Grassland Resilience Workshop Series Brush Management and Soil Health Santa Rita Experimental Range

October 20th, 2023

Workshop Agenda	Pg 2
Santa Rita Experimental Range Overview Presentation	Pg 6
Shrub Risk App Handout	Pg 16
Soil Health Handouts	Pg 19









GRASSLAND RESILIENCE WORKSHOP SERIES: BRUSH MANAGEMENT & SOIL HEALTH October 20, 2023

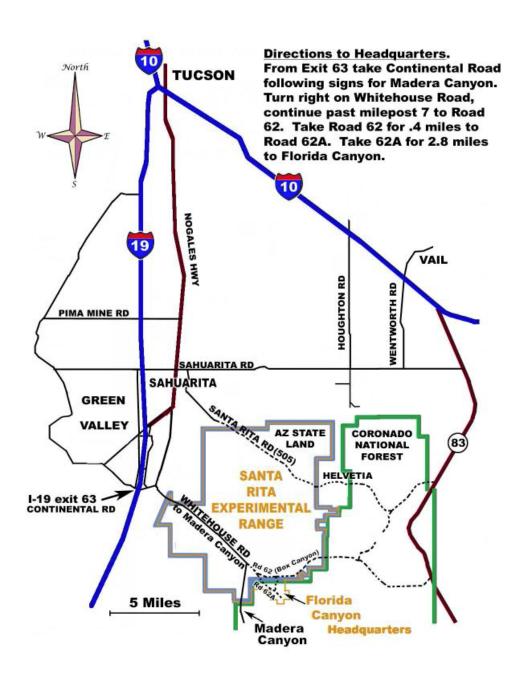
Santa Rita Experimental Range

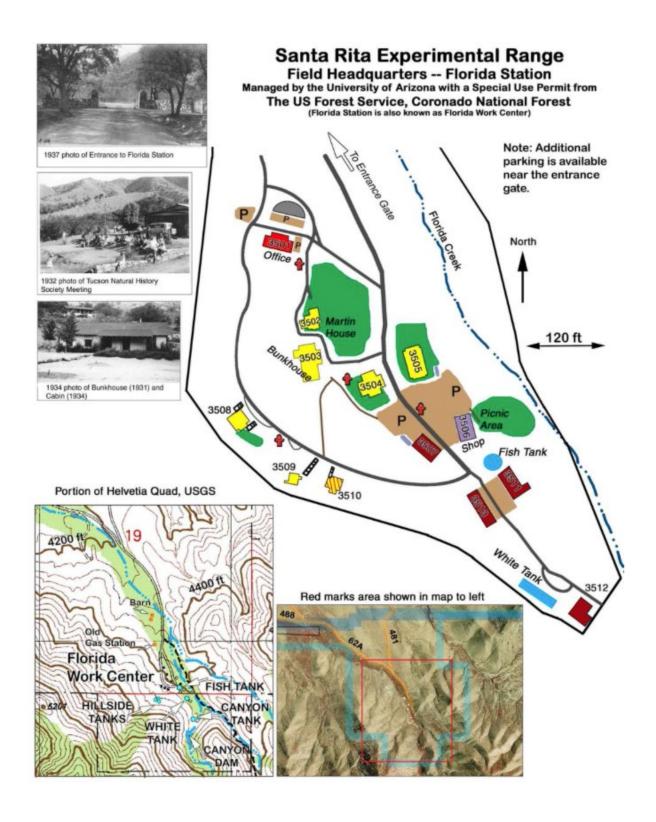
Green Valley, AZ

9:00 am	Welcome and Introductions at Florida Station Headquarters, SRER
	Brett Blum, SAES-University of Arizona
10:00 am	Station 1: Miner's Hill Site
	Brett Blum, SAES-University of Arizona
	Austin Rutherford, USDA-Agricultural Research Service
	Rachel Gallery, SNRE-University of Arizona
11:30 am	Station 2: RestoreNet Site
	Laura Shriver, United States Geological Survey
12:30 pm	Lunch at USDA-ARS Watersheds & Station 3: Soil Sampling
	Mary Nichols, Agricultural Research Service – Southwest Watershed Research Center
	Samantha Carillo, USDA-Natural Resource Conservation Service
1:45 pm	Station 4: D-DIRT Site
	Heather Throop, Arizona State University
2:30 pm	Station 5: DFFM site
	Johnathan Pelak, Dept. of Forestry and Fire Management
3:30 pm	Station 6: Media Luna Site
	Brett Blum, SAES-University of Arizona
	Julia Guglielmo, Altar Valley Experimental Range
	Ariel Léger, University of Arizona
4:30 pm	Closing Remarks and Adjourn
	Brett Blum, SAES-University of Arizona

