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▶ a soil texture analysis test, which will give you the percentages of sand, silt, and clay in the infield soil,

▶ or a particle size analysis, which will give you the above, plus a distribution of the different sizes of sand in the sand fraction and the sand shape and sphericity.

These tests can cost between $30 and $80. For that price, you'll get a valuable document containing a basic list of the ingredients for your current infield skin soil.

If you like the soil you have on your infield skin, use the test results as a recipe for ordering new soil any time you need to add some to the infield. Bear in mind that soil suppliers will not be able to match the exact percentages for you, but some should be able to get close. Once you find a trusted supplier, stick with them if you're looking for consistent materials.

Rototilling calcined or vitrified clay products into an infield soil with too much clay or hardness will help fractionate it and make it more manageable.

Amending infield base soils

If you're unhappy with the makeup of your infield skin base-soil, use the soil test is your baseline.

For almost all regions and conditions the guidelines for sand, silt and clay in an infield mix are 50% to 75% sand, 15% to 35% silt, and 15% to 35% clay. If you don't have the budget to totally replace your infield skin base-soil, the next option is to amend it with other soils or manufactured soil amendments to achieve the desired soil consistency.

Some soil labs can prescribe the amounts of soil you'll need to add to achieve your goal percentages. First, a sample of your present infield skin base mix is tested to provide the initial sand, silt and clay percentages. Next, a decision is made as to how the mix must be improved.

For example, a field is tested and found to be high in sand content (a likely scenario following players' complaints of poor traction and footing). There's not enough money to replace the entire infield skin mix, so the field manager decides to amend it with other soils to tighten up the existing mix.

With a loose, sandy infield mix, blend in a loamy or clay loam soil to provide better traction. This can be done in two ways:

▶ The field manager can add small amounts of these other soils (five to 10 yards at a time) to see how well it binds up the soil (a long process because one to two months are needed to see how the field firms up),

▶ or you can have the loamy or clay loam soil tested by the soil lab.

The lab will determine if the soil is a suitable candidate to achieve the desired soil separate percentages, and, if it is, will calculate the amount needed to add to the existing mix. You must know the square footage of the infield skin as well as the

depth it will be amended to to make the calculations.

Usually, you don't need to amend any deeper than four inches. If large amounts of soil are needed for the proper results, you may find some soil may need to be removed to prevent the infield skin grade from becoming dramatically altered. Be sure that any new soil added to an infield skin has been properly screened and is very clean.

In another example, the infield skin is too high in clay and too hard. The first option for a field manager is to use a commercially-produced soil amendment, such as calcined or vitrified clay products, to till into the heavy soils to fractionate it and make it more manageable. Amounts needed would depend on how much clay is in the base soil.

Be sure that any new soil added to an infield skin has been properly screened and is clean.

Take it slow and only add three to four tons at a time. Till it into the top three to four inches of the base soil, and allow the infield one to two months to settle in order to see the true effects of the amending process. (You can always add more if needed. It's a bigger problem if you go overboard with too much and then need to reclaim some firmness.)

The second option is to till in sand to loosen the soil. A word of caution — tremendous amounts of sand could be required to achieve the proper soil separate percentages. This would require the soil laboratory to calculate the amounts of materials needed to properly alter the soil to the desired consistency.

Due to the tremendous amounts of sand needed to alter the infield mix, you would need to remove a considerable amount of soil to avoid drastically altering the infield skin grade.

Amendments are a big help

In these circumstances, it's usually a lot easier to use commercially produced soil amendments to alter the skin base mix than actual soil. These amendments will usually be needed in smaller quantities to achieve the proper fractionating effect desired in high clay infield soils.

Mix it in good

No matter what you amend your infield skin base soil with, proper mixing is crucial to provide a homogenous soil for your infield skin. Any kind of layering can lead to the top layer sloughing off at the interface between the two layers. And, of course, this will happen right in the middle of a crucial play in a game.

Rototilling the infield in two to three different directions to the proper depths should provide adequate mixing. Make absolutely certain to get along all edges.

Once it's thoroughly mixed, level and drag the infield to assure positive surface drainage off the infield skin. Roll in two directions perpendicular to each

other with a one or one-and-a-half ton vibratory roller to adequately compact the base. Finish off by thoroughly soaking the field with water to help the soil settle and glue together.

Choosing topdressings

Now that the infield base soil has the desired consistency, a topdressing should be added to make managing the surface much easier. Besides the aesthetic value of a topdressing, these materials assist the field manager in maintaining a loose layer on top for resiliency, and to act as a mulch for holding moisture in the base soils longer.

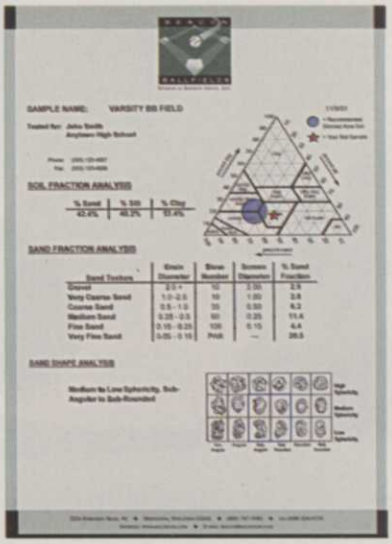
A field with a topdressing layer allows ballgames to continue in light rains without compromising traction. Infields with topdressings will also dry on the surface faster, which allows for faster field preparation after rain.

