarize; if you buy commercially available top-dressing soil, or if you make your own, have it and your greens tested. A mechanical analysis will determine exactly what you are using as well as what makes up the original putting green soil. With this information, a better understanding and decision can be made regarding your top-dressing mixes and program.

Don't be afraid of the sandy types of top-dressing soils, i.e., those containing 70-85 per cent mason's sand, 5-8 per cent silt and

clay, and 10-20 per cent organic matter (peat or humus). These soils are indeed a tremendous departure from the old 1-1-1 mixes of sand, soil and peat used a few years ago. But in recent years, dramatic changes have taken place in golf. With heavier play and increasing golf course demands, turf management procedures and programs have also changed. Better top-dressing techniques and better putting green construction are but a part of your success in "Managing Turf in the 70s."

Top-Dress—But Don't Smother

by WILLIAM C. BUCHANAN, Eastern Agronomist, USGA Green Section.

When we consider the topic "Top-dress But Don't Smother," the question arises "How much top-dressing can be applied before the grass becomes smothered?" The answer may well depend on exactly who is being asked. A light top-dressing to one individual may be considered heavy by someone else. To avoid this type of problem, we should concern ourselves with specific amounts of material applied to a given area. In addition, we must concern ourselves with the intervals between top-dressings. The frequency of top-dressing applications is just as important as the amounts applied.

Top-dressing, like fertilization, is best applied at light and frequent rates throughout most of the growing season. Top-dressing applied four times a year will give superior results to two applications, even though the same amount of material is applied. Generally, top-dressing is done in the spring, the fall, or perhaps during both seasons. This timing is used to help grasses overwinter in the cool-season regions, and help with overseeding and growth in the warm season areas. The point we would make here is that turfgrasses can also benefit from top-dressing on a three- to four-week interval throughout the growing season, as well as in the spring and fall.

It is difficult to estimate the amounts of top-dressing being applied by guesstimating the thickness of the soil layer on the putting green surface. Some of the material will filter through the plant leaves while the rest remains on the top of the plant. Therefore, the following chart will offer amounts of top-dressing to be used per 5,000 square feet of putting surface in order to judge the amounts of top-dressing being applied to a particular area. These figures will be given in cubic yards of material per 5,000 square feet of putting surface:

Cubic Yards per 5,000 sq. ft.	Inches Depth on Green
.9 to 1.0	1/16
1.9	1/8
3.9	1/4

If your greens are larger or smaller than 5,000 square feet, add or subtract .4 cubic yards for every 1,000 square feet over or below the 5,000 square foot figure.

With these figures in mind, top-dressing can be planned and applied on an accurate, knowledgeable basis. Once the desired amounts of material are known, calibration of the top-dressing spreader becomes the last requirement. With proper calibration exact amounts can be applied. Proper calibration of the new, scooter mounted top-dressing machines can make top dressing economically feasible again. This enables us to top-dress more frequently and use less material per application.

To illustrate, assume Superintendent Greenfield is initiating a top-dressing program. He has decided on the proper mixture and the amounts he wants to apply. His figures show his requirement will be about four cubic yards of material per green per year. He now is seeking the best results he can obtain from his top-dressing program. To realize these results, we suggest applying top-dressing four times during the coming growing season at a rate of slightly less than one cubic yard per 5,000 square feet. Thus, he would be able to apply his programmed four cubic yards of material throughout the growing season. Superintendent Greenfield will benefit more from this program than by applying the same amount of material in two applications. Of course, making one application at four cubic yards per 5,000 square foot green would not be good management. At the heavier rates, soil layers will form in the profile and there is a danger of smothering the turfgrass.

We realize top-dressing has been and still is an expensive procedure. Nevertheless, when it is done right, and with the assistance of new, efficient machinery, the cost per application is lessened and the results will more than justify the expenditures.