

URBAN USES FOR DAIRY MANURE COMPOST



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Urban settings offer unique
situations for using compost



Parks and Trails



Multiple use public sports fields

Residential Home Construction



Poor soil preparation = Poor turf quality

Why use dairy manure compost?

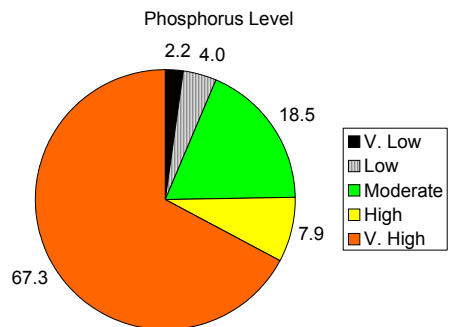
The Problem

- The Bosque River headwaters are located in near Stephenville, Texas in Erath County.
- Extensive water quality monitoring on the river has revealed that phosphorus is the limiting nutrient causing algal blooms.
- Approximately 40,000 dairy cattle in the watershed produce a huge quantity of phosphorus-laden manure every day.
- Most producers use the manure to fertilize their fields, but many just pile it next to their barns. Rainwater carries nutrients from the manure to local streams.

The Solution

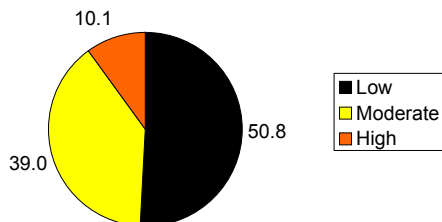
- Compost the dairy manure and transport it out of the watershed.
- Urban areas may provide a larger and more lucrative market for the dairy manure compost.
- However, are there environmental concerns?

EarthKind Urban Soil Test Results – Spring 2003



EarthKind Urban Soil Test Results – Spring 2003

NO₃-N Levels



Dairy Manure Compost Research/Demonstration Plots

Objective: To evaluate the effect of large single applications of DMC on the establishment and subsequent growth of typical urban landscape plants and to evaluate the effects on soil chemical and physical properties.

Materials and Methods

- 0, 40, 80, 120 ton/acre dairy manure compost (Erath Co., Texas)
- 20 x 20 ft plots size
- One-half ornamentals; one-half turf grass
- Irrigation applications
 - Ornamentals: Years 2003, 2004, and 2005
 - Turf grass: Years 2003, 2004
- No supplemental fertilization*

*3 x 1 lb/1000ft² N applied to turf in 2004

Analysis of Dairy Manure Compost

Parameter	Mean	SD
Total N (g kg ⁻¹)	9.0	(4.3)
Total P (g kg ⁻¹)	1.0	(0.1)
Total K (mg kg ⁻¹)	4.9	(0.4)
Ash Content (%)	81.3	(1.1)
OM Content (%)	18.7	(1.1)
Wet Bulk Density (kg m ⁻³)	792	(19.9)
Moisture Content (%)	34.3	(1.4)

Dairy Manure Composting Facility in Erath County, Texas



Composted dairy manure application rates and corresponding N, P, and K rates.

Compost Rate	N Rate (Total)	P Rate (Total)	K Rate (Total)
(kg m ⁻²)	(g m ⁻²)	(g m ⁻²)	(g m ⁻²)
9	81	9.4	44
18	162	18.8	88
27	243	28.2	132

Former Farmland: A major source of land for new residential construction sites.



