AMETEK
http://www.ametekwater.com

DOGGETT
http://www.doggett.net

Irrigation Supply Inc.
http://www.irrigationsupply.com

NETAFIM USA
http://www.netafim-usa.com

Aqua Master Fountains and Aerators
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EWING Irrigation Products
http://www.ewing1.com

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Otterbine Barebo, Inc.
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BOSS Irrigation Systems
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GLEN•HILTON Products • Inc
http://www.glenhilton.com

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http://www.planthealthcare.com

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http://www.husqvarna.com

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Weather Matic
http://www.weathermatic.com

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space from compaction.

The result is a hard field that is unable to take up moisture to help soften it. The best solution is tilling in calcined clay to help reduce compaction and increase pore space. But be careful not to blend in too much material.

Again, add your calcined clay by a couple of tons at a time. Till it, work it, let it settle, and pack and see how it reacts before you add more. The alternative is to replace the base mix with a new mix.

Rocks and pebbles in an infield base mix can be a major problem. Your base soil should be able to pass through a 1/4-inch screen, or at the very least a 3/8-inch screen, to eliminate any rocks or pebbles.

For Oriole Park at Camden Yards, I use a 60% sand, 20% silt, 20% clay base mix. This translates to a borderline sandy loam and sandy clay loam. I've used it since the day we moved here. It's a very stable soil with little mobility. Low spots on my infield are rarely a problem, but that is also partially due to the management of the skin.

The lesson to be learned here is don't just pick any old soil for your base mix. Know what you are getting by asking for a soil particle size analysis.

And whatever you do, don't purchase a mix just because some salesman says that he has "x" ballclub and "y" ballpark using it. Most of those people have zero knowledge of what kind of soil creates the best infield skin.

Infield topdressings

In general, there are four types of topdressings on the market today. Calcined clay is probably the most widely known.

- **Calcined Clays:** Quality calcined clays are usually made from the montmorillonite family of clays. They are fired to about 1200 degrees, a point where the clay particles become stable. Stable particles will not become soft or melt into a slimy clay when wet. Instead they maintain their original shape and hardness.

The firing process evaporates the moisture in the micro pores of the clay particles, making them extremely absorbent. Particles will release absorbed moisture, but at a slower rate.

Calcined clays work exceptionally well as a topdressing for high-sand infield mixes. The firing process gives the clay particles a light bulk density. This prevents too much clay from sinking into the sandy soil. It also helps hold moisture at the surface. Normally, large pore spaces in high-sand base mixes allow gravity to pull moisture out.

Calcined clay also works on normal infield mixes, but at times it can hamper field preparations after a rain. Particles that are on the field when rain comes absorb the water to their field capacity. When you're trying to dry out the skin, the particles continue to release moisture. You have to add more calcined clay to the field to dry it up, and suddenly you have too much topdressing on the skin.

- **Vitrified Clay:** Vitrified clay topdressing is made from the montmorillonite and illite clay families. These clays are fired to 2000 degrees, causing the particles to expand. The process creates macro pores and reduces the amount of micro pores. Thus, the vitrified clays absorb much less water then a calcined clay.

If you're looking for absorption, the finer grades will work a little better than the coarse grades.

Vitrified clay topdressings are not to be used on infield base mixes with high sand content. Vitrified clays have a heavier bulk density then calcined clays, and the topdressing will sink fairly quickly as it is agitated by play and regular maintenance.

However, vitrified clays work tremendously well on normal or high-clay/silt infield base mixes. They can be used straight, but they work even better when mixed with a calcined clay in approximately a 60:40 or 70:30 vitrified to calcined ratio.

Vitrified clay in these base mixes creates a buffer zone between players' cleats and the infield base mix. This allows you to wait a little longer before you cover the field for a light to moderate rain.

Vitrified clay sheds water as it gets wet. It allows the water to roll through to the base mix until it has absorbed all that it can handle. Any excess water will run off if the grade on your infield is correct. A small amount of calcined clay in your mix will help increase your water holding capacity a little.

