



All yard wastes from Old Westbury Golf and Country Club are composted on-site. The material is ground, blended, and screened before being used as a topdressing material on the fairways. The topdressing material provides nutrients that are recycled back to the turf.

The Old Westbury Code of Environmental Conduct

by **ARTHUR P. WEBER**
USGA Green Section Committee

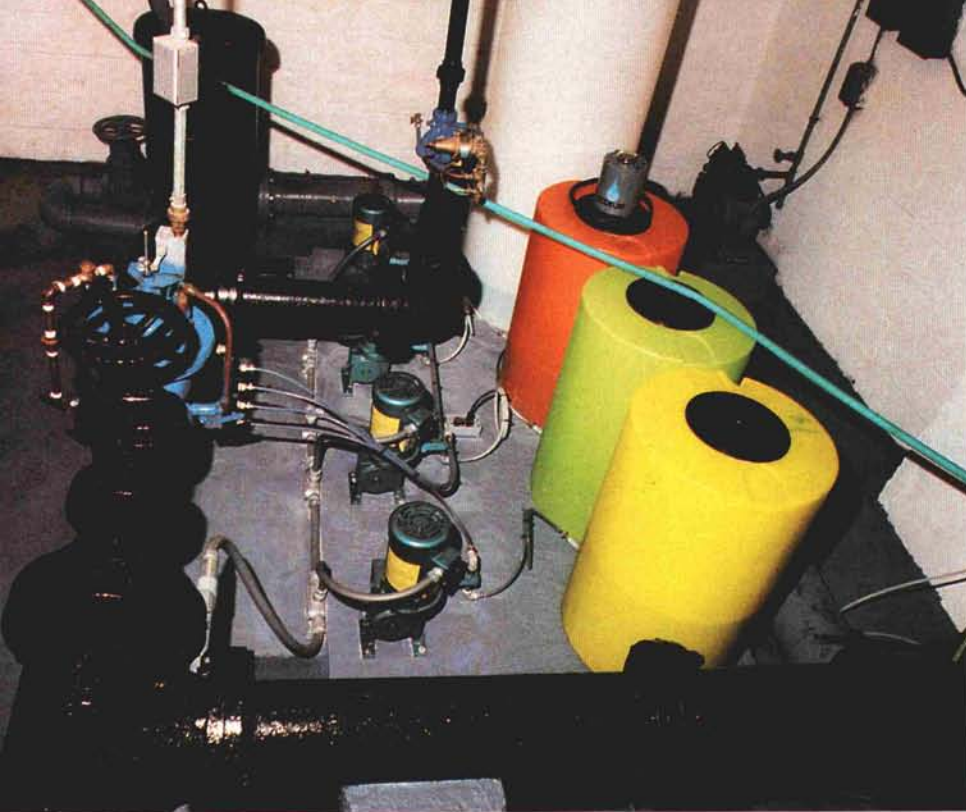
EFFECTIVE April 1, 1994, the Old Westbury Golf and Country Club, Old Westbury, Long Island, New York, became the first club in the United States to adopt a formal program of environmental awareness in the maintenance of its golf course, called the "Code of Environmental Conduct." The Code documents, for both the membership and the community, the club's positive environmental commitment and details the procedures to be followed. Its genesis derives from a set of environmental

guidelines promulgated one year earlier by the Royal Canadian Golf Association. On July 5, 1995, the club was designated a certified Audubon Cooperative Sanctuary, as promulgated by the Audubon Society of New York State with the support of the USGA.

It is not the intention here to include a verbatim recitation of the Code, but rather to highlight its content, describe how it is being implemented and report on its impact, a year and a half subsequent to its adoption. Although techniques are embraced within

the Code, such as Integrated Pest Management, which when out of context stands alone as a defensive or reactive concept, the Code in its entirety presents an aggressive or proactive Integrated Response Management protocol. A copy of the Code can be made available upon request to the club.

Superintendent Phil Anderson, realizing that golfers have been bedazzled by television tournament conditioning and driven by peer competition, has managed nonetheless to successfully live by the Code, albeit



A fertigation system is utilized to apply fertilizers through the irrigation system, providing small amounts of nutrients that the turf can readily use.

requiring a hard-fought balancing act to survive while maintaining responsible environmental stewardship. The results have been positive and without budgetary pressure. To the contrary, expenditures were reduced for chemicals, fertilizers, and for the maintenance of natural areas. Environmentally compatible biological controls and organics are employed in lieu of some previously used chemicals.

In summary, the Preamble of the Code avers:

- The club be committed to take every practical precaution toward ensuring that the products and techniques used in the maintenance of the golf course present the lowest possible risk to the environment.
- The golf course is to provide for the preservation and creation of areas useful to wildlife.
- The goal is to develop programs and utilize practices that sustain an equilibrium between maintaining good quality playing conditions and a healthy environment.
- The Club recognizes that all regulations and plans should be based upon scientifically corroborated data and, to this end, shall support turfgrass research.
- The Members be rallied to support the Club's efforts to balance conditioning with environmental enhancement and conservation strategies.

The Code provides for the establishment of an Environmental Committee to develop programs, foster staff and member support,

and maintain an evaluation process to assess the Club's performance. Employees are invited to participate in the development, implementation, and review of health and safety programs. Policies and objectives are to be disseminated to all levels in the Club organization. A system of planned audits is scheduled to verify compliance with stated objectives, the results of which are to be brought to the attention of management personnel for appropriate consideration.

