

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.

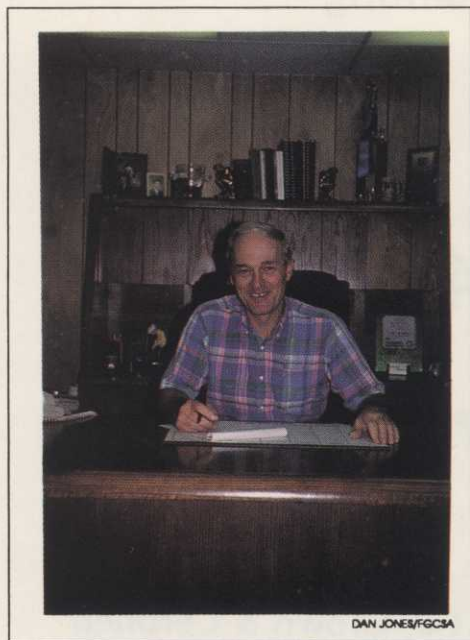
"The frequent, light applications of liquid fertilizer minimize the effect of sprin-

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/FGCSA

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,

- Current VP remembers when he was the only employee in the plant68
- Company has model containment program71

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,
(Continued on page 70)

Firm's vice president recalls the 'good old days' when he was the only employee at the plant

He never knew why I had such a smile on my face!

BY GEORGE JONES
& CHARLOTTE JONES

POMPANO BEACH — Ben Pittman, vice president of operations at Liquid Ag, was the third person hired by the new company. He started as the truck driver.

"Back in 1974, Ed Darlington (a former colleague of founder Dr. Max Brown and the firm's first employee) hired me. We were a small company.

"Max was busy doing a lot of consulting at that time and was not around very much. It was primarily Ed and myself. Sally, Max's wife, came in three times a week and did all the office work. We also had Howard, a retired bookkeeper accountant who worked half a day on the days Sally wasn't there.

"Business was real slow. But we needed a telephone answering service because there would be times when Ed would be out in the field and I would be making deliveries.

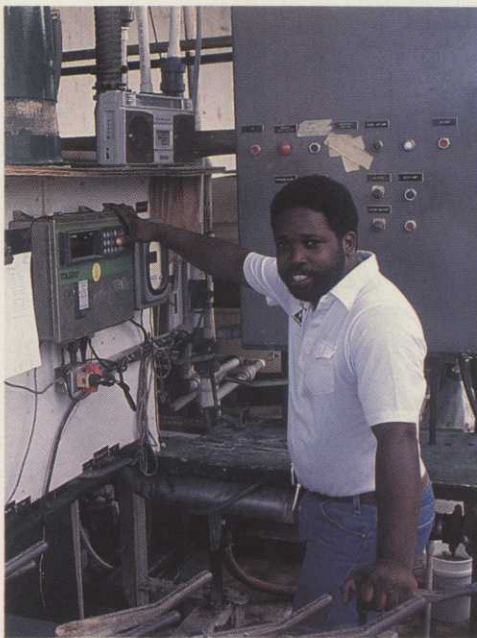
"Sometimes I'd be the only person there. I'd have to load the trucks, unload products coming in, batch and load outgoing product. When I had everything ready to make a delivery, I'd just lock up and the answering service would take over.

"I remember one time a customer asked for his order 'today.' So I hung up the phone, batched all the material, loaded the truck, typed up the paperwork, then I washed up, got in the truck and went straight out to the customer.

"When I got there, he said, 'The guy I talked with on the phone said that he could get it out here pretty soon, but I didn't know it would be this fast!'

"The customer never knew why I had such a friendly smile on my face."

In his first two years, Pittman eventually learned all the procedures at the plant, leaving Darlington free to spend all his time out in the field.



DAN JONES/FGCSA

Ben Pittman, Liquid Ag's vice president of operations

"The biggest problem we had in the early days was finding equipment that would be compatible with the fertilizers we made. The polypropylene we use today wasn't available in 1975. Our first systems were made from PVC and we had to use cast iron pumps.

"A lot of people laughed at us back then, but we knew we had a better way to get fertilizer to the plant so we just kept on going."