Unlike calcined clay, vitrified clay won't absorb water to field capacity and extend your drying time by releasing the moisture.

Because of its lack of moisture-absorbing micropores, vitrified clay products will not work as a drying agent during a game. Also, it's not highly recommended as a soil amendment for tilling into your base mix.

• **Crushed Aggregates:** The third type of topdressing material, crushed aggregates, combines various crushed stone products with crushed brick. These materials absorb minimal amounts of water, and they have a heavy bulk density.

Again, because of the bulk density, crushed aggregates should not be used on any high-sand base mixes due to rapid migration down into the mix. They can be used on normal infield mixes, and even high-clay/silt mixes, but only as a topdressing.

These topdressings perform better when enhanced with some calcined clay. Don't till these materials into your mix, or you may eventually wind up with something similar to concrete.

• **Diatomaceous Earth:** The fourth and final topdressing material is diatomaceous earth. It's made of sedimentary rock composed of fossilized skeletal remains of diatoms (microscopic, single-celled plants).

The material is very high in silica (between 86% and 94%). During processing, it is crushed, dried, and calcined to remove any organic contaminants. It becomes a very porous product that can absorb large amounts of moisture.

Diatomaceous earth works well for drying a field after rains, but it's very expensive and creates several major problems. First, it has a very light bulk density. This allows it to easily blow off your field in the wind, causing major problems with lips where your skin meets the turf edge. Also, when incorporated into the soil, diatomaceous earth tends to float back to the surface in time. It breaks down very rapidly from friction wear (dragging the infield). And finally, due to the high content of silica, it has a funny color and has shown some problems with glare on sunny days.

For Oriole Park at Camden Yards, we currently use a mixture of 80% vitrified clay and 20% calcined clay as a topdressing for our infield. We maintain approxi-

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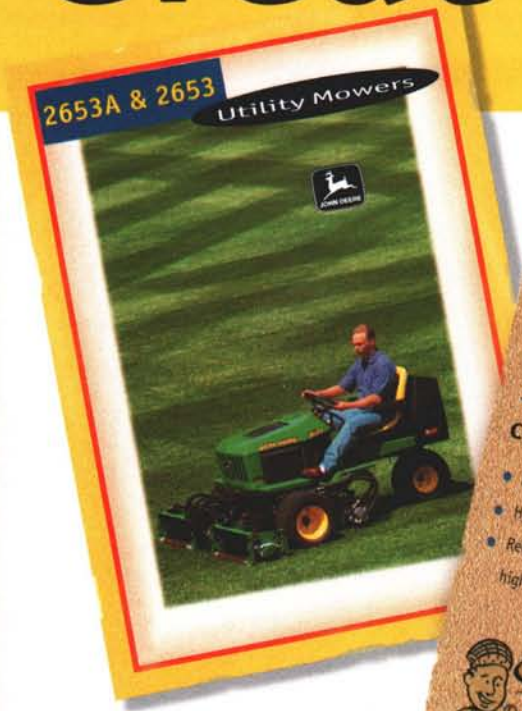
Great looking fields are in the



