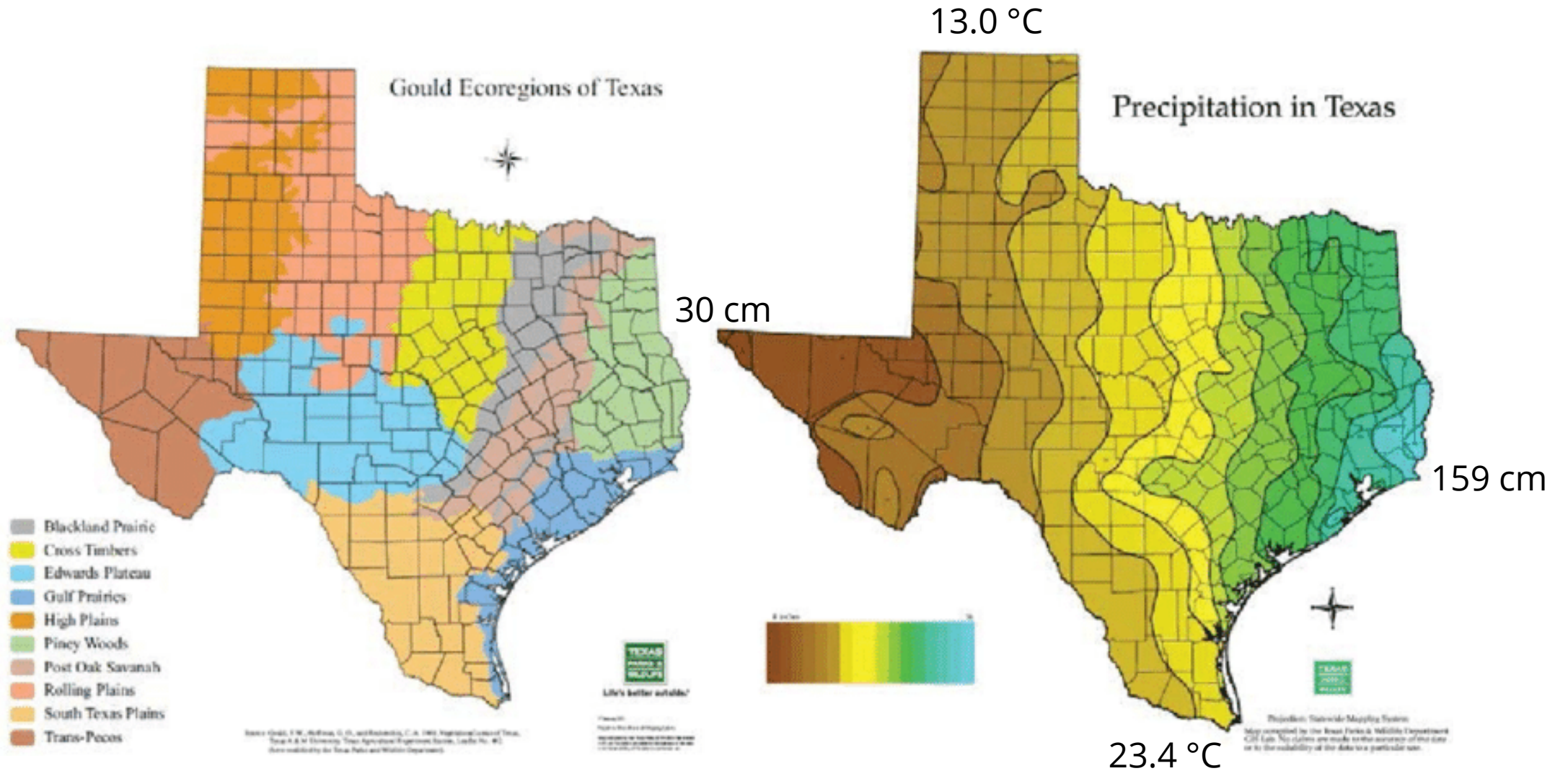


A black and white photograph of a cotton plant. The image shows several large, dark, lobed leaves and clusters of white, fluffy cotton bolls. The background is a soft-focus field of cotton plants.

