

# **A National Evaluation of the John Deere Onboard Module Weighing System**

---

**Wesley Porter, Ed Barnes, Seth Byrd,  
Guy Collins, Jeremy Kichler, Randy  
Norton, Brian Pieralisi, Simerjeet  
Virk, Jason Ward, Jared Whitaker**

---

2022 NCC Beltwide Cotton Conference  
January 5, 2022 San Antonio, TX

# Background

---

- Typically Extension Specialists do a considerable amount of on-farm research and need a way to evaluate the results at the end of the year.
- Cotton Modules are currently weighed in the field using large truck style scales to weigh the round bales from the John Deere Cotton Pickers.
- However, JD 7760 (CP/CS) and CP/CS 690's have the option to add an on-board module weighing system.



# Objective

---

- Evaluate the accuracy of the on-board module weighing system for evaluating trial data eliminating the need to have flat scales present during harvest.
  - This objective will be met by following these subobjectives:
    - Determine the reliability and accuracy of John Deere's on-board module weighing system compared to traditional trial evaluation methods.
    - Evaluate the potential of the on-board system to be utilized for on-farm research trial evaluation.
    - Development of a linear regression equation that can be utilized to estimate the weight of a round cotton module weighed with the on board weighing system.

# Initial Data from GA

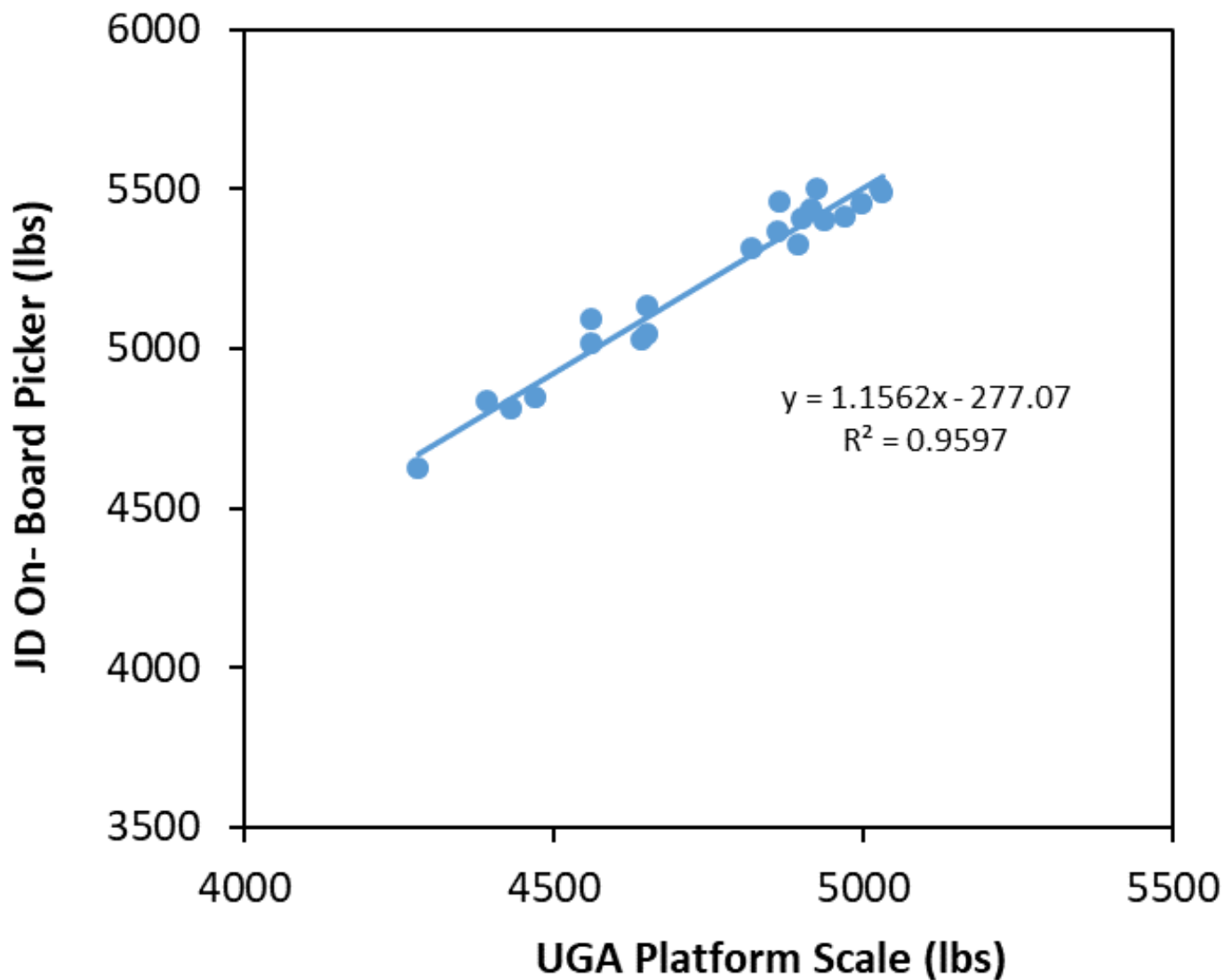
- 2018 Colquitt County On-Farm Variety Trial (42)
- 2019 Colquitt County Fungicide Trial (9)
- All Data from 7 on farm trials (112 comparisons)



