

Respirometry Analysis of RootX for Santa Cruz WWTF Application Limits

The respirometry of RootX was investigated by the Environmental Compliance Program at the City of Santa Cruz to inform safe dosage applications performed by the Wastewater Mains Division.

RootX is an herbicide and considered to pose a possible toxicity threat to the Wastewater Treatment Facility's wastewater biological treatment process.

Respirometry trials of RootX were achieved on an RSA Pulse-Flow 8000 Series Respirometer in aerobic configuration for 24-hours. Four different experiment runs were pH buffered and performed simultaneously in duplicate, comprising eight sample bottles, which were stirred at 500 rpm.

Experimental Run #1, consisted of 100 mL of "seed", sampled from the WWTF Solids Contact Tank #1, mixed with 400 mL tap water.

Experimental Run #2, consisted of 100 mL seed mixed with 400 mL primary effluent, while

Experimental Runs #3 and #4 were each comprised of the proportionate 500 mL seed-primary effluent mixture with the addition of RootX sample powder.

Experimental concentrations of the RootX mixture were derived from the maximum possible concentration of RootX in wastewater, considering the mixing instructions on the RootX package.

(Proper RootX dosing is stated as 1 lb. RootX to 5 gallons of water, equating to 344 mg/mL.)

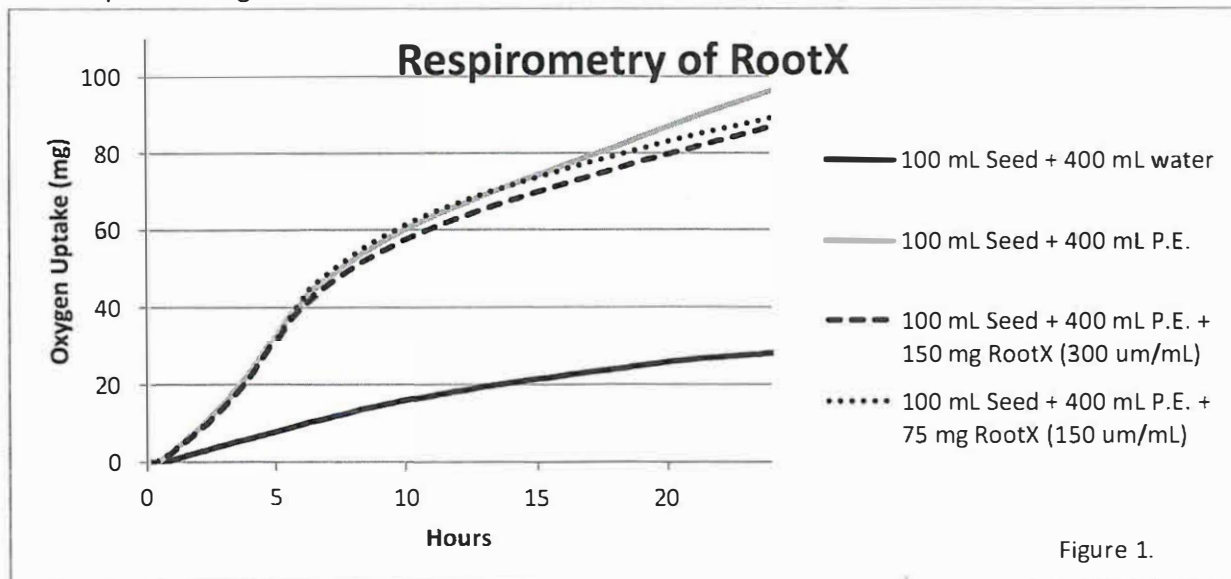
Six different runs recorded the respirometry of several RootX mixtures, ranging from 2.4 g to 0.075 g.

The minimum RootX concentration found to cause detectible inhibition to respirometry trials was 150 microgram/mL (Figure 1.). Using this experimental concentration value with our nominal wastewater volume received by the headworks, 8 MGD, we calculate plant inhibition should be created from a weight of 9,993 pounds RootX introduced to the sewer system within a 24 hour period. As such, safe RootX dosages to the sewer system must be kept far below this value and as small as is possible.

(Maximum Applicable Limit) = 100 lbs/day.

The RootX application limit will be published for the City and County of Santa Cruz at MAL of 100 pounds per day.

A limit of 100 pounds per day will both satisfy the needs of the Wastewater Mains Division and the concern of the Environmental Compliance Program.



Dave
Martin

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Paul Baker 7.20.17

Mona Miller 7.20.17