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The Graduates



Recent graduate John Micklas says he has the personality for sales.

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There was also a lot of talk about the future, as the name of the event suggests. What does the future hold for the future turf managers of this country?

"It's a tough industry," Wilkinson says. "There are not 1,000 new courses being built in the next five years. The top students are the ones who will be the future leaders in this industry. But it won't be an easy road."

Micklas has a job as assistant superintendent at Oak Hill Country Club in Fitchburg, Mass. But he eventually wants to go into sales and sell equipment, such as Jacobsen mowers.

"I have a plan," the ever-smiling Micklas says. "I have the personality for sales."

Sammy Elfstrom, a 23-year-old who recently graduated from Oregon State University, also has a sunny disposition but plans to use it to help grow turf as a superintendent. Elfstrom is upbeat, despite the fact that the market isn't bursting with jobs. Elfstrom says it is up to him to make a name for himself in a stagnant job market.

"I just have to try extra hard," says Elfstrom, who has a four-year degree in horticulture/turf and landscape management. "I have to try and separate myself from other people. That's why I'm here."

Elfstrom considers himself fortunate to have attended the Future Turf Managers Seminar and used the event, not only to learn, but to make connections with people like Engelke and Wilson.

Elfstrom heard about the Future Turf Managers event from Tom Cook, an associate professor of horticulture at Oregon State University. Cook nominated Elfstrom to attend.

Elfstrom is not the only one who realizes he must stand out in the job market. Greg Caldwell, a recent graduate of Virginia Polytechnic Institute and State University with a four-year degree in crop and soil environmental sciences with a turfgrass option, knows more people are going into turf maintenance than ever before and that competition is and will continue to be fierce for jobs. Caldwell, who took a semester of school off to intern at Winged Foot Country Club in 2006, the year the club hosted the U.S. Open, hopes the connections he has made throughout the industry will pay off in the future.

"It goes back to whom you know and where you have been," the 21-year-old says.

Speaking of which, Caldwell accepted a post at Galloway (N.J.) National Club on Memorial Day after being contacted by the club's superintendent, Scott McBane, a fellow Virginia Tech grad. Caldwell began as an intern but will soon move up to an assistant in training.

"I've been playing golf since I was 4 years old," he says. "I want to be a superintendent."

Caldwell, who grew up in Virginia, would like to end up there or North Carolina for the majority of his career. But he

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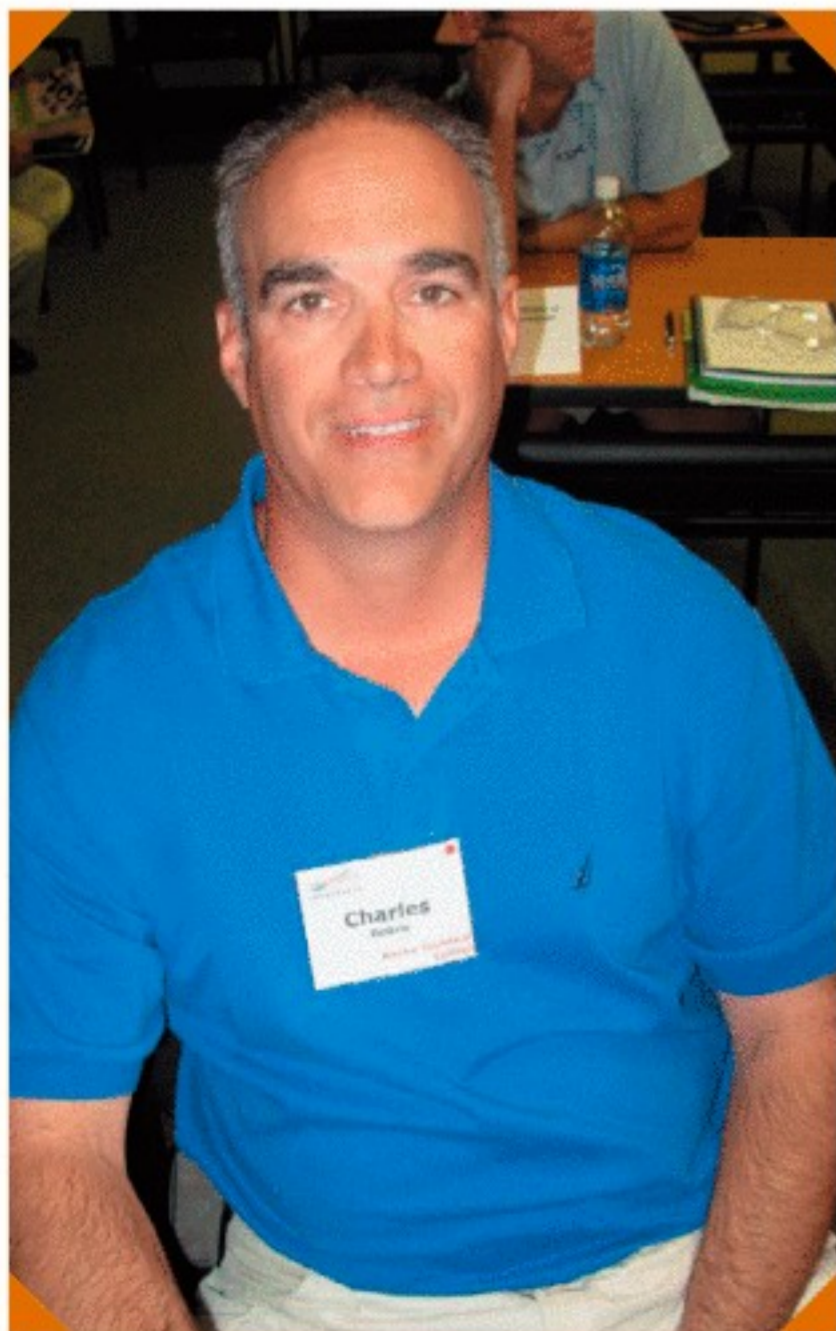
J. Landon Messal and Sammy Elfstrom realize they might have to go where the jobs are if they want to move up the career ladder.