# Results: 2018 Colquitt County OFT

Variety	UGA Platform Scale Weight		On-Board Picker Weight		Significance between PF Scale on JD On-Board System
	Mean Yield	Statistical Significance within Platform Scale Alpha = 0.10	Mean Yield	Statistical Significance within On-Board System Alpha = 0.10	
ST 5471 GLTP	2112	A	2246	A	
DP 1538 B2XF	2082	A	2225	A	*
DP 1646 B2XF	2015	A	2213	A	*
DP 1840 B3XF	2012	A	2153	A	
ST 5818 GLT	1983	A	2199	A	*
PHY 430 W3FE	1945	AB	2088	AB	*
CG 3885 B2XF	1930	AB	2085	AB	
DP 1851 B3XF	1923	AB	2093	AB	
PHY 480 W3FE	1888	AB	2067	AB	*
ST 6182 GLT	1842	AB	2015	AB	
NG 5711 B3XF	1838	AB	2035	AB	
NG 5007 B2XF	1837	AB	2038	AB	
DG 3605 B2XF	1833	AB	2069	AB	
PHY 440 W3FE	1682	B	1850	B	

# Results: 2019 Colquitt County Fungicide



UNIVERS

EXTENSION



GEORGIA  
Precision Ag

# Results: 2019 Colquitt County Fungicide

Treatment	UGA Platform Scale Weight		On-Board Picker Weight		Significance between PF Scale on JD On-Board System
	Mean Yield	Statistical Significance within Platform Scale Alpha = 0.10	Mean Yield	Statistical Significance within On-Board System Alpha = 0.10	
Untreated	4937	A	5452	A	*
Priaxor	4942	A	5456	A	*
Miravus	4930	A	5397	A	*

