

On-farm Evaluation of Cotton Potassium Recommendations in South Carolina

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COOPERATIVE EXTENSION
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Why Potassium is Important

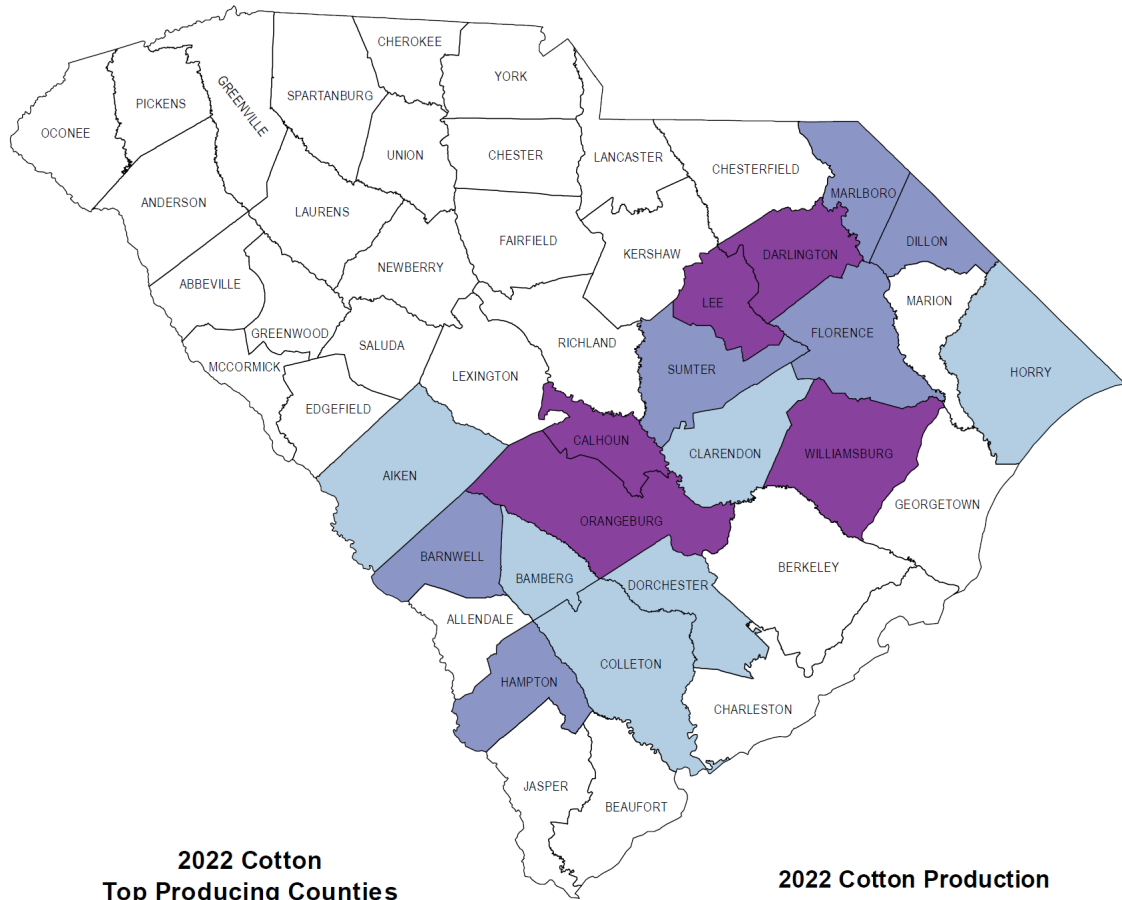
Potassium leaching can be considerable under:

- Low organic matter soils,
- Sandy soils,
- High soil water content,
- High potassium application rates.

Accumulation of potassium in clay subsoil horizons.

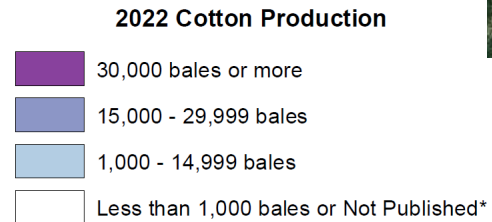
These factors together make potassium of greater concern for South Carolina producers.

