

*Max Brown followed up on Robert Trent Jones's 'crazy' idea to apply fertilizer through the irrigation system*

# It's a crazy idea... and it worked!

BY LARRY KIEFFER

POMPANO BEACH — Max Brown, Ph.D., knew he had a winner very shortly after he opened a business that launched an industry.

"I'm a very analytical person," says Brown, who founded Liquid Ag Systems Inc. nearly 16 years ago. "But once I see the numbers, I'm easy to convince."

The "numbers" that convinced Brown his business had a good chance of success were the results of a study which showed

that liquid fertilizer could be applied to turfgrass through an irrigation system at least as uniformly as granular fertilizer could be applied by mechanical spreaders.

"That was my big doubt," says Brown. "I knew there were some solid advantages to using liquid fertilizer — that's why I started the business — but I was worried about uniformity. I was sure we would get some patterns — big circles of green surrounded by undernourished turf — but the opposite turned out to be true.

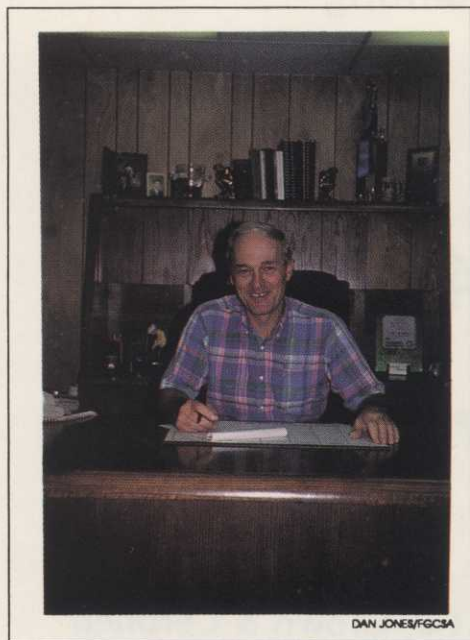
"The frequent, light applications of liquid fertilizer minimize the effect of sprin-

kler patterns and turn out to be at least as uniform as dry fertilizer applied by a broadcast spreader, which is what most golf courses used at the time."

Although the uniformity study was completed in May, 1973, only two months after Brown had hung out Liquid Ag's shingle, it would be another four years before the agronomist-turned-turfgrass consultant could put himself on the payroll.

"We started very modestly," he said.

Brown got the idea for his business while working as a staff agronomist for golf course architect Robert Trent Jones.



DAN JONES/FGCA

*Dr. Max Brown, founder of Liquid Ag*

## What's the big deal, anyway?

What are the advantages to using liquid fertilizer, or "fertigation" as it's called?

"The plant can't tell and doesn't care what form it gets its nutrition in, but there are several advantages," Brown said.

Robert Trent Jones originally investigated the process for two reasons:

- **Eliminate** fertilizer burn.
- **Avoid** closing course to apply fertilizer, since fertigation is done at night.

Brown's customers have given him some more:

- **Control** — it allows the manager to be completely in control of his nutrition program rather than putting

it in the hands of a technician.

- **Greater efficiency** — frequent light applications minimize loss from leaching or washout and also provide a steady supply of nutrition, eliminating the cycles of growth and starvation.
- **Application** cost is less. Once equipment is paid for (payback is less than a year and it lasts for at least 10), there is no application cost.
- **Materials** cost less — frequent light applications of liquid fertilizer give all the advantages of "timed release" dry formulations at a fraction of the cost.



DANIEL ZEJAZEK

Liquid Ag's 7,000-square-foot plant in Pompano Beach is now one of three facilities the company operates in Florida

“The Jones organization owned an irrigation company and Mr. Jones was always looking for new possibilities,” Brown recalls. “He asked me to look into the feasibility of applying fertilizer with the water in the sprinkler system.

“We looked at it and talked to engineers and other people that had been doing some of it and found that, under certain controlled conditions, it might be possible to fertilize golf courses through the irrigation system, especially in Florida where irrigation is used extensively.”

Jones didn't pursue the idea but Brown, who had grown weary after eight years of trotting the globe for the indomitable architect, became a golf course turf consultant and devoted his spare time to working on the “fertilization” concept.

“It's interesting now, looking back,”

Brown says. “We talked to some of the big names in the turf industry — the people who wrote the textbooks and other well-known professors.

“Most of them said, ‘Well, it's an interesting concept but it's not a very good idea and it probably won't work.’

“People in the golf industry said the same thing.”

But Brown wouldn't let go of the idea.

Perhaps he picked up his tenacity from Dr. Gene Nutter, who had recruited Brown off the campus of Iowa State University for a University of Florida research assistantship.

“I would hate to be any person standing between Dr. Nutter and a goal he has set,” Brown relates.

Ironically, although he worked with Nutter on some projects over the years,

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Brown never took a class from him.

“When I arrived, I learned he had left to start the superintendent training program at Lake City Community College,” Brown recalls, “so I ended up getting assigned to some new fella' named Horn.”

The “new fella',” of course, was the late Dr. Granville C. “Granny” Horn,  
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who led the UF's golf turf program into a period of national prominence.

So Brown decided to apply the analytical skills he honed under the legendary Horn to the idea spawned by Jones, one of the most creative men in golf.