realizes it's a transient business and that he has to move where the jobs are.

"I'll go where I have to," he says.

So will Elfstrom, who grew up on the Oregon coast and would like to work in his home state as well and be near the ocean. That said, Elfstrom would take a job smack dab in the middle of the country if he had to and be landlocked for a few years.

"To climb the ladder, you have to take those steps, and every step is a step you want to take but you might not always end up where you want to be," he says. "I know where I want to go, and I



U.S. Army veteran Charles DeGrio is beginning his second career.

know how I need to get there."

J. Landon Messal, a recent graduate of the University of Tennessee with a degree in turfgrass science management, is going where he wants to go — for now. Messal relocated to Charleston, S.C., where he accepted a job at the Golf Club of Briar's Creek as an irrigation tech and assistant in training. The 27-year-old, who was born in Florida and has lived all over the country, is in a good field because he's not afraid to move around from town to town.

"It will be necessary," Messal says.

But it concerns him that the golf industry, which was overbuilt in the 1990s, is undergoing a correction with fewer courses being built. He's afraid there won't be much turnover in a tight market in the next few years.

One of the graduates at the event, Charles DeGrio, appeared a tad different from the rest. He didn't sport the baby face like some of the others and even had some gray hair.

That's because DeGrio is 43 and embarking on a second career. The Minnesota native retired from the U.S. Army two years ago after 23 years. He went to Anoka Technical College near Minneapolis on the G.I. Bill for two years and received an associate's degree in golf course management. He has been working at Monticello (Minn.) Country Club as an assistant.

"I thought this would be a great career choice," DeGrio says with a smile. "And I'm loving every minute of it." ■



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The Science of Formulation Chemistry

The real technology that often determines the effectiveness of a product occurs several years prior to the first date of its sale

BY TERRY GOUGE

Never before has there been such a high level of interest in the technologies used by manufacturers to produce products that control insects, weeds and diseases for the golf course industry. Indeed, golf course superintendents are now presented with formulation options that offer the following benefits that lead to optimized performance:

- enhanced safety;
- simplified tank-mixing and application procedures;
- controlled or directed release to the target pest;
- active ingredients with particle-size ranges from nano to macro; and
- formulations containing pre-measured adjuvants proven to increase the activity of the active ingredient.

Basic manufacturers produce or internally certify the quality of each of their own high-purity active ingredients. They also invest millions of dollars to secure the latest equipment and instrumentation for the chemist to optimize the formulation to its

fullest potential. It is this optimization process that can make the difference between a product simply being applied to the pest site versus interacting within the full environment to control the intended pest as quickly and completely as possible.

Most formulation chemists agree: It is fairly simple to produce a basic formulation that “looks good in the bottle” and is relatively stable as it sits on the shelf. All formulators use the same basic processing equipment to measure, mix and mill the active ingredients with the inert ingredients that constitute a particular formulation type. However, the real technology that often determines the effectiveness of a product occurs several years prior to the first date of sale. At that time a basic manufacturer decides to produce a specific formulation type (i.e., suspension concentrate, water dispersible granule, emulsifiable concentrate, oil in water dispersion), which will exhibit the exact properties required to address a specific market objective.