Location Map of Testing Sites



**2022 Cotton
Top Producing Counties**

| | |
|--------------------|----------------------|
| Orangeburg | 71,200 bales |
| Darlington | 59,700 bales |
| Lee | 53,000 bales |
| Calhoun | 43,400 bales |
| Williamsburg | 34,800 bales |
| State Total | 505,000 bales |

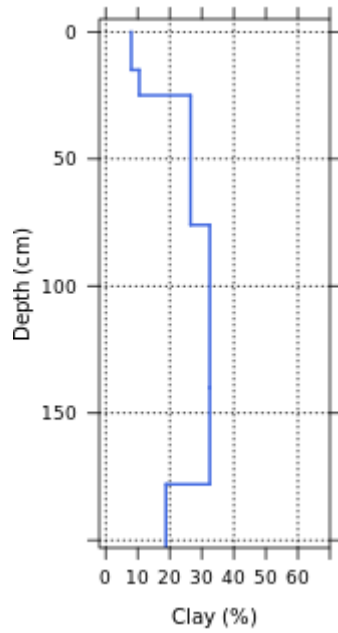
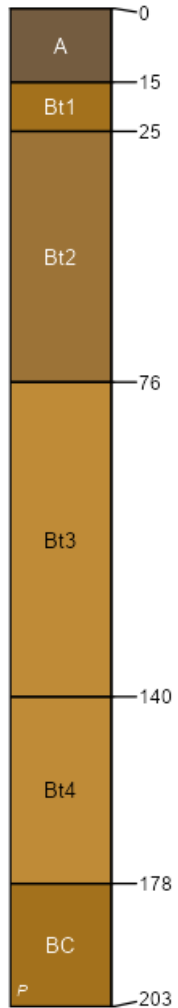


Basic Information of Test Sites and Crop Management Data

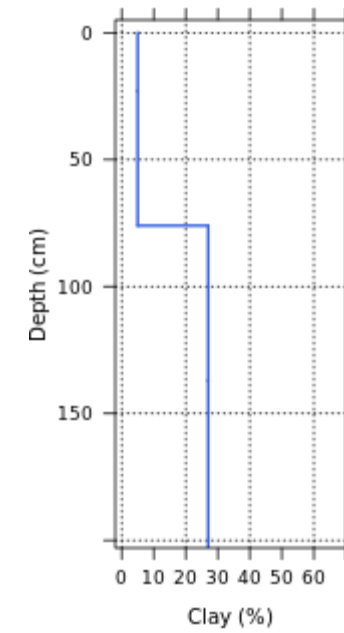
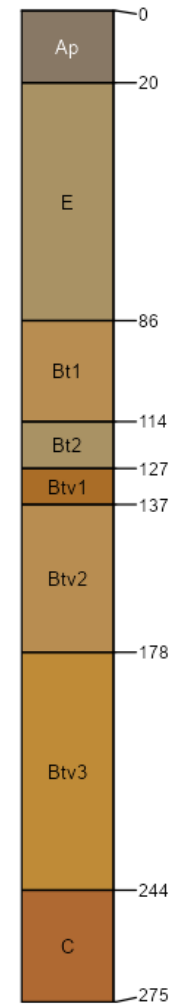
| Information/Site ID | Site A | Site B |
|------------------------|---------------------|---------------------------|
| Year | 2023 | 2023 |
| Number of crop rows | 4 | 4 |
| Row width (inches) | 30 | 38 |
| Variety | Nextgen3195 | Phtogen 411 |
| Crop rotations | Corn-Soybean-Cotton | Soybean_Wheat-Cotton |
| Tillage System | Strip-Till | No-till |
| Soil Series | Norfolk loamy sand | Faceville loamy fine sand |
| Harvesting rows | 2 | 2 |
| Harvesting length (ft) | 5ft | 5ft |

Soils of Test Sites

Site A (Norfolk loamy sand)



Site B (Fuquay loamy fine sand)