Carbon stocks of Texas cotton farms

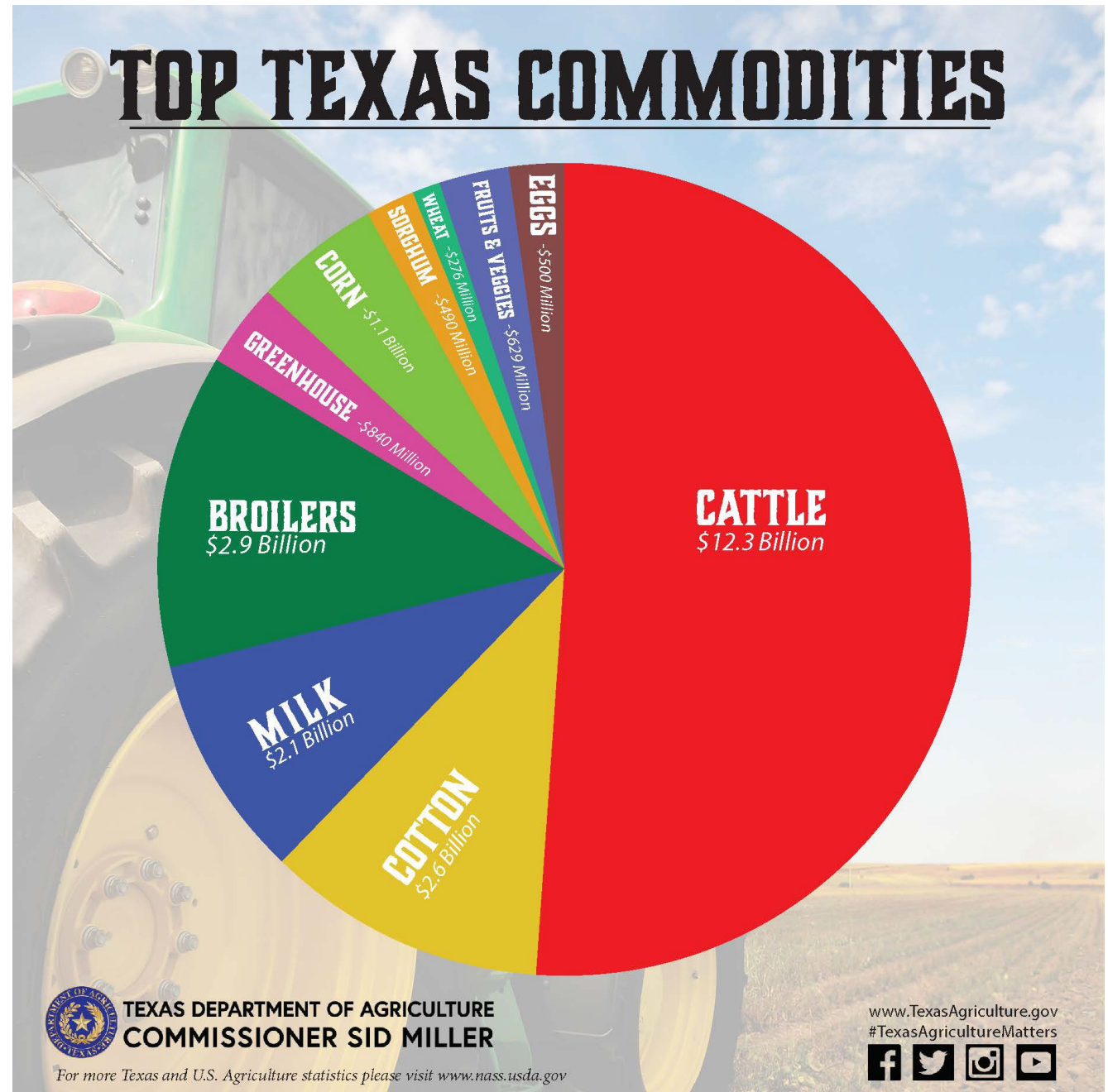
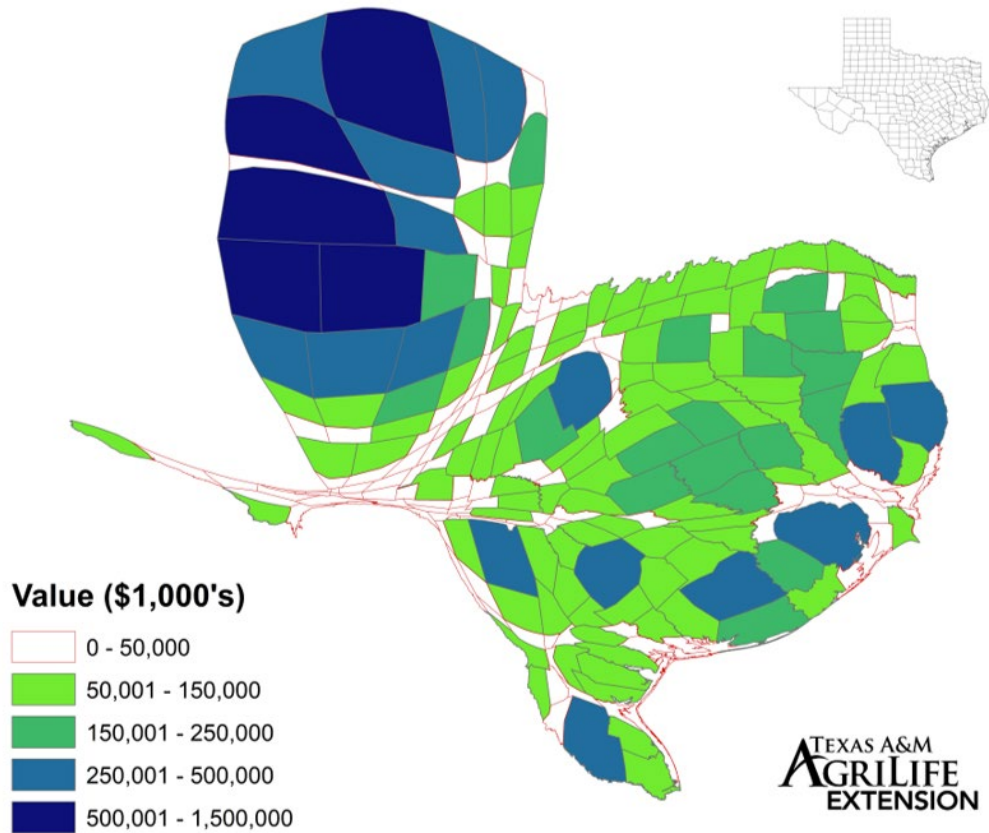
Joseph A. Burke, Katie L. Lewis, Hector Valencia, Christopher J. Cobos,
Paul B. DeLaune, Jamie L. Foster, and Jourdan M. Bell

The climate of Texas



Texas Agriculture

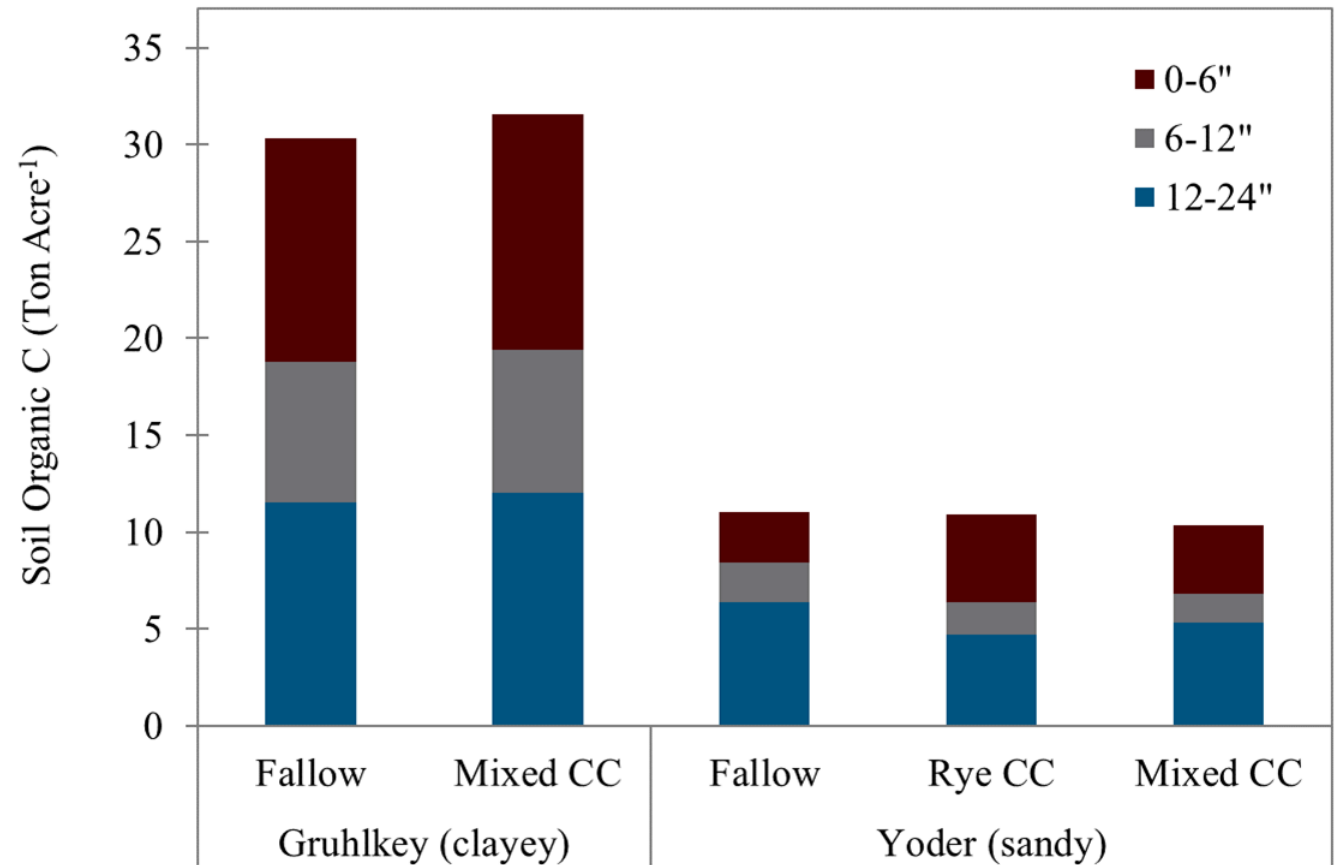
Value of Texas Agricultural Production, 2014



