CORN FIELD PERFORMANCE TRIALS

December, 2020

TRIAL TEST
EXECUTIVE SUMMARY

SGS NORTH AMERICA, INC.

CORN – South Dakota, USA

The effects of MicrobeBio® products on Corn compared to SGS's high yielding plot.

PRIMARY POINTS:

Crop:	Corn
Location:	SGS - South Dakota, USA
Trial Date:	October, 2020

COMPARISON POINTS:

MicrobeBio®:	Trial Test Data Reported by SGS North America, Inc.
	(products: Nature Phenom + Hydro Activator)
SGS:	SGS's High Yielding Corn Plot
U.S Average:	Reported National Average
U.S Grading:	U.S Corn Grading Requirements

ASSESSMENT DATA:

At Harvest:	Total Weight
	Moisture
	Yield

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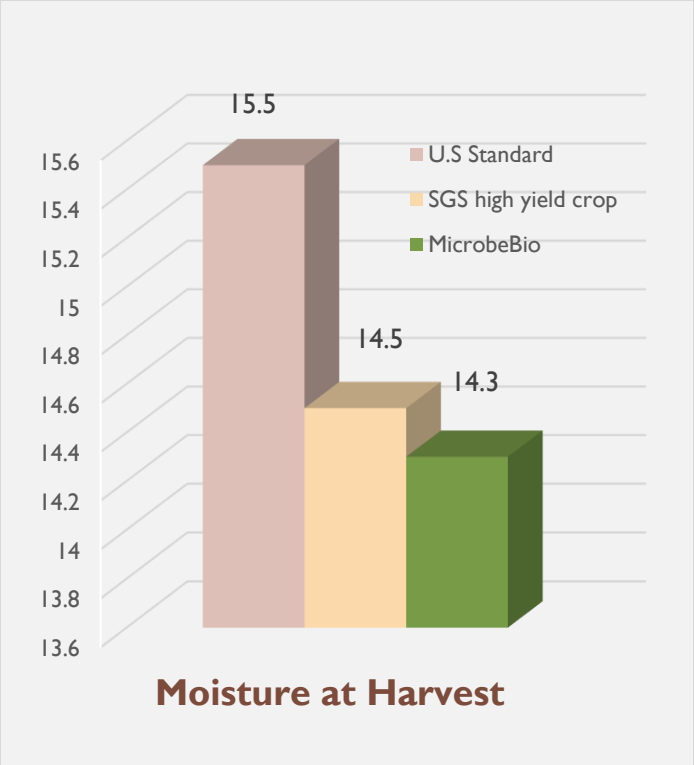
PERFORMANCE ASSESSMENT on MOISTURE

	Moisture
U.S Standard	15.5
MicrobeBio	14.3
Reduce	**-7.74%**

	Moisture
SGS high yielding crop (+)	14.5
MicrobeBio	14.3
Reduce	**-1.38%**

⇨ The moisture content of Corn treated using MicrobeBio Products is 14.3% which is less than SGS's high yield crop and the Average U.S. Standard Corn Moisture Content (*).



(*) Source: **USDA**
https://www.gipsa.usda.gov/fgis/standards/810corn.pdf

(+) Source: **SGS North America, Inc.**
Results of SGS high yielding crop (See Appendix for the data report).