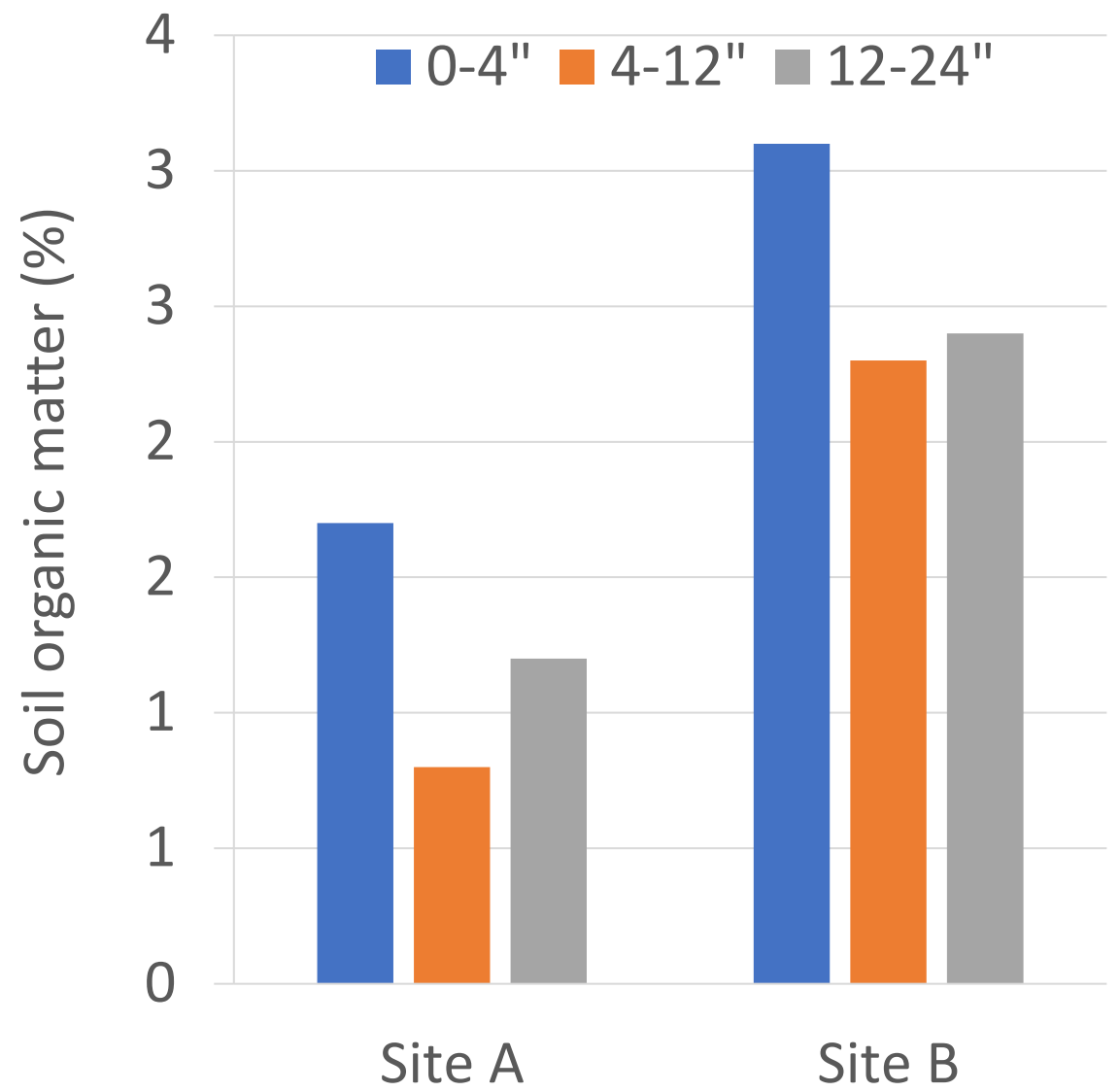