Project background

TCPB Project (2018-2020)

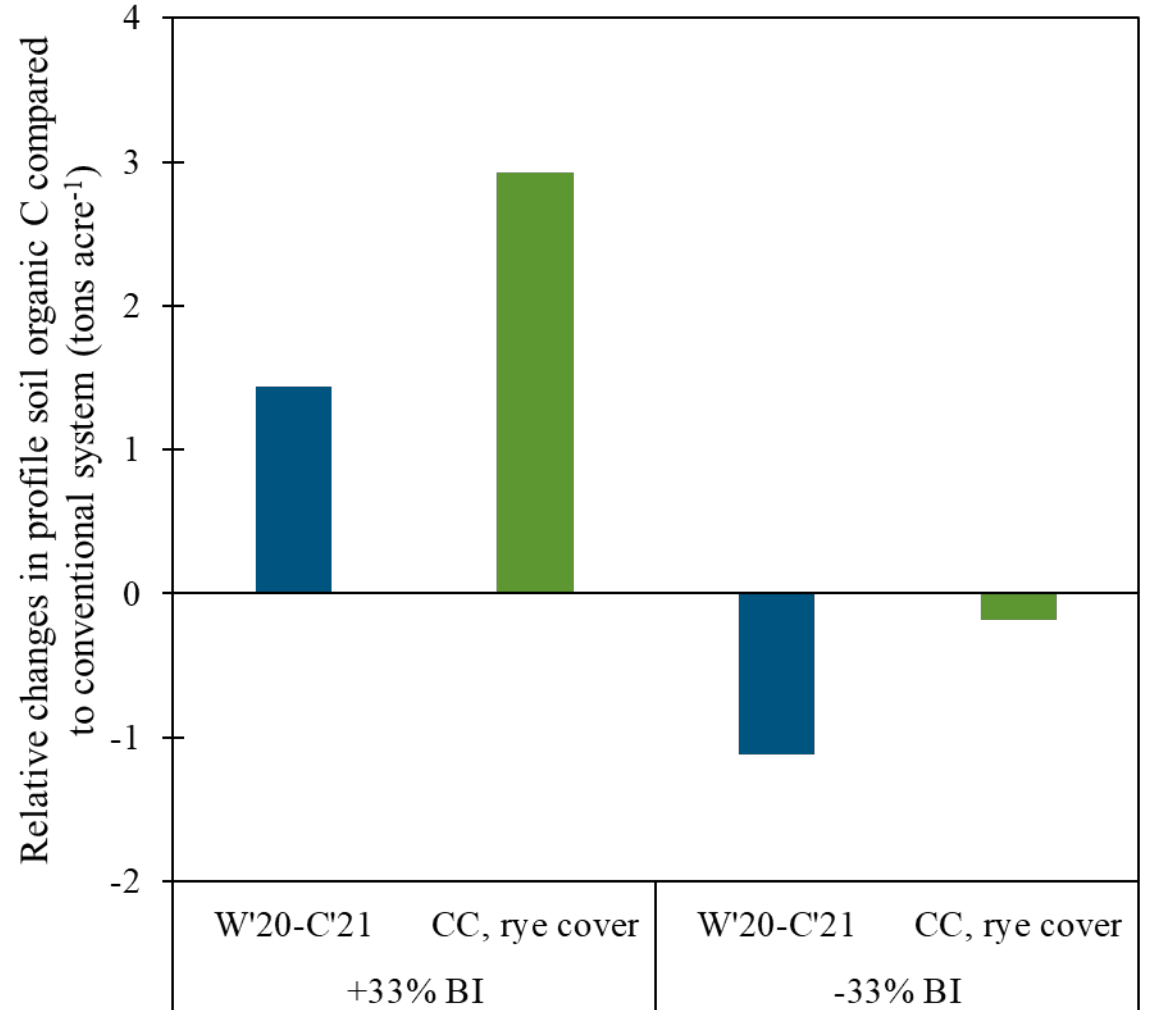
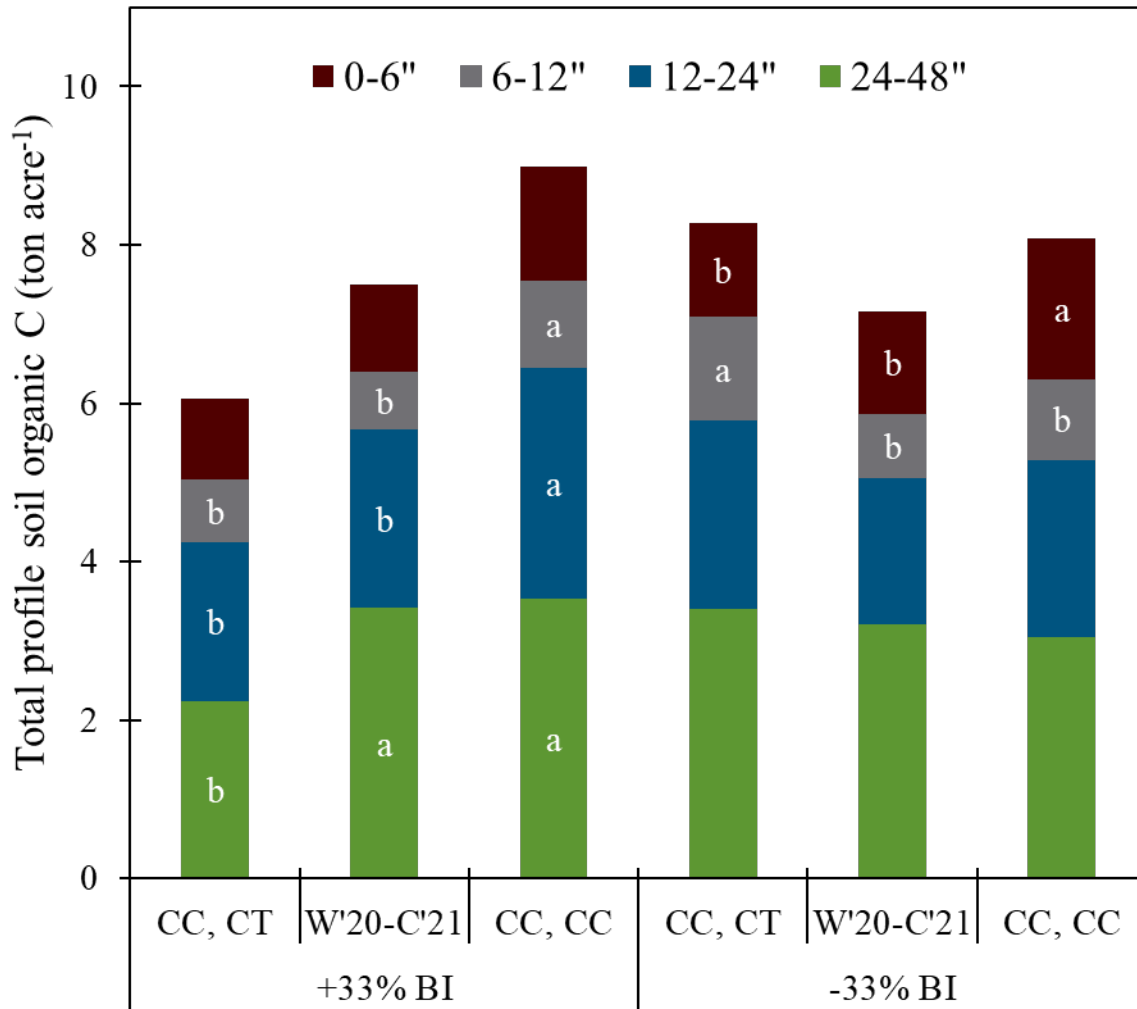
- Collected soil samples from three corn producers' fields
- Noticeable differences in soil organic carbon stocks along a texture gradient
- Push from commodity groups to understand soil C stocks in Texas
- Limited to no information for on-farm C stocks