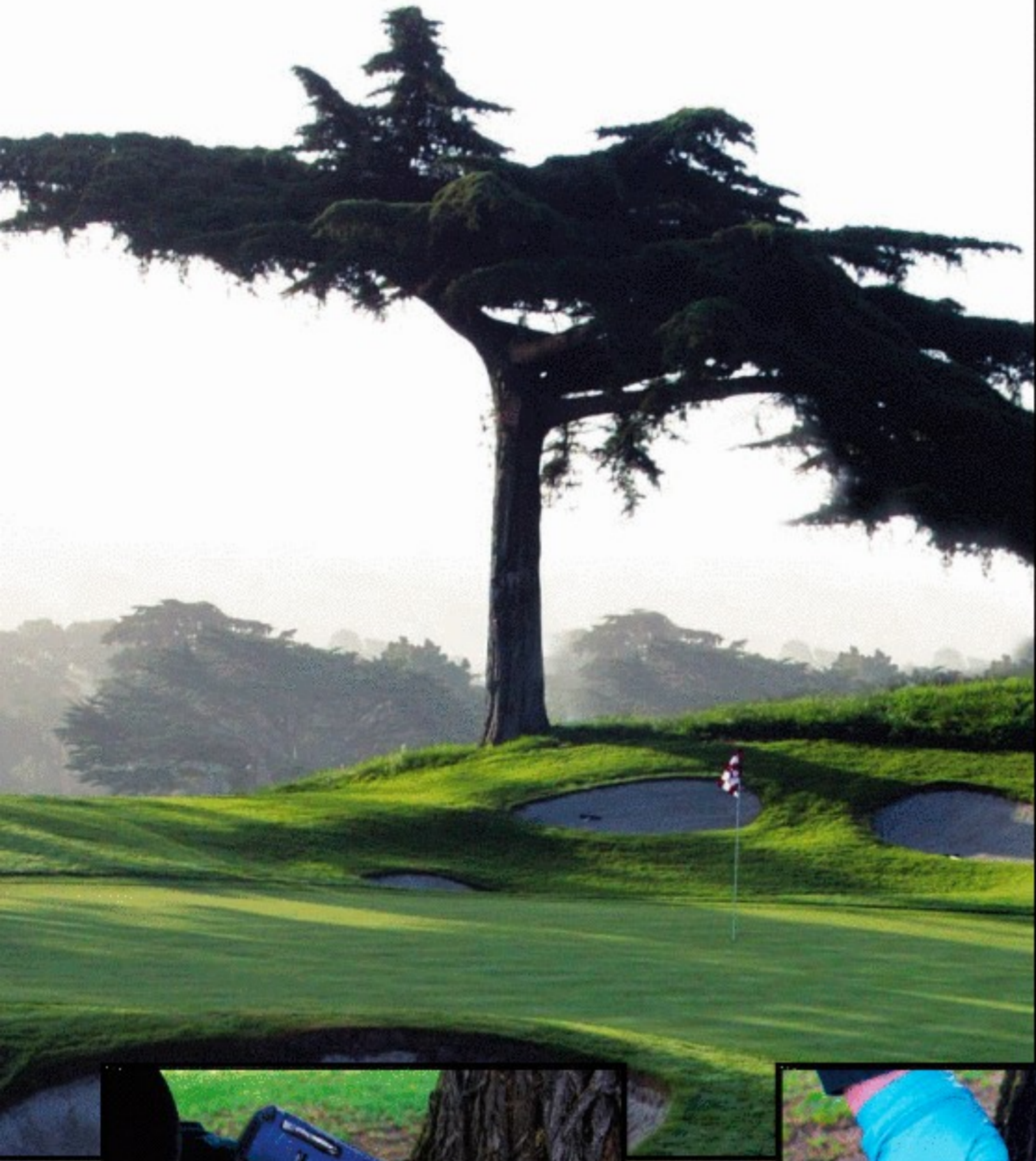
Basic manufacturers can easily spend hundreds of work days and several hundred-thousand dollars optimizing each formula-

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tion with the designed properties to make the active ingredient as efficacious as possible. Unlike the active ingredient, a proprietary formulation technology is rarely applied for patent protection but is instead maintained by the basic manufacturer as strictly confidential, without expiration.

One way to explain how formulation technology can benefit the end-user was demonstrated during a spray application study conducted by researchers at The Ohio State University. In this study it was discovered that up to 90 percent of the pesticidal spray droplets applied to soybean leaves was lost due to simple runoff. In similar tests at Bayer Environmental Science, high-speed photography was used to clearly demonstrate how droplets of non-optimized formulations can strike the waxy leaf cuticle and simply fall off, becoming unavailable for plant protection.

