

# Sugarcane Yield Monitoring Updates

By

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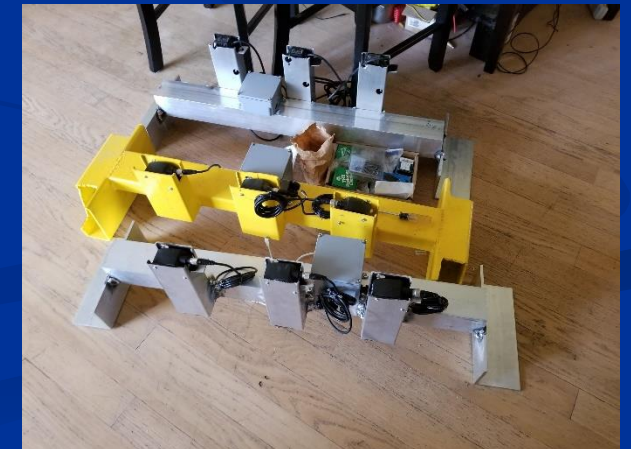
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Dean Lee, Alexandria, LA



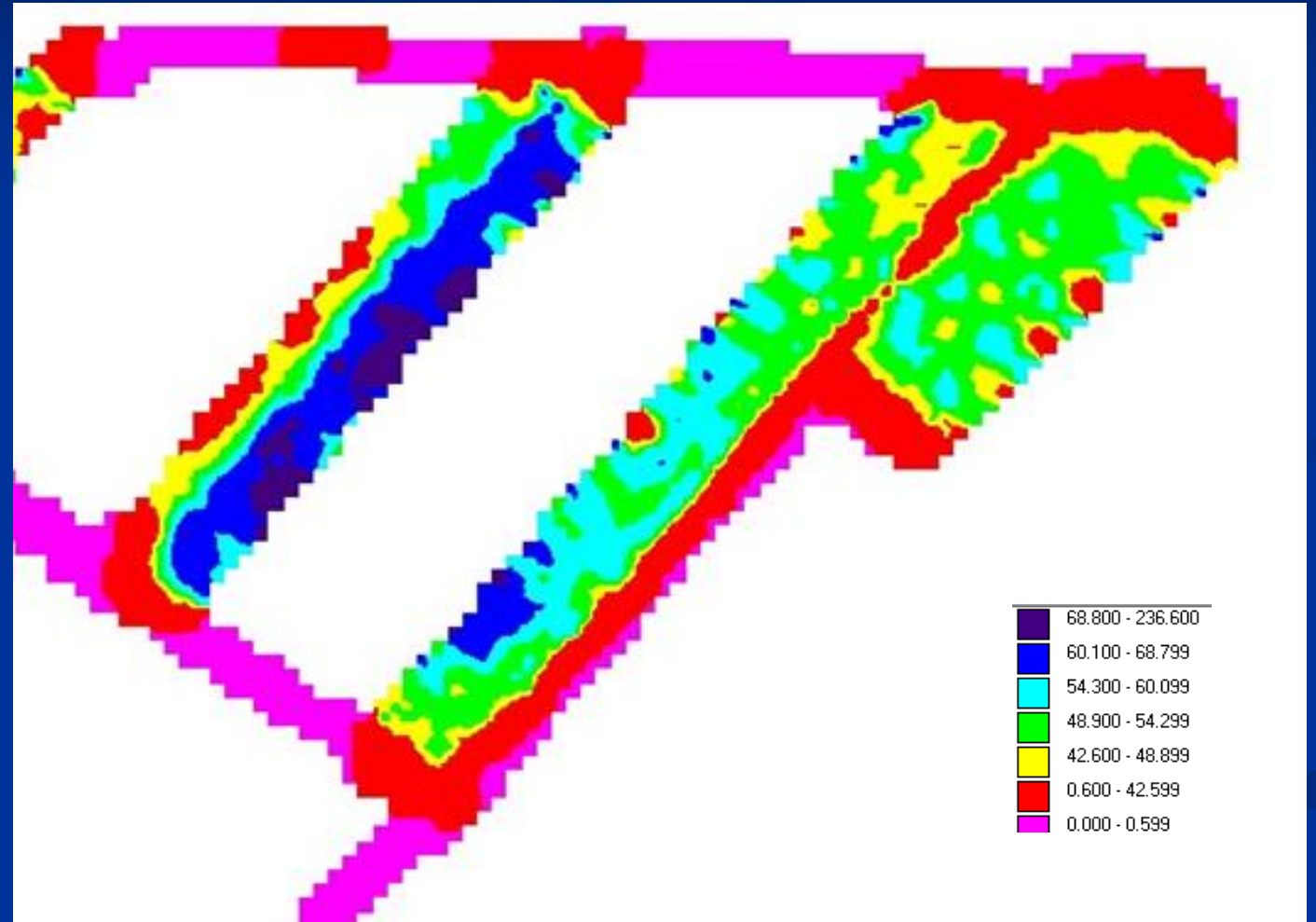
# Optical Yield Monitors on Combines:

- 3 Optical Yield Monitors put on combines:
  - Keith Dugas: Wireless with regular monitor:
  - Newton Farms (Bunkie Louisiana): TOPCON system
  - Special wireless Unit:



# Dugas Farms:

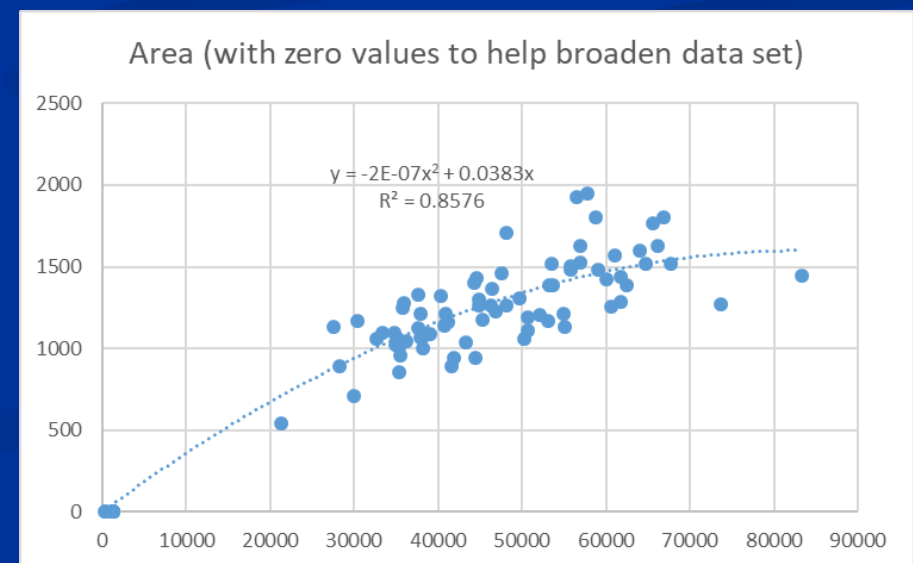
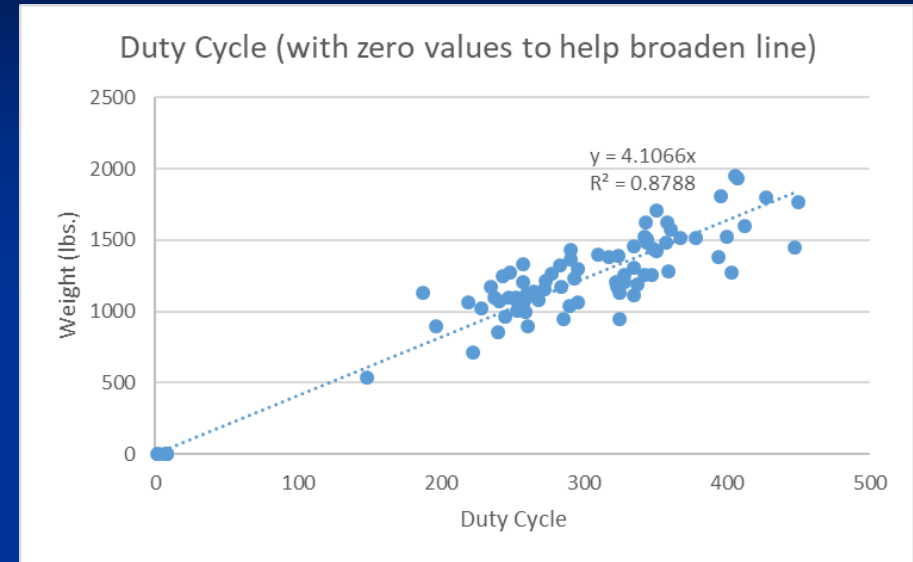
- Monitor installed on John Deere 3520 Combine and used to evaluate plots which resulted in:
  - 75 Data Points
  - Linear line relationship (4.1 proportional factor)
  - Average offset was 124 lbs.
    - 700 to 1600 lb. loads (10% error)
  - Duty cycle was a better reading than area