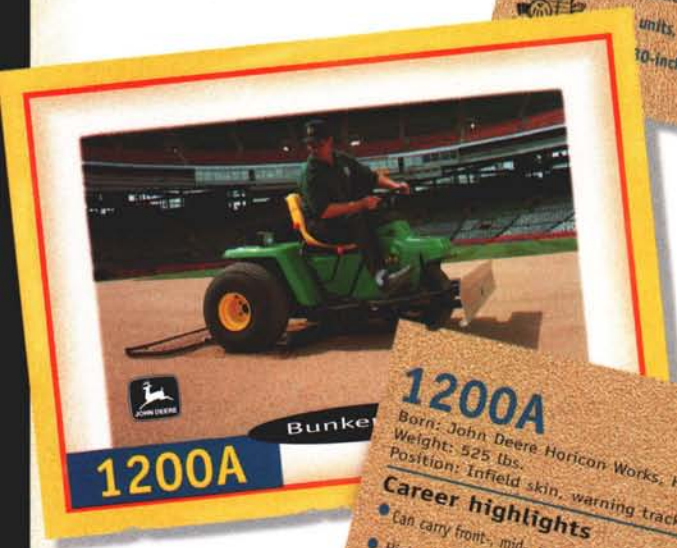
2653A & 2653 — Utility Mowers

Born: John Deere Turf Care, Fuquay-Varina, NC
Weight: 1,725 lbs. (2653A) 1,550 lbs. (2653)
Position: Outfield, any field

Career highlights

- Both feature 18-hp liquid-cooled engines
- Hydraulically driven ESP™ cutting units
- Reels and bedknives are made of induction-hardened high-impact steel

Catch this! The 2653A has the ability to power both the standard 26-inch cutting units, for a 72-inch stripe – as well as 10-inch units for an 84-inch cut.



1200A — Bunker & Field Rake

Born: John Deere Horicon Works, Horicon, WI
Weight: 525 lbs.
Position: Infield skin, warning track

Career highlights

- Can carry front-, mid-, and rear-mounted implements simultaneously
- High-torque, 10-hp engine links to efficient mechanical transmission
- Hydraulic control of rear-mounted field finisher

Catch this! The muffler and cowling design delivers only 10 dBs!

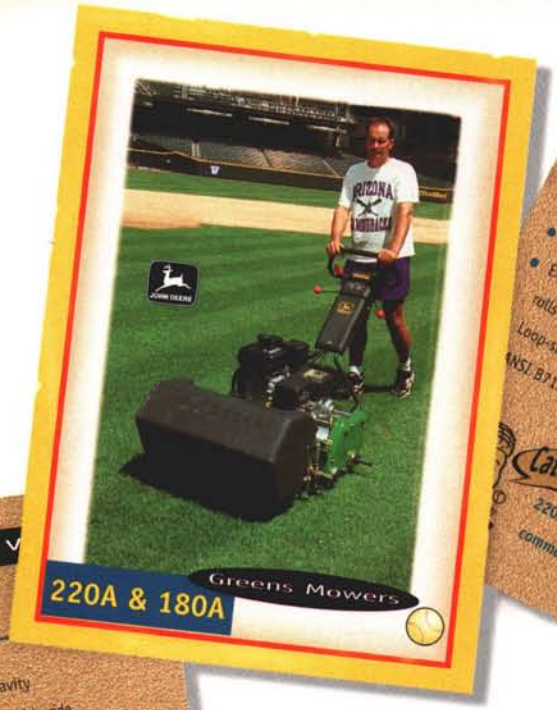
Pros who have these cards in their collection know the value of having John Deere ballfield maintenance equipment on their fields. It's a solid lineup: the Turf Gator utility vehicle with its whisper-quiet operation; the superior cut of the 2653 and 2653A utility mowers; the versatile 1200A Bunker and Field Rake; the dependable 1800 Utility Vehicle; and the straight-striping 220A and

cards.

1800
Utility V
Born: John Deere Horicon Works, Horicon, WI
Weight: 1,141 lbs. (without sprayer)
Position: All fields

Career highlights
- Durable traction unit provides high productivity, low center of gravity
- Four-wheel construction and large-diameter tires provide a comfortable ride
- Large, open operator station with two-passenger bench seat.

