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1. What is your primary business at this location? (check one)
   ☐ 21-Public Golf Course
   ☐ 22-Private Golf Course
   ☐ 23-Exclusive Golf Course
   ☐ 24-Municipal/City/State Golf Course
   ☐ 25-Hotel/Resort
   ☐ 26-Par 3/Executive Golf Course
   ☐ 27-Practice Facility
   ☐ 28-Other Golf Course

2. What best describes your title? (check all that apply)
   ☐ A-Golf Course Superintendent
   ☐ B-Green Chairman
   ☐ C-Director of Golf/Head Pro
   ☐ D-Club President
   ☐ E-General Manager
   ☐ F-Golf Course Owner
   ☐ G-Building/Developer
   ☐ H-Architect/Engineer
   ☐ I-Research Professional
   ☐ K-Assistant Superintendent
   ☐ L-Golf Course Management Company
   ☐ M-Others (please describe)

3. Number of Holes: (check one)
   ☐ A-9 Holes
   ☐ B-18 Holes
   ☐ C-27 Holes
   ☐ D-36 Holes
   ☐ E-Other

4. Purchase Involvement: (check all that apply)
   ☐ 1-Recommend equipment for purchase
   ☐ 2-Specify equipment for purchase
   ☐ 3-Approve equipment for purchase
   ☐ 4-Other (please describe)

5. Total Annual Maintenance Budget: (check one)
   ☐ 1-Less than $50,000
   ☐ 2-$50,000-$99,999
   ☐ 3-$100,000-$249,999
   ☐ 4-$250,000-$499,999
   ☐ 5-$500,000-$749,999
   ☐ 6-$750,000-$999,999
   ☐ 7-$1,000,000+

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Physiological response of turfgrass to mowing

Mark Howieson is in the third year of his doctorate work, which is funded primarily by a grant from The Toro Co. The objective of his work is to study the physiological response of grasses to mowing. He's studying such physiological responses as carbohydrate metabolism and the activity of antioxidant enzymes. During 2004, his work has centered on creeping bentgrass and its response to treatments such as double cutting, mower sharpness and mower setting. His work is conducted in the field and in the greenhouse.

The wounding of grass by mowing and other physical damage results in highly active reactive oxygen molecules that can damage the plants cells and affect the plants ability to form carbohydrates, lipids, and other plant chemicals required for proper growth and development. Plants have natural enzymatic systems to remove these reactive oxygen molecules and protect the plant from damage. Howieson's work is designed to study the protective response in creeping bentgrass.

Howieson also is conducting an extensive field trial at Cold Water Creek Golf Course in Ames, Iowa, about the physiological response of creeping bentgrass to mowing with equipment that has been sharpened with different types of reel sharpening equipment.

Howieson plans to complete his work by July of 2005.

Optical sensing identifies moisture, nutritional stress on greens, fairways

Jason Kruse is in the final year of his doctorate work about remote sensing. This work also is being conducted with funding primarily from Toro.

The overall objective of the work is to use optical sensing techniques to identify moisture and nutritional stresses in grass before it's observed with the naked eye. The specific objectives are: 1) evaluate various indices reported in the literature as tools for identifying moisture and nutrient stressed turf; 2) develop new indices to be used in detection of moisture and nutrient deficiencies; and 3) determine differences in spectral response of creeping bentgrass, Kentucky bluegrass and perennial ryegrass.

The remote sensing equipment used to collect the data was a field portable fiber-optic spectrometer fitted with 30-degree, field-of-view optics. The tip of the fiber-optic cable is mounted inside a plastic hood that contains two 12-volt halogen lights.

Kruse has collected extensive data during a two-year period about moisture stress from perennial ryegrass fairways at Veenker Memorial Golf Course in Ames, Iowa.

He also has data about creeping bentgrass that was treated with varying rates of nitrogen, phosphorus and potassium in separate studies. He's currently analyzing the data using indices that were previously reported in the literature and a new mathematical index that he's developing with help of the ISU departments of statistics and mathematics.

Kruse hopes to complete the work by December 2004.

Cation ratios, soil testing for sand-based greens

Rodney St. John is in the third year of his doctorate studies. He's studying the unique soil conditions that exist in sand-based media such as that found in many golf course greens. His work is supported by a grant from the U.S. Golf Association.