Project background

AG-CARES, Lamesa, TX – systems established in 2014

Soil samples collected prior to planting cotton in 2021 at 4 depths (0-6", 6-12", 12-24", and 24-48")



Project goal and funding support

Project goal:

Establish soil organic carbon baseline levels across Texas corn, cotton, and sorghum cropping systems



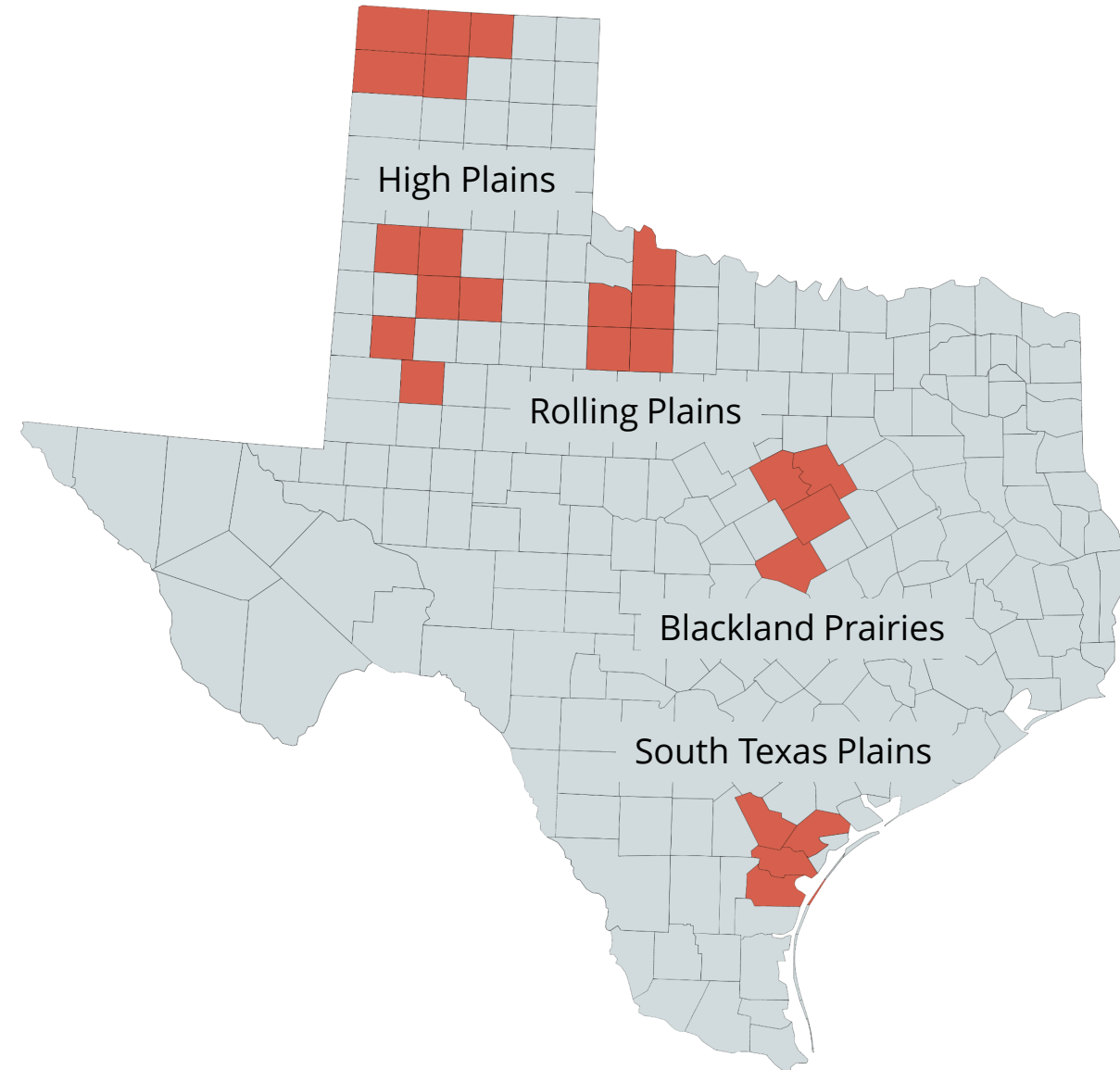
Cotton
Incorporated



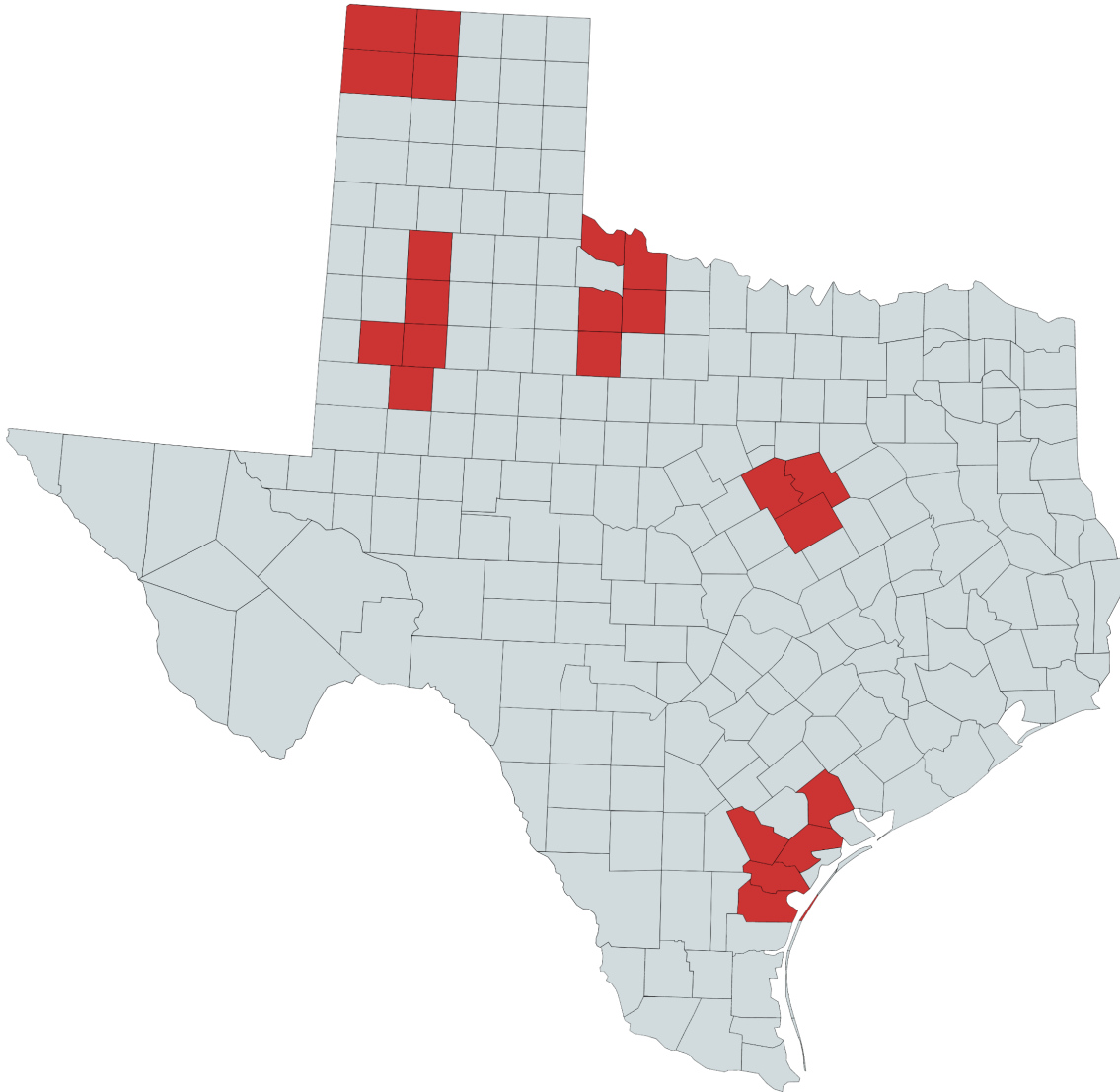
Targeted cropping systems

Cropping systems:

- Corn, cotton, and sorghum
- Conventional practices
- No-tillage
- Cover cropping
- Variable rate irrigation
- Livestock integration



Sampling plan



Region	Soil Series	Acres Represented
Northern High Plains	Conlen loam	501,717
