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By Randy Happel

River WILD

The Red River's scenic ambience comes at a price. Fargo Country Club's Aaron Porter has tried to tame the river and preserve his course.

The distinctive S-curve of the Red River that tightly hugs the southern and easterly boundaries of Fargo Country Club offers spectacular views along the picturesque fairways as golfers and fans make the trek toward manicured greens, in a quest to secure a birdie, or, on a very special day, the coveted all-elusive eagle. The river comes into play on six holes of North Dakota's first golf club, and has claimed more than a few Titleists, Calloways and Slazengers since the club constructed nine new holes back in 1963.

This scenic ambience of the Red River comes with a price, however. Nearly every year – or more often of late – when snowpack that has accumulated over the brutal North Dakota winter months finally succumbs to warming spring thaws and rains, the once hibernating, frozen river awakes in a torrent of water. During the three years since Aaron Porter has been superintendent at Fargo Country Club, the Red River has inflicted its wrath on the course a staggering nine times. But with each invasion, Porter, along with the most-capable assistance of his 23 dedicated grounds crew members, has spearheaded recovery efforts in amazing fashion.

"I arrived here in the fall of 2008, and was

on the job about a month when the first fall flood in Red River Valley history struck," Porter says. "It affected holes 1, 2, 14, 15, 17 and 18. Luckily, water receded fairly quickly so there was little damage. But the spring of 2009 was quite a different story. That was the all-time record flooding event here in Fargo. All the lower holes were under more than 22 feet of water. My first spring here was spent literally rebuilding the golf course."

The rebuilding process following the record flooding of 2009 took several months. With the rebuilt course looking good and scheduled to reopen on June 20 of '09, the unthinkable happened.

"As luck would have it, on June 19, an area to the south of Fargo received six inches of rain overnight," Porter recalls, "and I was looking at my third flood in less than a year. The river rose 25 feet overnight and again, the course was under water and pretty much everything was killed. We reseeded and opened the 2009 season on August 7. The club was in pretty good shape by then ... even better later in August, just in time for the 2009 North Dakota State Open."

A native of Altoona, Iowa, Porter competed in just about every sport except golf while attending Southeast Polk High School. His

knowledge of turf and grass was limited to mowing the family yard and occasionally schlepping hoses with an attached sprinkler. Then, during his junior year, while attending Iowa State University in pursuit of a business degree, everything changed.

"My college roommate played golf at Iowa State and he got me interested in the game," Porter says. "I had never played golf until then. I had buddies who played in high school, but when my mom found out how much a set of golf clubs cost, I was relegated to remain with football, basketball and track. When I started to golf with my college roommate, the game came pretty natural for me."

That same year, an ad appeared in the Des Moines Register, placed by Wakonda Golf Club – rated the top course in Iowa at the time – in search of grounds crew help. Porter





This scenic ambience of the Red River comes with a price. Nearly every year when snowpack begins to thaw the river awakens in a torrent of water.

“I arrived here in the fall of 2008, and was on the job about a month when the first fall flood in Red River Valley history struck.” —Aaron Porter, Fargo Country Club

the 2009 Superintendent of the Year award. Prior to joining Fargo Country Club, Porter was head superintendent of the north course at Des Moines Golf and Country Club in West Des Moines, Iowa, and assistant superintendent at Stoneridge Golf Club, Stillwater, Minn.

RED RIVER RAGE & REPEATEDLY. Spring flooding has become a way of life for residents along the river; however, in recent years, Red River Valley dwellers have also dealt with summer and fall flooding. It goes without saying that these frequent floods can be frustrating. But just like the good folks of the Fargo community who deal with Red River rage repeatedly, Porter and his crew don't back away from challenges. “Restoring the course after a flood requires some effort,” he says. “But we have always been able to recover.”

