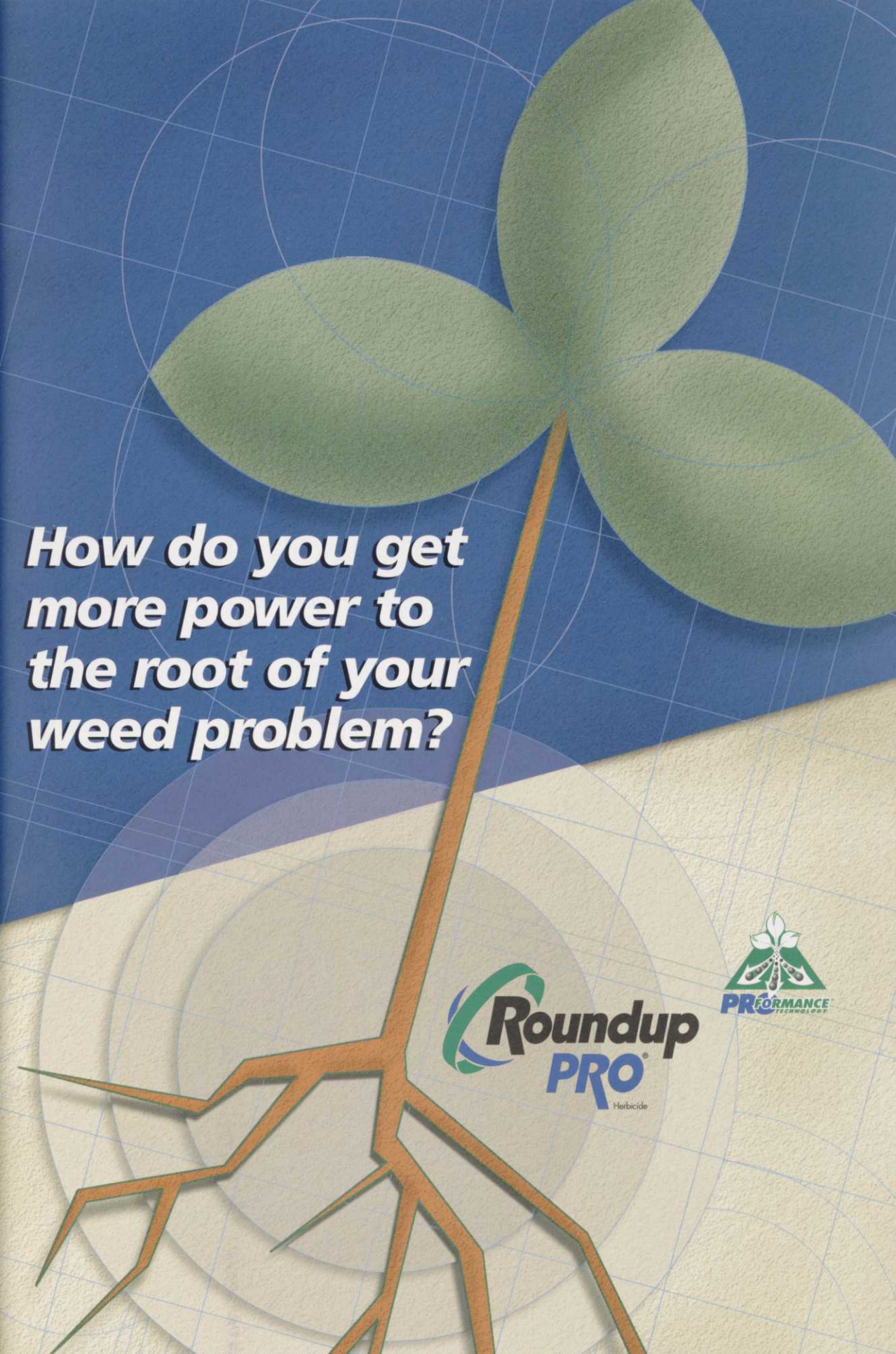
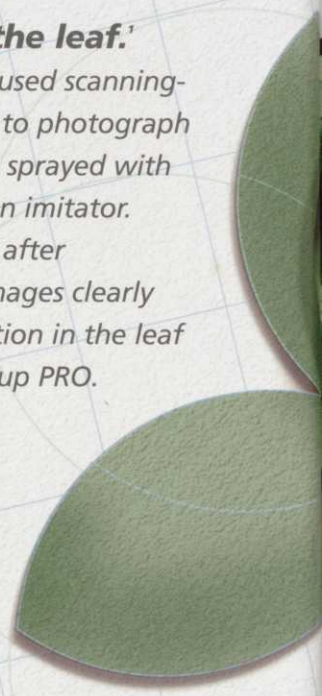