	Dallam fine sandy loam	851,576
	Sherm silty clay loam	1,432,333
	Sunray loam	500,625
Southern High Plains	Amarillo fine sandy loam	3,054,075
	Olton clay loam	1,800,547
	Pullman clay loam	3,091,530
Gulf Coast	Edroy clay	73,281
	Orelia sandy clay loam	228,130
	Raymondville clay loam	235,577
	Victoria clay	784,257
Rolling Plains	Abilene clay loam	340,476
	Miles fine sandy loam	1,439,014
	Grandfield fine sandy loam	801,794
	Rowena clay loam	492,390
Blackland Prairies	Austin silty clay	351,412
	Branyon clay	436,764
	Frio silty clay	520,407
	Houston Black clay	1,415,510
Total acres represented by our sampling efforts		18,412,723

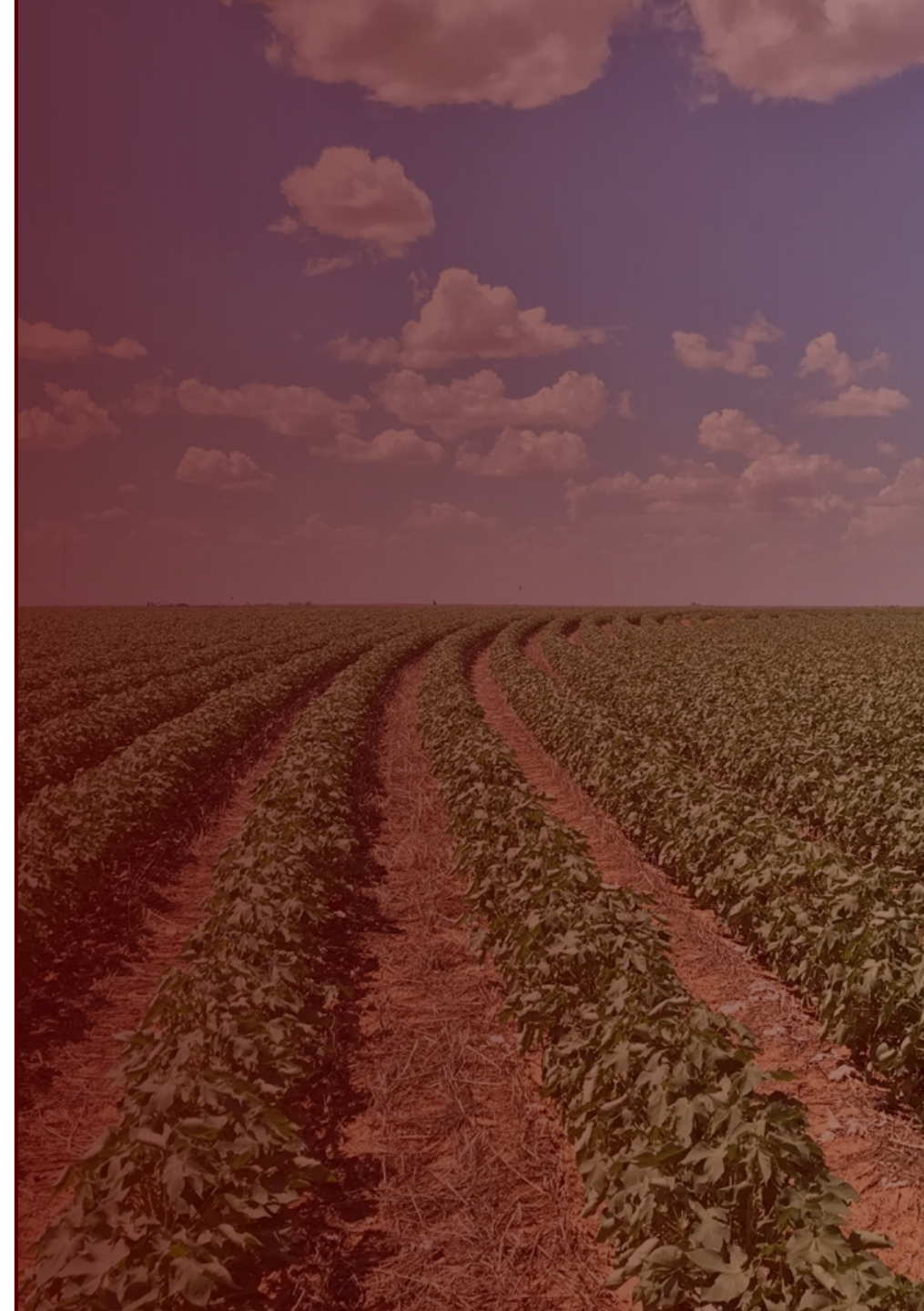
Methods and deliverables

Soil sampling depths:

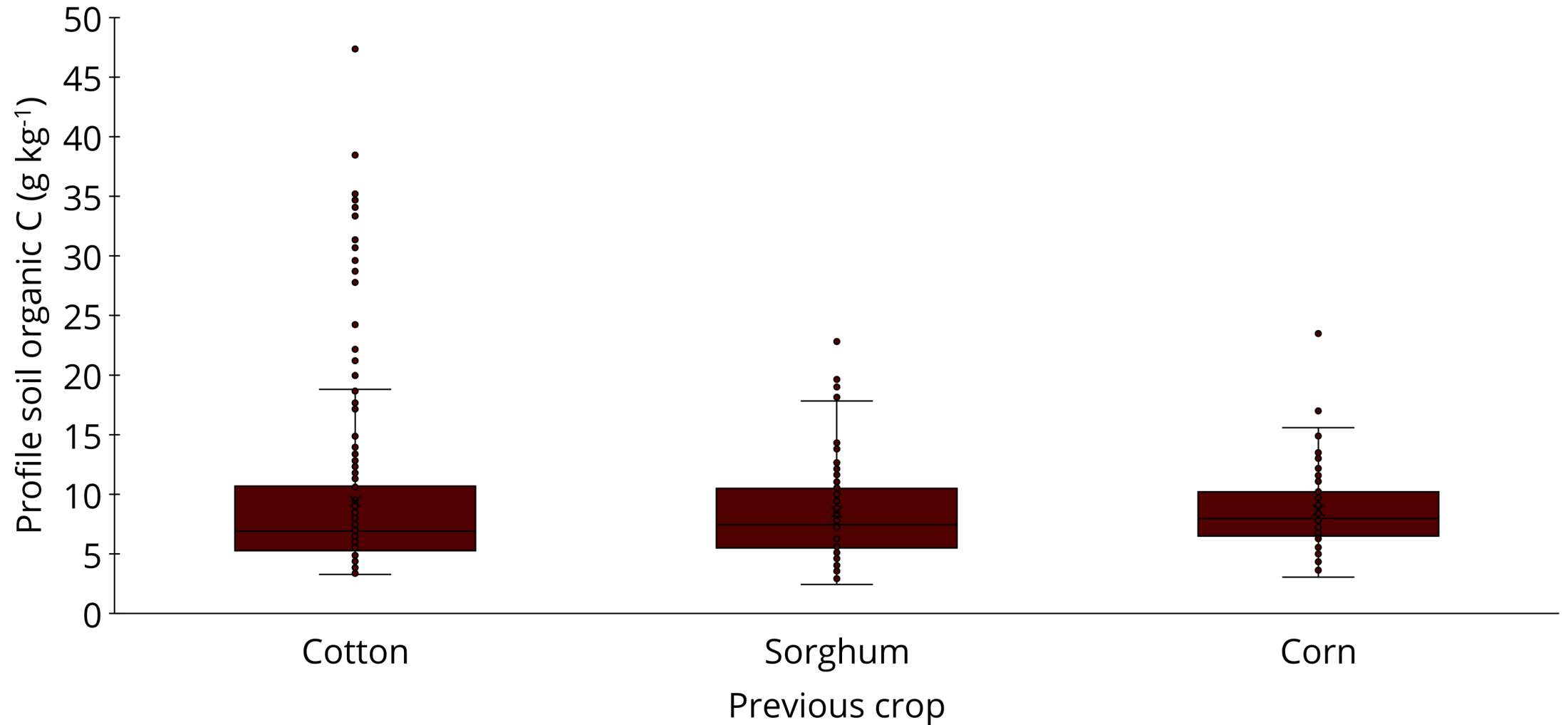
- 0-15, 15-30, 30-45, 45-60, 60-75, and 75-90 cm

Deliverables:

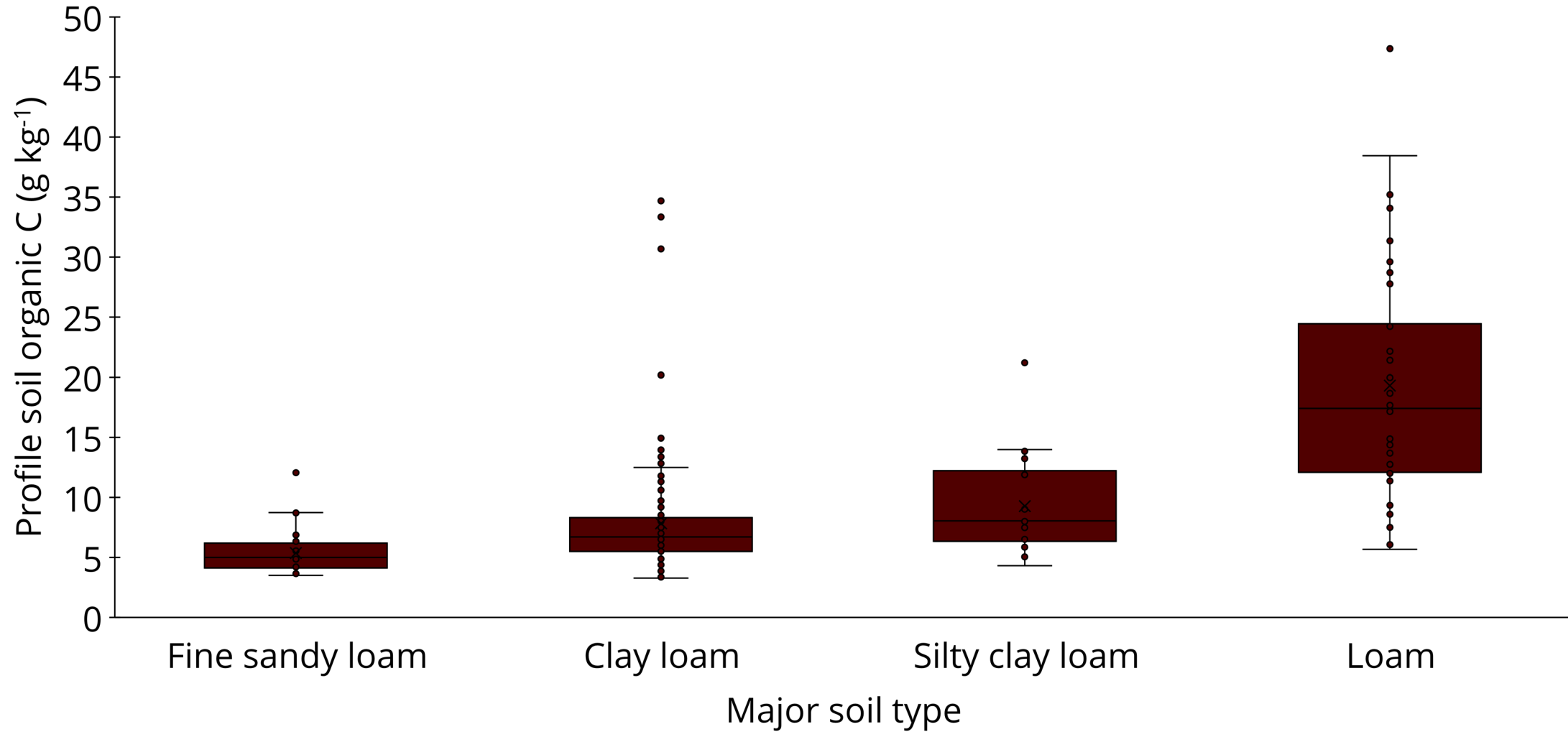
- Soil organic carbon
- Bulk density
- Routine soil analysis (0-15cm)
- Soil texture
- Soil pH and salinity
- Soil inorganic nitrogen (NO_3^- and NH_4^+)