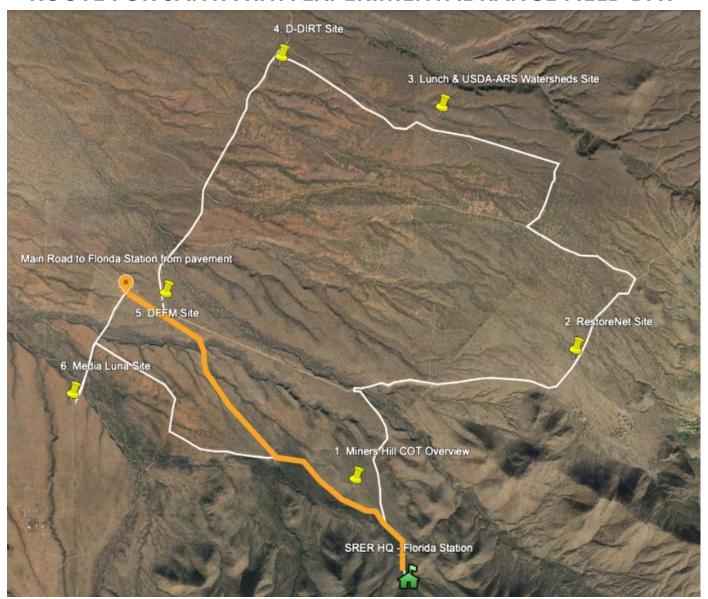
Santa Rita Experimental Range

27000 S. Florida Canyon Road Sahuarita, AZ 85629 United States of America





ROUTE FOR SANTA RITA EXPERIMENTAL RANGE FIELD DAY



Santa Rita Experimental Range Overview Presentation

Center for Creative Photography visits Santa Rita 06 June 2023



Important urls:

Santa Rita home page:

http://cals.arizona.edu/srer

Repeat Photography

http://cals.arizona.edu/srer/photos.html

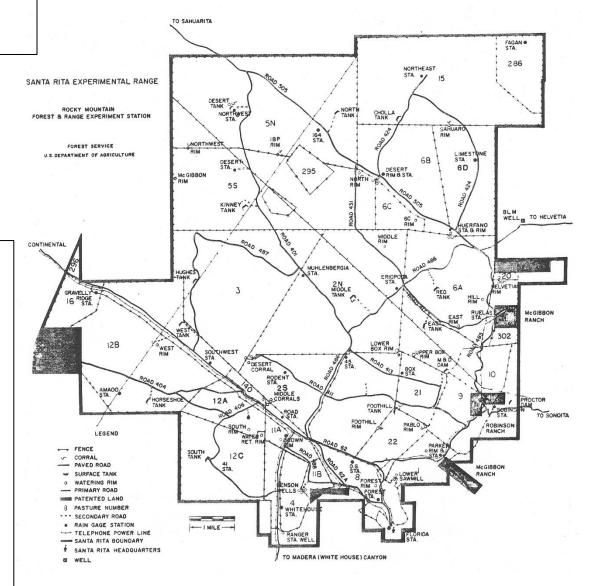
Vegetation and Rainfall Long-term data:

https://cals.arizona.edu/srer/content/datadownload

Historic Research Areas:

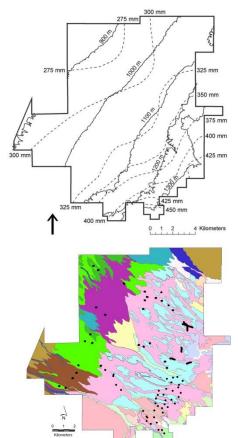
https://cals.arizona.edu/srer/content/historical-research-project-archive