Liquid Ag depended on nursery business at first, but a small public course across the street from the firm's tiny plant welcomed the company to experiment in exchange for the fertilizer.

"Our first big successful golf application was Inverrary CC in Fort Lauderdale. We did a lot of research work out there and put in systems on each of the golf courses that are still

operating.

"This was all so new to everyone. What we were guaranteeing was hard even for the fertilizer administrators to strive for.

"At first we offered relatively simple mixes but now we can develop any type of liquid fertilizer. In the early days, we could not put phosphorus in the irrigation water but now we have injection systems that can handle it. And we can put out whatever levels of micronutrients are needed.

"We have grown very fast, but I think appreciating our customers has contributed the most to that growth. In the beginning, we had such a new concept that it was necessary to spend a lot of time with the customers — if a customer had a problem, we were there to help, regardless of the time.

"Max still makes a point to tell us to spend enough time with our customers, just as we did back then. Although we are established now, we must always stay conscious of our product quality and the quality of our service."

(From page 67)

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

(Continued on page 72)

'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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Enterprising used equipment broker proves that one superintendent's pile of junk is another's latent treasure

Old mowers never die...

BY EARL COLLINGS

HOBE SOUND — You've heard of the "people-to-people" program where travelers exchange their experiences with people from other countries on a planned face-to-face basis?

Bill Barnette has started something like that in the turf business that might be called the "superintendent-to-superintendent" program to buy and sell used turf equipment as is.

And it is almost face-to-face. Barnette finds excess used equipment, lists it, photographs it as is and, when a buyer wants it, Barnette picks the unit up from the seller and delivers it. The selling price listed includes his brokerage fee.

Barnette's business is called UTEC — Used Turf Equipment Co. Simple enough. He started the business in behalf of the overworked superintendent who doesn't have time to go out and look for buyers of equipment he no longer needs, or who doesn't have time to go out and find used pieces to fit his needs and his budget.



UTEC

Bill Barnette, left, with David Paul, service manager at the Loxahatchee Club in Jupiter

UTEC is really a used equipment clearing house.

The company started a little more than a year ago when Barnette, who had been selling new turf equipment in south Florida, suddenly realized that every course he called on had several pieces of used — sometimes almost new — equipment sitting idle in the yard.

He would hear his prospects say, "I would like to get that new unit but I can't get rid of some of this extra stuff I have around here now." Or "I sure need one but my budget won't handle one. Do you have a good used unit?"

The light went on, and Barnette set up shop.

"Shop," that is, with a truck, a trailer, a mobile phone and a camera. Plus the conviction that he could fill a real need. He knew that all the unused equipment he had

seen for a couple of years was useful and saleable. He knew the area. He knew the business. And he knew machines. (He had been division director of maintenance for the South Florida Water Management District and, before that, had been in construction, an authority on welding.)

His plan was simple. Find the turf equipment superintendents want to sell. Take a picture of it in color. Get an honest listing of it and its condition. Publish a flyer to all courses offering the equipment for sale. When he has a buyer, pick it up, deliver it and get the check.

It worked. In fact, he has already worn out one truck.

When asked why so much extra used equipment is available, Barnette suggests several reasons. A superintendent might

(Continued on page 74)

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SUPPLY SIDE

Joint venture paves way for expansion

(From page 73)

find equipment he is not familiar with at his new course. He phases out his inherited equipment as soon as possible, and gets his old favorites.

Or the superintendent at a more affluent course might feel it is more economical in the long run to have a good routine maintenance program and replace equipment every two to four years on a rotating schedule rather than do major repairs.

Or since major turf equipment is so specialized, a superintendent at one time might have bought a unit for a special use and it is now rarely if ever used.

Barnette points out that all such cases offer the opportunity for clubs with smaller budgets to get that needed unit at great savings. And from experience, he knows

that a good mechanic can spruce up almost any unit. Many times the used equipment needs only the clean-up-tune-up-grease-or-sharpen treatment. Barnette, however, does not repair or rebuild equipment himself. But he does have a list of qualified turf mechanics he can refer the buyer to.

UTEC serves southeast-central Florida, roughly the area covered by the Palm Beach, Treasure Coast, Ridge and Central Florida chapters. Shipping is free for transactions between superintendents in the same chapter; otherwise it's \$1.50 a mile.