The specific objectives of his work are: 1) to evaluate and correlate several existing soil extraction methods with tissue analysis to determine which type of extractant is best for sand based turfgrass systems; 2) to modify, if necessary, existing extraction methods to better suit turfgrass soil types; 3) to better understand how the basic cation saturation ratio theory and Ca/Mg/K ratios apply to turfgrass systems; and 4) to improve current recommendations for Ca/Mg/K fertilization of turfgrass.

St. John's work during 2004 has been the establishment of proper techniques for the modification of cation ratios in sand media. He's also concentrating on evaluating soil test extractants for use in sand-based systems.

His goal is to complete the work in 2005.
Methods of establishing Roundup Ready creeping bentgrass on greens, fairways

Luke Dant is in the second year of his master of science work. The objective of Dant's work is to study methods for the establishment of Roundup Ready creeping bentgrass on golf courses. The work is funded by grants from O.M. Scotts.

Roundup Ready creeping bentgrass contains a gene that provides the plants with tolerance to the non-selective herbicide Roundup (glyphosate). Roundup kills most weeds that infest creeping bentgrass turf, including Poa annua, a weed for which there are no other effective selective controls.

Dant has conducted a series of studies about the conversion of conventional creeping bentgrass greens and tees, bluegrass fairways, and perennial ryegrass fairways to Roundup Ready bentgrass. He also has conducted studies evaluating various types of equipment for the renovation of creeping bentgrass greens and on the timing and rate of seeding for conversion.

Dant will complete his work in the spring of 2004.

Removal of creeping bentgrass from Kentucky bluegrass roughs

Creeping bentgrass has become popular as a fairway species in the Midwest during recent years. The roughs on these courses are generally Kentucky bluegrass. The contamination of the bluegrass roughs by the bentgrass from the fairways has grown to become a common problem. There are few herbicides that can remove a cool-season grass from a cool-season grass selectively.

Marcus A. Jones is in the first year of his master of science program and is working on this problem.

The objectives of his works are: 1) to determine the best time of application that provides for selective post-emergence control of creeping bentgrass in Kentucky bluegrass; 2) to determine the rate of application for selective post-emergence control of creeping bentgrass in Kentucky bluegrass; and 3) observe any detrimental effects to the Kentucky bluegrass from the herbicide applications.

Presently, Jones is concentrating on mesotrione, a herbicide from Syngenta that appears to have significant activity on the creeping bentgrass without doing serious damage to the Kentucky bluegrass.

Jones will complete his work in December 2005.

GCN
Because of activists, extremists and misinformed politicians, consumers are questioning whether the products and resources (such as water) used to care for their lawns, landscapes and other green spaces are a waste—or a harm to the environment. Yes, legislation and regulations have been throwing the green industry some rough punches. And we’re about to start fighting back.

Project EverGreen is an alliance of green industry associations, companies and professionals dedicated to educate the public, protect the green industry and grow our business. It was created in response to unfavorable regulations in many parts of the United States and Canada. If the services our industry professionals offer are restricted, regulated or made illegal, everyone will lose revenue and customers.

Help Project EverGreen educate consumers on the environmental, economic and lifestyle benefits of green spaces. To make a contribution, volunteer your time or find out more information, call 1-877-758-4835 or visit www.projectevergreen.com.
Revolution block copolymer chemistry
- Designed to refine the moisture distribution process
- Works in the soil to stabilize moisture levels, balance air-to-water ratios and provide better access to nutrients in the root zone
- Lets the plant function at its greatest genetic potential
- Can be tank-mixed with a broad spectrum of commonly applied chemicals for greater convenience
- Increases turf resilience and stress tolerance, photochemical efficiency and evapotranspiration for a cooler canopy
- Extends natural antioxidant activity

Aquatrols
Circle 200 on reader service form

Groom Master II bunker groomer
- Offers more power and better traction than its predecessor, resulting in easier use and less operator fatigue
- Optional 3-cylinder, 19.2-hp Kubota diesel engine
- One model equipped with a gas-powered, two-cylinder, Briggs & Stratton Vanguard engine delivering 18 hp.
- Power steering and 3-wheel-drive traction
- Low-profile tires improve stability and control
- Uses biodegradable hydraulic fluid