# Dugas Farms:

## ■ Calibration Results:

- 75 Data Points
- Linear line relationship (4.1 proportional factor)
- Average offset was 124 lbs.
  - 700 to 1600 lb. loads (10% error)
- Duty cycle was a better reading than area





# Some Problems Data File:

## ■ Doubled Data:

eedMPI	Course	Fttravel	Fttravel3s	Area1	Area2	Area3	totalall	totaltot	DutyCycle	DutyCycle	DutyCycle	RawYield	lbs	Yield (ton	Base1	Base2	Base3	Good Yield Number:
0.7	39	1	3	0	0	0	0	5	0	0	0	0	0	0	8.3	8.2	8.6	0
1.1	41	1.6	4.8	0	0	0	0	5	0	0	0	0	0	0	8.3	8.2	8.6	1
1.1	36	1.6	4.8	0	0	0	0	5	0	0	0	0	0	0	8.3	8.2	8.6	1
1.1	33	1.6	4.8	0	0	0	0	5	0	0	0	0	0	0	8.3	8.2	8.6	1
0.7	34	1	3	1060	1261	1451	1255	1260	8	7	10	8	32.8	41.1	8.2	8.2	8.1	0
1	32	1.5	4.5	967	1504	1395	1181	2441	6	10	10	8	32.8	27.4	8.2	8.2	8.6	0
1.3	34	1.9	5.7	967	1504	1395	1181	2441	6	10	10	8	32.8	21.6	8.2	8.2	8.6	1
2	33	2.9	8.7	1635	2054	2037	1836	4277	13	14	15	14	57.4	24.8	8.3	8.2	8.3	1
2	38	2.9	8.7	2881	4871	4434	3657	7934	20	29	28	25	102.5	44.2	8.3	8.2	8.1	1
2	40	2.9	8.7	4406	6217	6954	5680	13614	28	33	36	32	131.2	56.6	8.3	7.9	8.1	1
1.5	42	2.2	6.6	4406	6217	6954	5680	13614	28	33	36	32	131.2	74.6	8.3	7.9	8.1	1
1.7	41	2.5	7.5	3292	4756	5386	4339	17953	22	32	34	29	118.9	59.5	8.3	8.2	8	1
1.6	40	2.3	6.9	5470	6881	5795	5632	23585	34	40	34	36	147.6	80.3	8.3	8.2	8	1
1.6	41	2.3	6.9	3378	4739	5004	4191	27776	27	34	34	31	127.1	69.2	8.3	8.1	8	1
1.7	43	2.5	7.5	3378	4739	5004	4191	27776	27	34	34	31	127.1	65.0	8.3	8.1	8	1
0.6	40	0.9	2.7	5592	6196	5997	5794	33570	40	42	42	41	168.1	233.8	8.3	8.2	8.2	0
1.3	222	1.9	5.7	0	1	0	0	33570	0	0	0	0	0	0	14.9	14.3	12.5	1
1.9	42	2.8	8.4	0	0	0	0	33570	0	0	0	0	0	0	14.9	14.1	12.5	1

