



10 years later:

Q&A with Vanini and Sorochan on using crumb rubber on natural turf

TEN YEARS after we published an article on their research into using crumb rubber on natural turf fields, and nearly 20 years after their original research at Michigan State, *SportsTurf* spoke with J. Tim Vanini, PhD, founder and president of New Dimensions Turfgrass, and Dr. John Sorochan, associate professor turfgrass science, University of Tennessee, regarding their current thoughts on the practice.

SportsTurf: Under what circumstances would you advise turf managers to try using crumb rubber on natural grass?

Vanini: You want to use crumb rubber in high traffic situations. You can make the case for a whole field application because for example soccer field complexes where they move around are used length-wise and width-wise. We have observed a benefit to the plant through the use of less water as the crumb rubber serves as a “mulch” at the surface to help retain water.

Sorochan: Native soil athletic fields often drain poorly because they are high silt and clay, so when it rains you can tear up the field. Like adding 2 inches of sand on top of a field will help drain excess moisture, as Alex Kowalewski’s studies showed, adding ½ to ¾ inch

of crumb rubber helps take away moisture from a field’s surface. Even ¼ inch can help.

Vanini: Last year I partnered with Liberty Tire on a program that gave several schools 1 ton of crumb rubber to work with; we learned that, for cool-season turf at least, the crumb rubber

depth had to be a minimum of 25% of the mowing height to protect the crown tissue of the plants. And it’s important you have 100% turf coverage on a field before using crumb rubber—it won’t resurrect your grass on a cool-season field.

When budgets are getting less, consider that crumb rubber use can stabilize your field’s surface and make it not too hard or too soft, i.e., more consistent playing surface, improved traction, etc.

ST: How expensive is using crumb rubber and where do you buy it?

Vanini: Right now the cost is approximately \$.25 a pound. But the cost of freight plays a role in the overall cost; it depends from where the product is

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▲ **THE FOUL PLAY AREAS** were airfield and topdressed with crumb rubber one month before a baseball tourney in Cranberry, PA. The first base side (2) had crumb rubber applied, and third base side did not (3). After the tourney (15 games and 3.5 inches of rain), the first base side was just worn (4), and the third base side had no grass (5).

shipped. Besides Liberty there are other companies selling it to [sports turf managers].

Sorochan: It isn't sold through distributors though there is a landscape supply company in Tennessee that has a supply because of the research we are doing at the university (Sorochan is director of the Center for Safer Athletic Fields in Knoxville).

Vanini: Actually I am a distributor for Liberty Tire for crumb rubber that is used on natural turf only.

We have started a pilot program with one school and one municipality who are buying

more crumb rubber, and we are also involved in another project, with Rebecca Auchter of Cranberry Township, PA. *Editor's note: see article on page 8 of our April issue written by Auchter.* Because she has liked how the crumb rubber has helped in the foul territory areas of the township's Baseball Field I, Rebecca has convinced the local soccer association to let us use 5-6 tons of crumb rubber on an enlarged rectangular area on their Dick's Sportplex at Graham Park soccer field G.

Let's say you were going to do an entire football field including the sidelines; that is 80,000 square feet. Say the mowing height is

2 inches, so you are going to put down ½ inch of crumb rubber, which is approximately two truckloads; adding in freight costs, that might be \$22,000 to \$27,000.

Sorochan: We are looking at the long-term effects on the soil; in bluegrass it might stay on the surface longer but bermudagrass grows above it and buries in the crumb rubber like thatch, so you have to add 1/8 inch to ¼ inch every 2-3 weeks. It should be noted that you don't get "walk off" effects with the crumb rubber on natural turf as you do on synthetic turf. But if the turf has worn areas it will wash off.

ST: How should turf managers determine what particle size to employ?

Sorochan: For bermudagrass we currently are investigating particle sizes and are finding that varying particle size adds stability to a field. Most people are using 10/20 mesh-sized particles, which is similar to that used in synthetic turf, a bit on the coarser side. It is easier to incorporate a finer particle, for example 20 mesh, in bermudagrass as well as cool-season turf [for comparison's sake, USGA-spec sand is 30 mesh].

Vanini: I have observed that .25 particle size is better for cool-season turf. Turf managers need to be mindful when applying crumb rubber to get down at least ¼ inch depth down every time they apply. You can put down ¼ inch now and then another ¼ inch 2 weeks later. The crumb rubber works its way down, even if you apply ½ inch of 10/20 mesh.

You do run into static electricity and hydrophobicity (repelling water) issues when you first put the crumb rubber down. Use a wetting agent or spread out your applications to combat this.

ST: How do maintenance practices change when employing crumb rubber on natural grass?

Sorochan: You need to do what you should be doing—all the normal cultural practices that optimize turfgrass growth. There is no need to do anything differently, including using sand topdressing.

