Meet the NEW TMS "Strong Boy"

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A new hydraulic dump bed designed for use on pick-up trucks--1/2, 3/4, or 1 ton size. The TMS "Strong Boy" can hoist three tons and haul 52 bushels (equivalent to 65 cu. ft.) Optional side boards increase capacity to 87 bushels (or 109 cu. ft.)

The TMS "Strong Boy" has strong competitive advantages both in price and quality construction. No wonder it is sweeping the country in different industries for a variety of uses.

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The TMS "Strong Boy" has twin cylinder hydraulic lift, a 14 gauge steel body and a double-hinged tail gate. It is equipped with a sliding gate (9" high, 12" wide) and spreader chains.

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turers we felt were reputable to send us samples of their sprinkler heads. We said we'd like to test them.

"We took each head and set it at the manufacturer's recommended pressure. Then we took a vessel, turned the head upside down in it, got a stopwatch, and turned on the water to the recommended pressure. We watched to see how many gallons came out.

"One of the heads missed its mark by 25 percent! How can a design engineer for an irrigation system take those specs and be successful?

"From the tests," he said, "we selected our system. The selection was based on the performance of the company's head. It produced the amount of water it was supposed to."

Then the company was given the task of designing the irrigation system. It was decided that 1,228 sprinklers would be required to adequately cover the course. There was much discussion over how far apart to space them. This is interpreted as the irrigation ratio. Common but poor installations have ratios as high as five to one Lokey said. This means that for every inch of water you put on the dry spots, in a typical pattern of four sprinklers, you must put five inches on the rest of the turf. Many systems are four to one, which is not much better.

Valley Club superintendent Don Lokey testing moisture level with a moisture sensing instrument to determine water required for the next irrigation cycle.

The ideal, according to Lokey, is one-and-a-half to one. But that's about impossible to achieve with the present design standards. The new system at Valley Club is two to one. A group of four sprinkler heads farms corners of a rectangle 60 by 70 feet on a side.

Lokey would like the spacings to have been closer than 60 by 70 feet, but he acknowledges that his two to one system is surprisingly effective.

The Formost Construction Company of Venice, California, contracted to install the new system and was able to do so without shutting the course down. Plastic pipes were laid throughout, the largest mains being eight inches in diameter and the smallest, four. The pipe was laid three feet deep. Some of the digging was rugged. Many rocks had to be removed.

The new system was designed by Rain Bird Sprinkler Mfg. Corp., Glendora, Calif. to irrigate more than 100 acres of turf. Pressure is maintained by a booster pump with a capacity of 1,350 gallons per minute. It is expected to boost 75 psi water from the main Cachuma line to 105 psi, but Lokey admitted he has not yet achieved this goal.

When the rationing program was instigated after the new irrigation system had been installed, it sounded at first as if the Valley Club would be getting a generous allotment of water. The amount was to be based on the amount of water used over the years. This turned out to be less than bountiful. The meter on the old system had been faulty. And, as Lokey explained, when water meters go awry, they don't give you less water than they record, but most often much more.

Thus the Valley Club historically used more water than it is now allowed — which is 200 acre feet a year. It's apportioned into three-

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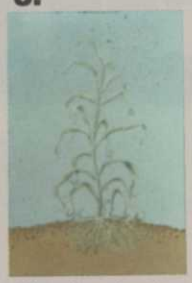

The plant begins wilting and yellowing within two to ten days.

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HERBACEOUS PLANTS carnation, chrysanthemum, gladiolus, iris, peony, zinnia, etc.	blister beetle, boxelder bug, flea beetle, Japanese beetle, June beetle, lace bug, leafhopper, leafroller, mealy bug, plant bug, psyllid, rose aphid, thrips (exposed).
SHRUBS, TREES AND WOODY PLANTS ash arborvitae, azalea, barberry, beech, birch, boxwood, catalpa, cedar, cypress, dogwood, elm, euonymus, ginkgo, hackberry, hawthorn, holly, honeysuckle, hydrangea, juniper, lilac, magnolia, maple, oak, pine, redbud, rose, tulip-tree, etc.	apple aphid, bagworm, birch leaf miner, boxelder bug, boxwood leaf miner, cankerworms, catalpa sphinx, Cooley, Eastern spruce gall aphid, elm leaf aphid, elm leaf beetle, elm spanworm, eriophyid mites, gypsy moth, Japanese beetle, June beetle, lace bugs, leafhopper, leafroller, mealy bug, oak leaf miner, orange tortrix, periodical cicada, pine sawfly, puss caterpillar, plant bug, rose aphid, roseslug, scale, spruce gall aphid.
LAWNS, TURF	ants, chinch bugs, cutworms, earwigs, fall armyworm, fleas, leafhoppers, millipedes, mosquitoes, sod webworms (lawn moths).

