

**Terry Buchen**, CGCS, MG, is president of Golf Agronomy International. He's a 38-year, life member of the GCSAA. He can be reached at [terrybuchen@earthlink.net](mailto:terrybuchen@earthlink.net).



## Travels With Terry

Globetrotting consulting agronomist Terry Buchen visits many golf courses annually with his digital camera in hand. He will share helpful ideas relating to maintenance equipment from the golf course superintendents he visits – as well as a few ideas of his own – with timely photos and captions that explore the changing world of golf course management.

## Mix it up

Sprayer agitators have to operate consistently to keep chemical compounds thoroughly mixed in suspension during spraying operations. Pictured is a Toro Multi Pro 175 low-profile sprayer mounted to the back of a Toro Workman utility vehicle. The sprayer pump also is operated from the utility vehicle engine. When the utility vehicle is being driven at lower speeds, the sprayer pump agitation system doesn't keep the chemicals mixed adequately.

Ray Nilsen, assistant superintendent at the Tucson (Ariz.) Country Club, came up with an idea to improve the sprayer agitation system. Nilsen designed and built a supplemental agitation system using a Honda model WX 15 1.5-horsepower pump with an adjustable throttle. The pump was mounted to a 1/4-inch-thick steel plate, which was mounted and welded to 2-inch square tubing, where the platform was bolted on the sprayer. All of these materials were in the club's inventory.

The 10 agitator nozzles were replaced with larger venturi openings to increase water flow. The pump intake hose was hooked to the sprayer drain at the bottom of the tank. The pump discharge hose was hooked to the existing agitator hoses. The sprayer pump agitator discharge pipe was connected with a tee in the line to the bypass valve so the fluid has somewhere to go.

The pump fuel tank can mix and spray about three acres of greens before it needs refueling.

Nilsen purchased the pump from Northern Tool ([www.northerntool.com](http://www.northerntool.com)) for about \$500. He purchased the hoses, quick disconnects, venturi openings and fittings from A.D. Williams in Phoenix for about \$120.



## Spread it accurately

Applying fertilizer precisely is an art form for golf course managers. Steve Gruhn of Spirit Lake, Iowa-based GolfKnowledge/Precision Golf Course Management offers GPS-produced mapping, GPS guidance and computer controls that guide spreaders to apply fertilizer exactly where turf managers desire at differing application rates with no skipping or overlapping.

The Bobcat 5600 Toolcat 4 x 4's forklift attachments move pallets of fertilizer bags or large totes as needed around the course and loads the fertilizer spreader hopper. The Simonsen fertilizer spreader's dual side-spin, which is attached to a custom-made, fifth-wheel hitch connected to the tow vehicle, is hydraulically driven at variable rate speeds.

First, the golf course must be GPS mapped with all of the specific sizes of the greens, collars, tees, fairways, roughs, bunkers, lakes, etc., with between 40,000 and 50,000 GPS reference points recorded for a typical 18-hole course. Then a grid system of management zones – fairways divided into 5,000 to 21,000 square feet, for example – is designed. Then the on-board GPS application controller/computer (patent pending) can apply precisely only what's needed, where it's needed (at varying throw widths) at different application rates while keeping the operator on the correct track so there are no gaps or overlaps. The GPS guidance/computer controls also can be used similarly while using a tow-behind sprayer. **GCI**

