Table 1. Soil test results for pH, potassium, and calcium in the pegging zone immediately prior to gypsum application approximately 45 days after planting. Potassium (0-0-60, N-P_2O_5-K_2O) at 250 lbs/acre was applied immediately after planting to the soil surface without incorporation.

Location	Year	Soil fertility characteristic					
		Soil pH		Potassium ($cmol_c$ /kg)		Calcium ($cmol_c$ /kg)	
		$-K_2O$	$+K_2O$	$-K_2O$	$+K_2O$	$-K_2O$	$+K_2O$
Lewiston-Woodville	2001	5.9	6.1	0.19	0.46*	2.73	2.18
Rocky Mount	2001	5.6	5.4	0.34	0.44	3.08	3.00
Lewiston-Woodville	2002	6.1	6.0	0.32	0.42	4.69	4.76
Rocky Mount	2002	6.2	6.3	0.42	0.56	3.46	3.58
Lewiston-Woodville	2003	6.0	5.9	0.26	0.44*	3.19	2.58
Rocky Mount	2003	5.8	5.8	0.24	0.47*	2.57	2.60
Lewiston-Woodville	2004	5.7	5.5	0.19	0.34*	3.96	3.94
Rocky Mount	2004	6.3	6.4	0.47	0.61	4.35	4.54
Lewiston-Woodville	2005	6.0	6.0	0.51	0.81*	3.63	3.79
Rocky Mount	2005	6.4	6.8	0.18	0.42*	1.31	1.30

Table 3. Interactions of location, year with cultivar and location, year with gypsum rate for peanut pod yield.*

Location	Year	Cultivar		Relative gypsum rate**		
		Gregory	NC-V 11	0	1.0×	1.5×
		Peanut pod yield (lbs/acre)				
Lewiston-Woodville	2001	4170 a	3660 b	4000 a	3780 a	3670 a
Rocky Mount	2001	4300 a	3620 b	4170 a	3970 ab	3730 b
Lewiston-Woodville	2002	3660 a	3260 b	3420 a	3570 a	3390 a
Rocky Mount	2002	4350 a	4280 a	4320 a	4320 a	4300 a
Lewiston-Woodville	2003	4200 b	4520 a	4130 b	4350 b	4610 a
Rocky Mount	2003	3530 b	3920 a	3780 a	3660 a	3740 a
Lewiston-Woodville	2004	3340 b	3950 a	3820 a	3760 a	3350 b
Rocky Mount	2004	3320 a	3030 b	3150 a	3110 a	3270 a
Lewiston-Woodville	2005	4950 a	4890 a	4530 b	5110 a	5120 a
Rocky Mount	2005	3580 b	4240 a	2540 b	4490 a	4630 a

Increase in peanut acres in 2023?

New and experienced growers in new fields

- Check ZINC
  - If NCDA&CS index is greater than 250, find another field if possible
- INOCULATE all acres for N fixation
  - In-furrow product that reaches the bottom of the furrow
  - In new ground, add peanut-based product to seed for insurance in case an orifice stops up
- pH across the entire field needs to be at least 5.8
- Make sure digging and harvesting equipment matches acres
- Consider implications of previous crop sequence

Digging loss was high in some fields
across the state

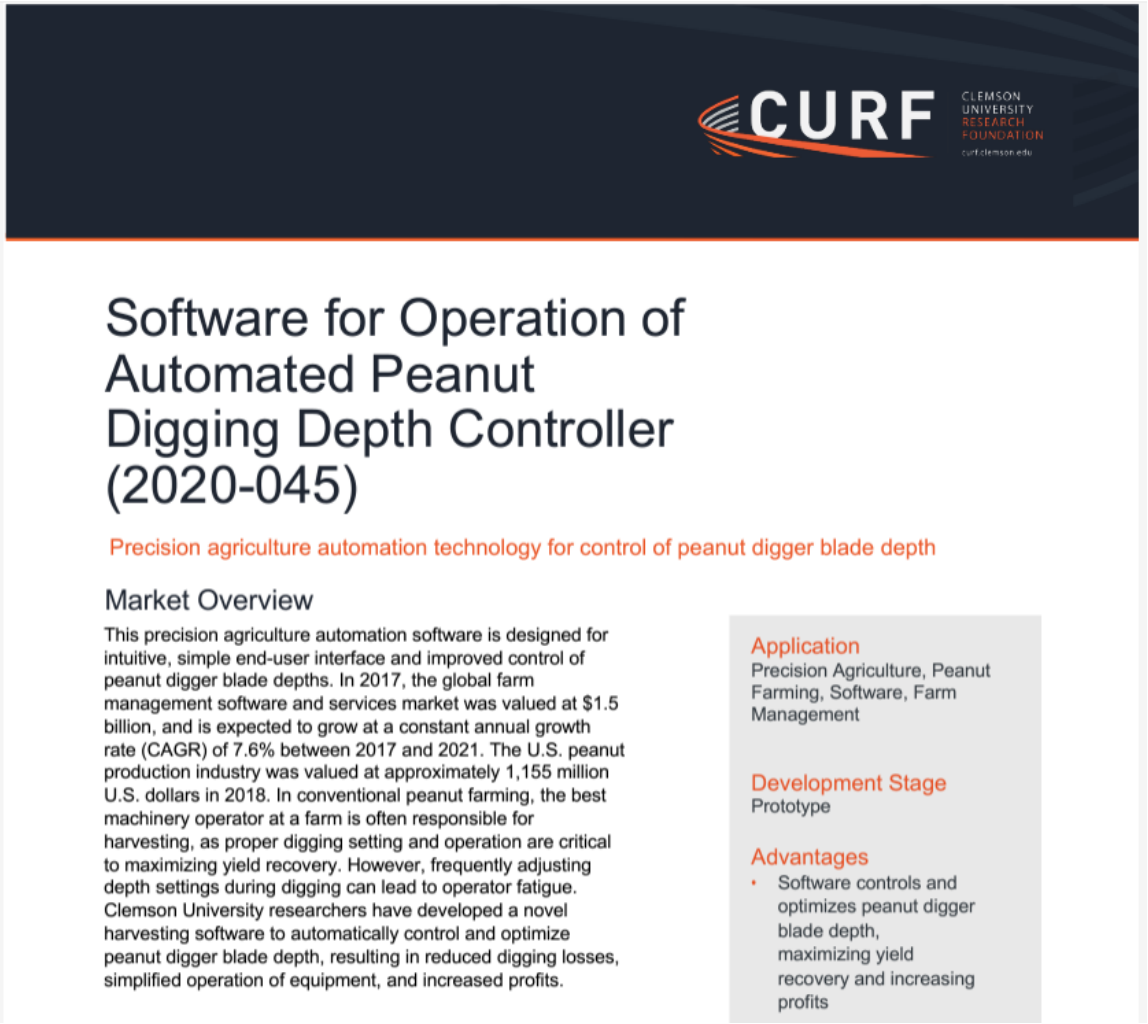
230 pounds/acre is about 6% of 4,000 pounds per acre

Table 7-2. Harvest Loss Table

Cultivar	Loss (lb/a) for 1 Pod per Square Foot	Loss (lb/a) for 1 Pod per 10 Square Feet	Loss (lb/a) for 1 Pod per 0.001 Acre
Sullivan[1]	231	23.1	5.3
Bailey[1]	230	23	5.28
Gregory[1]	240	24.0	5.51
GA 09B	165	16.5	3.79
Florida 07	170	17	3.91
FCIC-Virginia Type Average[2]	187	18.7	4.29
FCIC-Runner Type Average[2]	116	11.6	2.67

[1] Based on pod weights from NC State University variety test data.