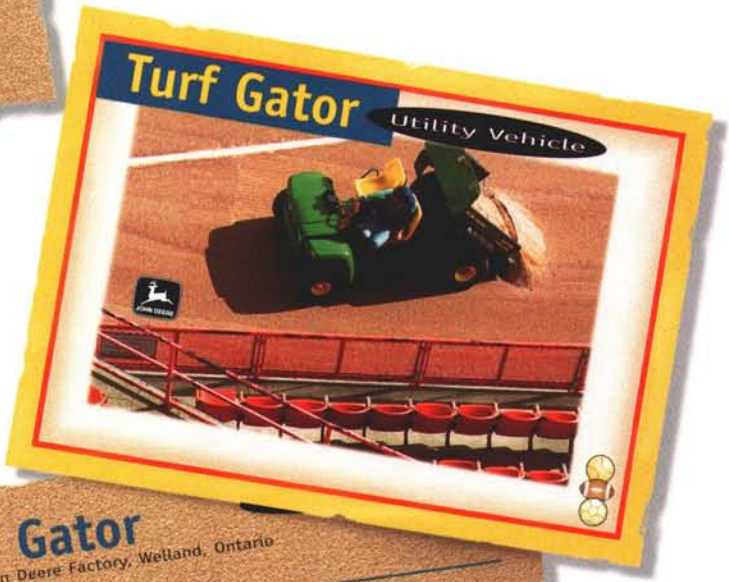
Catch this!
The 1800 has a 2,000 pound maximum payload.



220A & 180A
Greens Mowers
Born: John Deere Horicon Works, Horicon, WI
Weight: 219 lbs.
Position: Infield grass

Career highlights
- Both deliver a quality cut and dramatic striping to infields
- External differential drive splits power to both traction rolls for exceptional straight-line tracking.
- Loop-style handlebars with operator-presence system meet ANSI B71.4-1990 standards.

Catch this!
220A and 180A have a high degree of commonality in parts and features.



Turf Gator
Born: John Deere Factory, Welland, Ontario
Weight: 834 lbs.
Position: Utility player

Career highlights
- Has a hefty 900-pound load capacity
- Golf-car-style transmission makes for easier and quieter operation
- Available a variety of attachments, including med-bed and power lift

Catch this!
The Turf Gator has a psi of only 5.6

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continued from pg. 15

mately a 1/4-inch layer of topdressing on our skin areas.

Maintenance issues

• **Base Mix:** Here, the key is moisture, moisture, moisture. Moisture is what will give your base mix the corky feel that the players desire. Try to keep your infield skin as moist as possible. Soak the skin deep in the evening after the last game has been played. It then has all night to perk as deep as it can into your mix without evaporation stealing too much away from it.

During the daytime, add water as time and weather dictate. I can't stress enough how important it is to keep your field moist as long as possible. When it dries out, it takes a long time to reestablish a good moist base again.

If your base mix is getting too tight or hard, you might decide that you want to open it up to introduce some pore space into it. You want to till it; I prefer to save rototilling for when I'm adding an amendment to the soil mix and I want to mix it really well. Otherwise, I think a rototiller adds too much air to the base mix at one time. You have to spend too much time with a roller trying to firm the base mix back up.

I like to use a greens aerator to open up my infield mix. It increases pore space while maintaining most of the integrity (firmness) of the base mix. Unless you want to use it to amend the base mix, scrape off your infield topdressing or pull it to the side before you start.

I might go over it once or twice, depending on how much

Figure 2. Determining Soil Texture

There is a simple way to get an estimate of the percentages of sand, silt, and clay that are in your base mix. This experiment provides a nice, cheap way of checking soils if you are looking around and can't afford to do a lot of testing.

Step 1. Obtain a quart mason jar with a lid, like the ones used for canning. Fill it a little more than half way with the soil you wish to test. Fill the rest of the jar with water, and attach the lid tightly.

Step 2. Shake the jar vigorously for a couple of minutes to fully separate and wet the soil. There should be absolutely no lumps of soil left when you're finished agitating it.

Step 3. When you feel that the soil is fully dispersed in the solution, set the jar down and begin timing. After 45 seconds, mark a line on the side of the jar with a grease pencil or White-Out where the top of the layer of sand has settled out in the jar. Next, put a mark at the top of the next layer after three hours have passed; this is your silt layer. After 24 hours, your clay will have settled out as well.

