

Monitoring Organic Matter With Physical Soil Testing

Oglebay Resort – Jones Course
Nick Janovich, superintendent

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Issue

Cultivation practices such as aeration and sand topdressing are necessary for turf health because they help [maintain optimum organic matter \(OM\) levels](#). As a general rule, OM levels in the upper inch of the soil profile should remain between three and four percent by weight. If the levels are too high or low, turf health and playing conditions will suffer. For example, putting greens with high OM levels tend to hold excess moisture. This creates soft playing surfaces and makes turf more vulnerable to disease. Conversely, soils with excessively low OM levels can be unstable and may not retain adequate moisture for healthy turf.

On the Jones Course at Oglebay Resort, excessive organic matter had accumulated in the putting green root zones. As a result, the greens experienced frequent disease outbreaks and required regular fungicide applications to minimize turf loss. Additionally, golfers did not like the poor playing conditions and abundant ball marks created by the excess organic matter.

Action

Superintendent Nick Janovich needed to decrease OM levels in the root zone to reduce disease pressure and improve playing conditions on the Jones Course putting greens. The first step was determining exactly how much organic matter was present in the putting green soil profiles. This was done by submitting the upper 2-3 inches of the soil profile to an [accredited soil-testing laboratory](#) to determine organic matter levels.

The test results for the Jones Course putting greens showed OM levels higher than six percent by weight in the upper inch of the soil profile. This high

percentage of OM was sufficient to cause unhealthy turf and poor playing conditions.

To address this issue with minimal disruption to golfers, a program of simultaneous hollow- and deep-tine aeration was initiated. Sand topdressing applications were also made to fill the aeration holes and amend the soil. This cultivation program was conducted each spring and fall with the goal of modifying at least 11 percent of the putting surfaces during each cultivation. Light and frequent sand topdressing applications throughout the golf season helped to further dilute the organic matter. Bi-annual physical soil tests were performed to monitor progress and determine tine size and spacing for each aeration event.

Results

Three years of this aggressive cultivation program dropped the putting green OM levels to three percent by weight. This was the target level that would provide the best playing conditions possible with the available resources and existing grass species. Reducing OM levels in the putting greens has translated into better playing conditions and fewer ball marks. Furthermore, fewer curative fungicide applications are necessary because soil moisture is easier to manage.

Regularly conducting [physical soil tests](#) to monitor changes in OM was an important part of this three-year process. In fact, annual physical soil tests proved so useful that they are still used to maximize aeration efficiency. Mr. Janovich uses information from the tests to determine the tine size and spacing required to manage the OM that has accumulated at the end of each growing season. This information benefits both the maintenance department and golfers by eliminating the guesswork that was once part of aeration.



Putting green turf health and playing conditions were improved by performing regular physical soil tests on the upper 2-3 inches of the soil.