## ■ Measured Variance: 20 to 73 tons/acre

# TOPCON:

- Tested two units:
  - One in Brazil
  - One in the U.S.
- Results were good



# Components and Display:

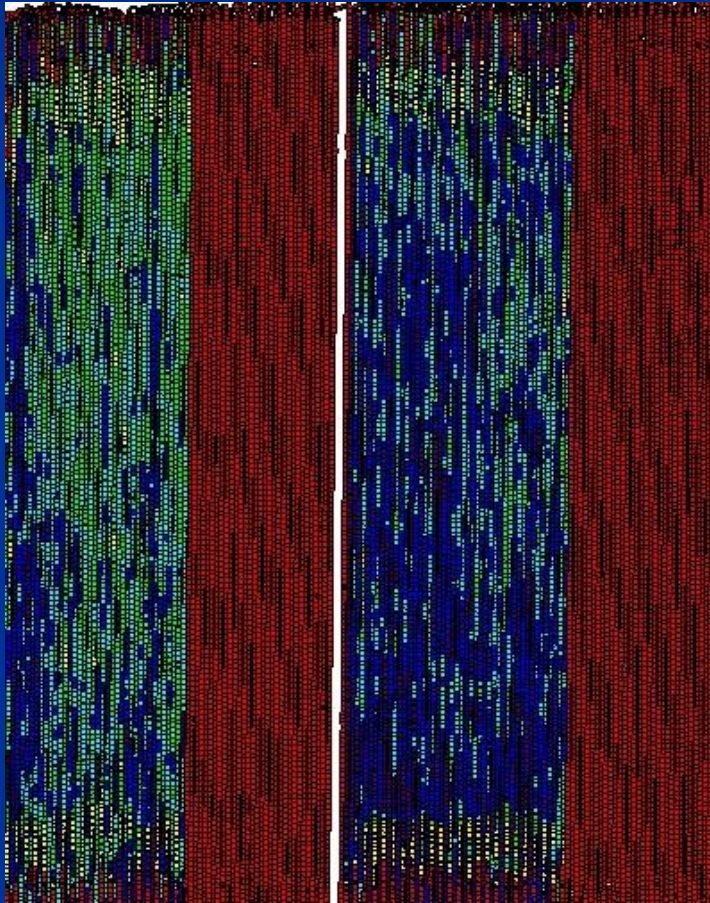
- System put on a harvester in Bunkie, LA



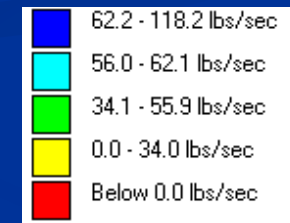
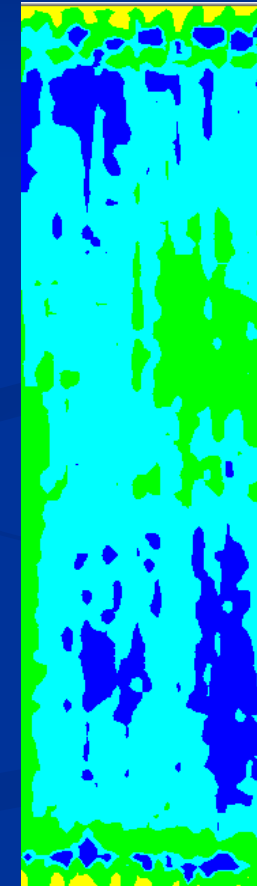


