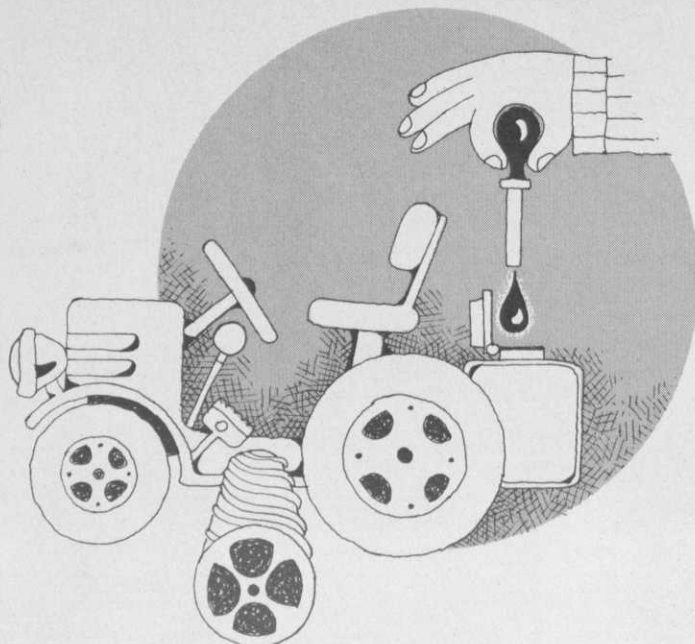


Quality Turf on Less Fuel

Superintendents could be faced with the seemingly conflicting tasks of keeping the course in top condition and implementing a fuel conservation program. Here's one expert's tips to help reconcile the problem



by HERBERT COLWILL

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Fuel costs now represent only 2 to 3 per cent of the total maintenance budget at most golf courses. Dwindling fuel supplies and rising fuel prices, however, will increase that percentage, although to what extent remains impossible to predict. A survey by The Toro Company in January of representative golf course superintendents throughout the country reveals that superintendents have experienced cutbacks in fuel supplies, ranging from 10 up to 25 per cent. Provided supplies remain at those levels, they foresee no problems in continuing to provide their memberships with the same high level of maintenance as in the past.

However, were the Government to institute stringent gasoline rationing, the percentage of cutbacks of fuel to superintendents would be that much higher and would force superintendents to take emergency steps, such as reducing maintenance in rough areas or revising the schedules of watering, fertilizing and mowing.

Although no such action is mandatory now, superintendents should be forewarned of the possibility of rationing and have already on hand plans for revisions of current maintenance schedules.

Dwindling gas supplies do not necessarily threaten the existence of golf courses. In all probability courses will become more vital to the well-being of a community. As vacation travel is restricted, it is reasonable

that the desire for and the demand on local recreational facilities, such as golf courses, will increase. To provide the kind of turfgrass environment that will withstand this greater traffic, the golf course superintendent must continue his full management program, not reduce it.

The dilemma this poses for the superintendent is one of reducing gasoline consumption yet maintaining the quality of turf that his players have learned to expect and appreciate. How a superintendent achieves the goal involves many steps, the primary ones are the proper equipment for each job, optimizing maintenance of all equipment and good management of resources.

SELECTING THE PROPER EQUIPMENT

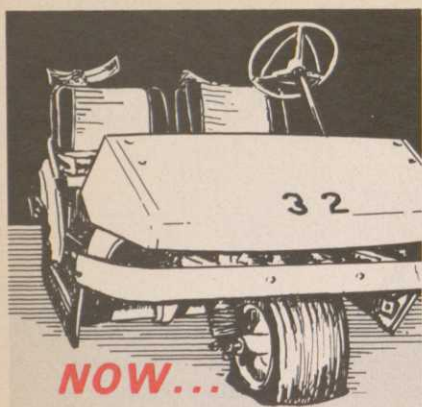
As a general rule, reel mowers and sickle bar mowers are more efficient than rotary and flair mowers. The scissor action of reel and sickle bar mowers shears the grass rather than the impact cutting from rotary and flair mowers. The scissor action requires less power. One 70-inch reel mower, such as Toro's Pro, is capable of cutting a 70-inch swath of grass using a 6.25hp engine, whereas one rotary mower (the Trojan) with a 60-inch width of cut needs a 14hp engine. The 70-inch reel mower cannot be used for all trimming operations, but it should be used wherever possible.

