

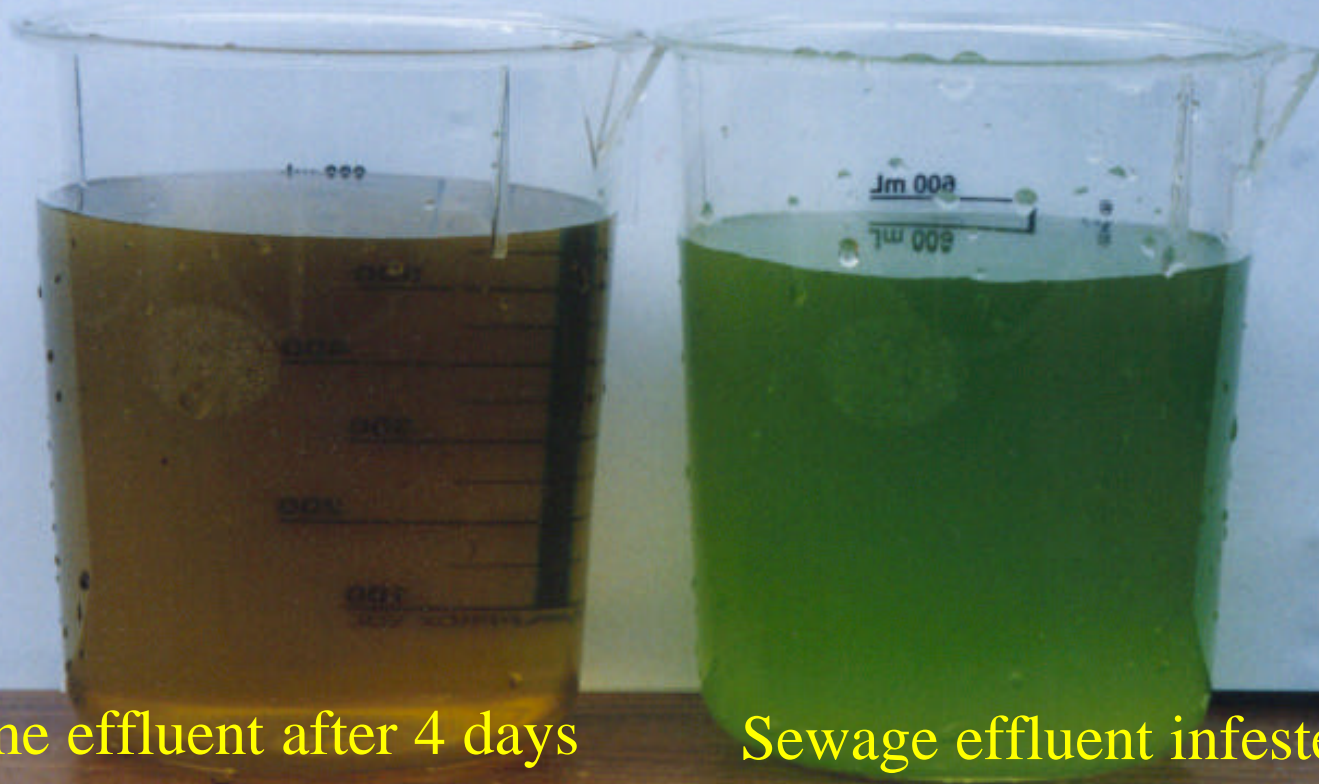
VETIVER GRASS SYSTEM FOR EFFLUENT, LANDFILL LEACHATE AND SEEPAGE CONTROL

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SPECIAL CHARACTERISTICS OF VETIVER GRASS

**High Capacity of Removal of N and P
from Polluted Water**

With high capacity of removing N and P in polluted water, vetiver cleaned up blue green algae in 4 days



Same effluent after 4 days with vetiver, reducing N to 6mg/L (94%) and P to 1mg/L (90%)

Sewage effluent infested with B-G algae due to high N = 100mg/L and P = 10mg/L

8 12 '00

Removal rates of pollutants from polluted water (Zheng et al. 1997)

Pollutants		River 1*	River **	Tap water
Total N	Concentration (mg/L)	13.8	10.5	0.1
	Removal %	71.0	58.1	
Total P	Concentration (mg/L)	0.94	1.03	ND
	Removal %	99.3	93.7	

*After 3 weeks

** After 2 weeks

ND Not detectable

Removal rates of pollutants from landfill leachate (*Xia et al. 2000*)

Pollutants		High concentration leachate	Low concentration leachate
COD	Reduction %	69.0	61.9
	Removal (mg/pot)	232.1	255.4
Carbonate +Bicarbonate	Reduction %	80.6	59.0
	Removal (mg/pot)	7.63	4.66
Total N	Reduction %	79.4	71.10
	Removal (mg/pot)	232.1	255.4
Total P	Reduction %	70.0	65.0
	Removal (mg/pot)	7.63	4.66
Chloride	Reduction %	21.5	7.9
	Removal (mg/pot)	321.9	207.8

Vetiver was most effective in absorbing effluent discharge from a toilet block at Beelarong Community demonstration center




This stand of vetiver absorbed all the effluent discharge from the toilet block, note the luxuriant growth, 5 months after planting





**Five month
growth , almost
2m tall**

A photograph showing a wastewater evapotranspiration area. In the foreground, a wooden fence with two horizontal rails runs across the frame. A white rectangular sign with a black border is attached to the fence. The sign contains the following text: "THIS IS A WASTEWATER EVAPOTRANSPIRATION AREA. PLEASE AVOID CONTACT. THIS AREA IS NOT TO BE USED FOR RECREATION PURPOSES OR FOOD PRODUCTION." Behind the fence, there is a dense field of tall, green grasses with some brown, feathery seed heads. In the background, there are trees and several tall, black light poles under a clear sky.

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FOOD PRODUCTION.