# Maps from TOPCON Unit:

Shape File From Monitor



Text Data Contoured in  
Farmworks

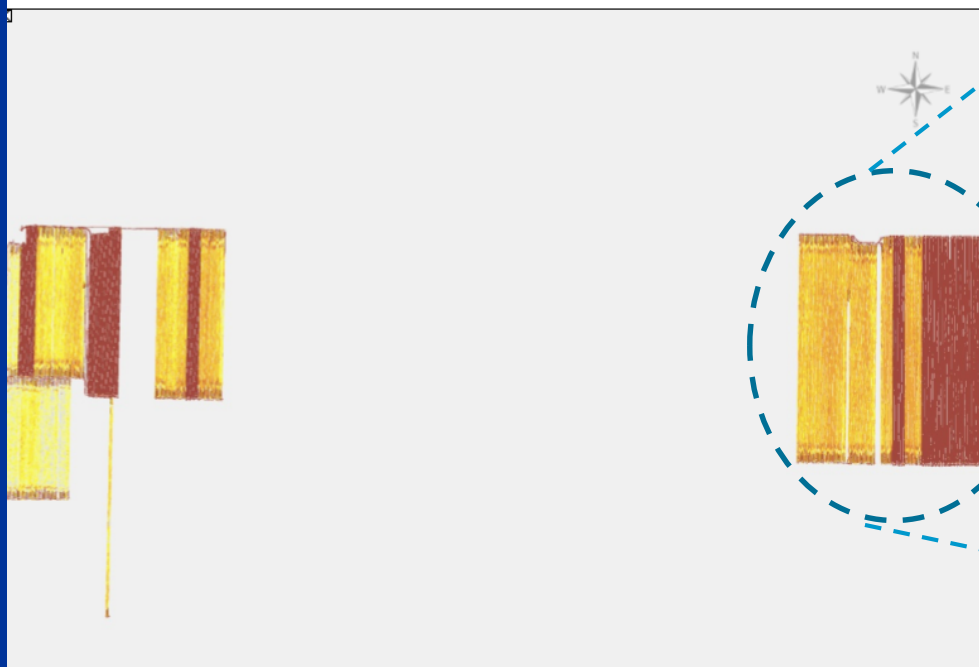




# Testing with TOPCON:

## ■ GPS and Compass Problems:

Job	SUGAR2_20181229
Harvest	Wet Yield
Product	SUGARCANE
Minimum Yield	0.00 t/ac
Maximum Yield	52.09 t/ac
Average Yield	19.22 t/ac
Worked Area	77.55 ac
<input checked="" type="checkbox"/> Map Origin	Latitude 30°56'09.05"N Longitude 92°10'32.56"W

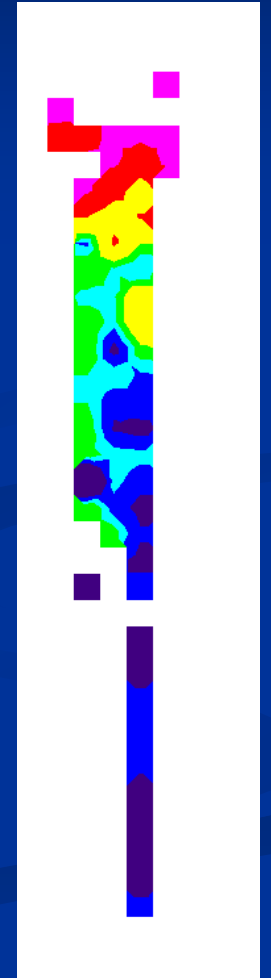
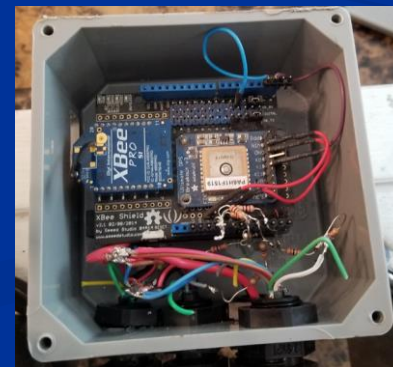


Compass Problem



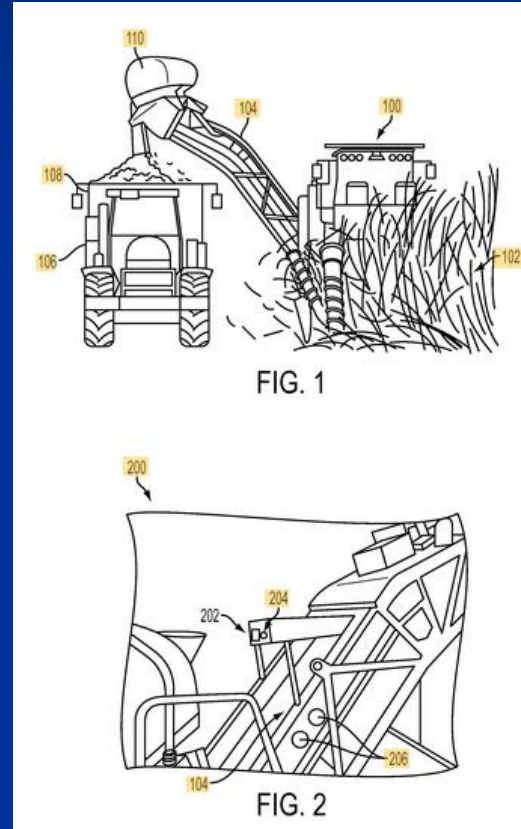
# Wireless Overhead Optical Yield Monitor with GPS:

- New software:
  - Takes 667 readings per second with GPS
- Built-in GPS
- Send out a GPS type statement
- Results: Good, but problems transmitting data down a far field



# John Deere Sugar Cane Yield Monitor

- Based on 3-D optical sensor:
  - Looks at conveyor floor from conveyor rack mounted above conveyor floor
  - Detects material properties as well as volume
  - Camera systems used in many device including drones, cell phones, tablets, etc.





# John Deere Unit:

- Chicken litter test on sugarcane field (Jimmy Flanagan)
- Several farmers using system
- Seems to work
- Getting patent on 3-D sensing part



51.77 ton/ac

58.22 ton/ac

# Special Thanks:

- American Sugar Cane League (AMSCCL)

# The End

Questions?



# Extra Slides:

