

Flawed Turfgrass Research Report Gets Mass Media Attention . . . Now What?



Once misinformation gets worldwide media coverage retracting it is like trying to put spilled coffee back in a cup.

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Turfgrass provides numerous environmental benefits and its ability to store carbon is one of them; but when a recently published and peer reviewed research study regarding the ability of turfgrass to store carbon reached the opposite conclusion of previous studies, more than a few turfgrass researchers and green industry experts were scratching their heads.

The study in question (containing miscalculations which we'll address in a moment) got extensive media coverage because of the negative conclusions it presented. According to Amy Townsend-Small, Earth system science post-doctoral researcher at University of California, Irvine and the lead author of a study that was accepted for publication in *Geophysical Research Letters*, a journal of the American Geophysical Union (AGU) it was suggested that the carbon-storing benefits of lawns were counteracted by fuel consumption.

Focusing on four parks and lawns in Southern California, the Townsend-Small and colleague Claudia Czimczik study found that greenhouse gas emissions from fertilizer production, mowing, leaf blowing and other lawn management practices were four times greater than the amount of carbon stored by grass in parks and lawns. The UCI study was supported by the Kearney Foundation of Soil Science and the U.S. Department of Agriculture.

The reported conclusion reached by the Townsend-Small and Czimczik study was fundamentally the opposite of previous research findings regarding carbon sequestration in turfgrass and the amount of carbon resulting from the care and maintenance of turfgrass.

The study generated plenty of press coverage by way of the American Geophysical Union (AGU) and a press release distributed by the University of California (Irvine). Publications and websites such as *USA Today*, *National Geographic's Green Guide*, *Science Daily*, *China Meteorological Administration (CMA)*, *First Science*, *Discovery News*, *Yahoo News India*, and just about every science publication, newspaper, news outlet, green industry website and various blogs carried assorted headlines that read:

- "Urban Green Space May Aid Global Warming"
- "Green Spaces (Lawns) Are Not So Green"
- "Urban Lawns Contribute to Climate Change"
- "The Grass Isn't Always Greener"
- "Lawn Care = Bad for the Environment?"
- "City Parks May Be Bad For The Environment"
- "Study Fumes Over City Park Grass"
- "New CO₂ Threat to the Planet"

There was only one problem: The authors of the Amy Townsend-Small research report acknowledge their study contained errors and miscalculations.

So how did the errors in the study come to the surface? Dr. Thomas Rufty, Bayer Distinguished Professor, Environmental Plant Biology, North Carolina State University questioned the findings based on previous research models and proceeded to point out several discrepancies in the Townsend-Small research report:

Rufty commented, "Regarding carbon sequestration and greenhouse gas emissions in urban turf by Townsend-Small and Czimczik, we suspected an error in calculations because their numbers were so different from the models we are developing." Rufty was challenged to find out why there was a discrepancy. He reported that two of his Ph.D. students took apart all of the assumptions and calculations in the Townsend-Small paper and found mistakes. When asked to provide a complete analysis of the situation ... they immediately presented their findings. Rufty reviewed their findings and confirmed they were right and that errors had been made.

Rufty then emailed the authors and they confirmed there was a mistake in their spreadsheet that no one had caught during the writing or peer review. The authors said 'someone' had informed them of the mistake and a correction was sent to the journal. Their corrected calculations showed that CO₂ generation was 122 g m⁻² yr⁻¹ rather than 1238 g m⁻² yr⁻¹ in the paper.

"This is important, because it makes the situation with 'ornamental lawns' carbon neutral to positive, depending on some of their other assumptions about fertilization. The students also are arguing that the authors made another mistake that will result in decreasing the estimated CO₂ further – they did not take into account C speciation during combustion. Depending on the kind of mowers used, this will lower levels by another 15 to 50%," according to Rufty. Rufty added, "The Townsend-Small and Czimczik paper is being viewed as an important publication for the carbon sequestration debate. I'm hoping our efforts will help correct this misperception."

It should be noted that Dr. Rufty isn't alone in questioning the study. More than two dozen leading turfgrass extension specialists and turfgrass researchers from across the nation are currently reviewing the study and they have already indicated there are numerous concerns above and beyond miscalculations. They have indicated (under independent and non-collaborated review) that they are not only questioning the methodology that was used, but the absence of critically important information. It is likely the authors can expect to receive numerous questions and valid concerns following these reviews, and they can also anticipate a request to offer some valid explanations.

Now that it's apparent that flawed research (miscalculations alone) has received broad media coverage worldwide, and as of this writing the misinformation is still posted on the websites of the University of California (Irvine), the UCIrvine Today NEWS, the University of California UC Newsroom and on the American Geophysical Union (AGU) website (despite concerns expressed to UCI) the real question is, how do you get the same media coverage for the corrected version of the research report which will likely show that turfgrass has a positive impact on the environment when it comes to carbon sequestration? The challenge is much like getting the genie back in the lamp . . . or trying to get spilled coffee back in a cup.

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