[2] Based on data from the Peanut Standards Loss Adjustment Handbook, Federal Crop Insurance Corp, USDA.



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Software for Operation of Automated Peanut Digging Depth Controller (2020-045)

Precision agriculture automation technology for control of peanut digger blade depth

Market Overview

This precision agriculture automation software is designed for intuitive, simple end-user interface and improved control of peanut digger blade depths. In 2017, the global farm management software and services market was valued at $1.5 billion, and is expected to grow at a constant annual growth rate (CAGR) of 7.6% between 2017 and 2021. The U.S. peanut production industry was valued at approximately 1,155 million U.S. dollars in 2018. In conventional peanut farming, the best machinery operator at a farm is often responsible for harvesting, as proper digging setting and operation are critical to maximizing yield recovery. However, frequently adjusting depth settings during digging can lead to operator fatigue. Clemson University researchers have developed a novel harvesting software to automatically control and optimize peanut digger blade depth, resulting in reduced digging losses, simplified operation of equipment, and increased profits.

Application

Precision Agriculture, Peanut Farming, Software, Farm Management

Development Stage

Prototype

Advantages

- Software controls and optimizes peanut digger blade depth, maximizing yield recovery and increasing profits

Kendall Kirk
Clemson University

SDI irrigation[a]	Yield	Estimated financial return		
		Pricing structure[b]		
		Low	Medium	High
Corn (5 yr)	bu acre^{-1}		$ acre^{-1}	
No	85	–199	–30	139
Yes	136	–217	–55	327
F-statistic	8.5	0.1	0.9	2.3
P > *F*	.0435	.7491	.3913	.2035
Cotton (11 yr)	lb lint acre^{-1}			
No	800	–133	27	187
Yes	1,050	–158	52	261
F-statistic	16.8	0.5	0.3	16.8
P > *F*	.0022	.5119	.6186	.2468
Peanut (7 yr)	lb acre^{-1}			
No	3,010	–216	–116	–19
Yes	3,600	–252	–133	–18
F-statistic	7.8	0.5	0.1	0.1
P > *F*	.0317	.4895	.7728	.9789
All crops and all years (23 crop-years)	–			
No	–	–173	–29	113
Yes	–	–200	–4	191
F-statistic	–	1.2	0.6	3.1
P > *F*	–	.2865	.4627	.0934

Crop and year	Crop yield		Total water	
	Rain only	Rain plus SDI	Rain only	Rain plus SDI
Corn	bu acre^{-1}		inches	
2008	96	146*	11.3	21.9
2009	62	148*	12.9	27.6
2010	64	155*	3.6	16.8
2011	64	101*	13.6	20.7
2013	137	131	19.8	21.8

Crop and year	Crop yield		Total water	
	Rain only	Rain plus SDI	Rain only	Rain plus SDI
Cotton	lb lint acre^{-1}		inches	
2001	800	1,020*	8.6	13.8
2002	460	900*	13.0	18.5
2003	840	850	18.9	24.4
2004	920	1,010	24.9	31.8
2005	850	1,300*	12.2	18.3
2006	810	860	19.5	27.8
2007	470	1,020*	11.5	21.3
2008	390	840*	13.8	25.2
2011	480	800*	19.9	39.1
2012	1,370	1,450	18.1	26.6
2013	1,430	1,490	19.8	21.8

Crop and year	Crop yield		Total water	
	Rain only	Rain plus SDI	Rain only	Rain plus SDI
Peanut	lb acre^{-1}		inches	
2001	2,350	3,400*	8.6	13.8
2002	2,020	2,960*	13.0	18.5
2003	3,020	3,210	19.6	24.8
2004	2,660	2,830	20.0	25.0
2010	2,540	3,880*	9.3	21.9
2011	3,440	4,040*	19.9	39.1
2012	5,100	4,910	18.1	26.6


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Thank you for the invitation!

Questions if there is time?