The record flood of 2009 called for drastic measures to save the city of Fargo, and Fargo Country Club was selected as the site of a massive barrier construction project in efforts to stave off the rising waters. Assisted by National Guard troops, the Corps of Engineers installed HESCO Concertainer barriers at many locations on the course, using

viewed it as an opportunity to be out on the course, learn more about the game, and, of course, the free golf wasn't a bad perk either. Porter landed the grounds gig, and in less than a week of working outdoors, being on the course, mowing, fertilizing and tending to the greens, Porter knew his career calling was about to change.

“I didn't even realize there was a turf management major,” Porter says. “The superintendent at Wakonda told me Iowa State had one of the best turf programs in the country. And that's all it took. I just had one semester left to graduate with a business degree when I made the change to turf management. I continued working at Wakonda for 3 more years, and completed two internships there, all while studying to get a turf management degree. It took two additional years, but hey, now I am living my dream. Mom and my family thought I was sort of crazy but everything seems to have worked out.”

Porter has more than 10 years of experience as a grounds specialist for private golf and country clubs. He received a Bachelor of Science degree in horticulture and turf management from Iowa State University in 2000, is a member of the North Central Turfgrass Association, currently serving as vice president, and was a finalist for



The rebuilding process following the record flooding of 2009 took several months.

A Protein Boost to Awaken Turf's Defenses

In many respects, the turfgrass plant is no different than the human body. If you exercise, eat right and get enough sleep, chances are your immune system will be in a better position to ward off disease and handle the everyday stresses of life.

For turf, ever-changing weather conditions, the seasonal onslaught of various pathogens, and daily compaction from machinery and foot traffic can reduce overall quality and the ability to fight disease.

With Daconil Action™ fungicide from Syngenta, superintendents have a new tool to help manage stressful conditions on their turf.

In August 2011, Syngenta unveiled Daconil Action, a product that boosts the protein levels in turfgrass plants and, as a result, helps them resist fungus and other diseases. This product combines the proven disease control of Daconil® fungicide with a protein boost from Acibenzolar-S-methyl (also known as Acibenzolar).

Though many factors can contribute to overall turf health, it's a well-known fact that maintaining healthy protein levels is one of the key building blocks of disease resistance.

"The Acibenzolar in Daconil Action bridges the gap between genetic resistance and conventional disease control. Daconil Action has systemic properties that help to uniformly distribute it through the turfgrass plant to trigger natural disease defense mechanisms," said Mike Agnew, PhD, technical manager for Syngenta.

"The end result is turf that not only stands up to diseases and stress better, but it also provides a more durable playing surface. This is great news for superintendents and golfers alike," he added.

Acibenzolar is not a fungicide. It belongs to a

product category called Host Plant Defense Induction. Once absorbed by the turfgrass plant, Acibenzolar stimulates a natural defense response or the Systemic Acquired Resistance (SAR) by activating the production of pathogenesis-related proteins (PR proteins).

SAR inducers mimic chemical signals in plants that activate their defense mechanisms, such as the production of thicker cell walls and anti-fungal proteins. The SAR effect can reduce disease infection, but it's often not enough to prevent a fungus from



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getting the upper hand. That's where the protein boost comes into the picture.

The PR protein boost awakens the turfgrass plant's resistance to biotic and abiotic stresses like drought. This internal response within the plant increases photosynthetic capacity and enhances its own defense system against certain fungal and bacterial disease attacks like dollar spot, anthracnose, brown patch, gray leaf spot, stem rust, yellow patch, *Pythium* blight* and bacterial wilt*.

According to Agnew, "The bottom line is this: Countless superintendents have long trusted and relied on the effectiveness of Daconil to prevent and control turf diseases. Adding a protein boost to the mix helps give them some additional peace of mind that turf under their care will be healthier, more durable, and resistant to everyday stresses."

To learn more about Daconil Action fungicide, visit www.GreenCastOnline.com or call 1-866-SYNGENTA (796-4368).

PROTEIN HELPS TURF DEAL WITH IT.

Turf leads a pretty stressed life. It has to withstand daily attacks by machines, UV rays, wildlife and extreme weather conditions. And if all that wasn't enough, there's always the constant threat of pathogens. New Daconil Action™ fungicide combines the power of Daconil® fungicide with a revolutionary Turf Protein Booster that helps turf activate its own natural production of PR proteins. The result is turf that is stronger, healthier and better able to defend itself against fungus and environmental stress like drought. Learn more at DaconilAction.com.