The most common equipment available? Greensmowers, sand rakes and trim mowers. However, UTEC has sold everything from an almost-new fairway mower in excellent condition for \$22,500 to golf cars in fair condition for \$480 to a \$300 sod cutter. Barnette will list any piece for sale, but his minimum brokerage fee is \$100. The selling price includes brokerage on a sliding scale of 20 percent or less.



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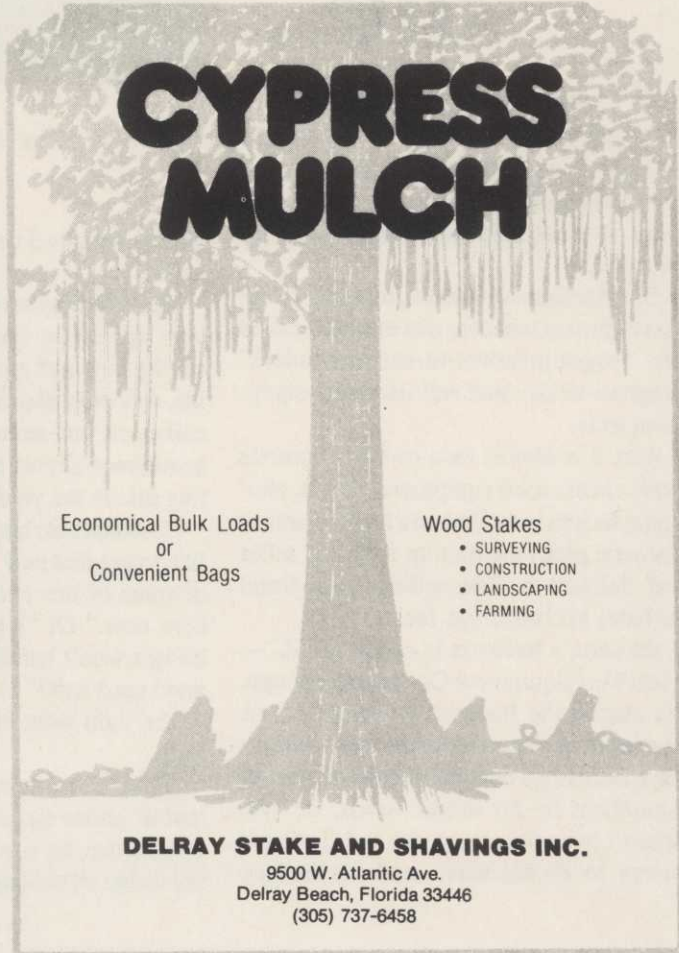
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Currently UTEC offers a couple of major units available from the Chicago area. In those cases, the sellers have arranged for commercial carrier delivery and included that in the price.

The color photos Barnette takes are in his working catalog he personally shows to customers. He urges them to call the seller or his mechanic. He also mails a black-and-white flyer showing equipment on a regular basis.

Where does UTEC go from here?

Barnette is expanding slowly. In August, he entered into a joint venture with Lakeland-based Golf Ventures to represent UTEC in the Bahamas and much of the rest of the state. David Miller and Jim Sartain will represent the company in Central Florida, Bob Schroter in North Florida and David Cheesman in South Florida and the Bahamas.

EDITOR'S NOTE: Earl Collings is a free-lance publicist based in South Florida. Advertisers may submit feature stories about their companies, which will be edited to meet Florida Green standards and will be used when space is available. Priority will be given to stories about new products and services.

Ransomes buys Cushman, Ryan

JOHNSON CREEK, WIS. — Ransomes America has acquired three major names

in turf equipment with the purchase of Cushman, Ryan and Brouwer Turf Equipment Ltd. from the Outboard Marine Corporation.

According to Helmut Adam, president of Ransomes America — a division of Ransomes plc (sic) of Ipswich, England — the price was \$150 million.

The Cushman group, based in Lincoln,

Neb., includes Cushman turf vehicles and mowers, Ryan aerators and sod cutters and Brouwer mowers, vacuums and sod harvesting equipment.