How do you get more power to the root of your weed problem?
Roundup PRO®
Herbicide
PROFORMANCE TECHNOLOGY

The proof is in the leaf.[1]

Monsanto scientists used scanning-electron microscopy to photograph the effects of weeds sprayed with Roundup PRO and an imitator. Taken just one hour after application, these images clearly show more formulation in the leaf sprayed with Roundup PRO.



Get Roundup PRO® herbicide with patented PROformance™ technology

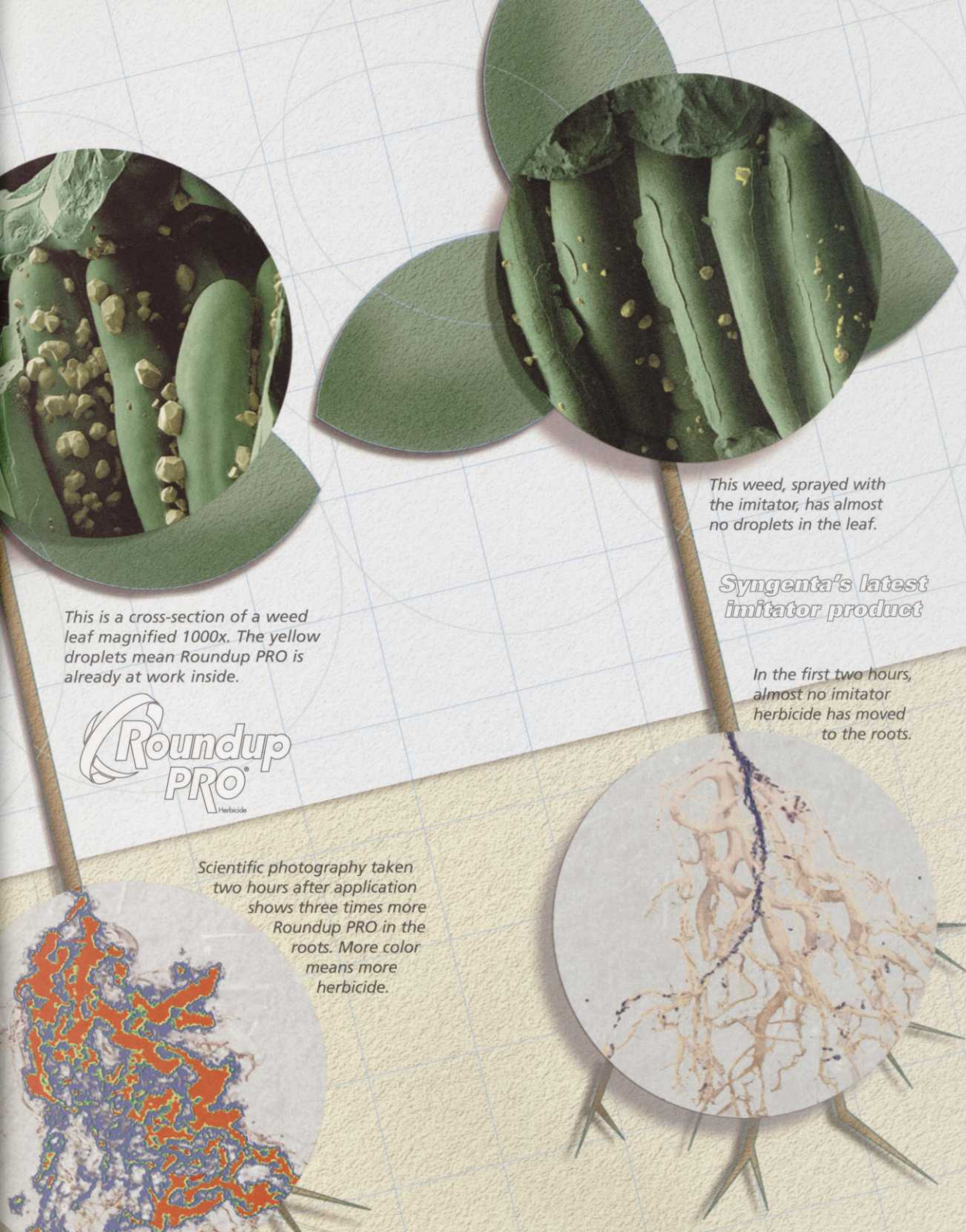
In the first two hours, it delivers three times more power to the roots than Syngenta's latest imitator product.

