

Researchers working with sports venues to make them 'greener,' sustainable

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Making sports venues such as Pocono Raceway sustainable is an organizational challenge that involves proper signage, messaging, color codes and containers, Penn State researchers have found. Credit: Michael Houtz

Ecosystem and bioproduct researchers in Penn State's College of

Agricultural Sciences are working with professional sports franchises to make their venues "greener" and reduce the environmental impact of their events.

Attaining the goal of sending no materials to landfills after sporting events—instead composting some refuse left by crowds and recycling the rest—is as much a challenge of changing the culture and behavior of the fans as it is developing new, biodegradable packaging and eating utensils, according to Judd Michael, professor in the departments of Ecosystem Science and Management and Agricultural and Biological Engineering.

"We have found that making sports venues sustainable is an organizational challenge that involves proper signage, messaging, color codes and containers," he said.

"Fans have to be persuaded to want to act in an environmentally conscientious way, and venues have to provide clear instructions and make it convenient to participate in their composting and recycling programs. Biomaterials science is just a part of the bigger-picture challenge, which also involves supply chains, marketing and psychology."

A few years ago, Michael began working with the President's Office, Intercollegiate Athletics and the Office of Physical Plant at Penn State to reduce and eventually eliminate the stream of material that goes to a landfill after Nittany Lion football games at Beaver Stadium. That effort is a work in progress but for several years has resulted in 100 percent diversion from landfill for a portion of the stadium.

"At Penn State, we strive to make our own academic and sports operations as sustainable as possible and have learned many lessons as we moved to the forefront of collegiate greening efforts," he said.

"Compostable materials are a little more expensive, and sports venue owners say, 'Look, I don't want to spend 5 percent more on these plates if the fans throw them away rather than compost them.' We are making big strides forward in trying to understand signage and marketing and the psychology of fan behavior so they will do the right thing with their materials."

More recently, Michael has been working with Pocono International Raceway to help that venue become sustainable. The northeastern Pennsylvania facility is a leader in NASCAR's systemwide initiative to go green. Pocono Raceway owner Brandon Igdalsky contacted Penn State in 2015 to help him make his venue the most environmentally responsible track in the entire sports world.



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"He wanted us to help him move closer to 'zero waste' at his events and work closely with Pocono Raceway on its long-term sustainability plan," Michael said. "Some people said NASCAR fans wouldn't buy into recycling, but our surveys proved that fans not only cared but wanted the raceway to be 'greener,' which aligns perfectly with the third-party data NASCAR also has collected in its analysis around sustainable behavior and aspirations of race fans."

Michael's research team recently wrote Pocono's first comprehensive sustainability report to help highlight the track's progress in solar energy production, waste diversion and water management.

Michael's lab and Penn State recently entered into an agreement with PepsiCo to help guide it toward sustainability. The owners of Frito Lay have been working with Penn State to develop compostable bags for their chips and other snacks. The packages not only have to be biodegradable but must convey the idea to consumers in a way that promotes the products, Michael pointed out—perhaps a trickier concept than most realize.

"We looked at package designs and consumer preferences and collected a lot of data to help PepsiCo, and it has turned out to be a great research project for one of my doctoral degree students," Michael said. "We did 1,500 student surveys and hundreds of face-to-face interviews to help

them design the bags."

Michael's lab can perform an analysis of sports venues and provide a comprehensive look at waste generated during events, with an eye toward recyclable and compostable waste. He has consulted with the Pittsburgh Pirates, Philadelphia Eagles and other sports franchises, and he gives his classes projects such as "come up with a plan to make the Penn State Pegula Ice Arena operate in a 100 percent sustainable fashion."

The University's composting facility, which handles all the waste from dining halls and food concessions on campus and generates mulch used in the landscaping that makes the University Park campus so attractive, provides testing and experimental support for Michael's lab. The composting facility determines if packaging, such as the new Frito Lay chip bags, is truly biodegradable and compostable.

Penn State is a member of the Green Sports Alliance, as is the Big Ten and most every other college conference and most major league professional sports franchises. Michael recently was named the Big Ten representative for the Green Sports Alliance.

The momentum toward making sports venues sustainable is a growing trend, Michael said, but there are still many challenges to helping venues achieve their goals of saving money while being greener.

"The Department of Agricultural and Biological Engineering is providing cutting-edge research and service to industry partners to help them become more sustainable," he said.

Provided by Pennsylvania State University

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