

Effluent irrigation deemed fairly safe

By ALAN NEWPORT

If you irrigate effluent onto corn or soybeans, then you should know that recent research shows you need only a few precautions even with relatively high salt levels.

Nebraska researchers checked 2,700 samples of hog effluent to determine just how saline they could be. They found the electrical conductivity of the samples ranged from 6.4 deciSiemens per meter to 20.3 dS per meter. Then the researchers designed a project to test these levels on growing corn and soybean crops.

Stated simply, they found corn was almost impervious to effluent salts at every level commonly found in manure pits. They found beans could withstand the relatively high salt levels, but the highest levels greatly reduced yields.

The specifics

Corn was only hurt by the highest electrical conductivity level (20.3 dS per meter) during the V8 stage of growth or about eight leaves. Plants produced about 30 bushels less grain than the average. In other cases, grain production actually increased by effluent application by an average of 13 bushels an acre.

The researchers found soybeans suffered some leaf loss when they applied effluent with 11.7 dS per meter during

Key Points

- Use effluent irrigation water carefully on corn and beans.
- In tests, soybeans were more affected by high-salt-content water than corn.
- Hot weather increases the amount of salts taken up from sprinkler water.

the three-leaf growth stage, yet most of the plants recovered and ultimately produced the same amount of grain as untreated fields.

Irrigating soybeans during the R1 stage of reproduction with the highest electrical conductivity level tested (20.3 dS per meter) cut production by about two-thirds. Grain yields dropped from the test average of 41 bushels per acre to 14 bushels per acre.

When the researchers irrigated soybeans at the three-leaf stage with the saltiest effluent, it was devastating. Yields dropped to 5 bushels per acre.

In general, irrigators putting effluent on their soybeans should keep electrical conductivity readings below 6.4 dS per meter, says Bill Kranz, engineering professor at University of Nebraska and one of the lead researchers.

The level of salinity in these tests was quite a bit higher than the amounts most farmers would apply through their pivots, Kranz adds. He also notes time is



Six rules of thumb for salty effluent

- Avoid irrigating with effluent during hot, windy weather.
- Be a little cautious during crop reproductive stages with high-electrical-conductivity effluent.
- Soybeans are more susceptible than corn.
- Run the pivot fast so leaves dry quickly; that reduces foliar salt uptake.
- Dilute effluent with irrigation water, if possible.
- Always keep electrical conductivity rating below 6.4 deciSiemens per meter.

an important factor in foliar salt uptake and says the lateral-move irrigation system they used in this test only kept the leaves wet for about 10 minutes. It was applying about ½ acre-inch of effluent per pass. Speed this up and the chance for damage goes down, he says.

Previous research has shown hot weather increases plant uptake of foliar-applied salts, so that should be another consideration for irrigators. Moreover, Kranz says, a good precaution would be to acquire and use a handheld electrical conductivity meter.

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