Vanini: You still want disruption at the surface; the sand will make it past the crumb rubber because it has a higher particle weight. Crumb rubber topdressing should be considered another tool to com-

USING CRUMB RUBBER ON NATURAL TURF

Here are some of the findings from Drs. Vanini and Sorochan's research:

"It is important to maintain a high quality, athletic-field stand that will hold up to aggressive wear, while continuing to provide consistent, stable cover. Maintaining quality turf stands that withstand athletic-field conditions has always been a challenge. This is particularly evident when many athletic-field events are scheduled to be played when growing conditions are not favorable for turfgrass recovery from wear. Proper implementation of the five primary cultural practices (mowing, irrigation, fertilization, cultivation, and pest control) and the use of non-traditional methods are important management practices in maximizing turfgrass vigor. Non-traditional methods can be cost beneficial and can extend the performance of the athletic field in the long run. The use of crumb rubber as a topdressing is a method that has demonstrated improved turfgrass functionality.

Crumb rubber serves two functions when topdressed, this blanket of rubber or "rubber thatch" reduces soil compaction and improves wear tolerance of the turfgrass stand. No different than the "padding" used to protect an

athlete, crumb rubber for an athletic-field acts as a "padding" for protecting the turfgrass. If the crown tissue area of a turfgrass plant is damaged by the cleats of an athlete, the turf will quickly die because the point of rejuvenation has been damaged beyond repair. However, if crumb rubber is used, the crown tissue of the turfgrass is protected by the crumb rubber. This limits the direct impact of an athlete's cleat/shoe, thus resulting in the prolonged wear tolerance of the turf stand.

No question there have been concerns about topdressing crumb rubber if too much water takes over an area i.e. rainfall or excessive irrigation. Crumb rubber is half the density of a soil particle, thus causing it to float. Strategies to deal with this problem are first, be in tune with the weather second, do not put too much crumb rubber down at one time. Our recommendation is that no more than ¼ inch of crumb rubber should be topdressed in a single application. Remember, you can always add more crumb rubber. A final strategy is to fertilize more frequently, budget permitting. Obviously, the grass will grow more vigorously and crumb rubber will gravitate quicker down to the surface.

plement your normal maintenance practices. Using crumb rubber is not bullet proof; you will still have wear but it will wear more slowly.

ST: How should turf managers respond to any environmental concerns expressed over the use of crumb rubber?

Sorochan: The Environmental Protection Agency has tested and approved the use of crumb rubber in synthetic turf. In natural grass the likelihood of any exposure to the crumb rubber is unlikely.

Vanini: I agree with John; other agencies, such as the Connecticut Agricultural Experiment Station, and New York State, have looked at it and found no health problems. Parents should be more concerned about exposure on synthetic turf, not to mention the heat factor with synthetic fields. Microbial activity eventually breaks down the rubber in natural turf.

Sorochan: Also, with the moisture that is held on the natural fields, it means less dust in the air. We should rely on research data to understand that no results show the crumb rubber to be unsafe; rather, using it makes fields safer.

Vanini: More research is coming regarding the environmental, agronomic, and biomechanical benefits of using crumb rubber. It can make a difference in poorly managed fields. ■

CRUMB RUBBER SUPPLIER ANSWERS QUESTIONS

WE ASKED ONE OF THE MOST PROMINENT COMPANIES supplying crumb rubber for natural turf and synthetic turf fields, Liberty Tire Recycling, to answer some questions about their products. John Ripp, an account executive for Liberty, responded:

ST: How should turf managers wanting to incorporate crumb rubber into their natural fields determine what particle size to buy?

Ripp: It all depends on what type of turf stand it is. If it's a situation where we are treating a tight Bermuda or bentgrass stand, a 20 minus or 30 minus will work just fine. If it's a cool season grass stand, we suggest the 10:20 mesh (commonly used for synthetic turf infill), a 1-3 mm mesh or 1-5 mm mesh (commonly used in track construction).

ST: Do you have recommendations for how to best incorporate the product—when and how often?

Ripp: Although it may be directly topdressed over existing turf, we suggest you aerify first and then topdress. We suggest applying a ¼ inch per application(s) (600 lbs/1000 sq ft.) and brushing it in. [We suggest] two applications in medium traffic areas and three applications in heavy traffic areas. In cool season turf, ¾" can be achieved with two 900-lb./per 1000 sq. ft. applications.

ST: How (or perhaps more appropriately, where) can turf managers buy your product? Any recommendations on reducing shipping costs?

Ripp: Liberty has seven locations in the US and three locations in Canada where these products are available. As with any product, the more you order the lower the freight cost. I suggest you develop a plan of attack and order the amount necessary to complete a job successfully. For crumb rubber to be effective, multiple applications within a month's time are preferred. The objective is to cover and protect the crown of the plant as soon as possible.