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month blocks that cannot be carried over. If they could, Lokey is certain he could work more effectively with the rationing schedule.

"I sympathize with the water department," he declared. "We'd voluntarily curtail our present amount of water rather than let the community run short — even though it's painful. And it is painful."

Lokey and his club committees have taken the rationing philosophically.

"We've had shortages before and survived them," he said. "And we can do it again. During one shortage only the tees and greens were watered."

Lokey is convinced that with the new, more efficient irrigation system and tensiometers he can make it. He has the advantages of humidity, little evaporation, and a variety of fairway grasses that have been allowed to grow and mingle as they wish — bluegrass, bent and Bermudas. They grow in Montecito beautifully. There also is some native annual bluegrass that does very well. The greens are all of seaside bent; they were planted forty years ago. The grasses don't require heavy watering because of the mild climate.

After it was installed, Lokey began calibrating the new system immediately so that the water output would agree with the meter reading. He makes daily checks of the amount of water used.

"We're coming pretty close to knowing how much water we're putting on," he commented. "Our rain gauge-like calibration cups are helping."

As far as depth of watering, Lokey isn't interested in getting it eight inches deep. His turf doesn't have roots down there. But he is interested in three inches, and wants to keep things moist at least to that depth. The Montecito soil is good at holding moisture, unlike the sandy soils of many desert golf courses.

At present, the watering periods are two cycles of 20 minutes each every other night. The whole course gets this amount, which in summer is about .84 of an inch a week.

"I can go our right now and find a dry spot, put tensiometers on it and get virtually zero," Lokey says.

Clubhouse complex at Valley Club in Montecito, Calif.

"On a couple of them now I'm getting five centibars. I can get along beautifully with 20."

There are indications that he can reduce his water. But he doesn't want to cut back to the point where he's creating dry spots.

"On the average course where you find a dry spot, you just turn up more water," he said. "That's just a cover-up."

To make certain he stays well within his ration quota, Lokey has turned off sprinklers at the edge of fairways and in the roughs. Of the total of 1,228 sprinklers, he has cut off 286, explaining: "I'd rather have an area completely dead and try to balance the rest of the system so the parts that are watered look good."

As for the course's many great trees, they do better without watering. In fact, over-watering the course fosters the growth of fungus at the base of the tree trunks. Lokey's men are careful to keep the base of the trees as dry as possible.

"All courses have dry spots," Lokey said. "And when the greens committee jumps on a superintendent for this, he turns on more water. That ends the dry spots for a time, but it over-waters the course. Pretty soon you're standing with mud on one leg and dust on the other. The big problems are underpressure of water and over-spacing of sprinkler heads."

The spacing of heads of the key to a successful irrigation system, according to Lokey.

Many system designers will space the heads too far apart so that they can bid a lower price for the system. It's the competitive thing.

He thinks golf management is willing to pay a higher price for well-spaced heads if the sales people would explain to them that they would save in the long run on water and labor. Clubs don't want to have to try to cover up for a poor system by over-watering. The original cost of additional sprinklers and pipe is soon made up in savings in water. And where water is scarce, there is additional incentive for an efficient water system because it saves water. The irrigation equipment is excellent and can perform much better with well planned installations.

Lokey thinks the locations of sprinkler heads should be determined with transits, instruments that civil engineers use. This isn't done. The common practice is to line up the sprinkler sites with the eye and plant flags on the selected sites. Sprinkler heads located by that method invariably are off by a few feet and that can upset the pattern, he said.