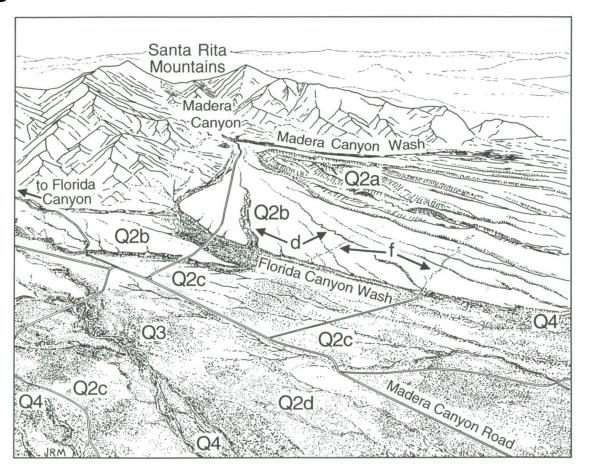
Contact: Mitch McClaran mcclaran@u.arizona.edu



Diverse Environment

- 500 m elevation range
- 175 mm rainfall range
- 17 ecological sites
- 7 geomorphic types





Geomorphic and Soil Controls on Vegetation



June 1936 (42.6.1936.06)



June 1956 (42.6.1956.06)

Geomorphic and Soil Controls on Vegetation



January 1988 (42.6.1988.01)



March 2019 (42.6.2019.03)









March 2019 (42.2&3.2019.03)





MESCUITE THINNING STUDY STUDY AREA 196

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		99
North	desqu acre	66 ft.
	ا ت	
	25 Mesquites per acre	Lehman lovegrass
	6 6 F	eded to Lebugan
	squites acre	Se
South	o N	1111
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the plot at the south end. The three plots between were thinned to leave 25, 16, and 9 mesquites per acre. Lehmann lovegrass was seeded on a strip 66 feet wide across the east end of all plots in June 1945. Grass production for the 1946-1950 period and for 1958 are listed below. on the studies that began in April 1945. 2-acre plots were established. All mesquite trees were left on that the north end of the study and all mesquites were removed from This experiment is one of four similar Five 2-acre plots were established. plot

Kind of grass	Period or Ver	c	Ir ees	left 16	ses left par acre	358
Native perennials	1946-50	55	187	167	per acre	
Total Native perennials	1958	38 S	326		314 E	
Lehmann lo vegrass Annual gra sses Total		970 18 1526	495 6 827	584 898 4 4	36 20 20 20 20 20 20 20 20 20 20 20 20 20	5 olg

Descriptive Data

cow yearlong. Average annual rainfall 16.95 inches. Average summer rainfall 9.81 inches. 1958 summer rainfall 16.81 inches. Mesquite density 358 trees per acre. stocking rate 36 acres per Flevation 4100 ft.

Important Results:

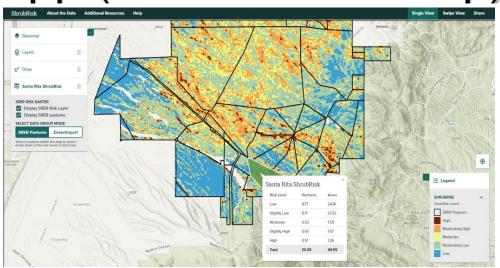
- Mesquite control gave rapid grass increases that have held up well. Perennial grasses made up almost all of the total grass yield.
- Seeding Lehmann lovegrass was successful where mesquite was controlled. Only 25 mesquite trees are enough to cut grass yields in half. mesquite trees are enough to cut grass yields in half.

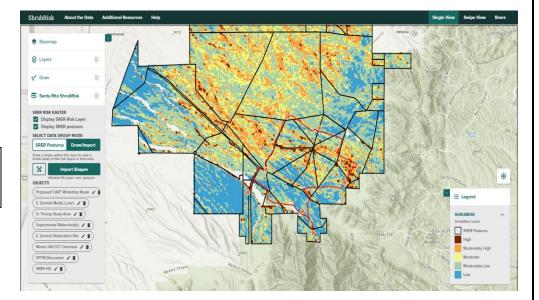
Shrub Risk App Handout

ShrubRisk.app (mobile or desktop)