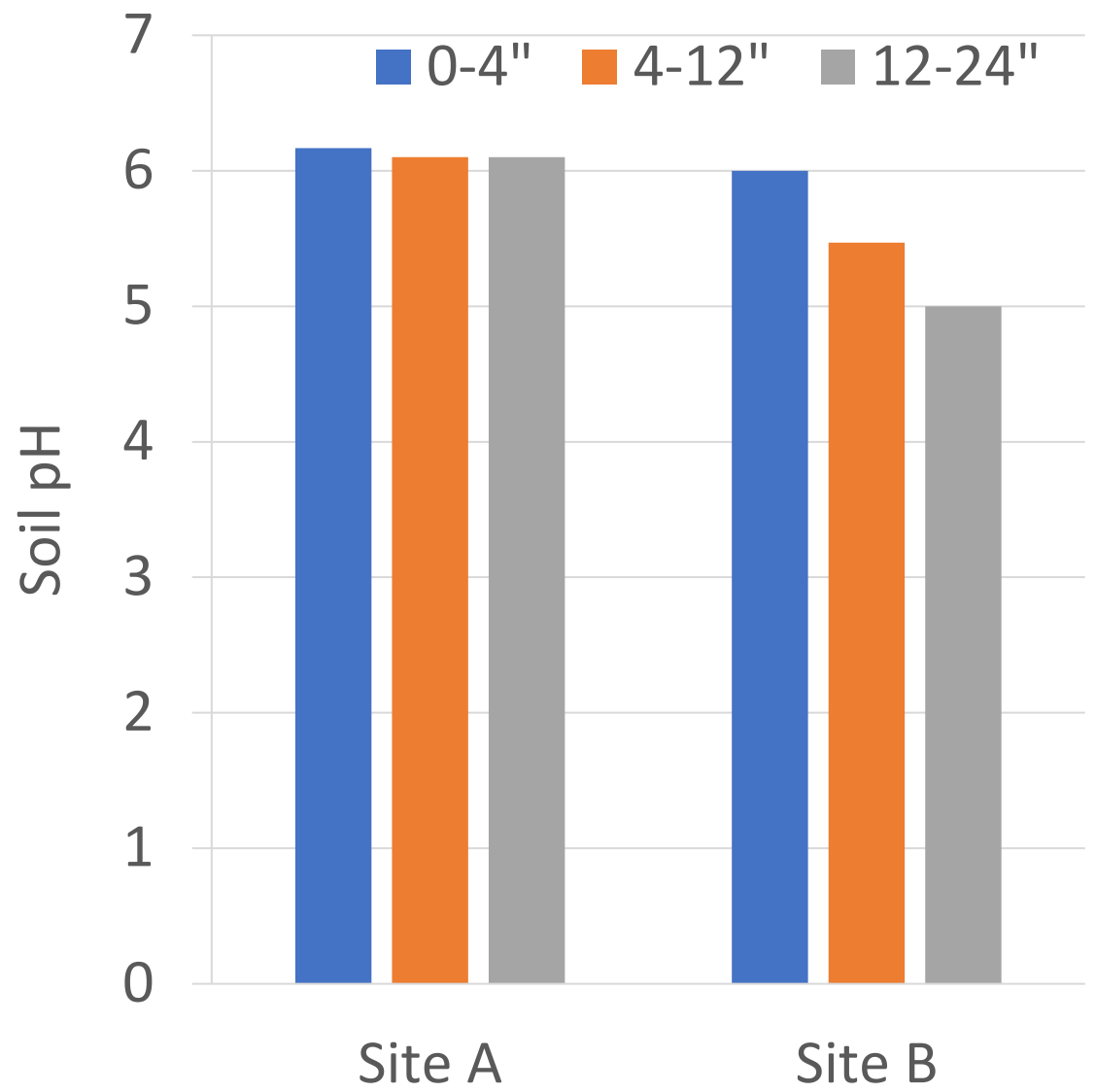