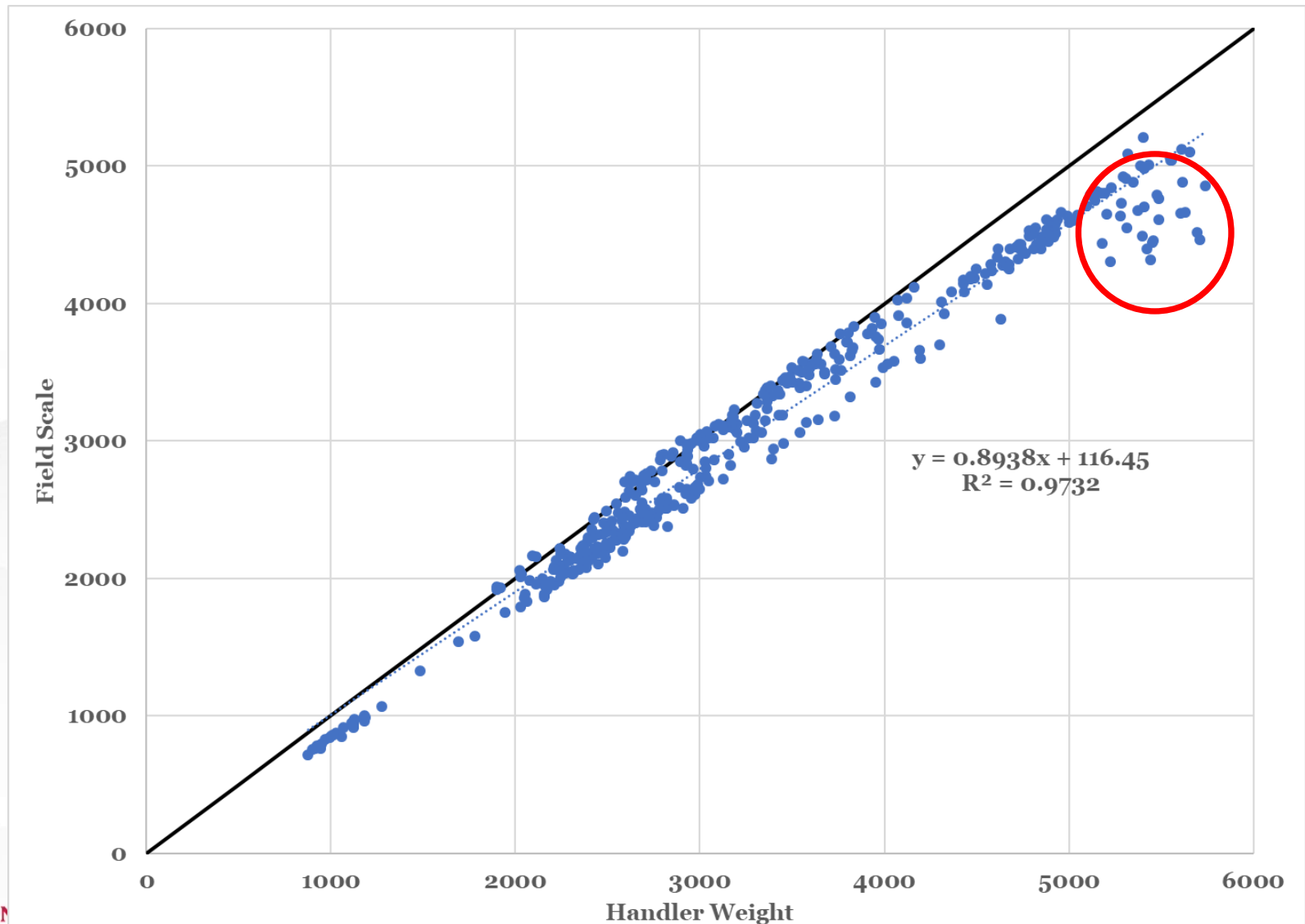
# National Data Collected

---

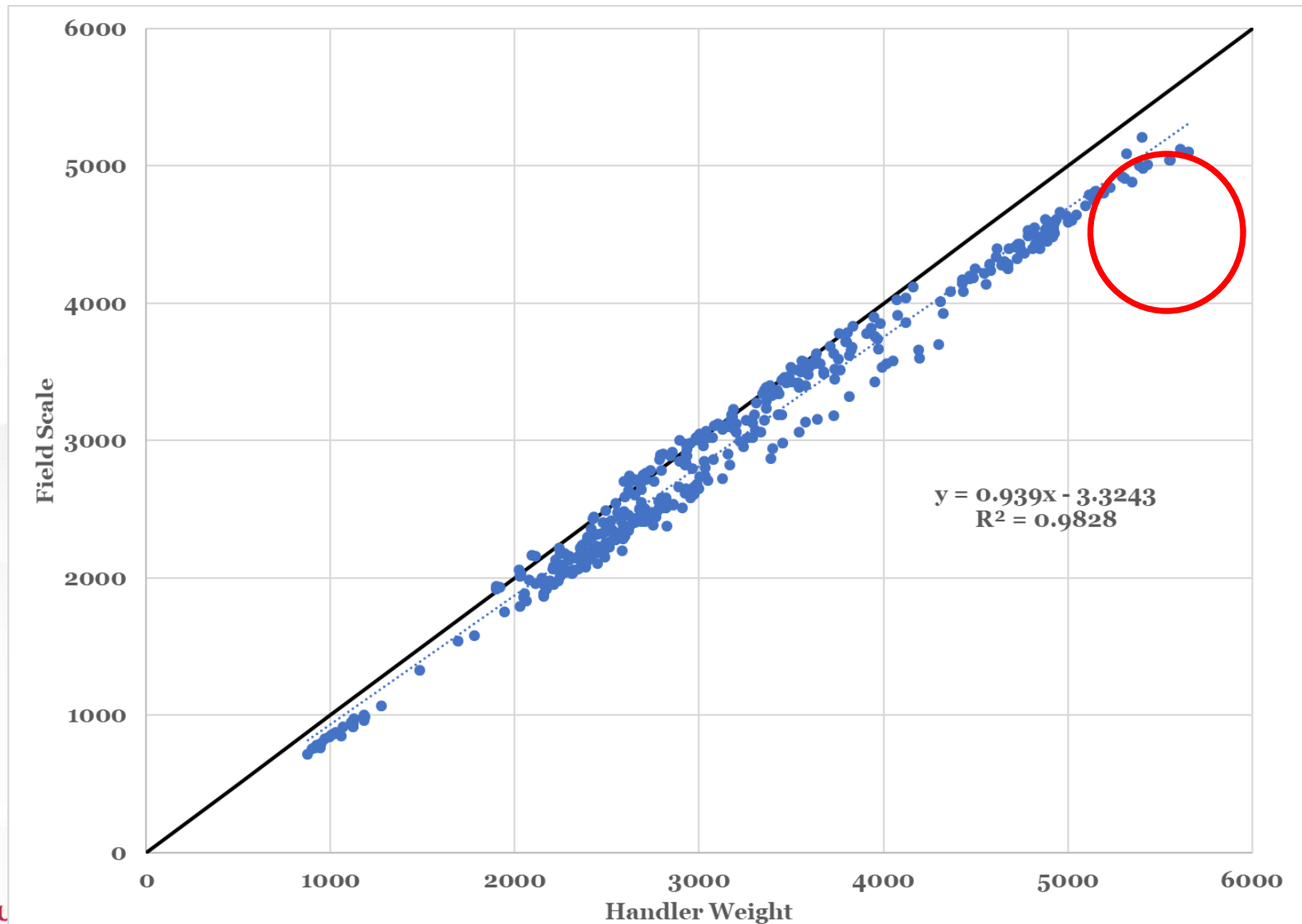
- **2020:**
  - Arizona, Georgia, North Carolina, Oklahoma
    - Total of 414 observations compiled.
- **2021:**
  - Arizona, Georgia, North Carolina, Oklahoma
    - Total of 272 observations compiled.



