



Air-induction nozzles contain an “inverted water balloon” with an air bubble inside a water droplet. That bubble actually helps with coverage by breaking the droplet apart better upon contact with the plant.

GETTING THE DRIFT

When it comes to being precise with an application, the right nozzle makes all the difference. By Kyle Brown



HOW DOES IT WORK?

The transformation of the nozzle to what they’re using today is huge. Today, you’re hitting the plants at different angles for better coverage. What we’ve seen is great drift control and very good coverage for the fungicides. The controlling factor is the nozzle: the finer the droplet, the more coverage.

A good compromise for that is the air-induction nozzle. The nozzle creates a kind of inverted water balloon, where water is the cover and air is on the inside. They’re still fairly large droplet sizes, but they’re able to splatter and cover the plant. Drift is a huge issue on golf courses: you don’t want to waste money when it drifts onto a non-target site, and golf courses are surrounded by communities. The air-induction helps keep it where it needs to go.

— Dr. Mike Agnew, Syngenta field technical manager



WHITSFORD COUNTRY CLUB

Kris Givens is a new convert to air-induction nozzles. As long as he’s been at the Whitsford Country Club in Exton, Pa., he’s used floodjet or raindrop nozzles to deliver his applications to the 30 acres of sprayable bentgrass fairways.

But recently he’s seen research that has pushed him to make a move.

“Last year I started looking at some of the research that had come out and seeing what other superintendents have been coming up with and I just thought, ‘Wow, those are some impressive numbers,’” says Givens. “Talking about the precision that these things have, getting the droplet to that size and getting even more coverage to hit the plant.”

Air-induction nozzles have been around for a while, but they’ve started to get more attention in the golf market because the technology promises good coverage with almost no drift. Being able to be more precise with fungicide and herbicide applications makes all the difference for a superintendent working with a limited budget and tools.

“The EPA is hitting hard on us,” says Givens. “They’re taking products away and not giving us replacements. Anytime I can lengthen the effectiveness of a product, I’m going to. They say it’s only two or three days, sure, but two or three days on an application, after a couple of applications it becomes six days or so in a month. After two months, that’s a whole application I’ve made up.”

Givens fights against anthracnose, summer patch and fairy ring, and uses mixes made to both combat those threats while providing for his turf. With the air-induction nozzles, he’s making the expensive chemical mixes more effective and specific in targeting around the course.

“I’m hopefully getting longevity out of those sprays,” says Givens.

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"I want to get rid of that fungal pathogen and save some money with these chemicals. When I talk to other superintendents, they're looking to be able to get a better handle on pathogens too. That's really what's driving me more than anything here. Once you make your selection of a chemical, that's pretty easy now. But it's all in how you apply it."

On top of being more precise, the air-induction nozzle provides a little more solid coverage in the form of an air bubble inside the medium-coarse droplet, which bursts upon contact with the plant. Givens has been watching the research, but he prefers to see it in action on the course.

"It's just math with the researchers, but it's practicality with superintendents. You've got to be able to apply it in the field," says Givens. "It's such a science, which is what makes it fun and interesting. It's getting that coverage with that droplet size with the precision to hit exactly the disease I'm dealing with."

BENT CREEK COUNTRY CLUB

Superintendent Jim Loke attributes his habit to volunteer parts of his course to being a frustrated superintendent and scientist, waiting to see if new technology lives up to its promise for the golf course industry. It gave him the chance to see air-induction nozzles in action when Dr. Mike Agnew, Syngenta field technical manager, and others tested their effectiveness on the course.

"Anytime I've had an opportunity to share with the industry in some capacity, I've put my foot forward and volunteered for whatever research is necessary," says Loke, of Bent Creek Country Club in Lititz, Pa. "About a year before the testing took place, Dr. George Hamilton did some spray pattern testing that really caught my eye. I didn't realize how efficient some nozzles were and others weren't for different jobs."

Loke went with a fairway that had seen its fair share of battles with dollar spot for testing, looking for relationships between the type of nozzle used and the control of dollar spot.

"We'd had tremendous bouts with dollar spot on this fairway," says Loke. "It's a very large bentgrass fairway, and we sprayed the daylights out of it."

They worked with TeeJet to run the tests, checking for changes between floodjet, rain-drop and air-induction nozzles, according to Mark DelSantoro, who was a territory rep for Syngenta at the time.

"The two objectives were really to look at drift and droplet size and how that affects the fungicide," says DelSantoro. "Covering the plant

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in an effective way and reducing drift were really the goals here.”

With different nozzles delivering the full range of droplet types, they were able to see which gave the best coverage for the dollar spot fungicide. The results showed that the nozzles he had been using might not be the best choice for the application.

“Many of us at the time were using rain-drop nozzles for dollar spot control,” says Loke. “Through this process, we discovered we were using the wrong nozzle. There are nozzles that have coarse droplets and nozzles that have fine droplets we had to find out which was the most effective nozzle for the chemical we were using.”

Chemicals are generally listed for a specific size of droplet meant to provide the best coverage with the least amount of drift from air movement. In this test, the other nozzles worked well, but the air-induction nozzle worked best overall, says DelSantoro.

“The air-induction was much better as far as droplet size,” he says. “In its ability to handle all situations, it was the best based on the research. The other nozzles might’ve done a little better, but that x-factor had to do with the wind. The AI was first considering all the varying conditions that a superintendent has to spray in.”

Because of the air bubble inside of the droplet, droplets from the air-induction nozzle gave a much more precise application, according to DelSantoro. The best setup gives the superintendent multiple nozzles to choose from depending on the chemical to be applied and the situation, but the air-induction nozzle gives solid coverage when dealing with wind.

“A superintendent today probably has two or three nozzles available to them,” he says.



“You rotate based on the environmental conditions and what you’re putting out. But drift is the biggest thing. If there’s any type of air movement, you’re going to want to use air-induction, which is going to get you good coverage and efficacy for the product.”

For Loke, the drift means more than getting the product exactly where it’s needed: it also means that he keeps it from going where it shouldn’t.

“We’ve got a golf course surrounded by homes, so we have pets and children to worry about,” he says. “The air-induction is good for that environment, when you want to put something down very accurately. It’s good for cost-efficiency, too. When you’re putting down the exact chemical on your exact target, you’re saving money in the long term and being environmentally responsible, too.” **GCI**

Above: Superintendents use nozzles like these TurboDrop DualFans to get precise coverage on the foliars from multiple angles. Below: Air-induction nozzles produce smaller droplets that handle drift well.



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