

of water.

To prevent condensation from forming in the fuel tank, keep it full at all times when not in use. In addition, condensation and other types of contamination can enter the system from the fuel storage tank.

Quality is another key for diesel fuel users as fuel contamination is a major concern. The following fuel factors must be considered to keep on top of this potential problem:

- Cetane number: reduces lag time. A longer lag time means a harder start engine, especially in cold weather. It is also more likely to smoke and knock.
- Flash point: the temperature at which fuel ignites. If too low, white smoke will appear.
- Cloud point: approximately 10-15° F.

when wax fuel appears. As long as fuel system components do not plug, the fuel is usable.

● Sulfur content: should not exceed 0.5 percent. Levels above that may contribute to acid build-up on the lubrication system.

Proper storage of diesel fuel is imperative. The following guidelines should be followed:

- 1) Be certain fuel is stored with as little moisture as possible.
- 2) Be certain fuel is stored where there are no dramatic temperature changes.
- 3) Only store what can be used in a reasonable amount of time. Storage tanks should be kept full, too.

Diesel fuel engines will smoke at the initial start-up. However, smoke that continues after a complete warm-up may be an

indicator of potential problems. A diesel engine's condition can often be read by the color of its smoke, as such:

White smoke, Type 1: water vapor or steam that appears but doesn't linger. This indicates a cooling system leak.

White smoke, Type 2: caused by low temperature. If it is a low ambient temperature, the smoke will disappear. If it is a low combustion chamber temperature, the puffs of white smoke will continue and may indicate low pressure, ring or piston problems, or leaky valves.

Black smoke: caused by unburned fuel. This may indicate nozzle problems of injecting more fuel than can be properly burned with the given horsepower and time.

Gray smoke: caused by excessive amount of oil in the combustion chamber. It indicates worn rings or valve guide wear.

Refer to your operator manual for specific tractor or equipment models. In general, the fuel filter should be checked and cleaned every 100 hours, and changed every 400 hours.

—The author is national training manager for Kubota Tractor Corp.

Treating oak leaf spot

■ During the past two years, leaf spot (*Tubakia dryina*) has increased in container-grown oaks, according to Dr. Jim Strandberg, plant pathologist at the Central Florida Research and Extension Center.

The fungus produces small lesions and a blight that deforms the plant's leaves. It affects many species of oak, including the popular laurel oak.

Tubakia spores reproduce best in humid, damp weather. At one time, this devastating disease was common only in Eastern states. Severe oak leaf spot losses, however, recently have been recorded in several Southeastern nurseries.

Strandberg has studied the fungus since 1989. In addition to investigating its biology, he has so done a comparison of control products.

"Traditional control methods include copper fungicides," says Strandberg. "But these aren't always effective because they're non-systemic. Oaks may produce several

growth flushes a season, so there's a constant chance that young, susceptible foliage may need protectant sprays.

"Ornamental nurseries are at particular risk because sprinkler irrigation spreads tubakia spores," he adds.

Strandberg tested seven fungicides in three classes: systemic, copper and non-systemic. Efficacy was determined by measuring the percentage of leaf area damage (indicated by "LAD") on new foliage of infected one-year-old laurel oaks. Overhead irrigation was performed nightly for two months, and fungicide applications were made bi-weekly.

"All the fungicides reduced leaf damage," Strandberg notes. "Only the systemic fungicides reduced the damage enough to satisfy the strict requirements of nursery production."

For his test results, see accompanying chart below.

FUNGICIDE EFFICACY ON OAK LEAF SPOT

Percentage of leaf area damaged (LAD) on new growth of one-year-old Tubakia-infected trees.

Fungicide	June 14		July 25	
	Rating	%LAD	Rating	%LAD
Banner	1.8	6.4	1.6	5.1
Bayleton	2.3	9.3	3.3	33.2
Copper hydroxide	1.6	14.7	2.7	24.4
Daconil	2.5	20.3	3.4	31.8
Control	3.5	17.6	4.3	51.4

Source: Strandberg, 1991

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