Fertilizer safety levels in doubt

CORVALLIS, Ore. — An Associated Press report states the Environmental Protection Agency (EPA) says fertilizer levels that are safe for human drinking water can kill some species of frogs and toads.

In a new study, researchers at the Oregon State University found some tadpoles and young frogs raised in water with low levels of nitrates typical of fertilizer runoff ate less, developed physical abnormalities, suffered paralysis and eventually died. None died in control tanks with normal water.

"We're looking at levels of nitrates so low we didn't think we'd get any effect," zoology Professor Andrew Blaustein told the AP.

In addition, the fertilizer runoff may be encouraging the growth of algae that feeds tiny parasitic flatworms called trematodes, blamed for causing deformities in frogs around the United States.

The study indicates EPA water-quality criteria does not guarantee the survival of some protected and endangered amphibians, Blaustein told the AP.

"I think this is clearly a significant problem," he said. "The question I have to ask is, are you comfortable drinking water with levels of fertilizer that kills off frogs?"

Officials at the EPA regional office in Seattle would not comment until they have reviewed the study, published in November in the journal Environmental Toxicology and Chemistry.

Scientists internationally have reported a sharp decline in the numbers of frogs, toads and salamanders in many locations. Numerous explanations have been proposed, including water pollution and increased ultraviolet radiation from the sun because of a thinning ozone layer around the Earth.

Drought-proofing

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to contend with water-use restrictions in the event of an extended drought.

"Although still rare in the Midwest, tapping an effluent water source for turf irrigation is becoming more common on the East Coast," said Gaussoin.

√ Another consideration is to minimize irrigated areas.

"One way is to decrease the amount of fairways and increase rough areas," Gaussoin added.

√ Plant more native, drought-tolerant species in the roughs, and even in irrigated areas, if necessary.

"Kentucky bluegrass, for example, can go dormant under drought stress. It will turn brown, but it will be there and green up again when you get rainfall or irrigation water," he said.

Under water rationing or restrictive-use conditions, Gaussoin recommended these additional steps:

- Prioritize water use, starting with the prime pieces of real estate. That is, water greens first, then tees, then fairways and roughs if possible. Don't worry about grass around the clubhouse. It won't look pretty, but that isn't what the customers come for, he said.
- Consider retrofitting the irrigation system to make it more efficient. Valve-in-head systems, for example, provide better irrigation management and more efficient use of water. Water can be easily applied to those areas most critical to the course.
- Make subtle management changes. Raise mowing height slightly to give grass a little extra "insulation" from heat stress. Consider using a growth retardant to slow grass growth (and water use). The offset to this, however, is that grass will be slower to pull out of stress after its growth has been slowed.
- Limit traffic where possible. Heavily trafficked turf requires more water to recover and, when it is drought-stressed, won't recover as quickly. Keep carts on cart paths or limit them to roughs. Use the 90-degree rule to reduce wear on fairways.
- Move the cups more often to reduce greens stress. Move tees more frequently.
- Route traffic with physical barriers — artificial or plant material — to reduce wear and compaction on turf. For example, if golfers always exit the tees or greens in the same place, it increases turf wear. Use barriers to change traffic patterns occasionally.

"These are all pretty common management steps superintendents can take, but too often we don't think about them until we're into a drought-stress situation," Gaussoin added.