Estimating erosion control and sediment entrapment in monotypic saltgrass (*Distichilis spicata)* using rainfall simulation

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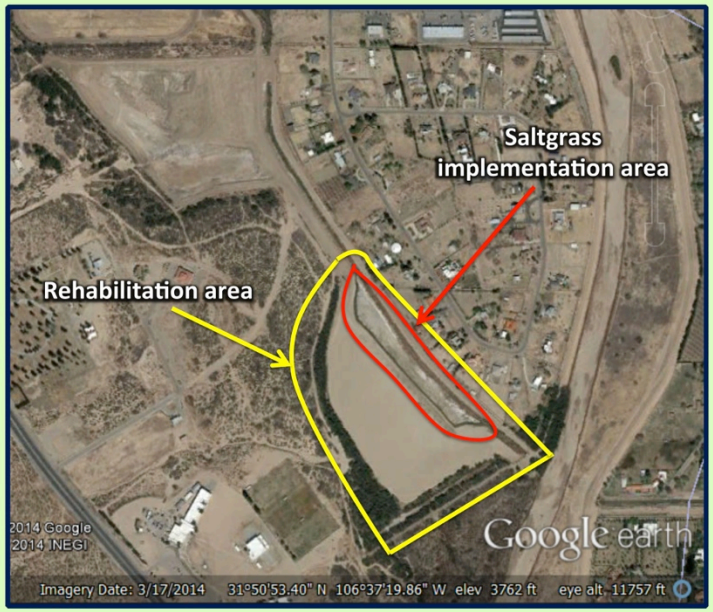
Study Site

- Sunland Park, NM Test Bed ecological rehabilitation site
- Saltgrass planted along extended drainage canal
- Caballo, NM research site: established saltgrass



Sunland Park Test Bed

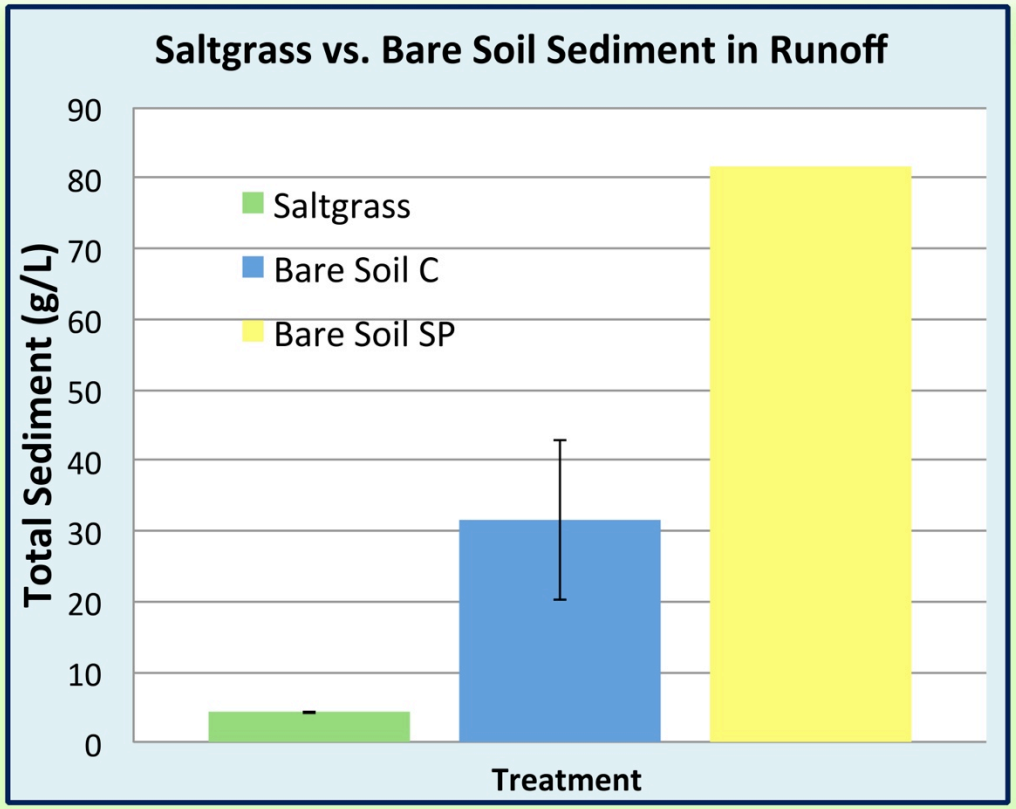
Objectives

1. Design and conduct an experiment to estimate the amount of sediment entrapped in saltgrass vs bare soil
2. Modify and test a rainfall simulation device
3. Develop framework for quantification of erosion control in saltgrass vegetated areas at rehabilitation site in Sunland Park, NM

Scope

- Measured and adjusted spatial distribution and intensity of rainfall simulator
- Conducted rainfall simulation trials measuring
  - Total sediment in runoff
  - *Soil conditions*: slope, moisture, texture, bulk density
- Analyzed data using Mann-Whitney-Wilcoxon Procedure

Results



Trial	Slope	Time until runoff collection (min)	Length of simulation (min)	Θv (cm^3/cm^3)	Texture
Saltgrass-1	7.0%	3.0	4.0	0.231	Sandy Loam
Saltgrass-2	6.0%	1.8	3.0	0.172	
Saltgrass-3	5.0%	1.3	3.0	0.192	
Bare Soil C-1	1.0%	-	2.7	0.161	
Bare Soil C-2	2.0%	0.8	1.5	0.102	
Bare Soil C-3	0.5%	-	1.5	0.089	
Bare Soil SP-1	1.4%	6.3	8.2	0.040	Sand
Bare Soil SP-2	1.0%	8.7	12.2	0.052	
Bare Soil SP-3	0.5%	2.5	8.2	0.031	

Note: C- Caballo, SP- Sunland Park

Major Outcomes

- Statistically significantly more sediment in runoff from bare soil plots
- On average 86% reduction in sediment content in saltgrass plots
- Major erosion issues at Sunland Park: modification of installment needed to collect sediment in poorly graded sandy soil