Soil Sampling Strategy



Soil Sampling from
A: 0-4 inches;
B: 4-12 inches, and
C: 12-24 inches

Baseline soil pH and organic matter content at different depths (inches)



Fertilizer Applications and Hand harvesting at On-farm Sites

Fertilizer Application by hand-held spreader

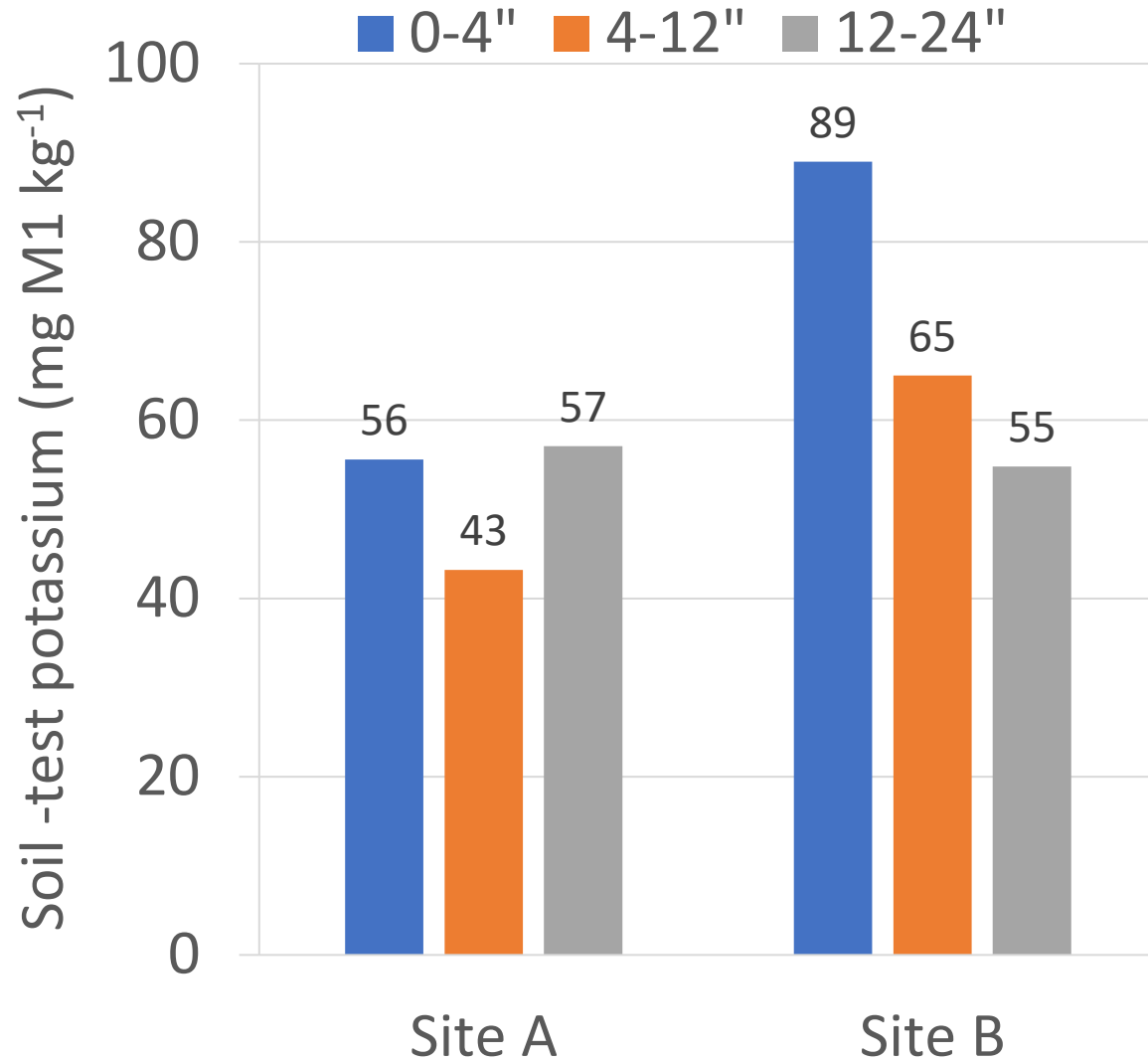


Hand harvesting of cotton