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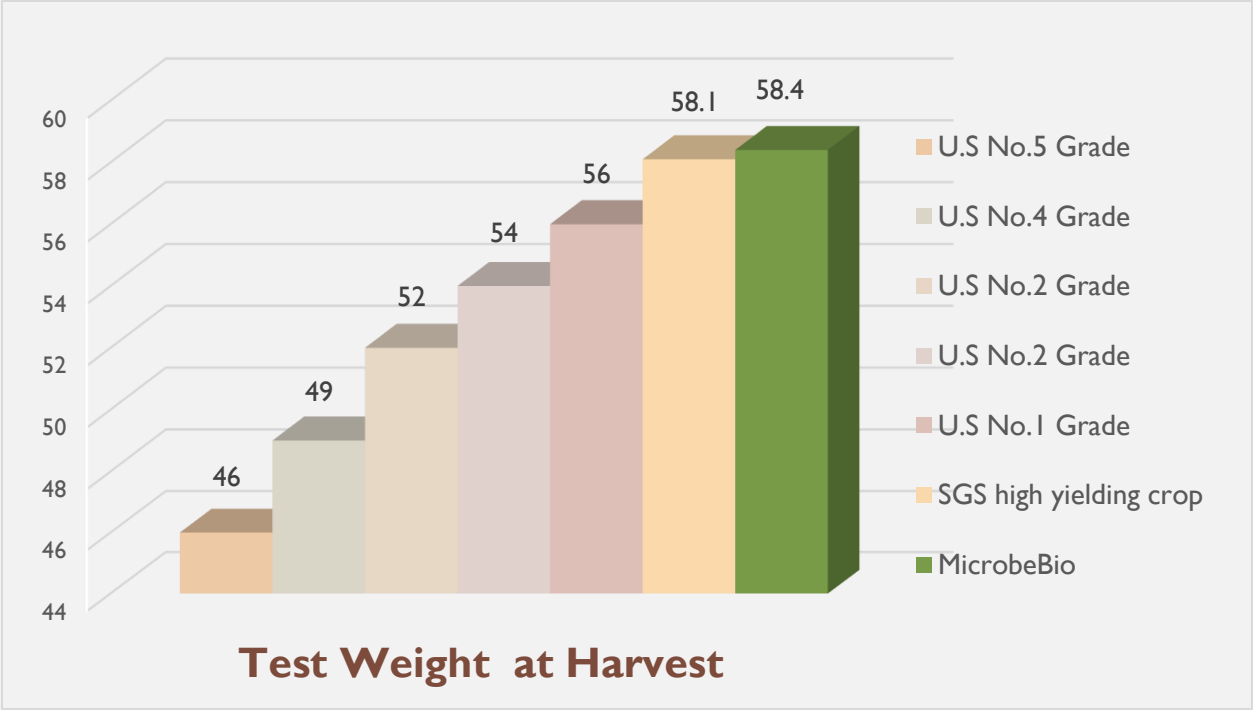
PERFORMANCE ASSESSMENT on TOTAL TEST WEIGHT

	TEST WEIGHT	MicrobeBio's	Increases
U.S No.5 Grade	46	58.4	**+ 26.96%**
U.S No.4 Grade	49	58.4	**+ 19.18%**
U.S No.3 Grade	52	58.4	**+ 12.31%**
U.S No.2 Grade	54	58.4	**+ 8.15%**
U.S No.1 Grade	56	58.4	**+ 4.29%**
SGS high yielding crop (+)	58.1	58.4	**+ 0.52%**

⇨ The average Test Weight of Corn treated using MicrobeBio Products is 58.4 lb/bu which is higher than SGS's high yield crop and is well above the U.S. Average Corn Grading Requirements (*).



(*) Source: **USDA**
https://www.gipsa.usda.gov/fgis/standards/810corn.pdf

(+) Source: **SGS North America, Inc.**
Results of SGS high yielding crop (See Appendix for the data report).

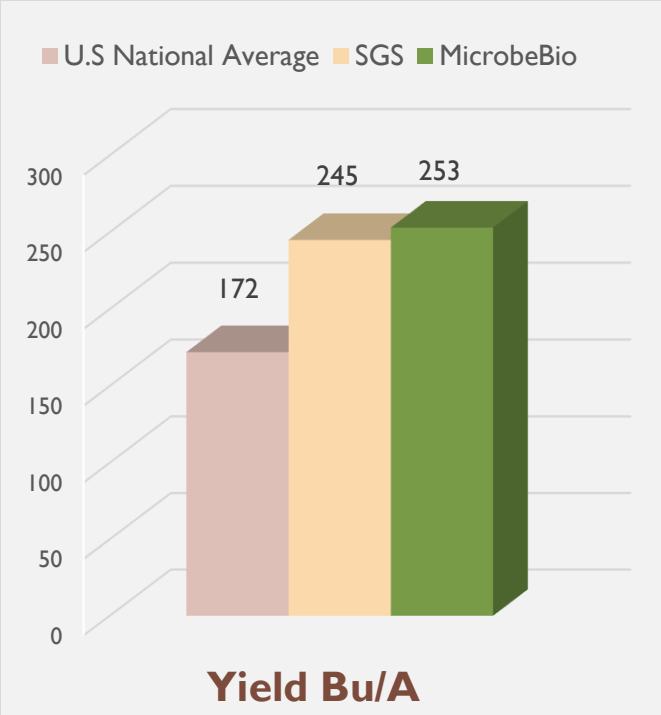
TRIAL TEST
EXECUTIVE SUMMARY

SGS NORTH AMERICA, INC.