Step 4. Measure the total depth of soil in the mason jar. Then measure the thickness of each of the three layers using your marks on the jar.

Step 5. Calculate the percent of sand, silt, and clay in your soil sample with the following procedure:

1. Divide the thickness of the sand layer by the total depth of the soil in the jar.
2. Follow the same instructions for both the silt and clay layers.
3. Multiply each of the three figures by 100, and you will have the percentages of sand, silt, and clay in your sample.

Step 6. You can now check your soil texture triangle (pg. 10) to see where the intersection of the three values places you on the triangle. Remember that this is an estimate. If you need a more precise test, it is worth your while to have a professional test done by a private lab or a county extension office.

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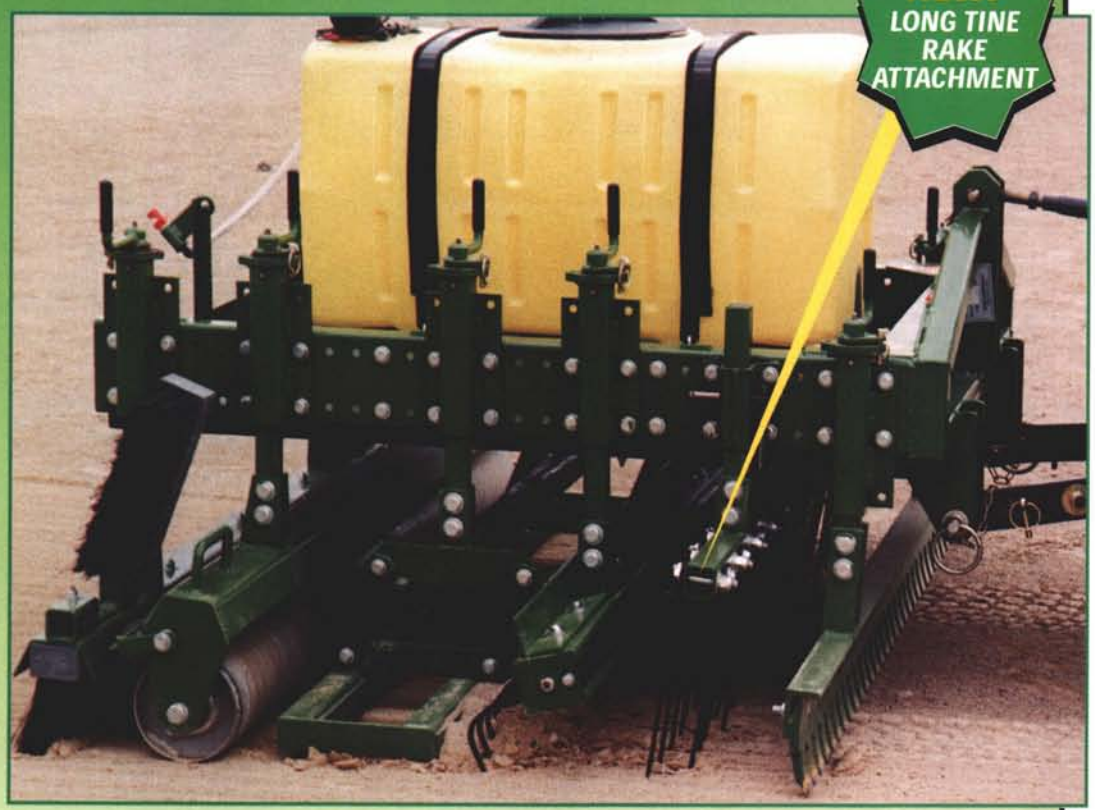

Now you can fluff up wet ball diamond surfaces and dry them out quickly, then go back and groom the area ready for play. Avoid disappointing game cancellations due to wet conditions.

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