Practices

All yard wastes from the course are mixed and recycled, employing on-site composting and soil blending, utilizing rototillers, a front-end loader, soil blender, and tub-grinder. Such recycling eliminates the disposal problem of organic wastes in landfills. Grass clippings, leaf cleanups, chipped brush, and thatch from turfgrass renovation projects are used in soil mixes to refurbish or enlarge tees, frame bunkers, stabilize pond banks, and create mounding for burrowing animals, and are finely ground and screened as a topdressing to biologically treat and organically fertilize fairways, tee boxes, embankments, and greens.

Organic materials are disposed of on site for use by wildlife. Scattered dead trees are pruned to remove lateral branches, leaving the main trunks standing as shelter and food sources for birds and wildlife. Aerification plugs are ground up, composted, and used as soil amendments or topdressing, thereby

enhancing turfgrass quality and the uniformity of seed germination while significantly reducing the need for water and fertilizer. Landscaped beds and the surrounds of recent plantings and young trees are mulched to reduce water requirements.

In cooperation with the Village of Old Westbury, the Club serves as a centralized depository for organic debris and leaf cleanup collected by Village road sweepers and landscape gardeners. The materials are processed to renew and enrich hardpan and sandy areas. More than 12,000 cubic yards of organic debris have been collected and processed to date. The operation now serves as a model for neighboring villages and towns.

All irrigation water is derived from the Club's two deep-well sites. The runoff of all rainwater, irrigation water, and snowmelt is directed to collection ponds and perimeter pits improved with inversion wells. Water usage has been reduced significantly by monitoring irrigation output, regulating spray patterns, and watering on an as-needed basis, supplemented by organic wetting agents, all computer-optimized. Using fertigation techniques at the pumping stations allows wetting agents, biological controls, and trace nutrients to be proportioned and selectively diluted into irrigation water. Irrigation efficiency is augmented by a scheduled nozzle inspection and replacement program.

Pesticides are shipped to the club on an as-needed basis to minimize storage and handling requirements. Only those chemicals that are biologically degradable, with short environmental half-lives and known fate in the ecosystem, are used. As a control, a "cap" is imposed upon the total quantity of pesticides in storage at the Club at any one time. Fairways are spot-sprayed as needed, rather than blanket-treated systematically. The pesticide storage area is state of the art, utilizing a rinse-and-recycle program for pesticide containers. A modern closed-loop wash area is under development for mower reels, greens rollers, aerators, blowers, and other turf maintenance machinery, vehicles, and tools. The system will prevent the potential for fertilizer, pesticide, oil, grease, and fuel contamination of ground and surface water that can result from the pressure or steam cleaning of such equipment and vehicles. The contaminants are removed and the purified water recycled.

The most prevalent disease targets have been dollar spot and pythium. An Integrated Pest Management (IPM) program is followed for insect control, applying pesticides only when a problem has exceeded an established damage threshold. Spot spray

treatments are applied at curative rates in lieu of preventive systemic treatments. The program is enhanced by the use of lightweight mowing equipment, turf rollers on greens, and judicious irrigation. Weather forecasts, soil moisture, relative humidity, and air temperature, correlated on a degree-day basis, are monitored to predict disease damage, complemented by leaf tissue microscopy. Pesticide products are varied to avoid the development of resistant disease strains. Again, composts are applied as biostimulants to maintain healthy growth on greens and less dependence on fertilizers. Biocontrol agents and aeration serve in lieu of chemical algicides in ponds.

Thatch layers are regulated by verticutting to optimize their effectiveness in maintaining a dynamic balance between water, nutrient and pesticide retention, and pesticide degradation. Turf samples are subjected, in-house, to near-infrared spectral (NIRS) analysis, measuring how much of 12 essential elements are in the plants' leaf tissue. From this fertility profile, we identify deficiencies, feed the turf only what it

needs, avoid unnecessary fertilizer applications, and reduce the susceptibility of the turf to pest damage. Only slow-release fertilizers are used, and none are applied on slopes with runoff to ponds. Even where runoff is not a concern, fertilizers are not applied within 25 feet of pond levels to maintain a buffer zone. Vegetative buffers also are preserved around ponds to filter runoff and to mitigate erosion. Baseline data have been established for pond water quality, including clarity, dissolved oxygen, and pH.

Only those parts of the golf course that are in play are maintained. *Poa annua*, which otherwise requires heavier doses of fertilizers, pesticides, and water, is controlled by overseeding with more desirable species like creeping bentgrass and perennial ryegrass.

Natural areas have been reestablished. To attract butterflies and hummingbirds, a perennial garden has been established, augmented by strategically located tree saplings and flowering shrubs. Twenty-six nesting boxes have been erected for bluebird fledglings and other cavity-nesting species.

Six bat boxes are located on the property for insect control. Habitats are maintained for wildlife, such as foxes, raccoons, rabbits, quail, pheasant, turtles, frogs, chipmunks, opossum, and red-tailed hawks.

Not to overlook other environmental concerns, the combustion engines of all turf maintenance machinery are fine-tuned and their moving parts well lubricated and overhauled as necessary to mitigate polluting fugitive emissions.

Much to the gratification of our members, the adoption of these practices, so beneficial to the symbiotic relationship between groomed golf play areas and their natural surrounds, has had a positive corollary effect upon the conditioning, playability, and aesthetic appeal of the golf course. Our members take pride in their commitment to environmentally responsible behavior and the leadership role the Old Westbury Golf and Country Club has assumed. Hopefully, as this behavior becomes commonplace, a universally adopted Code of Environmental Conduct will evolve as an adjunct to the Rules of Golf.

The Old Westbury Golf and Country Club uses in-house near-infrared spectral (NIRS) analysis to measure essential nutrients in leaf tissue. The results are used to modify the turf fertilization program.

