PRODUCTION TECHNOLOGY

Sludge? Just Say No!

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Two years ago, a nursery manager in Georgia asked me to determine why two beds of loblolly at the edge of the nursery were bright yellow. The manager knew that mill sludge had been applied there and wondered what the imbalance might be. Tissue analysis determined that the seedlings were yellow because they had only 12 ppm Mn compared to green seedlings in adjoining beds where there were 106 ppm Mn. In a second case, an Alabama nurseryman recently asked if I had an idea why seedlings growing in a former sludge-trial area were yellow. Although the largest difference between green and yellow seedlings was again Mn (green = 399 ppm, yellow = 88 ppm, minimum sufficient 85 ppm) the Zn also differed and was actually deficient among yellow seedlings (green = 51 ppm, yellow = 20 ppm, minimum sufficient = 30 ppm).

Paper mill sludge had been applied at the Alabama nursery and a nearby AU substation as part of a study in 1986. In 1989 the substation reported that, although it didn't increase soybean yields, the sludge appeared to be an acceptable alternative to limestone. Sixty tons of sludge per acre increased soil pH from 6.8 to 7.5 and added 1,500 lbs/ac Ca. Neither Mn nor Zn are available to plants at neutral pH and $CaCO_3$ reduces the availability of both. The substation report concluded that using sludge instead of limestone would be an economical alternative to landfill disposal for the pulp and paper industry.

However, there is still a rectangular block of small yellow seedlings 12 years later. While sludge has possible use in field applications, nursery managers should probably refuse mill sludge amendments in

their nurseries. If presented with the opportunity to participate in a sludge experiment a manager just might want to say no. If that doesn't work, try to limit your exposure to two beds at the corner of the nursery.