To prevent this droplet repulsion phe-

nomenon, the formulation chemist can incorporate special surface active agents (surfactants) into a formulation that effectively reduce the droplet's dynamic surface tension and thus dramatically reduce droplet runoff. If necessary, other well-researched additives are incorporated into the formulation to allow:

- maximum leaf contact (droplet spreading);
- rapid cuticle penetration and uptake to improve efficacy and rainfastness;
- and quicker activity resulting in reduced pest damage.

Additional studies are conducted to measure the particle size and shape of the active ingredient as it dries and binds to the leaf surface. This is carried out by scanning electron and fluorescence microscopy, along with direct biological assays that correlate surface characteristics with field performance.

For soil-applied granules or fertilizer formulations, the chemist may incorporate specially designed emulsifiers that allow rapid granule release with small amounts of rainfall or soil moisture. Should longer residual activity be required, the chemist may encapsulate the granule in a polymer coating that allows for slower or sustained release of the active.

An optimized formulation must deliver the active ingredient to the target in the physical form and at the threshold level and timing required to control the pest.

We continue to enhance the performance of our older active ingredients in much the same way we work with newer active ingredients in our pipeline. Often previously optimized formulations must be altered to add specific characteristics to better control a specific pest, to add tank-mixing properties with fertilizers or other pesticides or simply to make the product safer to end-users.

For the formulation chemist, an optimized formulation is never truly achieved. ■

Editor's note: Terry Gouge, the author of this story, is manager of formulations development for Bayer Environmental Science.

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TOP Assistants

Clint Forstrom finds contentment in the mountains of Colorado

Editor's note: Top Assistants will feature a question-and-answer session with an assistant superintendent every month. If you'd like to nominate someone for the feature, please send an e-mail to Larry Aylward at laylward@questex.com.

He was born for this job, developing an infatuation with John Deere tractors and golf from an early age. Now in his 11th year in the golf industry, 27-year-old Clint Forstrom is assistant superintendent of Brightwater Club, a Robert Trent Jones Jr. layout in Gypsum, Colo.

Golfdom: What's your favorite part of the job?

Forstrom: Right now we are in the middle of a construction/grow-in on a 1,000-acre gated community. Being able to work directly with the different companies putting in all of the amenities and infrastructure and seeing everything come together to form an outstanding product is what does it for me.

Golfdom: Who has been the biggest influence on your career and why?

Forstrom: Every superintendent that I have had the privilege of working for has been very influential on my career. Although, the one that sticks out the most would be David Swift, superintendent on the Straits Course at Whistling Straits in Sheboygan, Wis. I have known Swift my entire life, and he took me under his wing and was very influential with my schooling and employment path from the time I graduated high school. I worked four years for Swift, helping with the grow-in of the Irish Course (Whistling Straits) and preparing for and hosting the 2004 PGA Championship. He is very passionate about what he does and is a great teacher. If he

wasn't teaching you something about turf, he was giving you some kind of life lesson — he's a great mentor as well as a great friend.

Golfdom: What was the defining moment in your professional life?

Forstrom: When certified superintendent Daryl Dinkel hired me onto this project in 2006. Upon graduation from Penn State's Turfgrass Program, I was very adamant about finding a construction job in the mountains, and it really could not have turned out any better.

Golfdom: What's your favorite product or piece of equipment and why?

Forstrom: The John Deere XUV. It does a really good job getting around the construction site as well as checking our irrigation ditches and head gates.

Golfdom: If you could change something about the industry right now, what would you change?

Forstrom: The pay. For all the time and dedication that assistants put in day in and day out, I do not believe we get compensated fairly. But then again, I would not trade it for anything else.

Golfdom: Describe yourself in one word:

Forstrom: Inquisitive.

Golfdom: What is your favorite hobby and why?

Forstrom: Backpacking. I love to explore new areas, and it's a good way to get far from the grind of everyday life.



Golfdom: Favorite vacation spot:

Forstrom: Right where I live. We have access to whitewater rafting, fly-fishing, skiing, hiking, golf — you name it. For me, that is what I envision as a perfect vacation spot.

Golfdom: Favorite golf course besides your own:

Forstrom: The Nicklaus Course at Pronghorn in Bend, Ore. It's a great area, beautiful layout, and the attention to detail on the course is amazing.

Golfdom: If a movie were made about your life, what actor would play you?

Forstrom: Mark Wahlberg. He plays all the good roles.

Golfdom: It's your last day on Earth. What would you do?

Forstrom: Spend it with my family and friends. It would not matter what we did, just that I would be around the people that mean the most to me. ■



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