Baseline soil-test K (Mehlich-1) of different depths at sites A and B

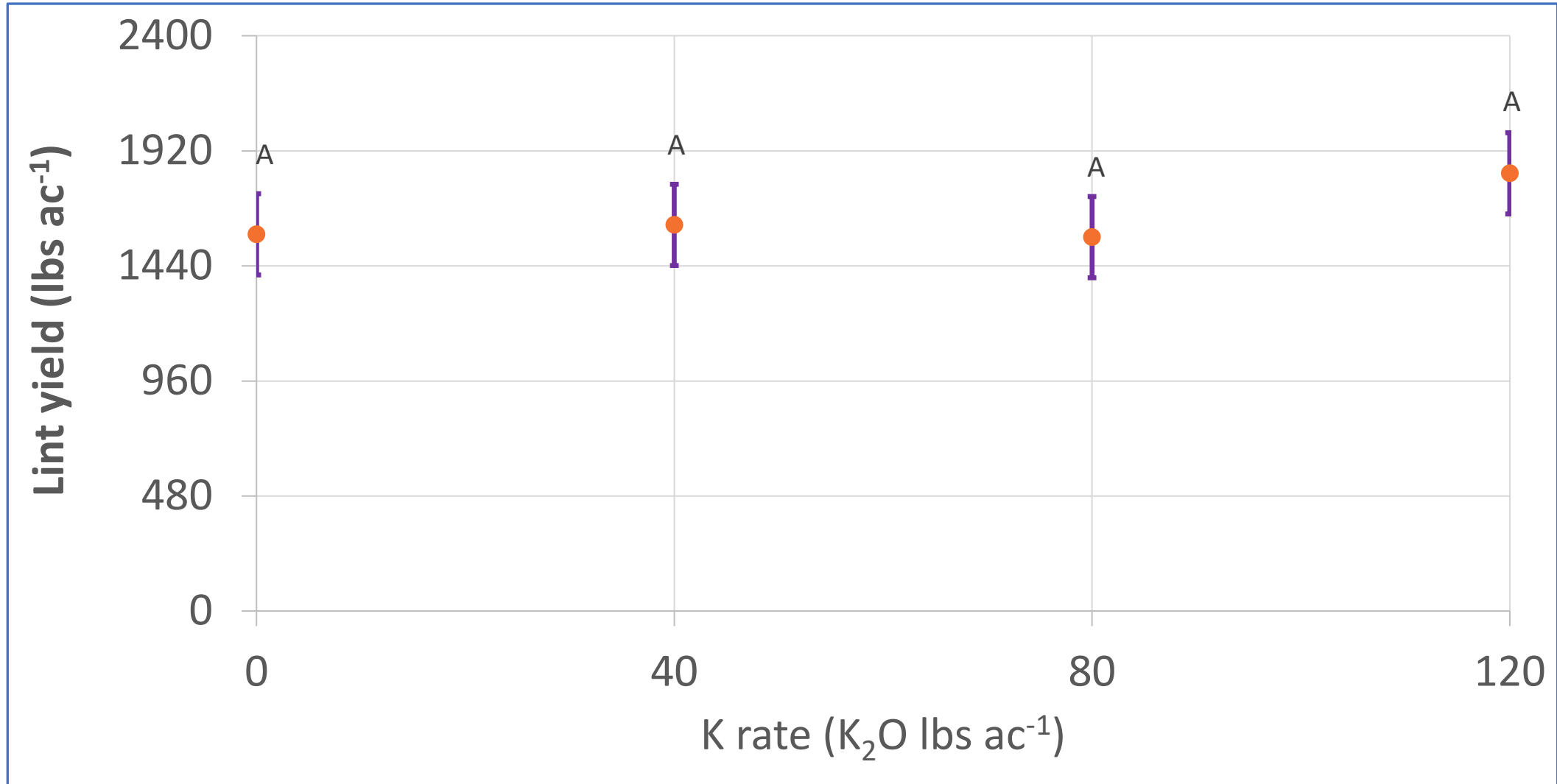
The soil-test K for site A was in medium and for site B was in sufficient category.



| Soil test category | Soil-test K(mg M1 kg ⁻¹) |
|--------------------|--------------------------------------|
| Low | 0-36 |
| Medium | 36-78 |
| Sufficient | 78-91 |
| High | 91-118 |
| Excessive | >118 |