With the same mowing speed, reel mowers will use up to 50 per cent less fuel per acre of cut grass than rotary mowers.

The diesel engine, although more expensive, is 20 to 25 per cent more efficient than the gasoline engine. As a rule, diesel fuel costs less than gasoline. Preliminary tests on the Toro Parkmaster, for example, indicate that 400 to 600 hours of use a year are required to justify the additional cost of a diesel engine, based on fuel saving. But with gasoline on allocation, the cost may not be the primary factor in deciding when to use diesel power. Perhaps the 20 to 25 per cent greater efficiency offered by diesel power, which means fewer gallons for a given task, will give the superintendent enough incentive to consider diesel power when purchasing new equipment or to use diesel-powered equipment for a greater number of jobs, if it is already being used on the golf course. Another advantage of diesel fuel, frequently overlooked, is that it is not as likely, as gasoline is, to be stolen.

It is more efficient to use one large mower than it is to use two or more smaller mowers. One Greensmaster 3 rider, for instance, can cover a given area in the same time as three to four walk Greensmowers. Using a nine-gang fairway mower will increase mowing capacity by 20 per cent over a seven-unit machine, while the dif-

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ference in fuel consumption is only 5 to 10 per cent.

A useful general rule: The larger the equipment and the faster the job can be done, the less fuel will be used.

Among the many factors that affect the quality of cut of a reel mower is the number of blades in the reel. A five-bladed reel uses 8 to 12 per cent less power and fuel than a six-bladed one. Determining the quality of cut for a given area is a judgement only the superintendent can make, after running comparison tests. He can then decide if he can take advantage of the fuel-saving opportunity by using fewer blades on the reels.

OPTIMIZING MAINTENANCE

The engine is probably the most critical component in determining fuel economy. A properly maintained, well-tuned engine can conserve fuel. Because of the variety of engines available, the superintendent should refer to the engine manual for each machine. These are some of the items that will bring about fuel savings:

Carburetor adjustment. Both the no-load idle and high-speed carburetor jets, if adjustable, should be set for the maximum air-to-fuel ratio or lean setting. Adjust to a lean mixture until some misfiring occurs or the engine runs rough, then enrich the mixture slightly. Check also the acceleration to ensure performance when under load.

Ignition system. Replace or clean the points, condenser and spark plugs, according to the engine manufacturer's recommendation. Check timing of the engine to ensure maximum power.

Air cleaner. This component is extremely important for durability of the engine; a clogged air cleaner can change the air-to-fuel ratio and use excessive amounts of fuel.

Oil-fuel ratio (two cycle). This ratio varies for different engines, so follow the engine manufacturer's recommendation for mixture.

Combustion chamber. According to some air-cooled engine makers, it is necessary to remove the cylinder head and clean the deposits from the combustion chamber. When this job is done, also check the valves to ensure the valve and seat surfaces are in good condition. Recondition worn engines to improve compression by grinding the valves and replacing the old rings.

General maintenance of the machine can also prolong its life and save fuel. It is important to reduce the parasitic load caused by the various components. Check bearings, belts, chains and shafts for proper alignment. Make the necessary adjustments to bring these components into proper alignment. This will reduce friction within the machine and allow more of the available power for work output. Frequent and proper lubrication also can reduce friction and parasitic load.