CORN – South Dakota, USA

The effects of MicrobeBio® products on Corn compared to SGS's high yielding plot.

PERFORMANCE ASSESSMENT on TOTAL YIELD



	Yield Bu/A
U.S National Average	172
MicrobeBio	253
Increase	+ 47.09%

	Yield Bu/A
SGS high yielding crop (+)	245
MicrobeBio	253
Increase	+ 3.27%

⇨ The Total Yied of Corn treated using MicrobeBio Products is 253 Bu/A which is higher than SGS's crop and is well above the U.S. National Average – 172 Bu/A (**)

(**) Source: **USDA**
https://downloads.usda.library.cornell.edu/usda-esmis/files/tm70mv177/8w32s016h/79408r341/crop0321.pdff

(+) Source: **SGS North America, Inc.**
Results of SGS high yielding crop (See Appendix for the data report).

APPENDIX

SGS North America, Inc.

Trial ID: MicrobeBio Corn 2020 Location: Trial Year: 2020
Protocol ID: Investigator (Creator): Field Researcher
Project ID: Study Director:
Sponsor Contact:

Rating Date								Oct-15-2020
Part Rated								
Rating	Stand	NDVI	NDVI	Avg - PlantHeight	Avg - Stalk Diam	Total - Root Mass	Total - 1000 K Wt	WEIGHT
Type	17.5FT				Inches	Grams	Grams	
Rating Unit	1	1	1	1	1	1	1	1
Number of Subsamples	Oct-27-2020	Oct-27-2020	Oct-27-2020	Oct-27-2020	Oct-27-2020	Oct-27-2020	Oct-27-2020	Oct-27-2020
Data Entry Date	V5-V6	V5-V6	R1	R3	R3	R3		HARVEST
Rating Timing								
ARM Action Codes								
Number of Decimals								
Trt Treatment								
No. Name Plot	1	2	3	4	5	6	7	8
1 Nature Phenom 10	31.0	0.630	0.840	98.0	3.400	888.0	336.0	32.260
1 Hydro Activator Mean =	31.0	0.630	0.840	98.0	3.400	888.0	336.0	32.260
2 Check 102	32.0	0.650	0.830	95.0	3.250	850.0	322.0	31.370
Mean =	32.0	0.650	0.830	95.0	3.250	850.0	322.0	31.370

SGS North America, Inc.

Trial ID: MicrobeBio Corn 2020 Location: Trial Year: 2020
Protocol ID: Investigator (Creator): Field Researcher
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Rating Date	Oct-15-2020	Oct-15-2020	Oct-15-2020
Part Rated			
Rating Type	MOISTURE	TEST WEIGHT	YIELD
Rating Unit			BU
Number of Subsamples	1	1	1
Data Entry Date	Oct-27-2020	Oct-27-2020	
Rating Timing	HARVEST	HARVEST	HARVEST
ARM Action Codes			TY1
Number of Decimals			1
Trt Treatment No. Name Plot	9	10	11
1 Nature Phenom Hydro Activator 101	14.30	58.40	253.0
Mean =	14.30	58.40	253.0
2 Check 102	14.50	58.10	245.4
Mean =	14.50	58.10	245.4

SGS North America, Inc.

Trial ID: MicrobeBio Corn 2020 Location: Trial Year: 2020
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Rating Type
NDVI = normalized difference vegetation index
WEIGHT = weight
YIELD = yield
Rating Unit
BU = bushel
ARM Action Codes
TY1 = 7.778572*[8]*(100-[9])/85

Reps: 1 Appl Code: _ Plots: 10 by 20 feet

Trt No.	Treatment Name	Amt Product to Measure	Rep 1
1	Nature Phenom Hydro Activator		101
2	Check		102

Sort Order: Application Code, Replicate 1

Product quantities required for listed treatments and applications of trials included in this table:

Amount*	Unit	Treatment Name	Form Conc	Form Unit	Form Type	Lot Code

* Product amount calculations increased 25 % for overage adjustment.