The proof is in the roots.[2]

Scientists also used autoradiography to photograph and measure the amount of herbicide in the roots two hours after application. Time after time, at least three times more herbicide showed up in the weeds sprayed with Roundup PRO. With the imitator, barely any herbicide has moved to the roots.

Roundup PRO® Herbicide

PROFORMANCE™ TECHNOLOGY



This is a cross-section of a weed leaf magnified 1000x. The yellow droplets mean Roundup PRO is already at work inside.

This weed, sprayed with the imitator, has almost no droplets in the leaf.

Syngenta's latest imitator product

In the first two hours, almost no imitator herbicide has moved to the roots.

Roundup PRO® Herbicide

Scientific photography taken two hours after application shows three times more Roundup PRO in the roots. More color means more herbicide.

The proof is in your control.

*See for yourself the difference Roundup PRO with patented PROformance technology can make in your weed management. See your dealer or call **1-800-ROUNDUP** for more information.*

Free video shows science in action.

See PROformance technology at work in a free, five-minute video. Scientists Dr. Tracey Reynolds and Dr. Jimmy Liu demonstrate the autoradiography and cryo-SEM techniques used to compare Roundup PRO with an imitator on two identical weeds.

*Call **1-800-ROUNDUP** and ask for your free Roundup PRO video today!*

Old English Golf Course

Continued from page 50

cent sand subsurface chosen for an ideal percolation rate, Whelchel says.

Drainage is accomplished by 1-foot-wide and 1-inch-thick flat pipe laid out in a herringbone design on each green. These Hurdzan-Fry greens follow the same pattern as more expensive ones, but with the flat pipe there is no need for trench-digging.

The pipe was developed for road construction. It is covered with landscape fabric to keep out mud and other particles, then pinned to the bottom of the green surface and covered by about a foot of sand. The pipes can be set by a skeleton crew in a relatively short period of time. The developers also saved by putting in only a few tiered greens.

Whelchel says that compromises between a designer's vision and the owners' pocketbooks is necessary in these types of projects.

"You have to talk about what to do to fix things within the budget," he says. "It's the willingness to be flexible and to make changes in the field that don't really affect the course. You can't let your ego get in the way. Sixteen of the holes fit in pretty well. On the other two holes, I could've used more money, but I don't think the golfers will notice."

Continued on page 56

PHOTO COURTESY OF HURDZAN/FRY

A view from the 18th hole tee. It is one of several of the course's holes with a stunning vista.

Continued from page 55

The builders were blessed with excellent river-bottom soil on the flat first nine. Fears that they'd be building on rock on the back side were unfounded when they discovered 8 inches of soil on the slopes, negating the need to truck earth up the steep hills.

Time and money were saved on fairway drainage by using a large wheel-trencher that allowed them to set pipe more quickly and by bulldozing slopes for maximum run-off. Megenity expects that, despite its river valley location, the course will be open more quickly after big rains than others in the region.

Fairways were seeded with four cultivars of fungus-resistant bluegrass. "We wanted to use zoysia, but sprigging zoysia before you can get a full stand takes about a year, and our budget is too tight," Megenity says.

The greens are L93 bentgrass and the rough areas in hard-to-mow hills have been seeded with fescue, which won't be irrigated or fertilized.

Though a teacher, Megenity also holds a law degree, which he put to use in permitting and incorporation tasks that normally would cost course developers big bucks in legal and consultant fees. The Old English project, particularly, with the involvement of so many governmental agencies due to its flood- plain status, was an expensive red-tape proposition. Megenity estimates that he did more than $100,000 in legal work to get it off the ground.

When Old English opens, golfers will have the experience of playing in an isolated setting. There will be no homes or other developments adjoining the links. In addition, the spacious grounds assure that foursomes will seldom cross paths with other groups.

The pure golf experience promises the kinds of variations in terrain and shot-making challenges that bring golfers back time and again. The drive to English, at the intersection of U.S. 64 and Indiana 37 (two-lane country highways), is about one hour from Louisville and most other population centers, but many players will probably make the trek, especially for an under-$40 round.