"It is a well-run company with a good name," said Adam. "We are not going to change something that runs as well as

(Please see RANSOMES, page 78)

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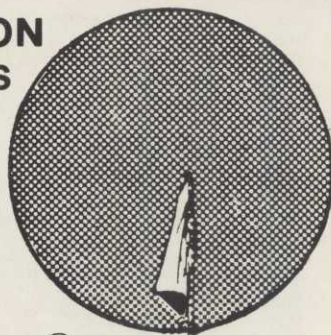
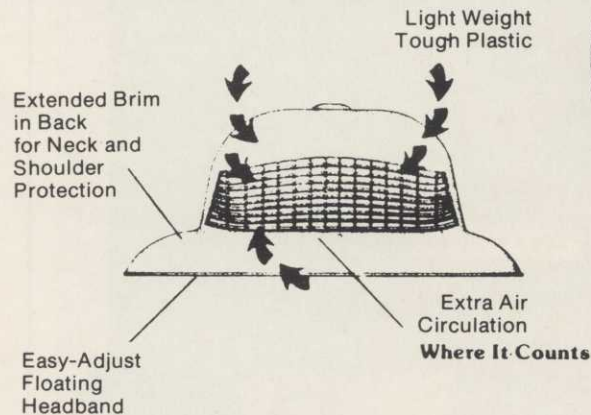
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Southern Turf opens facility in Spain

TIFTON, Ga. — Southern Turf Nurseries has opened a production facility in Spain, the first international facility of an American-based turfgrass producing company.

With the expanding golf course market worldwide and the exporting of the American golf course architect expertise, demand has been created for the high quality hybrid bermudagrasses in the tropical and subtropical regions of Europe and Asia.

Southern Turf Nurseries has established a farm near Malaga, Spain, where hybrid Tifway 419 and Tifgreen 328 are being produced to standards of greens-quality, certified grass.

Partners in the venture are Larry and David Cooper. The latter is a member of the Royal & Ancient at St. Andrews.

Ransomes takes over Cushman, two others

(From page 75)

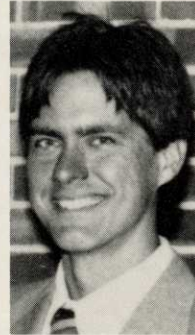
Cushman.

"I am excited about working with Stuart Rafos (Cushman president) and the rest of the management team at Cushman. Its product line complements the Ransomes line of commercial turf equipment extremely well."

Ransomes America, which manufactures and markets commercial turf equipment in



Duane Guettler



Mark Myhre



Scott Spara

Nor-Am awards 3 scholarships

Nor-Am Chemical Company of Wilmington, Del., awarded scholarships to three Florida turf students: Scott Spara at Lake City Community College and Duane Guettler and Mark Myhre at the University of Florida

North and South America, also acquired a line of turf renovation equipment from Salsco of Cheshire, Conn., in August. The line includes aerators, seeders, spreaders, loaders, blowers and dethatchers.

Last year the company bought Steiner Turf Equipment of Orrville, Ohio, which it operates as an independent manufacturer of mowing tractors and attachments.

Ransomes plc (*sic*) has ceased production of agricultural equipment to concentrate on turf machinery worldwide.

Its other three divisions are Ransomes Commercial, which manufactures and distributes professional turf equipment outside the Western Hemisphere, Ransomes Consumer, which manufactures garden machinery and Ransomes Property, its development and investment arm.

Ransomes Consumer recently purchased Westwood, a producer of garden tractors in the United Kingdom.

Duda opens 7th branch

OVIEDO — Duda Sod opened a Clewiston branch in August, the company's seventh Florida location.

"The demand for Duda sod has grown so much in recent years that we felt it was necessary to move closer to our buyers," said Betty Miller, Duda marketing representative.

Established in 1972, Duda Sod specializes in Floratam St. Augustine, 419 bermudagrass and other grasses.

Duda has locations in Zellwood, Oviedo, Cocoa, Fort Lonesome, LaBelle and Fort Pierce.

Duda Sod is a division of A. Duda & Sons, which was founded in 1926 as a five-acre celery farm. Headquartered in Oviedo, the company also has offices in California and Texas. Its Florida land holdings exceed 115,000 acres.

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