Annual / Perennial Ornamentals



Pentas - Egyptian Star Flower



New Gold Lantana



Echinacea - Purple Coneflower



Shasta Daisy

Woody Ornamentals



Dwarf Burford Holly



Dwarf Yaupon Holly

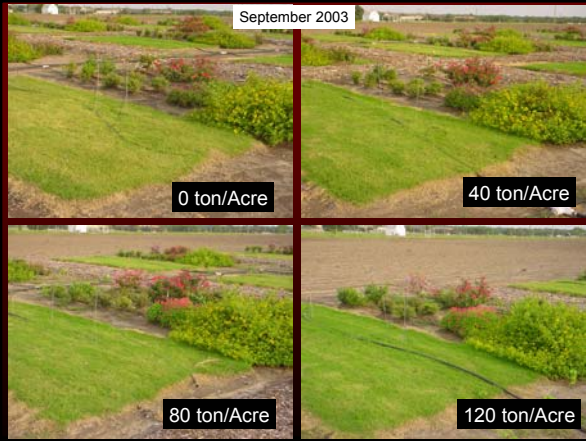


Knockout Rose

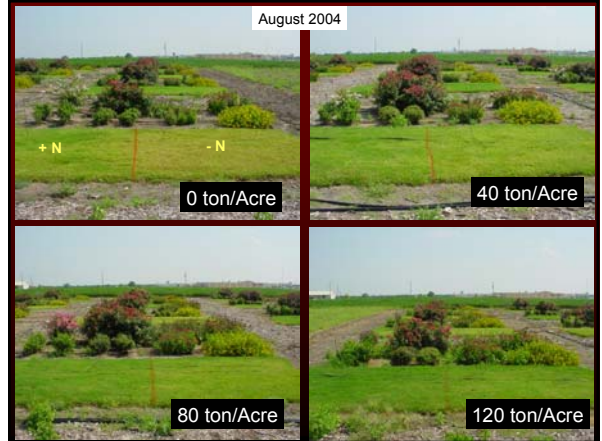


Crape myrtle

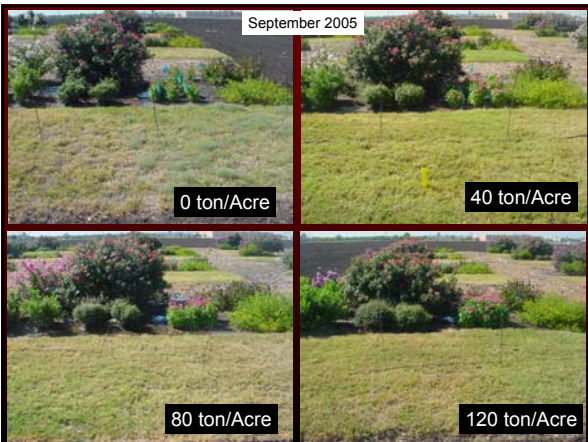
September 2003



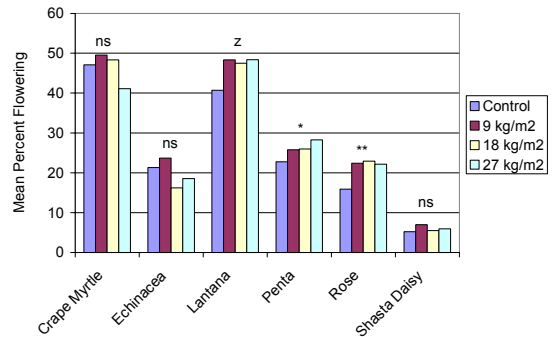
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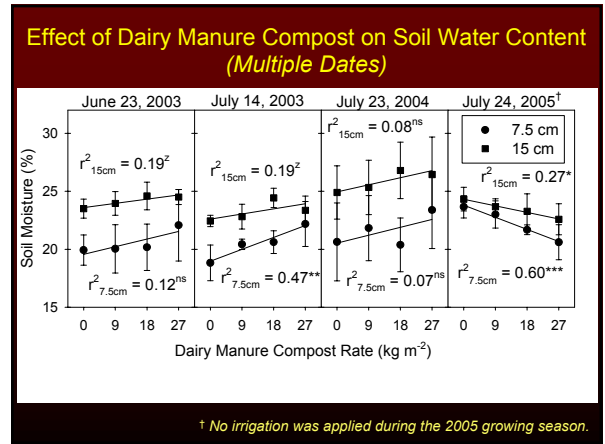
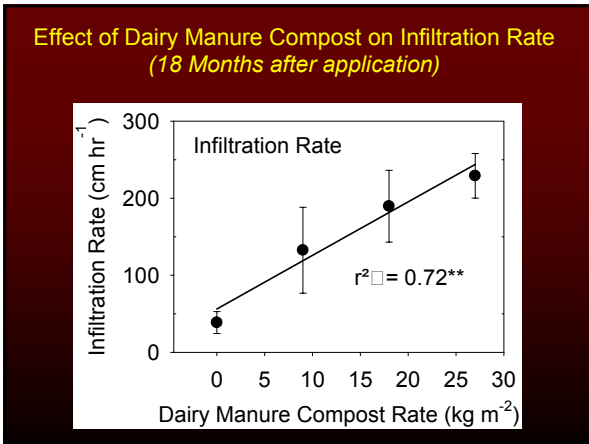
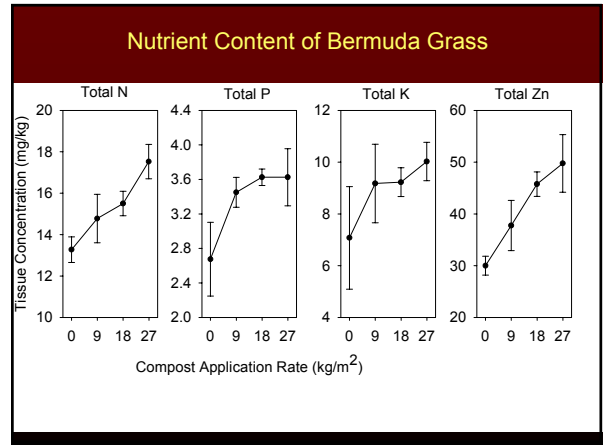
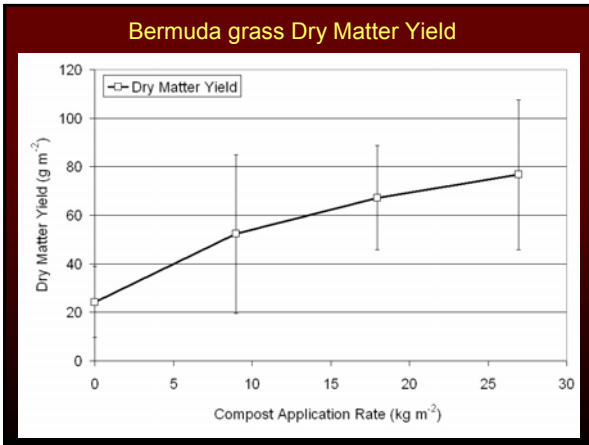
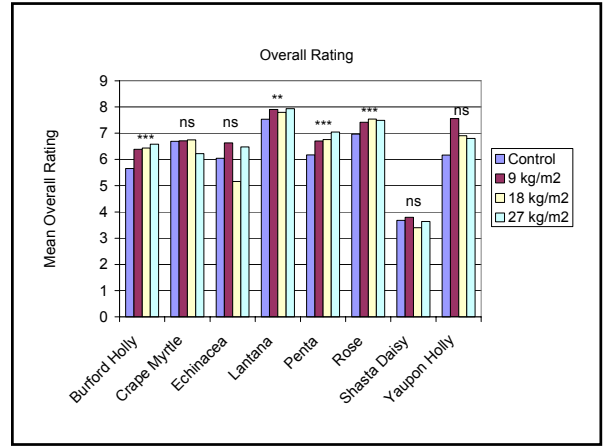
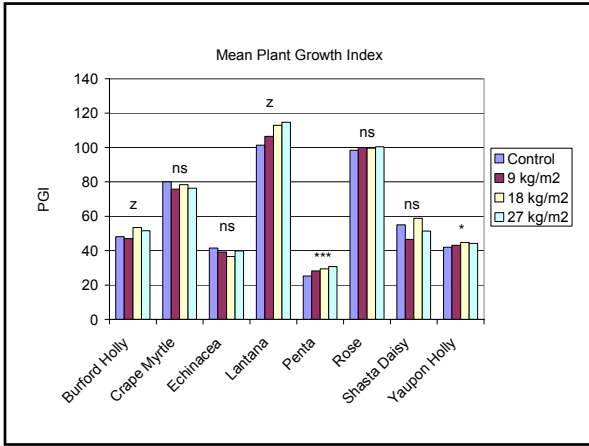