Jacobsen
Circle 201 on reader service form

Advion fire ant bait
- Provides control of fire ants within 24 to 72 hours after application
- Contains active ingredient Indoxacarb that belongs to a new class of insecticide chemistry
- Its fast action results from the metabolic activation of Indoxacarb by developing larvae within the colony
- Activated metabolite is distributed to the other members of the colony
- Control occurs quickly because metabolite disrupts the insect's nervous system
- Can be applied as a broadcast application or a mound treatment
- Available in 25-pound bags and 2-pound jugs

DuPont Professional Products
Circle 202 on reader service form

Outdoor water cooler
- Available with a 220- to 240-volt/60 hertz option
- Can tap into 220-volt irrigation wiring when supplying power to the unit
- Available in a free-standing or wall-mounted unit
- Underwriters Laboratories listed for outdoor service
- Comes with stainless-steel finish, vandal-resistant bubbler and frost-resistant option

Halsey Taylor
Circle 203 on reader service form

Landscraper
- Reclaims land, forms and maintains drainage ditches, spreads rocks and gravel, removes snow
- Features 6-inch-high carbon steel cutting edge with hubs/bearings that are interchangeable with company's standard wagon
- Has 3-inch lift cylinder, 15-inch standard rims and a tongue constructed of square tubular steel
- Weight box provides additional cutting pressure

Westendorf Mfg. Co.
Circle 204 on reader service form
Valhalla floating fountain aerator
- Part of the masters series, which offers 21 patterns with interchangeable nozzles
- Available in 1 to 5 hp; single- and three-phase motors; 60 Hz only
- Stainless-steel motor housings
- Optional 120-volt lighting and 75-, 150-, and 250-watt halogen lamps
- Underwater cable disconnect
- Underwriters Laboratories listed

AquaMaster Fountain and Aerators
Circle 205 on reader service form

Aqua Series fractional aerator
- Used for water quality management and aesthetics
- Ideal for ponds smaller than 1 acre
- Available in 115 volt, 1/4 hp or 1/2 hp
- Interchangeable between two patterns
- Minimum operating depth at 13 inches
- Pumping rates exceeding 250 gpm
- Ready to install out of the box

Otterbine Barebo
Circle 206 on reader service form

Lily display aerator
- Two-tier display aerator pattern
- Wide, low-fan and 7-inch-thick, high-arching streams
- All streams are wind resistant

Aqua Control
Circle 207 on reader service form

Pyramid fountains
- Ideal for ponds as big as 2 acres
- Available from 1/2 hp to 2 hp
- Stainless-steel motor shaft prevents corrosion
- Comes with 50- or 100-feet oil-resistant power cords
- Easy one-person installation

Pyramid Technologies Industrial
Circle 208 on reader service form

Decorative fountains, aerators
- Enhances water quality and aesthetics of ponds, lakes and shallow reflection pools
- Commercial floating aerators are available with 1-hp to 3-hp motors
- Designed to establish continual pond turnover, introduce oxygen to water appropriately and in the proper quantity, eliminate or prevent algae growth, and control insect infestation
- Fountain packages include one of eight different nozzle spray patterns, 100 feet of cord, a propeller guard, a control panel with a time clock and a three-year limited warranty
- Fountains are available in 1/2-hp to 5-hp models

Air-O-Lator Corp.
Circle 209 on reader service form

Dual propeller fountain with lighting accent
- FD1000DP model
- 1-hp unit is available in 110 or 220 volt, 50/60 cycle
- Comes with 100 feet of power cord
- Produces more than 1,200 gallons of aerated water flow per minute
- Each lighting accent comes assembled on a black float with four 20-watt clear lights, a built-in timer and four lenses in each color (blue, green amber and red)

The Power House
Circle 210 on reader service form
Electric Workman e2050
- Based on the Workman mid-duty 1100/2100/2110 platform
- Regenerative braking provides efficient operation
- Fuel gauge displays current level of battery power; when the battery levels become significantly low, the unit limits top speed and acceleration, alerting the operator to find a charging location
- Includes several safety features, such as a plug detector that stops the unit from operating when plugged in for recharging
- Run-away-protection indicator applies brake and sounds off if unit rolls down hill without the operator depressing the accelerator
- Supervisor switch controls maximum speed employees can drive