Proper adjustments can be an important fuel-saving technique. Belts that slip excessively are inefficient and will waste fuel. Chains should run smoothly with proper adjustment and lubrication. Keeping tires at recommended pressure can reduce the rolling resistance of the machine.

With reel mowers, the bedknife adjustment is critical. Overtightening wastes power, and an insufficient bedknife contact will not maintain the slight wear essential to maintaining sharp edges. Occasional backlapping may be necessary to maintain sharp edges. A sharp reel mower will improve the quality of cut, which could prolong the interval of mowing in some areas. A sharp, properly adjusted mower will require less power and therefore use less fuel.

Sharp cutting edges on rotary mower blades will improve the quality of cut and reduce power requirements. Sharp edges also will allow reduction of engine RPM while maintaining good quality of cut. Keep the blade edges parallel to the ground. Discharge material away from uncut grass and thereby avoid picking up the clippings on the next pass and recirculating them. Control the discharge opening for optimum discharge, but be careful to maintain the necessary safety features built into the deck. Saving fuel at the expense of safety is not wise.

MANAGEMENT

The superintendent also controls other factors that could save on fuel consumption. Plan mowing patterns for the least amount of transport between locations. Use the least amount of overlap consistent with the skills of the operators. Select the heights of cut best suited for each area to be mowed. You may be able to increase the height of cut in the roughs and add one or two days to your mowing cycle,

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highly-developed system of green belts serving densely populated areas. These green belts—mostly small parks and wooded areas—are heavily used.

Americans can look for an increased use of parks and woods near heavily populated areas. If access to free-wheeling cars and skies full of planes is diminished, there may be an American renaissance of hiking, hosteling, and cross-country skiing. Bowling greens and lawn games may return to our towns. The network of more than 11,000 golf courses—one of America's national treasures—will increase in importance as we move further into this new age of shortages.

As the demands on these facilities grow—and they are bound to—scientists and researchers will have to keep pace with new turf management techniques and products. In the last quarter of a century, there have been such achievements as: new warm and cool season turfgrasses; fertilizers; fungicides; herbicides; insecticides, and turf equipment. That kind of developmental work will provide the basis for continually satisfactory turfgrass areas.

The energy crisis provides turfgrass managers with their greatest challenge and their greatest opportunity in years. The production and maintenance of good turfgrass facilities can only grow in importance, for they are a vital part of our way of life. □

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thereby reducing the number of times per season that you must cover the same area.

Too much mowing can waste power, as can allowing the grass to grow too long, which may require subsequent cleanup operations. Try to remove no more than one-third of the blade of grass at each mowing. Greens will still require daily mowing, but you can revise mowing schedules for all other areas.

Other conservation suggestions are these:

1. Keep the gas pump locked to avoid theft;
2. Avoid spilling while refueling. You'll want your operators to avoid hot rodding and jack rabbit starts and stops. This may bring the additional benefit of reducing breakdowns;
3. Turn off the engine when not in use; there is no productive work done while idling;
4. A governor installed on the engine is the most efficient means of ensuring uniform speed. It is not always necessary to operate machines at maximum rated RPM. With hydrostatic propulsion drive, you can reduce engine speed and still maintain the desired ground speed. The reduced speed will save fuel.

Fertilization and water practices affect the frequency of mowing. Soil analysis may not only save money on

fertilizer, but will eliminate the possibility of over fertilizing, therefore reducing frequency of mowing while maintaining good growth and color in the grass. An efficient sprinkler system, which evenly distributes and controls moisture, influences the growth of grass; that, in turn, dictates the frequency of mowing. Don't water any more than is absolutely necessary.

Fuel can be saved, but it will require special effort on the superintendent's part to reduce gasoline consumption 10 to 20 per cent. Select the proper machine for the job, keep equipment properly maintained and adjusted and make full use of your managerial talent. Any one of the steps listed is not critical for fuel conservation, but all of them will give you the opportunity to save fuel without sacrificing good turfgrass management practices. □

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