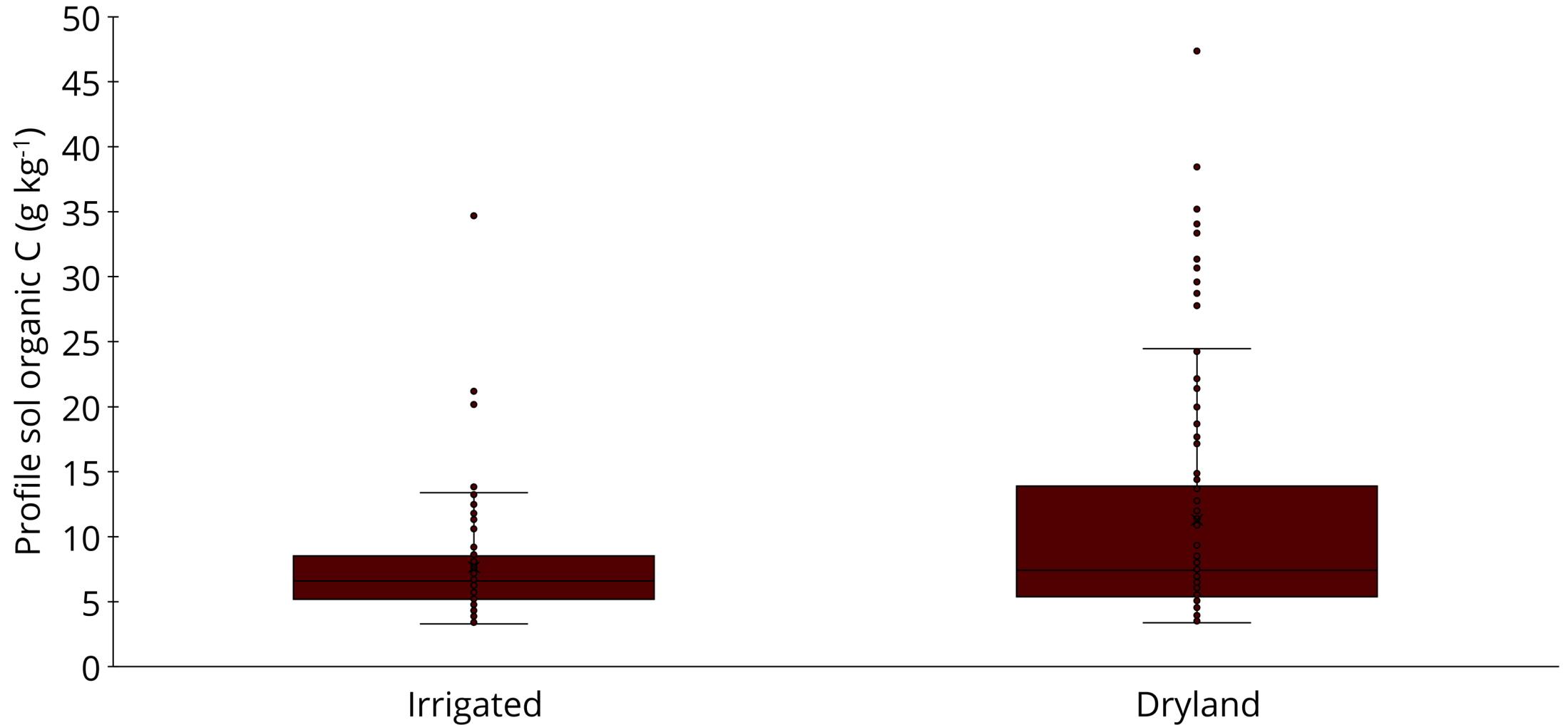
Soil organic carbon – Effect of cropping system