The Toro Co.
Circle 211 on reader service form

Gator TX Turf
- Four new models: Gator TS, Gator TX, Gator TX Turf and Gator TH 6x4
- More powerful than the previous Gators; improved braking capabilities, increased payload and enhanced operator comfort
- 13-hp/401-cc Kawasaki FJ400 engine
- All-wheel suspension and hydraulic disc brakes
- Decreased noise levels because of: an engine and exhaust system that's isolated from the frame and chassis, a large-volume muffler, and a ground speed governor and starter generator
- Ground speed governor also provides improved performance and the ability to operate at full speed with reduced engine rpm
- 44-inch-long cargo box with a 600-pound capacity and overall 1,000-pound payload/towing capacity

John Deere
Circle 212 on reader service form

Antonio Carraro TigreCar 7700
- Short wheelbase; 4-wheel drive
- 64-hp turbo diesel engine
- Actio suspension
- Gearbox provides 16 speeds – eight forward and eight reverse
- Large turf tires keep ground compaction to a minimum even when fully loaded
- Optional items include a three-way dumping box with a 4,000-pound maximum payload, full cab and front power lift

Redexim Charterhouse
Circle 213 on reader service form

Carryall 294 4x4
- IntelliTrak system delivers automatic 4x4
- Senses driving conditions and automatically engages and disengages 4-wheel drive without the driver having to stop and shift gears or lock differentials
- Available with a 20-hp, 614-cc Honda gas engine or a 20-hp, 719-cc Kubota diesel-powered engine
- No levers, buttons or switches for 4x4 engagement, front/rear differential lock or high-low range
- IntelliTrak eliminates steering feedback and reduces tire wear and turf damage
- Two bed-load capacity options for gas and diesel models

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Circle 214 on reader service form
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Attracting kids with golf
to better their education

T
	
twenty years ago, Jay Miller was vacationing with his wife, Barbara, in Hawaii, and she told him to write down what he would do if he had all the money in the world.

"I said I would try and help as many kids as possible by hooking them on golf," Miller says. "I put my plan in my desk, and it ended up in there for 13 years."

Miller is co-founder, president and c.e.o. of the privately operated Get a Grip Foundation, which was founded in 2000.

Miller is a golf aficionado. He started playing the game at age five, worked at a golf course when he was 11, was a high school all-American and went to Purdue University on a golf scholarship. He then tried to play on the PGA Tour, but failed. Eventually, he opened his own business of promotions, sales, marketing and fund raising.

"I did well because of golf," he says. "Back then (during the early to mid-1980s), the martini lunch was still in vogue. A lot of golf was played. I

played 92 rounds of entertainment golf a year."

Shortly after Miller's father died on his 40th birthday in 1999, he was playing golf with friend Bob Hoff, who asked Miller the same question his wife asked when they were in Hawaii. Miller told Hoff about his program, which he called "Tee It High." It was renamed Get a Grip because Tee It High was taken already.

Miller and Hoff raised $2.5 million to operate there March 1, 2002. The foundation has a budget of $400,000 on which to operate, has four junior tournaments a year that cost the kids nothing. Miller sees the tournaments as building a base of loyal customers. A large part of the fund raising is the Esteban Toledo PGA Tour Pro-Am. Toledo is the ambassador for Get a Grip.

"We now have 150 parents that play golf because of their kids," he says. "That's $20,000 in potential revenue a year."

Miller also says kids return as adults to play the course to give back what they've received from the foundation.

"I'm building my own base of loyal golfers instead of participating in the golf discount wars," he says. Miller wants to grow the program to 1,000 kids by the end of next year.

The foundation can be summed up by the two tag lines it has: "Making golf and education accessible to all children" and "Bringing golf back to children." For more information, visit www.getagripfoundation.org.

For every hour of golf they play, kids in the program are required to spend 20 minutes in the learning center.

The foundation continues to grow. A practice center opens in late November this year and a tutoring center is expected to open in the spring of 2005.

With the help from Superior Golf, Jay Miller, founder of the Get a Grip Foundation, redesigned the Cresta Verde Golf Club.

For every hour of golf they play, kids in the program are required to spend 20 minutes in the learning center.