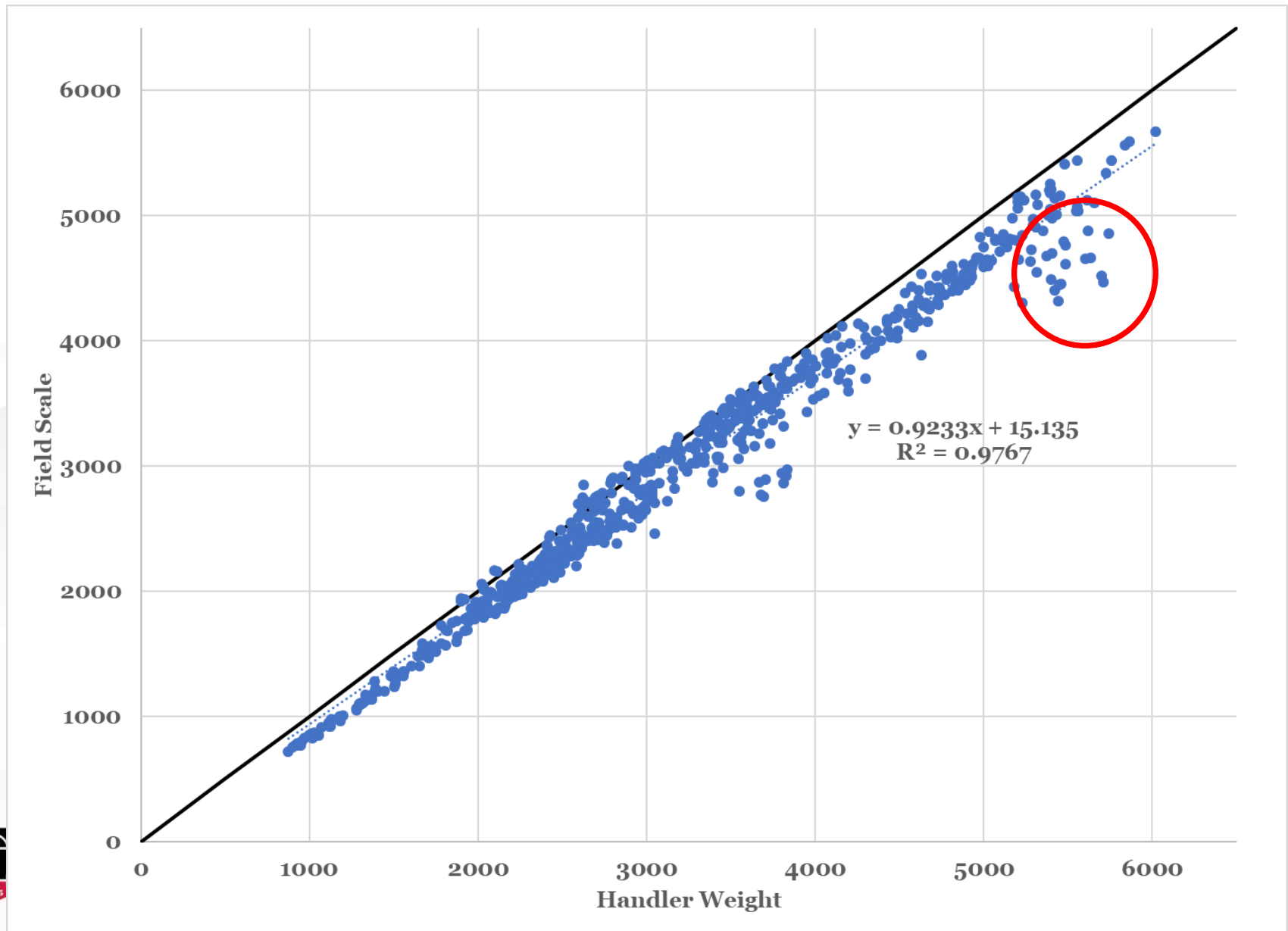
# 2020 AZ, GA, MS, NC, OK, Pooled Data



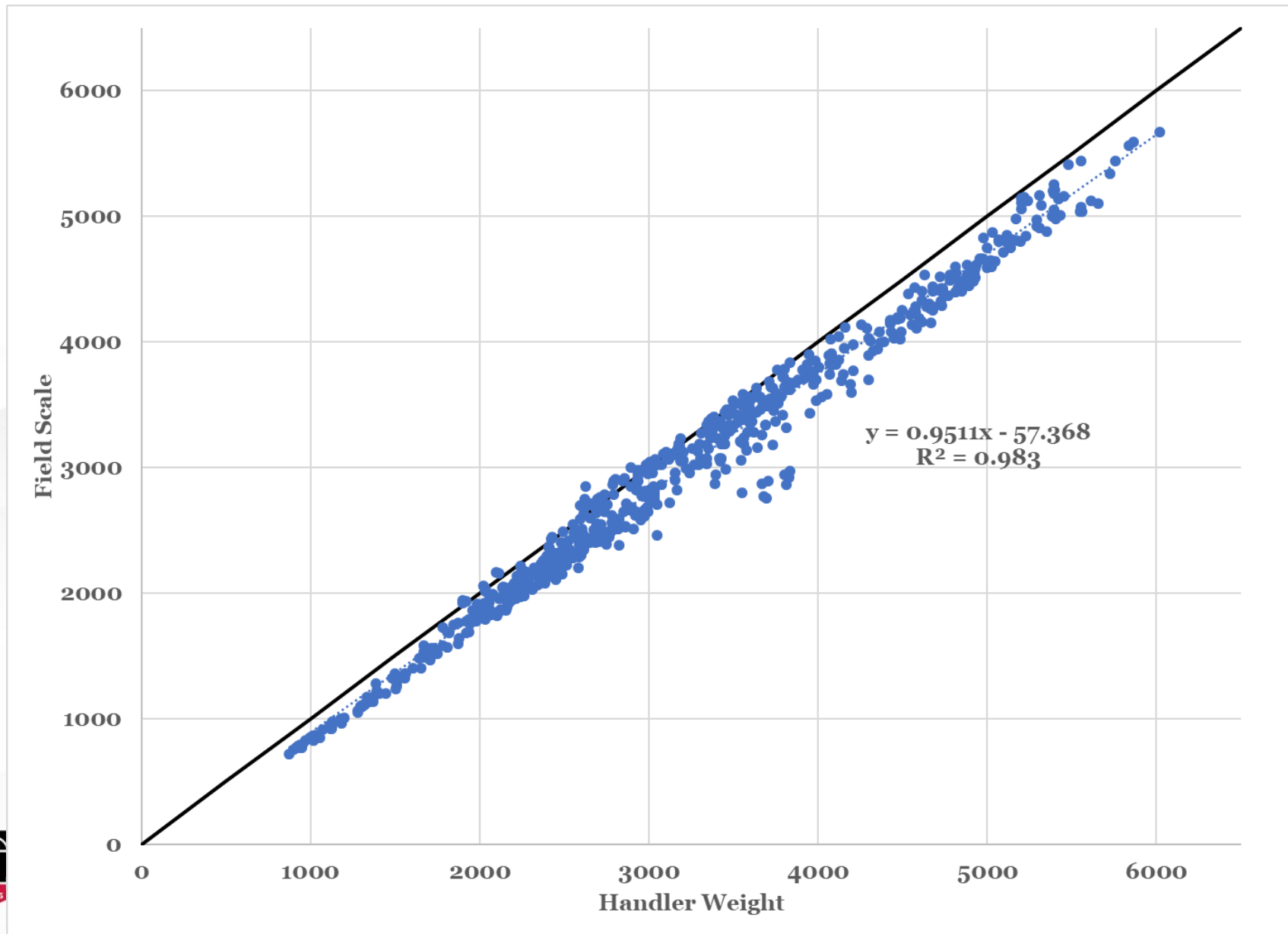
# 2020 AZ, GA, MS, NC, OK, Pooled Data



# Results: 2020-2021



# Results: 2020-2021



# Conclusions

---

- With over 686 different loads collected from multiple states, harvesters and harvester types (CP vs. CS) the John Deere On-Board weighing system had a strong correlation to a calibrated platform scale system ( $R^2 = 0.983$ ).
- In trials with replicated data, the On-board system was statistically similar to the platform scale in 9 of the 14 treatments.
  - Additionally the On-board system was able to accurately determine significant differences between treatments even if it's weight predictions were not the same as the platform scale.

# Conclusions

---

- Based on these observations the John Deere On-Board module weighing system can be used as a viable option for determining treatment differences for On-Farm trials.
- However, if the system has not been calibrated and the data require high accuracy, a field scale is suggested.
- The system accuracy can be increased via applying a calibration equation because it has a strong enough correlation to a calibrated platform scale that it can be utilized for accurate weight predictions.
  - <https://www.planthealthexchange.org/cotton/Pages/GROW-COT-10-20-271.aspx>

Wesley M. Porter • [wporter@uga.edu](mailto:wporter@uga.edu) • UGA -Tifton

# QUESTIONS?

Follow us on Facebook and Twitter at [@GeorgiaPrecisionAg](https://www.facebook.com/GeorgiaPrecisionAg)



GEORGIA  
Precision Ag

Georgia Precision  
Ag  
[@GeorgiaPrecisionAg](https://www.facebook.com/GeorgiaPrecisionAg)



Precision Agriculture Makes Farming More Sustainable,  
Profitable | PrecisionAg  
An UGA vet and intern discuss chick seed placement in a field. In the  
photo, a young farmer is seen at work about his research project using precision  
Ag.

**Cotton Cultivated**  
Providing the cotton growing community quick and easy access to cotton  
production resources  
<https://www.facebook.com/GeorgiaPrecisionAg>

7 tips for successful cotton planting



UNIVERSITY OF GEORGIA  
EXTENSION



GEORGIA  
Precision Ag