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Red River has inflicted damaging blows for Porter and his crew so often since he became the grounds superintendent he actually has to pause a bit to recall the details of each one.

more than 40 pieces of Bobcat equipment, including loaders and telehandler machines donated by Bobcat to the flood-prevention efforts. Every hole on the course was damaged; some underwater for more than six weeks and were left with more than 6 inches of silt after the water receded.

“The silt is like gum and takes a long time

to dry out,” Porter explains. “The club would have had to wait for the silt to dry out before removing it and planting new turf. We rented a Bobcat T864 compact track loader to push the silt off the course and back into the river. The tracks give the machine good flotation in wet and muddy work areas and saved us at least three weeks in the cleanup and re-

covery efforts ... time we should have spent waiting for the silt to dry. After that, the club bought one.”

Red River rage has inflicted damaging blows for Porter and his crew so often since he became the grounds superintendent that he actually has to pause a bit to recall the details of each one. “I get confused sometimes ... all the floods have started to run together,” Porter says, “especially those when the water receded more quickly.”

After a summer flood in 2006 caused extensive damage to what Porter refers to as the bottom holes – those lower in elevation and closer to the Red River, club officials decided something needed to be done.

They hired soil experts and a team of architects and engineers to provide a recommendation. The plan called for raising the elevation of holes 1 and 2, along with holes 14 through 18, in addition to building an alternate hole.

Porter was just coming on board when

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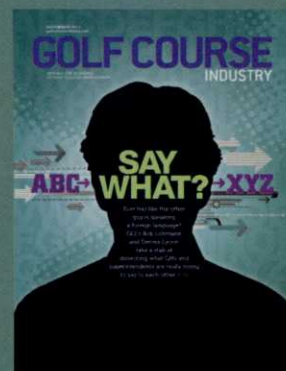
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the \$2.5 million renovation project began, a project of incredible scope that included – among raising several holes up to six feet in height (fairways included) to an elevation of 30 feet – building new cart paths, retooling all the bunkers and enhancing drainage and irrigation systems, all as components of the master plan.

“The club is very proactive,” Porter says. “The members embraced the 10-year capital assessment project because they knew something needed to be done. The Red River wasn’t going anywhere, but neither was the 113-year location of North Dakota’s first golf club.”

THE 2011 SETBACK & ANOTHER MIRACULOUS RECOVERY. The club reopened on July 7, 2010, after nearly a year of rebuilding. Much to the delight and relief of Porter, the Red River remained calm for the remainder of that summer. But the feisty river just couldn’t behave through another spring, and in March of 2011,

the rage of Red unleashed another post-winter fury – the fourth highest on record, with water levels rising to 38.6 feet, leaving portions of the course completely submerged for up to seven weeks.

“Raising holes 1, 2 and 10 really helped this spring, because the water didn’t remain on the fairways and greens for very long,” Porter says.

“The reseeded on those holes was minimal. But the bottom holes : 14, part of 12, and all of 15 through 18, were under water for 39 days,” he says. “When that water started receding in mid-May, we began the restoration process all over again, starting from scratch. We reopened the entire course ... once again ... on July 6. It probably goes without saying, but I haven’t really had a break. Along with the regular maintenance that it takes to maintain the 27 holes of the course, we’ve had to deal with additional, ongoing challenges here.”

Golfers and fans attending the 2011 Bobcat

North Dakota Open will be hard-pressed to find any evidence of Red River rage as they traverse the immaculate, scenic fairways and manicured greens of Fargo Country Club.

As you make your way down the tree-lined fairways and soak up the scenic ambiance that is Fargo Country Club, pause for a moment and visualize the same place, less than three months ago, submerged beneath 20 feet of water, floating logs and other miscellaneous debris. Then, join the members of Fargo Country Club in giving a special shout out to Porter and his crew.