Trial Map Treatment Description

Trt	Code	Description
1	CHK	
2		
3		
4		
5		

General Trial Information
Investigator: Connor Vitzthum **Title:** Field Scientist

Trial Status: E established
ARM Trial Created On: Apr-7-2020

Conducted Under GLP: No
Conducted Under GEP: No

Role: INVEST investigator
Investigator: Connor Vitzthum **Title:** Field Scientist
Organization: SGS Field Research
Address 1: 47649 US Hwy 14 **Mobile No.:** 5153681410
Country: USA United States **E-mail:** connor.vitzthum@sgs.com
City: Aurora **State/Prov:** South Dakota **Postal Code:** 57002

SGS North America, Inc.

Trial ID: MicrobeBio Corn 2020 Location: Trial Year: 2020
Protocol ID: Investigator (Creator): Field Researcher
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Crop Description
Crop 1: C ZEAMX Zea mays Corn
Entry Date: Oct-27-2020 **Stage Scale:** BBCH
Variety: DKC38-03RIB
Attributes: VT2PRIB
Planting Date: May-26-2020 **Planting Rate:** 32000 P/A
Depth: 2 IN
Rows per Plot: 4 **Planting Method:** PLANTD planted
Row Spacing: 30 IN **Planting Equipment:** PP plot planter
Seed Bed: SMOOTH smooth
Soil Moisture: GOOD good
Harvest Date: Oct-15-2020 **Harvest Equipment:** Wintersteiger Quantum
Moisture Meter: Harvest Master H2 Classic **Harvested Width:** 5 FT
% Standard Moisture: 15.0 **Harvested Length:** 20 FT
Weighing Equipment: Harvest Master H2 Classic

Site and Design
Treated Plot Width: 10 FT
Treated Plot Length: 20 FT
Treated Plot Area: 200 FT2 **Treatments:** 5
Replications: 1 **Study Design:** RACOBL Randomized Complete Block (RCB)

Maintenance

No.	Date	Type	Maintenance Product Name	Form Conc	Form Unit	Form Type	Rate	Rate Unit
1.	May-26-2020	HERB	Accuron	3	QT/A	L	15	GPA

Soil Description
Description Name: Aurora, SD
% Sand: 39.8 **% OM:** 3.5 **Texture:** L loam
% Silt: 37.7 **pH:** 6.6 **Soil Name:** VENAGRO-SVEA
% Clay: 29.5 **CEC:** 18.1 **Fert. Level:** E excellent
Soil Drainage: G good

Weather Conditions
Overall Moisture Conditions: GOOD good
Closest Weather Station: On Site **Distance:** 300 FT

No.	Date	Moisture Total	Unit	Min Temp	Max Temp	Avg Temp	Temp Unit	Avg Wind	Unit
1.	May-26-2020	0.02	IN	53.9	66.6	60.3	F	1.5	MPH
2.	May-27-2020	0	IN	47.2	82.4	65.8	F	0.6	MPH
3.	May-28-2020	0	IN	51.1	74.8	65.9	F	5.1	MPH
4.	May-29-2020	0	IN	45	68.7	56.9	F	2.7	MPH
5.	May-30-2020	0	IN	48.1	72.6	60.8	F	1.3	MPH
6.	May-31-2020	0	IN	48.1	78.2	64.3	F	4.8	MPH
7.	Jun-1-2020	0	IN	64.5	96.8	79.5	F	5.6	MPH
8.	Jun-2-2020	0	IN	62	92.1	76.8	F	5.0	MPH
9.	Jun-3-2020	0	IN	55.9	86.2	72	F	0.9	MPH
10.	Jun-4-2020	0.01	IN	56.1	86.3	71.9	F	2.4	MPH
11.	Jun-5-2020	0.01	IN	53	80.9	68.8	F	3.5	MPH
12.	Jun-6-2020	0.3	IN	63.7	79.5	70.1	F	5.0	MPH
13.	Jun-7-2020	0	IN	71.4	95.9	82.6	F	12.1	MPH
14.	Jun-8-2020	0	IN	74.3	90.1	81.7	F	11.7	MPH
15.	Jun-9-2020	0.19	IN	55.3	79.4	67.4	F	9.4	MPH
16.	Jun-10-2020	0.01	IN	53.7	72.7	62.3	F	7.9	MPH
17.	Jun-11-2020	0	IN	50.9	79.9	66.5	F	3.8	MPH
18.	Jun-12-2020	0	IN	54.1	89.6	72.2	F	2.3	MPH
19.	Jun-13-2020	0	IN	59.4	86.1	72.6	F	2.9	MPH
20.	Jun-14-2020	0	IN	59.4	87.4	72.9	F	8.0	MPH
21.	Jun-15-2020	0	IN	70.9	91.3	79.5	F	9.6	MPH
22.	Jun-16-2020	0	IN	71.8	91.4	81.6	F	10.7	MPH