"Golf courses like this are a lot more fun," Whelchel says. "When you get $10 million, you can do damn near anything you want to. This takes more patience.

"We tried to create a good golf course within the framework of what we were given. I think we've done it."■

Allar, a free-lance writer from nearby Floyds Knobs, Ind., can't wait to move his family to English, Ind — for the free golf.

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CIRCLE NO. 126

A Wetland Wonder

Architect, builder had to be at their best to build a golf course amid flood plains, marshes and streams

BY MARK LESLIE

Golf course architects talk in eloquent terms about "painting" a course on a "canvas." When Robert Trent Jones Jr. and chief design officer Bruce Charlton arrived at the new Kanata Research Park in Ottawa, Ontario, to look over a property on which they were to build 18 holes, they discovered "the canvas barely had a frame around it," Charlton said.

Here were 230 acres, the core of which was unusable for anything but a golf course. To make a golf course possible, though, Jones, Charlton and ASL Golf Course Construction would have to be at their enterprising best.

"A large portion of this land is flood plain and marsh, with some low-key streams," Charlton says of what is now appropriately called The Marshes GC. "It is mostly flat or gently rolling. ASL basically filled the fairways, tees and greens to make playable high ground, and then reconfigured and re-established wetlands adjacent to those holes."

The challenge of re-establishing wetlands, however, was exacerbated by the fact that the course handled not only its own water and drainage but also that of the 500-acre Kanata Research Park which surrounds the course. But Charlton sought to simplify the situation.

The challenge Charlton faced was to create a stream corridor that connected two points at opposite ends of the property. The government agencies gave him and ASL permission to make the stream meander through the golf holes in whatever fashion they desired. Kanata Research Park owner Terry Matthews enlisted the help of Bernie Muncaster, a biologist with ESG International's Ottawa office, and together they turned a detriment into a positive element of the golf course design.

"That corridor of interconnected wetlands

Continued on page 60

MARK LESLIE

"We used the wetlands to provide all kinds of strategy and shot definitions on a number of holes," says architect Bruce Charlton.

Problem

How do you build a golf course on 230 acres of land dominated by wetlands? Architect Bruce Charlton faced several challenges in doing so.

Solution

Charlton had to re-establish the wetlands. In doing so he had to create a stream corridor that connected two points at opposite ends of the property.

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CIRCLE NO. 128

Continued from page 58

is how we created the drama in holes seven, eight and nine," Charlton says. "We used the wetlands to provide all kinds of strategy and shot definitions on a number of holes.

"The contrast of the linear marshes with the manicured turf is superb," he adds. "Nice clean, simple lines define the edges of the marshes. In the end, the wetlands became an opportunity we did not want to lose."

ASL engineer Murray Amirault said the plan saved Matthews from buying expensive native grass seed to provide the regrowth required in the wetlands.

Instead, ASL used excavators to scoop up 55,200 yards of the property's hydric topsoil, resembling muck, and stored the material in piles until it could be spread along the small ponds, canals and other waterways that Charlton wove into his course design.

Because marsh and pond habitat are part of the same hydrologic system, Charlton created a wetland buffer zone to the pond habitat. "It works well, especially in non-play areas like next to tees and on the opposite side of the lake," he says.

Of the 27 acres of wetlands that existed on the site, about 11 acres were retained in their existing conditions, Muncaster said. He then set about crafting "duig" pools (a habitat and refuge for larger fish), riffles (shallow places where the water's surface flow is broken by rocks, gravel or logs and where small fish can spawn), and realigning 1.6 miles of water course to improve the habitat for small forage fish like minnows.

Whereas the property originally contained a channelized ditch, Muncaster said his revamped creek is another 25 percent longer, greatly improving the fish habitat.

"It's a very shallow gradient, so you have to be careful to maintain the flow of the runoff," he says. "We do that by natural channel design, incorporating bends and curves and placing rocks and logs in specific places."

Muncaster said the wildlife will establish itself in the newly created wetlands from upstream in a natural process called "drift."

Integrating Muncaster's plans with its own, ASL used Total Station, which Amirault characterized as "a computerized system that performs as well as GPS." ASL digitized the plans and downloaded them into the Total Station, from which it was able to precisely lay out all features, including the exact layout, curves, pools, rocks and more in the realigned creek. The rest is history.

"Things grew like mad as soon as it rained and they were watered," Amirault says. "Everyone was surprised by how fast it grew. It looks like it's been there forever."

Continued on page 62