They may not be swinging the golf clubs this week, but their mowers, trimmers and compact track loader will be out in full force, as Porter looks ahead to the next major event – most likely a flood. Perhaps there should be a trophy created especially for them. **GCI**

Randy Happel is a features writer at Two Rivers Marketing, which represents Bobcat.



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TERMINAL VELOCITY

When you discuss irrigation design it doesn't take long to focus on velocity.

Velocity is a very important component of irrigation design, but it is also an important consideration in irrigation-system operation. Rarely, though, do you hear it in the conversation about irrigation-system programming and operation.

Pertaining to irrigation, velocity is how fast the water is moving in the pipe. It is analogous to the speed of your car traveling down the highway. It is most commonly measured in feet per second (fps).

Velocity control is important in any irrigation system. Velocity becomes even more of a concern as the irrigation system and its associated piping gets larger. Uncontrolled velocities can reach havoc levels. High velocities cause surge pressure and undo wear on pipe and fittings, as well as other equipment. Velocity is calculated simply by determining how much water is going through a certain size pipe.

Industry standards dictate the velocity in a buried plastic irrigation pipe be kept below 5 fps. Some designers consider 5 fps to be too low, whereas others consider it too high. Certainly the larger the pipe the lower the velocity should be. For example, where a 6-inch pipe might be fine at 5 fps, a 14-inch pipe may be better with a velocity limit of 3 fps. Remember, it's not just about speed, but also weight. A large pipe carries more water weight, and therefore, more momentum.

Before central control systems, when these systems were mechanical, the designer could control and dictate how the system would operate and could control the velocities throughout the system. If you can dictate what comes on, where and when, then the pipes can be sized to always be below the 5 fps limit.

In the old days, the operator was not able to change the system design. If the design was correct, velocities would be controlled. It was common to have the operation of the system spread out throughout the 18 holes to minimize pipe sizes and keep system costs down.

With the implementation of central computerized control systems the operator has the ability to decide what goes on, where and when. If the operator wants a whole fairway to operate at once, then the control system can be programmed accordingly. The ability to design for a specific sequence of operation no longer existed.

Unfortunately, if you look at most golf course irrigation system databases you will find that the **flow database** is not filled out except for the pump station capacity.

In all the central computerized control systems there is the ability to flow manage the system. Each manufacturer does it a little differently and calls it by a different name.

These flow databases limit the amount of water theoretically allowed to flow through a given pipe. As part of the system programming the flow database needs to be filled out. It basically takes the piping design and then limits through the database the flow through each pipe and, therefore, the velocity.

Unfortunately, if you look at most irrigation system databases you will find that the flow database is not filled out except for the pump station capacity.

So examine your irrigation control system and take a look at what is in it. Is it filled out completely with mainline and lateral piping? Or, is it just a one of a couple of numbers? Is it just mainline, or is it a pump station

capacity – one number?

It is important to have a detailed database to keep from putting excessive wear and tear on the piping and control systems and to minimize water hammer.

It is also important to complete the database to allow higher velocities. Some people use higher velocities to lower their water window. However, you're asking for trouble as this will cause more fittings and other irrigation equipment to fail. Ask your original irrigation designer, distributor or other irrigation professional for assistance.

Although many only look at main-

line velocities, it is important to look at lateral lines, too. Valve-in-head sprinklers are very fast closing, and a fast-closing valve, in combination with high velocities, causes high surge pressures. So it is just as important to keep lateral velocities under 5 fps even though it is common to see them closer to 7 fps.

For example, on a 2-inch fairway lateral with three sprinklers, each using 32 gpm, there is a total of 96 gallons per minute. If one sprinkler is operating on the lateral the velocity is 2.88 fps, two operating 5.76 fps and all three operating 8.64 fps.

So the operator/programmer can decide whether to operate one, two or three sprinklers on the lateral can at a time. If you were to set the capacity of the 2 inch pipe in the database to 55 gpm, the velocity would be 4.95 fps, and operation would automatically be limited to one sprinkler on the lateral. **GCI**



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