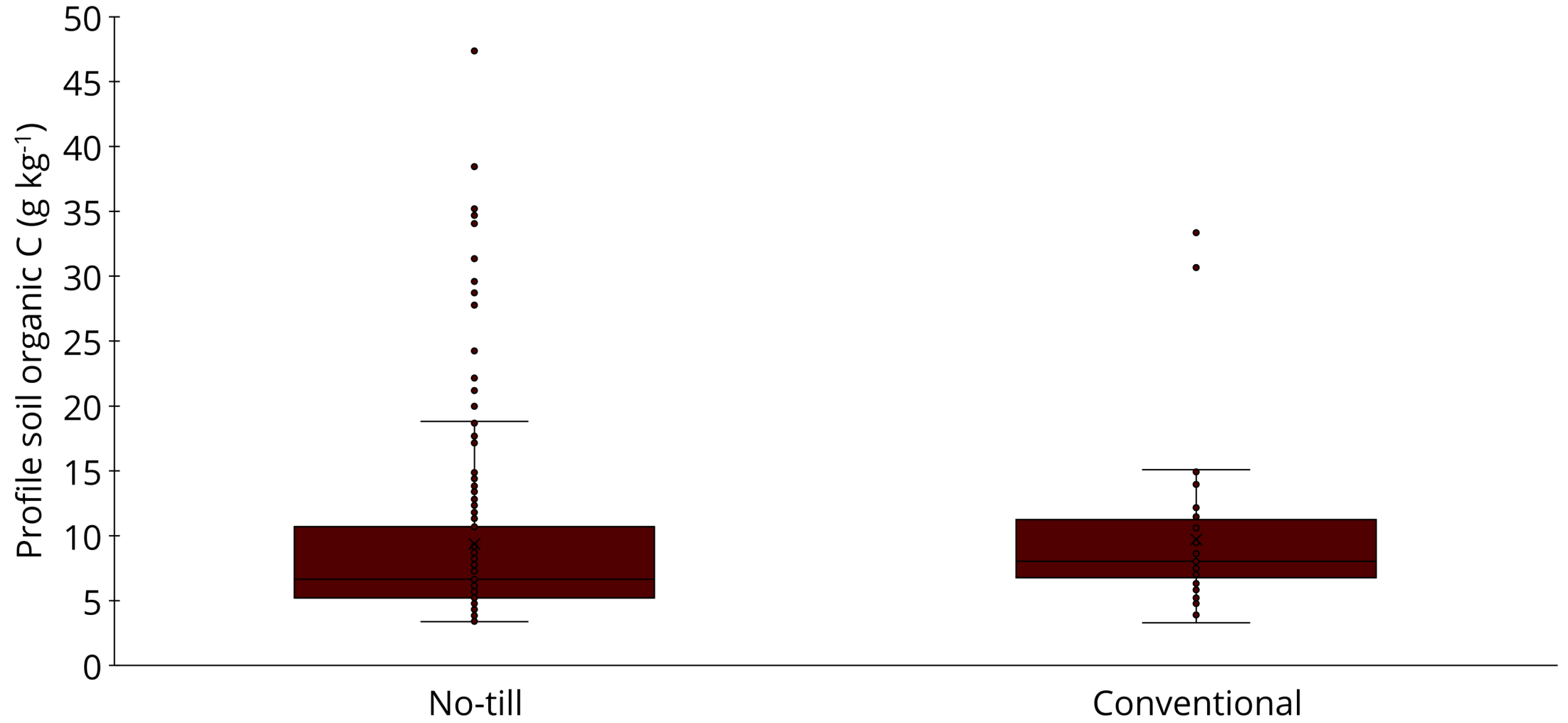
Soil organic C - Effect of soil type



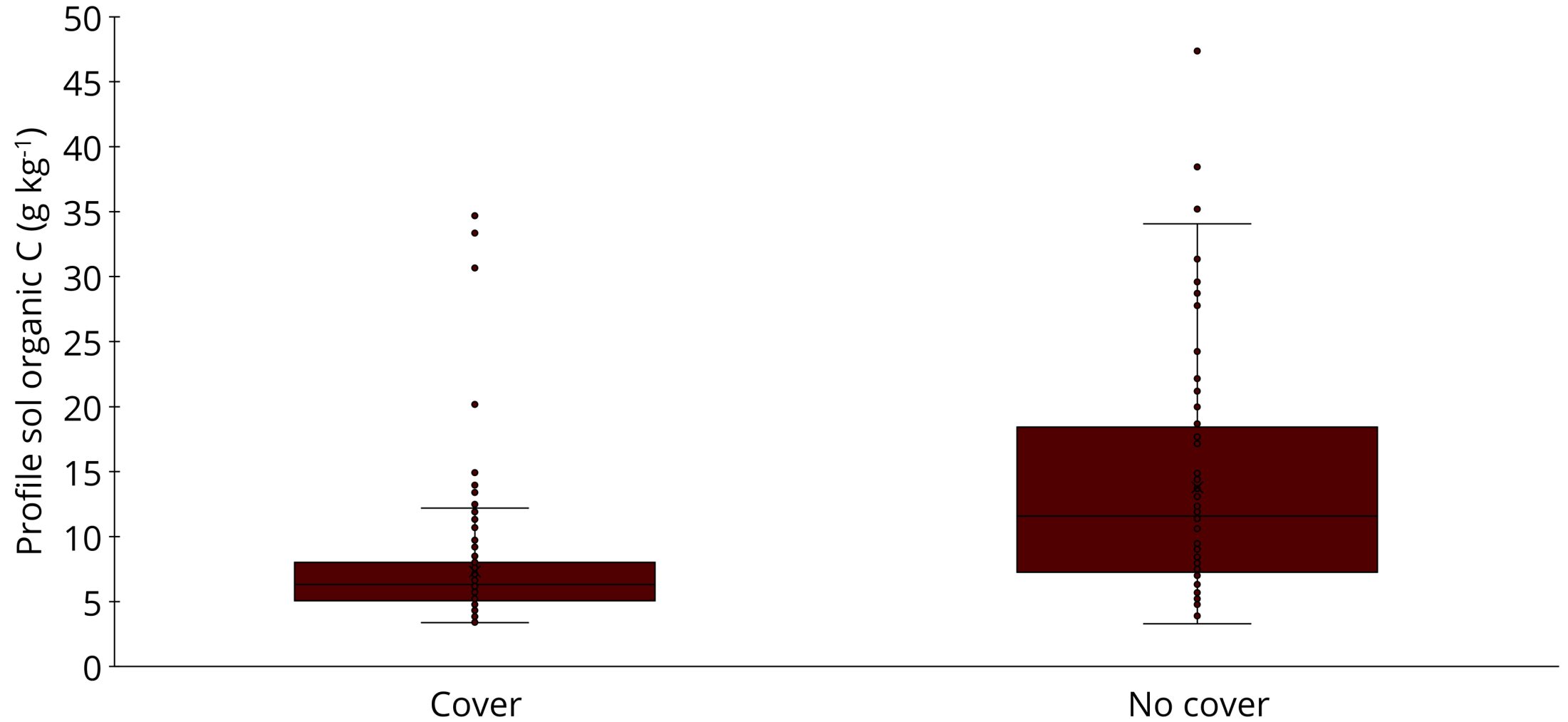
Soil organic carbon – Effect of irrigation



Soil organic carbon – Effect of tillage



Soil organic carbon – Effect of cover crop

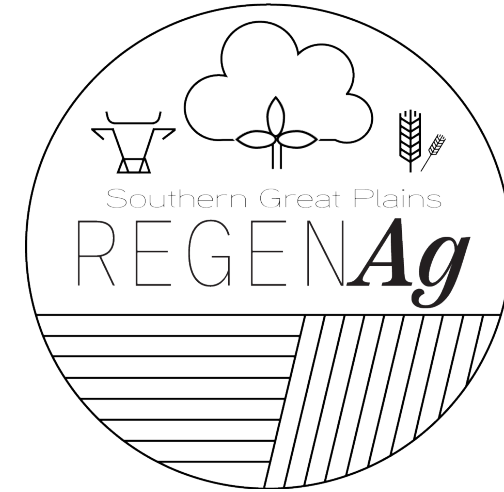


Project highlights

- Soil samples were collected from 72 farms across the Texas High Plains, Rolling Plains, Blackland Prairies, and Gulf Coast Plains, encompassing over 29.8 million acres of arable Texas.
- Soil carbon storage is primarily driven by soil texture with increased sequestration potential in more clayey soils.
- Conservation practices have a variable effect on carbon sequestration in the Texas High Plains.



Moving forward



Project continuation:

- Increased county selection (22 additional counties)
- Added dynamic soil health analysis

Integration with other projects:

- Sustainable Agricultural Systems – #RegenAg
- Climate-Smart Partnerships
 - ECOM
 - Sorghum Board





THANK YOU

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