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23.	Jun-17-2020	0	IN	69.4	92	81	F	10.5	MPH
24.	Jun-18-2020	0.49	IN	58.3	78.9	67.8	F	2.3	MPH
25.	Jun-19-2020	0	IN	52.5	75.7	64.5	F	0.3	MPH
26.	Jun-20-2020	0.13	IN	60	73.6	65.1	F	2.0	MPH
27.	Jun-21-2020	0.01	IN	58.9	76.7	67.8	F	1.2	MPH
28.	Jun-22-2020	0	IN	56.3	75.9	65.1	F	1.6	MPH
29.	Jun-23-2020	0	IN	55.3	75	64.8	F	2.4	MPH
30.	Jun-24-2020	0	IN	50	83.1	68.6	F	1.1	MPH
31.	Jun-25-2020	0.88	IN	57	86.6	69.7	F	2.8	MPH
32.	Jun-26-2020	0.19	IN	64.8	83.5	73	F	1.4	MPH
33.	Jun-27-2020	0.01	IN	59.2	85.9	73.7	F	0.6	MPH
34.	Jun-28-2020	0	IN	68.9	81	75.2	F	2.5	MPH
35.	Jun-29-2020	0	IN	68.5	79.2	75	F	3.1	MPH
36.	Jun-30-2020	0	IN	74.7	87.9	80.1	F	3.8	MPH
37.	Jul-1-2020	0.82	IN	61.5	84	74.2	F	2.6	MPH
38.	Jul-2-2020	0	IN	65.8	88	77.2	F	1.8	MPH
39.	Jul-3-2020	0	IN	69.3	90.6	78.3	F	0.5	MPH
40.	Jul-4-2020	0	IN	65.7	87.3	77.2	F	1.9	MPH
41.	Jul-5-2020	0	IN	68.9	87.1	77.4	F	1.8	MPH
42.	Jul-6-2020	0.16	IN	66	82.1	72.9	F	2.0	MPH
43.	Jul-7-2020	0.23	IN	65.7	83.5	74.3	F	1.1	MPH
44.	Jul-8-2020	0	IN	73	90	80.3	F	5.4	MPH
45.	Jul-9-2020	0.22	IN	66.8	84.1	74.8	F	0.6	MPH
46.	Jul-10-2020	0	IN	59.6	85.1	73.7	F	0.6	MPH
47.	Jul-11-2020	0	IN	58.9	80.4	71.6	F	2.7	MPH
48.	Jul-12-2020	0	IN	55.4	84.7	70.3	F	0.5	MPH
49.	Jul-13-2020	0	IN	62.7	87.4	74.6	F	4.8	MPH
50.	Jul-14-2020	0.2	IN	56	73.9	66.5	F	1.4	MPH
51.	Jul-15-2020	0	IN	50.5	80.9	65.8	F	0.9	MPH
52.	Jul-16-2020	0	IN	57.3	85.2	72.5	F	3.2	MPH
53.	Jul-17-2020	0	IN	67.4	87.3	78.4	F	4.0	MPH
54.	Jul-18-2020	0.09	IN	62.5	88	74.8	F	3.3	MPH
55.	Jul-19-2020	0	IN	58.2	81.1	70.4	F	2.2	MPH
56.	Jul-20-2020	0.95	IN	60.5	82.7	69.8	F	1.4	MPH
57.	Jul-21-2020	0.64	IN	61.1	75.5	68.3	F	2.0	MPH
58.	Jul-22-2020	0	IN	55.1	79.7	67.8	F	0.2	MPH
59.	Jul-23-2020	0	IN	60.8	83.6	72.4	F	3.2	MPH
60.	Jul-24-2020	0	IN	74	89.4	80.7	F	7.1	MPH
61.	Jul-25-2020	0.04	IN	69.3	88.1	79.2	F	4.1	MPH
62.	Jul-26-2020	0.34	IN	62.1	80.8	73.4	F	1.0	MPH
63.	Jul-27-2020	0	IN	55.1	82.9	70.6	F	0.2	MPH
64.	Jul-28-2020	0	IN	62.9	84.1	72.8	F	0.9	MPH
65.	Jul-29-2020	0	IN	60.4	81.2	70.4	F	0.6	MPH
66.	Jul-30-2020	0	IN	56	79.3	68.1	F	0.7	MPH
67.	Jul-31-2020	0	IN	55.7	84.6	70.6	F	0.1	MPH
68.	Aug-1-2020	0	IN	57.2	76.3	68	F	2.3	MPH
69.	Aug-2-2020	0	IN	53.7	75.4	63.7	F	1.8	MPH
70.	Aug-3-2020	0	IN	45.5	77.3	62.3	F	0.0	MPH
71.	Aug-4-2020	0	IN	51.5	76.9	64.5	F	1.0	MPH
72.	Aug-5-2020	0	IN	59.5	69.8	64.7	F	2.2	MPH
73.	Aug-6-2020	0	IN	62.8	81.7	70.8	F	0.6	MPH
74.	Aug-7-2020	0.07	IN	68	81.2	73.7	F	4.9	MPH
75.	Aug-8-2020	0.01	IN	65.4	81.3	74.1	F	2.5	MPH