Which topdressing material is right for your situation? Field managers have a variety of different materials to custom-craft their infield topdressings for their specific infield soils, climate conditions and desired infield skin color. Here are some common conditions and topdressing suggestions:

Loose, sandy infield skins: Use topdressing materials that absorb and hold moisture (calcined clays or diatomaceous earth products). These topdressings add water-holding capacity to the loose, sandy infield skins. Moisture helps to firm sandy soils just like on a beach — as you get closer to the shoreline where there's more moisture in the sand, the sand firms up. This will provide better traction on these soils provided that moisture is always available. However, it won't do much good on a field with no irrigation and three weeks with no rain.

Low humidity, windy climates: In these areas, it's vital to maintain a high amount of moisture on the topdressing surface to further slow the rapid evaporative process from reaching the base soil materials. In addition, the extra moisture being held by the topdressing adds weight and glues the topdressing down so that strong, prevailing winds won't blow it off the infield and contribute to building up any lips. It doesn't take long for fields to dry after a

In windy climates with low humidity, it doesn't take long for infields to dry after a light rain.



A soil test will provide a report such as this one showing the makeup of your infield soil.

light rain in these areas. Topdressings that hold moisture (calcined clays or diatomaceous earth products, which are too transportable to be used in windy areas) work well, but can be mixed with low moisture absorbing materials (vitrified clays or crushed aggregate products) in small percentages for color or slightly more rapid surface drying.

An example would be a topdressing mix of 70% calcined clay and 30% vitrified clay. Increase the vitrified clay if you want the topdressing to dry faster; decrease it to dry more slowly.

High humidity, light to moderate wind climates: Fields in parts of the United States with this type of climate tend to dry much more slowly after a natural rain. These climates tend to slow evaporation and therefore require different topdressing management strategies.

There are many recipes for a topdressing in these weather scenarios. You can use any of the four types of topdressings, or a mixture. A favorite mixture involves using a higher percentage of low moisture absorbing materials (vitrified clays or crushed aggregate products) with a smaller percentage of topdressings that absorb and hold moisture (calcined clays or diatomaceous earth products). This provides a topdressing that dries more rapidly at the surface while shading the lower base soil from drying too rapidly. It allows for rapid re-entry by maintenance crews to prepare fields for upcoming games.

By varying your percentage of water-holding vs. non-water-holding topdressings, you can control exactly how much moisture you want to hold in your topdressing.

With all the varieties of topdressings available, it's wise for a field manager to become familiar with the choices, their attributes and colors. Next, the best advice is to experiment with all of the various materials until you craft a topdressing that gives you the greatest aesthetics and versatility in all weather and field conditions. **LM**

—The author is manager of Beacon Ballfields and former grounds manager for the Baltimore Orioles at Camden Yard. For information concerning a Paul Zwaska seminar on baseball field maintenance, visit the Web site **www.ballfields.com.**

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Mulch it up

DownDischarge mulching package available for some Grasshopper mowers

BY CURT HARLER

Mulching mowers are part of the answer to the landfill space crunch facing America. An analysis of residential waste composition in Cincinnati, OH, shows that yard debris accounted for nearly 20% of the total. A study in Plano, TX (population 80,000) reveals over 700 tons of grass clippings were collected and disposed of in landfills each week.

In addition to demand for landfill space, collection and disposal of this waste material is expensive, notes Dr. Peter J. Landschoot, associate professor of turfgrass science at Penn State University.

Mulching mowers are rotary mowers designed to keep the clippings circulating under the mower deck so the blades of grass will be chopped into finer pieces.

Some newer mowers have special features that facilitate mulching, including multiple rippled blades and dome-shaped decks.

Most commercial mower manufacturers offer mulching kits for their mowers. These are plates that block discharge shoots and force the clippings back through the blades to assure they become a fine mulch.

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Circle #259

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Get an edge

It's one thing to sharpen a mower blade properly. It's another thing to keep a sharp edge on that blade.

The best answer today appears to be Marbain mower blades. Several manufacturers now tout products which offer Marbain. Among them are Cub Cadet Commercial, Gravely, Great Dane, Raptor and Scag.

Competitors agree there's a marked advantage to this newest technology. Blades made with Marbain-treated steel, a proprietary heat treatment process, are extremely hard, yet not brittle.

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Circle No. 105

Cub Cadet one of several mowers with new blades

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PORTLAND, ME
www.hovermower.com
- Hover mowers come in 19- and 16-in. widths
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Circle #264

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GRAVELY
800/472-8359
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Circle #266

HUSTLER
800/395-4757
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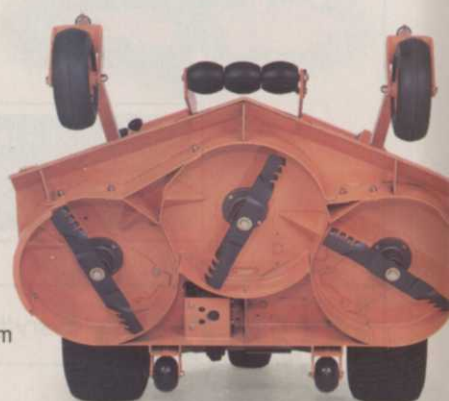

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In fact, their 50 Rockwell Hardness rating is 25% to 50% harder than blades found on standard mowers.

The process improves blades' metallurgical properties. The yield strength (or amount of force needed to deform the blade edge) is increased, and this gives the blade greater impact toughness and improved wear resistance. As a result, the blades hold their edges longer.

These new blades are tough but not bulky. With the Marbain process, one produces a lighter blade material. The metal's actual weight or density isn't changed. But it's possible to make a blade thinner and therefore lighter given its better properties, according to Cub Cadet product line manager Ken Speece. That means less work for the mower engine.

Marbain blades are no more difficult to sharpen if standard power grinding wheel techniques are used, but would be tougher to do with a hand file.

The material is effective both for mulching blades and regular mower blades.