Processing Cores After Aeration

What You Do With Cores Depends On How Much You Are Trying To Change Your Soil Profile

By JOHN L. CISAR

Providing suitable playing surfaces on heavy play areas such as golf-course greens and athletic fields is a challenge for professional turf managers. Without proper care, heavy-use areas can decline in performance due to compaction, thatch buildup and wear.

What can you do to correct or overcome these problems? One of the most important tools managers have to avoid or correct the "boogie men" of turf is mechanical cultivation of soils.

Aeration, also known as aerification or coring, is a mechanical cultivation in which a small core of soil with turf is removed, leaving a hole in the turf.

Hole diameters range from 0.25 to 0.75 inch. The depth and spacing of the holes vary, depending on the kind of device you use, its speed, the soil type and degree of compaction, and soil moisture. Generally, the depth is 2 to 4 inches, and spacing is between 2 and 6 inches. Deep-drill aerators can open holes up to approximately 12 inches in depth, but do not bring an appreciable amount of soil to the surface.

Pros and Cons

Coring has many benefits. It

* Relieves soil compaction.
* Allows deeper and faster penetration of water, air, fertilizer and chemicals.
* Releases "trapped" gases.
* Improves surface drainage.
* Helps relieve localized dry spots.
* Controls thatch.
* Increases rooting.
* Penetrates through soil layers developed by improper topdressing.
* Helps reseeding during renovations.

Coring can have disadvantages, such as

* Surface disruption
* Desiccation
* Increased insect problems.

The list of problems that aeration tackles is impressive. Clearly, the benefits of coring outweigh any disadvantages. And there are ways you can reduce the disadvantages. For example, use solid tines in place of hollow tines when you must minimize surface disruption. Water-injection aeration is another option that causes little surface disruption.

No pun intended, but aeration should be a "core" part of a manager's cultural program. Coring should be done when turfgrass is actively growing and when environmental stresses are low to encourage turf "healing."

When to Process Cores

When contemplating coring, turf managers often ask what they should do about the cores that are pulled out of the soil. Should they physically remove the cores or drag them back into the soil and surface horizon?

In general, you do not have to remove cores if the objective is thatch removal and if the underlying soil profile is acceptable. If the soil is okay, you can easily break up cores or drag them directly back into the soil and surface horizon. You can use many devices for this. Dragging with mats, chain links, carpets and brushes are all common approaches.

Wait to reincorporate the cores until a bit of drying has occurred. Mechanically remove thatch puffs that remain after dragging. Core removal often is difficult in large areas. In such cases, you may opt to leave cores on the surface-they will break down over time and become intermingled with the surface horizon.

Core removal can be most useful when you need to change the profile. For example, if you have heavy soil, you can remove the cores and topdress with a sand-based material to change the physical characteristics of the profile. The other approach to soil modification is complete rebuilding of the profile. Both methods have pluses and minuses. However, when soil modification via coring and topdressing is adequate to create the desired changes, it can be a desirable option because it does not interrupt site use.

Modifying the Soil Profile

In the case of soil modification through mechanical coring, a well-thought-out plan based on the description of the present soil and on how you hope to change the physical properties of the soil will provide the best chance for long-term success.

Typically, soil-profile renovation will require frequent application and larger quantities of topdressing materials than that used for routine topdressing maintenance. Rates range from about 1/8 to 1/4 inch of material per topdressing (2 to 4 cubic yards per 5,000 square feet of surface area).

During a sand-based transition program, you should continue core removal and topdressing at least until the

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aeration unit can no longer reach the depth of the previous soil type. This will reduce the effects of soil layering.

Selection of appropriate topdressing materials will greatly affect the success of a renovation, so you should consult a soil laboratory for recommendations. However, there are other factors to consider. A successful transition from a heavier-textured profile to a sandy one will encompass changes in watering and fertilization rates and frequencies; acceptance of harder surfaces through the introduction of sand, and water and cultural management practices to avoid the development of water repellency on sand-based systems.

Judicious watering will avoid drought without increasing vulnerability to pests. When fertilizing in a sand-based system, you must take into account the change in the ability of the soil to retain nutrients. Spoon-feeding of turf becomes a more important factor in portion of the management equation. You can avoid or alleviate soil-water repellency, often associated with sands, through the use of prudent irrigation, surfactant/wetting agents and cultivation.

Even on sand-based systems, turf managers will remove cores and use straight sand topdressing (without organic matter) to reduce the organic content of their root-zone mix. Avoiding soil layering is critical when topdressing. Small differences in topdressing materials can cause significant problems due to layering. If the initial root-zone mix is appropriate, you should use a stockpile of the original mix in topdressings. Over time, some managers choose to omit organic amendments to topdressing.

Moreover, layers of organic matter and soil can occur if not enough topdressing is applied. Lighter topdressings are encouraged for thatch control, generally 1/16 of an inch (1 cubic yard per 5,000 square feet).

Successful aeration practices begin with communication. Consulting with your greens committee or employer to review the options and costs is the first crucial step, along with a characterization of your soil profile by a qualified soil ph.

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(Editor's Note: Dr. John Cisar is professor of turfgrass science and turfgrass coordinator at the University of Florida (Fort Lauderdale, Fla.).