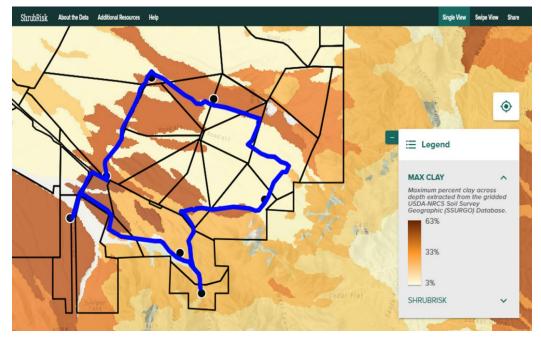


Acreage estimates of risk class (low-high) for additional woody cover, by pasture or drawn polygon, SRER only



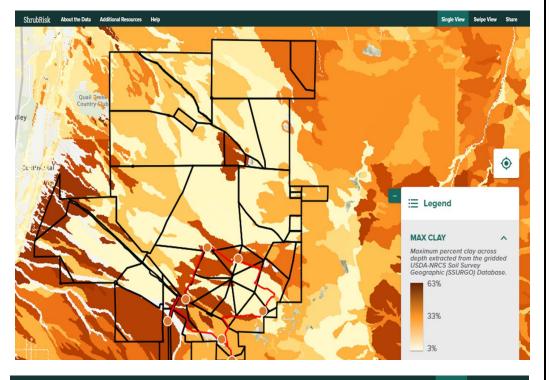


Encroachment risk over the field day area, SRER only

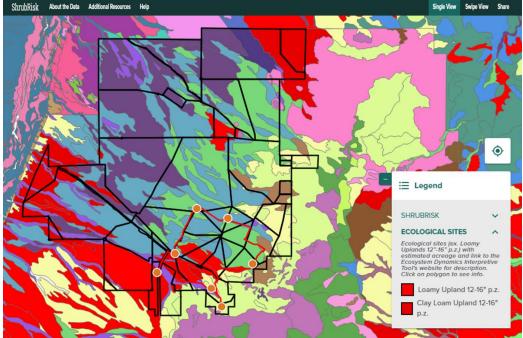


Max clay % possible within soil profile, MLRA 41 level

Max clay % possible within soil profile across SRER



NRCS ecosites (majority, no subtypes), click polygon to go to ecosite description, MLRA 41 level





More Brush Management Information:

ShrubRisk was developed in collaboration with the University of Arizona Communications and Cyber Technologies group and the School of Natural Resources and the Environment. Funding was provided by the National Institute of Food and Agriculture, U.S. Department of Agriculture.

Soil Health Handouts

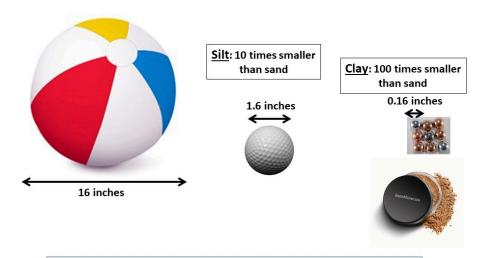
Tools for Soil Scientists

Soils are made out of a mixture of Sand, Silt, Clay and Organic Matter. Here is a size comparision...



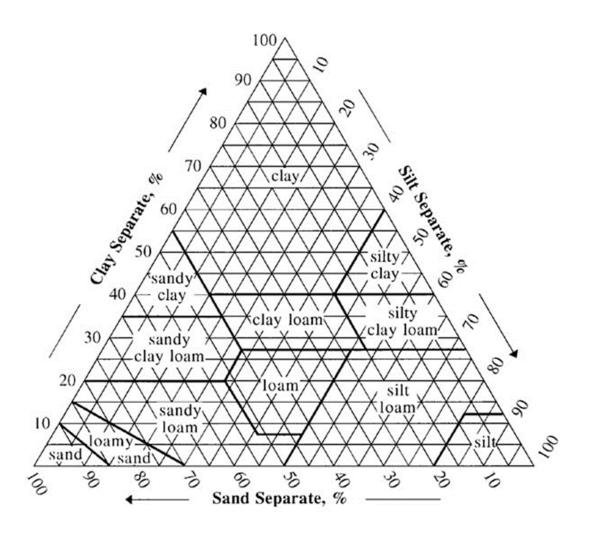
Here is another size comparison...