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76.	Aug-9-2020	0.23	IN	63.4	86.6	74.9	F	2.5	MPH
77.	Aug-10-2020	0.05	IN	58	77.7	67.4	F	0.6	MPH
78.	Aug-11-2020	0	IN	52.3	80.1	67.3	F	2.1	MPH
79.	Aug-12-2020	0.01	IN	64.3	85	73.8	F	2.7	MPH
80.	Aug-13-2020	0	IN	70	85.8	77.1	F	6.3	MPH
81.	Aug-14-2020	0	IN	57.5	83.6	73.7	F	5.2	MPH
82.	Aug-15-2020	0	IN	49.6	83.8	67.1	F	1.2	MPH
83.	Aug-16-2020	0	IN	54.9	87.6	70.2	F	0.8	MPH
84.	Aug-17-2020	0	IN	52.6	82.3	66.7	F	0.9	MPH
85.	Aug-18-2020	0	IN	51.3	83.2	67.4	F	1.2	MPH
86.	Aug-19-2020	0	IN	59.1	83.8	71.1	F	4.0	MPH
87.	Aug-20-2020	0	IN	62.2	84.1	70.6	F	3.0	MPH
88.	Aug-21-2020	0	IN	64.9	87.5	75.7	F	2.4	MPH
89.	Aug-22-2020	0	IN	60.1	91.4	76	F	0.0	MPH
90.	Aug-23-2020	0	IN	60.1	92.2	77	F	0.4	MPH
91.	Aug-24-2020	0	IN	66.3	90.9	76.8	F	2.8	MPH
92.	Aug-25-2020	0	IN	66.4	90.2	77.6	F	2.9	MPH
93.	Aug-26-2020	0	IN	69.4	90.6	78.2	F	3.2	MPH
94.	Aug-27-2020	0	IN	69.2	84.9	75.4	F	2.2	MPH
95.	Aug-28-2020	0.43	IN	56.3	79.3	68.7	F	3.1	MPH
96.	Aug-29-2020	0.01	IN	50	78.8	63.3	F	0.1	MPH
97.	Aug-30-2020	0.17	IN	53.4	76.9	63.6	F	4.2	MPH
98.	Aug-31-2020	0.6	IN	50.3	70.5	60.7	F	2.6	MPH
99.	Sep-1-2020	0	IN	53.5	75.8	62.9	F	3.2	MPH
100.	Sep-2-2020	0	IN	46.3	83.5	67.2	F	3.2	MPH
101.	Sep-3-2020	0	IN	47.4	72.2	62.2	F	5.1	MPH
102.	Sep-4-2020	0	IN	41.8	81.3	60.6	F	1.2	MPH
103.	Sep-5-2020	0.08	IN	44.9	84.5	64.6	F	0.5	MPH
104.	Sep-6-2020	0.14	IN	58.3	83.7	70.3	F	2.3	MPH
105.	Sep-7-2020	0.27	IN	45	59.2	48.7	F	1.4	MPH
106.	Sep-8-2020	0	IN	37	45.7	42.7	F	1.8	MPH
107.	Sep-9-2020	0.04	IN	33.4	51.6	42.1	F	0.1	MPH
108.	Sep-10-2020	0	IN	31.2	64.1	46.5	F	0.1	MPH
109.	Sep-11-2020	0.2	IN	42.3	55.2	51.1	F	0.2	MPH
110.	Sep-12-2020	0.01	IN	50.8	62.7	54.9	F	0.3	MPH
111.	Sep-13-2020	0	IN	43	82.6	60.6	F	2.1	MPH
112.	Sep-14-2020	0	IN	51.5	83.7	66.1	F	3.9	MPH
113.	Sep-15-2020	0	IN	57.7	84.8	68.2	F	4.1	MPH
114.	Sep-16-2020	0	IN	44.4	67	56.3	F	1.8	MPH
115.	Sep-17-2020	0	IN	39.9	66.5	51.8	F	1.0	MPH
116.	Sep-18-2020	0	IN	39.4	67.5	52.9	F	1.5	MPH
117.	Sep-19-2020	0	IN	46.8	74.5	61	F	5.9	MPH
118.	Sep-20-2020	0	IN	55.3	75.3	64.5	F	7.2	MPH
119.	Sep-21-2020	0	IN	55.1	81.7	66.4	F	1.9	MPH
120.	Sep-22-2020	0	IN	53.1	85.8	67.8	F	1.1	MPH
121.	Sep-23-2020	0	IN	54.3	85.6	68.7	F	2.6	MPH
122.	Sep-24-2020	0	IN	53.1	82.1	66	F	0.6	MPH
123.	Sep-25-2020	0	IN	51	78.1	64.7	F	2.1	MPH
124.	Sep-26-2020	0	IN	50.3	77.4	61.8	F	0.9	MPH
125.	Sep-27-2020	0.06	IN	47.1	64.3	53.5	F	4.1	MPH
126.	Sep-28-2020	0	IN	40	54.6	49.7	F	4.0	MPH
127.	Sep-29-2020	0	IN	36.6	72.6	54.6	F	2.9	MPH
128.	Sep-30-2020	0	IN	45.4	63.7	55.1	F	7.0	MPH