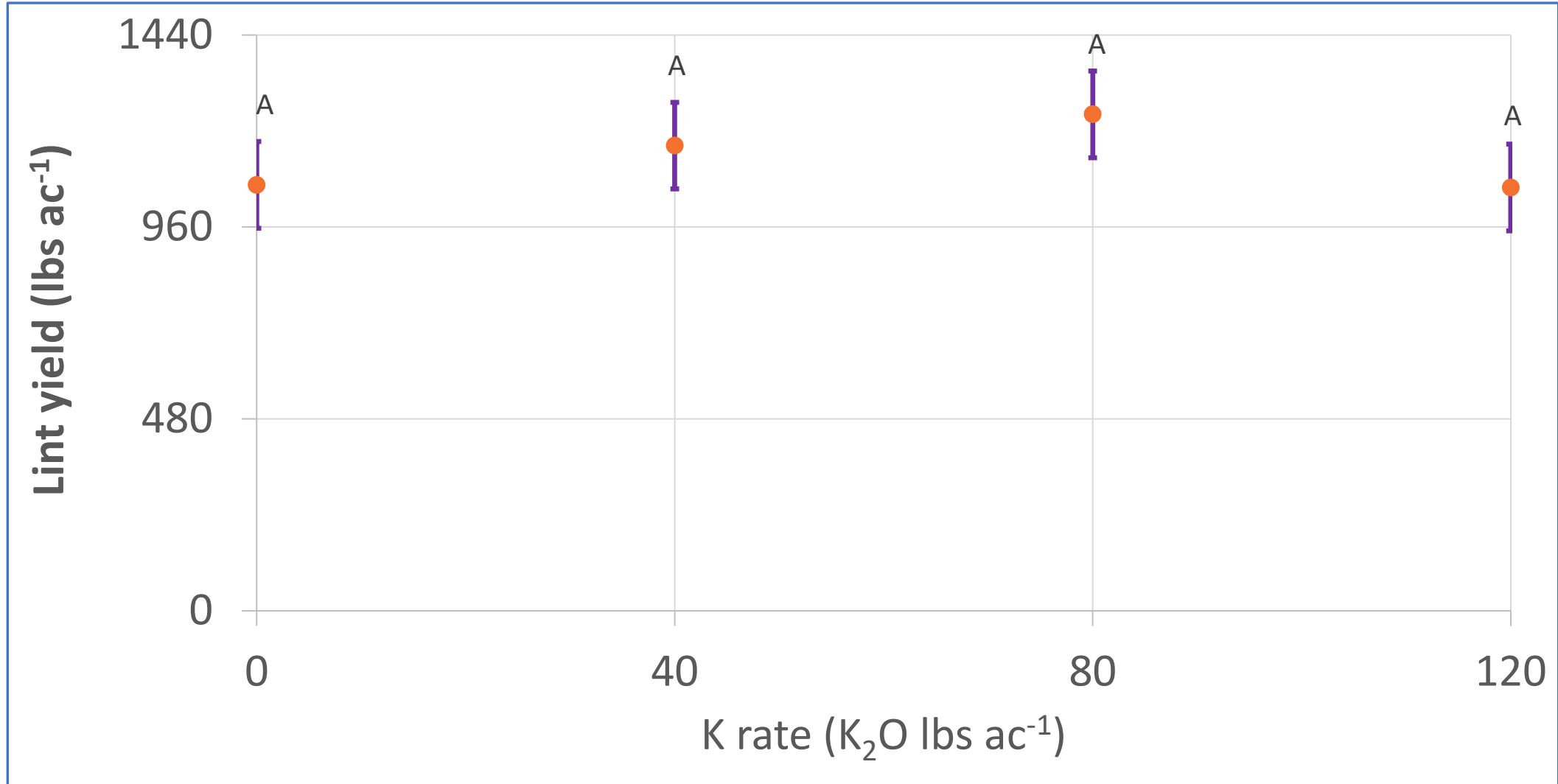
Yield Response to K fertilization at Site A

Site A was non-responsive to K fertilization



Yield Response to K fertilization at Site B

Site B was also non-responsive to K fertilization



Summary

- **Site A had STK in the medium and site B had STK in the sufficient category.**
- **There was considerable STK in the sub-surface at both the sites.**
- **Both the sites were non-responsive to K fertilization.**
- **Average lint yield at site A was close to 3 bales and at site B was close to two bale of cotton (960 lbs/ac).**
- **Non-responsiveness of both sites could relate to the accumulation of K in the sub-soil profile.**
- **These findings suggest appropriately credit fertilizer recommendations based on sub-soil K reserves.**



**Thank You for Attending
the Presentation!**

Questions?