Sand, Silt and Clay have a Large Range in Size

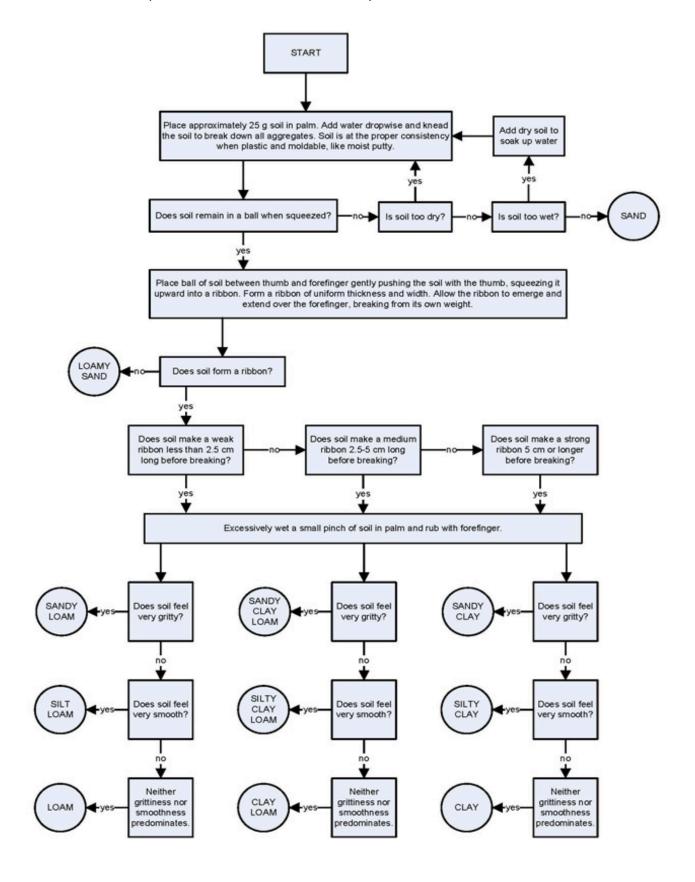


Soils are a mixture of different sized mineral particles

Soil Scientists determine the amount of each sand, silt, and clay and use those percentages to determine which soil texture that sample is.



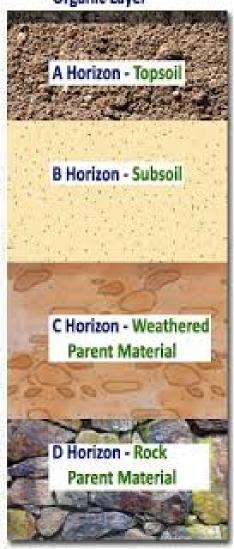
This is a different way to determine soil texture, Texture by Feel.

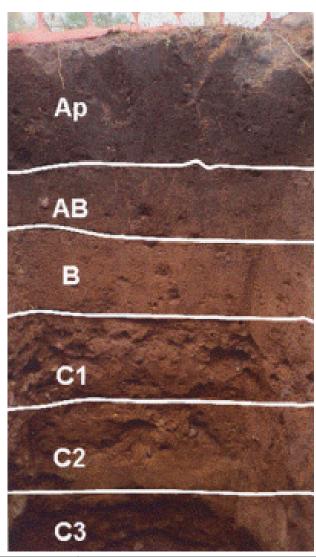


Soils are either laid down in "layers" or the "layers" are formed in place over a long period of time, "layers" are called horizons in soil profiles. Examples of horizons:

Soil Profile

Organic Layer





Depth	Sand %	Clay%	Silt=((100-(Sand+Clay))	Texture

Soil and Plant Science Division

Arizona Soil Scientist Contact Information

Please contact your local Soil Survey Office for any questions or for assistance with soils investigations.

Flagstaff Soil Survey Office – MLRA 35

Jim Harrigan – Soil Survey Office Leader

1615 South Plaza Way

Flagstaff, AZ 86001

Phone: (928) 864-5529

James.harrigan@usda.gov

Globe Soil Survey Office – MLRA 38 & 39

Greg Anderson – Soil Survey Office Leader

Omoo Loador

2250 Hwy 60 Ste B

Miami, AZ 85539

Phone: (928) 961-8088

Greg.anderson2@usda.gov

Tucson Soil Survey Office – MLRA 40 & 41

Samantha Carrillo – Soil Survey

Office Leader

2000 E. Allen Road

Tucson, AZ 85719

Phone: (520) 526-7405

Samantha.carrillo@usda.gov





December 2023 **Helping People Help the Land**