September 2005



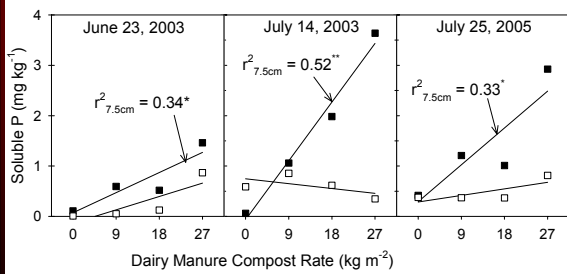
Mean Percent Flowers



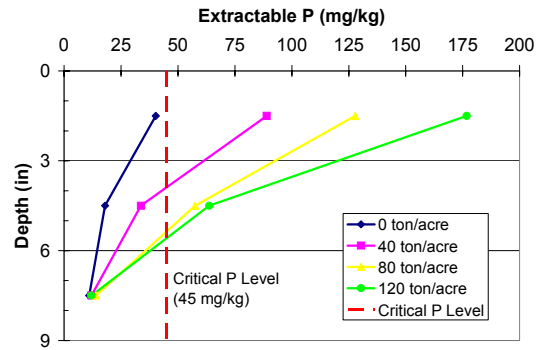


† No irrigation was applied during the 2005 growing season.

Soluble Soil P 1st and 3rd year after compost application



Effect of Dairy Manure Compost
on Mehlich3 Extractable Soil P (plant available)



Conclusions

- The long term performance of newly established urban landscapes can be improved by amending the soil with dairy manure compost prior to installing plants.
- Large applications of dairy manure compost will elevate soil nutrient levels to high levels, so it is important to avoid runoff from the landscape and to limit future nutrient applications.

