

EFFECTS OF BIOCHAR ON TURF ESTABLISHMENT

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Introduction: Biochar is a form of charcoal that can be made from lawn clippings and other carbon waste. Biochar persists in the soil for years, reducing the need for water and fertilizer with no need for further intervention. Projected work at this site will quantify tall fescue water use when planting into soil amended with biochar and greenwaste or biosolid compost. Here, initial results regarding the effect of biochar and compost incorporation on establishment rates of tall fescue are presented, along with results from a companion study on biochar's effect on nitrate, ammonium, and phosphate leaching.

Objectives: 1) Measure effects of biochar and compost incorporation on turf establishment rates.
2) Evaluate biochar and compost's ability to reduce turfgrass irrigation requirements.

Treatments: Water use study: The experiment is a split plot design, with subplots of either Full (80% of ET) or reduced (50% of ET), and main plot treatments of biochar or compost (see treatment list and plot plan on following page). Tall fescue was planted May 5, 2014, and will be top dressed in fall 2014. All plots are being watered fully during the current establishment phase. Drought stress will be induced May-October 2015 in the reduced irrigation plots. Turf quality, clippings, root growth, and water use efficiency will be measured and correlated with irrigation regime and soil amendment.

Results:

- There was no statistical difference in establishment rate between grasses grown in untreated and biochar-amended soils.
- Grasses grown in compost-amended soils took longer to fully establish, but reached comparable levels of coverage.
- The rate of biochar or compost amendment did not significantly affect establishment rate.

Plot Plan and Treatment List

(North)

Block 1	Irrigation Treatment B							
	F	C	B	G	D	E	H	A
	Irrigation Treatment A							
	E	B	H	F	D	A	G	C
Block 2	Irrigation Treatment B							
	C	H	E	B	G	A	D	C
	Irrigation Treatment A							
	E	G	A	C	F	B	H	D
Block 3	Irrigation Treatment B							
	E	C	A	B	H	D	G	F
	Irrigation Treatment A							
	G	E	B	A	H	D	F	C
Block 4	Irrigation Treatment B							
	B	A	C	D	H	F	E	G
	Irrigation Treatment A							
	B	H	D	E	A	C	G	F

Irrigation Treatment	
A	80% ET _o
B	50% ET _o

Amendment Treatment	
A	Control
B	1 Ton/Acre Biochar
C	5 Ton/Acre Biochar
D	10 Ton/Acre Biochar
E	2 Inches Composted Biosolids
F	2 Inches Composted Greenwaste
G	2 Inches Composted Greenwaste + 5 Ton/Acre Biochar
H	4 Inches Composted Greenwaste