Technically, he knew "fertigation" was feasible and he knew the process had two major advantages over dry fertilizer:

- No possibility of fertilizer burn.
- No need to close the course for fertilization, since it's applied at night.

So in March, 1973, Brown took the plunge.

He leased a 1600-square-foot building on a quarter of an acre in southwestern Broward County and hired a former student, who had helped investigate the concept for the Jones organization, as general manager, technician and custodian. Brown's wife, Sally, kept the books three

days a week.

"I want to make it clear that we didn't invent this process," Brown says. "Other companies were selling liquid fertilizer and the equipment to apply it. But we were the first to base our business on the concept of fertilizing turf through the irrigation system."

From those early beginnings, Liquid Ag Systems Inc. has grown to 25 employees working in facilities in Pompano Beach, Fort Myers and Tampa.

The Pompano Beach plant was moved to a bigger site — 7,000 square feet on two acres — two years after Liquid Ag was born.

"We needed to be on a rail siding and of course the building was nowhere near big enough," Brown said. The Fort Myers plant, which has 11,000 square feet of production and office space, opened in 1984. The Tampa facility, which has no administra-

tive offices, opened in 1987.

The fledgling company had only two technological problems to overcome, Brown says, one mechanical and one chemical.

"It was very hard to work out the chemistry for some of the micronutrients, particularly iron and manganese," he said. "Getting them into a clear liquid form was not easy."

The Iowa native says he cannot remember how many glass jars were filled with sample formulations before they solved the problem.

"Until we got it right, they all had reddish-brown sediment at the bottom within a couple of hours after we filled them," he said. No superintendent is going to water his turf with a liquid that will stain the sand in his bunkers.

Solving the manganese problem paid an unexpected dividend a few years after the

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company started. South Florida was experiencing a mysterious, severe turfgrass decline that had agronomists, pathologists and all the chemical companies stumped.

"It was brutal," Brown recalls. "I could name half a dozen top-notch superintendents who lost their jobs when they lost their turf and nobody could tell them what had happened.

"We began to work on it and so did some of the major chemical companies and we finally figured out that it was a manganese deficiency.

"We adjusted our formulas and in a matter of days, courses that were using Liquid Ag were looking a lot greener and healthier than those that weren't. The turf responded amazingly quickly. It sure didn't hurt business."

The mechanical problem had to do with the method of injecting the liquid fertilizer

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## 'We're all responsible for the future'

POMPANO BEACH — Two years ago, Liquid Ag founder and president Max Brown decided to install complete containment and protection programs at all three plants.

"Our goal was not to allow any foreign materials other than rainwater to hit the ground," he said.

"It's for our own benefit to do it the best way we can," he added. "We are going to be looked at pretty closely in the industry. Regulatory agencies will be inspecting what we are doing.

"We want to be a model operation.

"I expect in a short time, regulation of all agricultural chemical interests will be very tight. This will sort out the companies that haven't been complying with the regulations: it's going to be so costly (to change their ways) that they may not be able to afford to do it.

"The companies that have complied with regulations and budgeted to get the job done are the ones that will survive and still be in the business."

"We have never had any major problems, but anything can happen. There are possibilities of a spill or some kind of mistake that might endanger the aquifer.

"It should concern us because we all drink the water. We have families, children and our grandchildren's future to think about. Whatever we are doing — or others are doing — to the groundwater and the environment has an effect on all of us.

"We are all responsible for the future."



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into the irrigation system.

"The early systems were not flow-sensing," Brown says. "Fertilizer was metered in at a set rate regardless of how much water was flowing. Later we learned that it is very important to maintain precisely the proportion of fertilizer to water.

"Whether one sprinkler is running or 30, the proper amount of fertilizer must be used.

"The flow-sensing injection system has evolved through several generations. We try to take advantage of the latest technology," says Brown, who does not patent any of the equipment he designs or the formulations he uses.

"The technology evolves so fast. The key thing is to be at the leading edge. Why spend a lot of money to patent or copyright something that might be obsolete by the time you get it done?"

Although Liquid Ag is in the business of selling fertilizer, Brown says hardware accounts for about 10 percent of his golf course business.

"Well, you have to make it easy for a prospect to become a customer," he says. "So we handle the storage tanks, meters, control boxes and injection pumps. We sell them and we install them."

Golf courses — Liquid Ag has "something less than 350" of them on its client list — account for about 60 percent of the company's business. Lawn care, nurseries, vegetable farms and citrus are the other industries it serves.

Nurseries, Brown notes, have been using fertigation for some time, but, until he founded Liquid Ag, most were using home-made systems.

Although he has a few clients in North Florida, nearly all his business is in the central and southern regions of the state.

"It's very expensive to move this stuff around," Brown says. "The freight is not cheap."

Expansion is a possibility, he says, but no firm plans are in the works.

"Originally my thought was to work the company personally only to help get it started and get the concept established. My real love and interest was in golf course consulting.

"But with the company growing so rapidly, it now demands so much of my time that I sometimes think it controls my time more than I control it.

"Still... looking back after 15 years at what was pretty much a crazy idea at the time and seeing something you helped start develop into an accepted standard in the industry..."

It's hard to top.

**EDITOR'S NOTE:** *George and Charlotte Jones contributed to this story.*

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