SGS North America, Inc.

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129.	Sep-1-2020	0	IN	29.2	52.8	44.3	F	5.3	MPH
130.	Oct-2-2020	0	IN	27.4	53.6	40.7	F	0.3	MPH
131.	Oct-3-2020	0	IN	30.6	56.6	43.2	F	0.2	MPH
132.	Oct-4-2020	0	IN	24.1	62.2	44	F	2.7	MPH
133.	Oct-5-2020	0	IN	47	75	56.9	F	4.5	MPH
134.	Oct-6-2020	0	IN	36.4	81.8	57.9	F	2.0	MPH
135.	Oct-7-2020	0	IN	40.7	71.8	54.6	F	2.2	MPH
136.	Oct-8-2020	0	IN	38.8	73.7	56.9	F	3.4	MPH
137.	Oct-9-2020	0	IN	47.7	85.2	65	F	1.8	MPH
138.	Oct-10-2020	0	IN	39	70	55	F	1.0	MPH
139.	Oct-11-2020	0.14	IN	51.7	80.3	63.3	F	7.9	MPH
140.	Oct-12-2020	0.03	IN	39.7	66.3	53.3	F	2.3	MPH
141.	Oct-13-2020	0	IN	43.4	60.3	51.1	F	3.5	MPH
142.	Oct-14-2020	0	IN	37	60.3	51.1	F	6.2	MPH
143.	Oct-15-2020	0	IN	26.4	49.1	37.8	F	7.2	MPH

Crop Stage At Each Application

	A
Crop 1 Code, BBCH Scale	ZEAMX BCOR

Context	**Date**	**By**	**Notes**
STATUS	Apr-7-2020	Field Researcher	Automatically added by ARM: Trial Status updated to 'S' during trial creation.