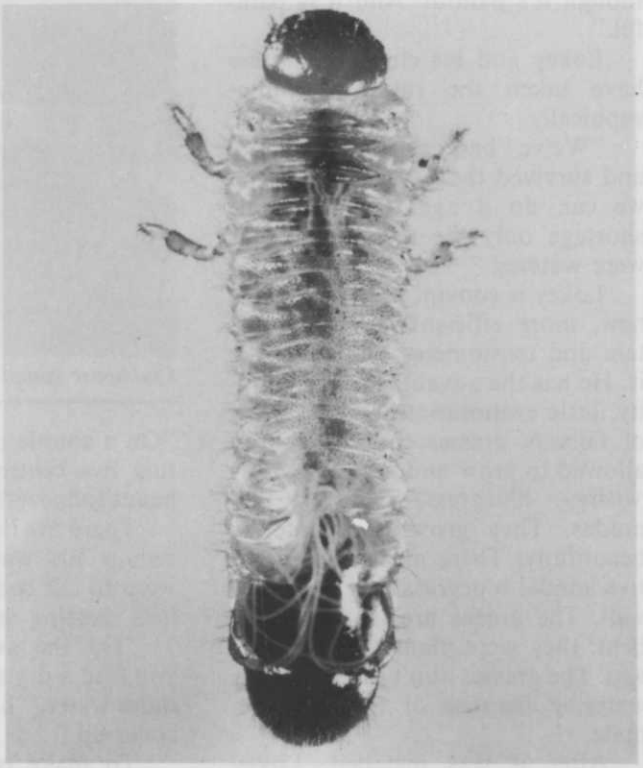
One thing appears certain. The Valley Club's irrigation system will be one of the most efficient in the country when Lokey completes his research project. And not many systems will be as well understood. □

Japanese Beetle Parasite Found in the Northeast

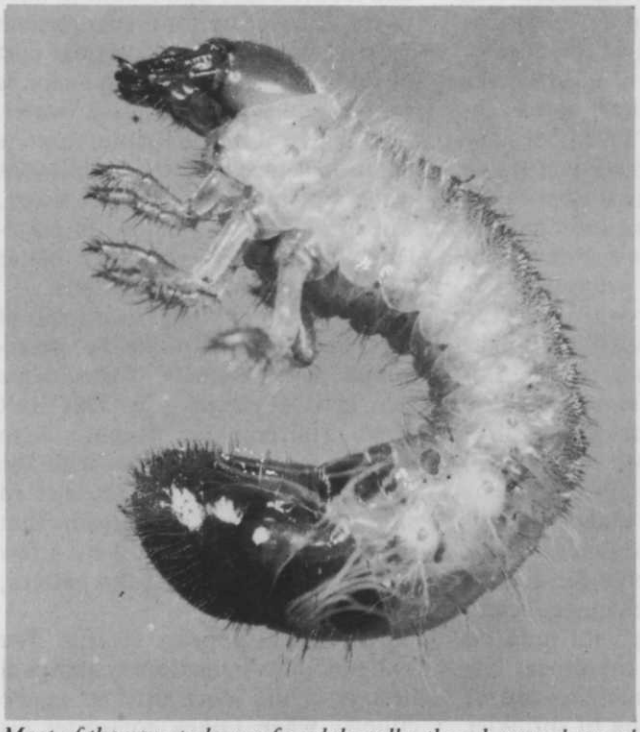
As was reported in the January news section of WEEDS TREES & TURF, a new nematode parasite has been discovered in the Northeast. The parasite is being studied as another possible natural method to control the insect. Since the January report pictures of the parasite attacking the larvae of the beetle have been taken at the U.S. Agriculture Department's Japanese Beetle Laboratory at the Ohio Agricultural Research and Development Center in Wooster, and the pictures are published on this page.

Apparently, Japanese beetle larvae become infected by the merimithids in late summer. Laboratory entomologist M. G. Kelin said the merimithids emerged in March from larvae collected in October and held in cold storage until January. Parasites emerged in mid-May from larvae collected in April.

The thread-like merimithids, about nine inches long, could be observed coiled inside the collected larvae. At the time of emergence, individual grubs showed little sign of life except feeble movement of the mouthparts. A single merimithid normally emerged from each grub, although as many as three parasites were recovered from one host. Most of the host larvae had completed their third moult when the merimithids emerged.



The merimithids, about nine inches long, could easily be observed coiled inside the larvae since they extended from the middle region to the second-last abdominal segment.



Most of the nematode was found dorsally, though several strands were visible on the ventral side.

The merimithids emerged either through the intersegmental membrane of the first body joint of the legs or through the mouth of the larvae.

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LEAF SPOT on bentgrass (melting-out stage).

LARGE BROWN PATCH (Rhizoctonia solani).

TYPHULA BLIGHT or Gray Snow Mold, close-up view.

RUST (Puccinia graminis) on bluegrass.

FUSARIUM BLIGHT (Fusarium roseum and Fusarium tricinctum).

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