Production Details: Penn State Corn Grain Hybrid Evaluation Trials

PennState Extension
College of Agricultural Sciences

Site:	York County, PA
Cooperator	Richie and Andy Flinchbaugh
Planting Date	5/18/2019
Soil Type	DuB Duffield Silt loam 3-8% slope
Herbicides pre-	2 qt. Resicore 1 qt. Atrazine 1 qt. Durango DMA 1 pt. 2,4D 20 Gallon 30% UAN
post-	None
Tillage	None
Previous Crop	cover crop wheat
Starter Fertilizer	10.5 gal - 10-34-0
Insecticide	None
Manure	2.5 ton/ac layer manure
Fertilizer	40 gallon 30% UAN
Harvest Date	10/19/2019

Field Summary: This field looked outstanding. Timely fertility and weed control applications set this location up to be one of the highest yielding locations this year. Late season dry weather took some top end yield away from the full season hybrids.

Weather Summary: 5/18-10/19

Month	Precip. (inches)	GDD
May	0.46	275
June	3.43	598
July	3.89	832
August	2.36	756
September	1.52	538
October	1.93	151
Seasonal Total	**13.59**	**3150**

Precip. Data: www.accuweather.com
GDD data: http://climatesmartfarming.org/tools/csf-growing-degree-day-

Site:	Lehigh County, PA
Cooperator	Henninger Farms
Planting Date	5/17/2019
Soil Type	Duffield silt loam, 3-8 % slopes
Herbicides pre-	Anthem
post-	1 oz. spirit, 5 oz. Status, 1 qt NIS, 1 qt Atrazine, 2 qt UAN-had burcumber.
Tillage	None
Previous Crop	Soybeans
Starter Fertilizer	10.5 gal - 10-34-0
Insecticide	None
Manure	2 ton/ac of chicken manure
Fertilizer	65 gal N 30% Preplant 15 gallons 30% sidedress
Harvest Date	10/24/2019

Field Summary: This field looked amazing. Fertility and weed control applications have set this location up to be a very good performing location. This field was off to a great start from the beginning of the season.

Weather Summary: 5/17-10/24

Month	Precip. (inches)	GDD
May	2.75	227
June	5.22	519
July	9.91	792
August	4.3	669
September	2.09	468
October	6.49	103
Seasonal Total	**30.76**	**2778**

Precip. Data: www.accuweather.com
GDD data: http://climatesmartfarming.org/tools/csf-growing-degree-day-

Site:	Lycoming County, PA
Cooperator	D. Richard Snyder
Planting Date	5/8/2019
Soil Type	Lindem Loam, occasionally flooded
Herbicides pre-	4 oz Capreno, 1 quart atrazine
post-	1 oz Spirit, 5 oz Status, NIS, UAN
Tillage	None
Previous Crop	Soybean
Starter Fertilizer	10.5 gal - 10-34-0
Insecticide	None
Manure	None
Fertilizer	None
Fertilizer Sidedressed	None
Harvest Date	10/21/2019

Field Summary: This corn field had girthy ears and tall plants. Low disease pressure and fertility was adequate. The challenge every year with this plot is burcucumber but we suppressed them well this year. There is some horsenettle pressure, but it should not impact yield. Rainfall was adequate during pollination time.

Weather Summary: 5/8-10/21

Month	Precip. (inches)	GDD
May	4.65	272
June	6.68	493
July	6.54	762
August	3.04	615
September	1.52	421
October	2.54	75
Seasonal Total	**24.97**	**2638**

Precip. Data: www.accuweather.com
GDD data: http://climatesmartfarming.org/tools/csf-growing-degree-day-calc

Site:	Hershey, PA
Cooperator	Hershey Farm School
Planting Date	5/23/2019
Soil Type	HaB2 Hagerstown silt loam 3-8% slope
Herbicides pre-	1 qt glyphosate, 1 qt atrazine 4L, 1.25 oz basis blend, 1.25 calvary, 1 bag ams/ 500 gal of water
post-	3.5 halex gt, 1 pt atrazine, 1 bag ams for 500 gal/water, 1 qt surfactant
Tillage	None
Previous Crop	Soybeans
Starter Fertilizer	10.5 gal - 10-34-0
Insecticide	None
Manure	None
Fertilizer	125 lb/ac nitrogen 90 units of 30%
Harvest Date	10/30/2019

Field Summary: Deer damage was evident as usual. This location was a good performer this year with perhaps less deer impact than last year. Weed and disease pressure were low.

Weather Summary: 5/23-10/30

Month	Precip. (inches)	GDD
May	2.93	181
June	5.02	562
July	4.81	840
August	2.12	733
September	2.11	503
October	5.62	159
Seasonal Total	**22.61**	**2978**

Precip. Data: www.accuweather.com
GDD data: http://climatesmartfarming.org/tools/csf-growing-degree-day-

Penn State Corn Grain Hybrid Testing Program 2019

Medium-late (Zone 3) and late (Zone 4) season hybrid performance for individual locations

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Notes: Timely fertility and weed control applications set the York location up to be one of the highest yielding locations this year. Some late season dry weather took some top end yield away from the full season hybrids though. Astonishingly, York had the least amount of rainfall out of the four Z34 locations but had the highest overall average. Lehigh was an outstanding field of corn as well and was off to a great start from the beginning of the season. Rainfall was adequate during pollination time. Lycoming had girthy ears and tall plants. Low disease pressure and fertility were also sufficient. The challenge every year at Lycoming is burcucumber but we suppressed them well this year. Deer damage was evident as usual at Hershey. This location was a good performer this year with perhaps less deer impact than last year. Weed and disease pressure were low.

Company	Hybrid	Traits*	Relative Maturity	York (bu/ac)	Lehigh (bu/ac)	Lycoming (bu/ac)	Dauphin (bu/ac)
Medium-late (108-114 day) RM Grain Hybrids							
Augusta	4463	31	113	252.0	252.0	244.3	162.6
Augusta	5264	3	114	222.5	233.2	237.1	179.0
Blue River Organics	62G22	Conv.	110	217.3	219.0	214.8	***
Blue River Organics	66G25	Conv.	112	226.7	236.9	195.4	***
Channel	210-79STXRIB	34	110	245.9	232.2	240.2	178.6
Channel	211-44STXRIB	34	111	249.1	216.6	244.4	164.3
Channel	212-90STXRIB	34	112	234.6	221.6	237.4	182.3
Channel	213-72VT2PRIB	31	113	243.3	238.6	220.8	192.0
Channel	213-93STXRIB	34	113	261.0	244.5	237.8	187.9
Chemgro	6905V5Z	9	109	238.8	196.5	210.5	169.1
Chemgro	7095RDP	31	110	232.4	196.4	212.3	125.0
Chemgro	7305RDP	31	113	247.1	239.8	253.8	182.8
Hubner	H4692RC2P	31	112	252.8	236.5	244.2	173.3
Hubner	H6755RCSS	34	114	257.0	236.3	223.0	180.2
LG Seeds	LG59C46VT2RIB	31	109	249.1	217.9	225.9	172.4
LG Seeds	LG5590VT2RIB	31	110	259.6	235.2	231.0	158.5
LG Seeds	LG62C02VT2RIB	31	112	247.2	236.0	225.5	175.0
LG Seeds	LG5643VT2RIB	31	114	244.0	243.0	247.7	192.6
LG Seeds	LG64C30TRCRIB	33	114	243.3	241.8	251.1	**
Local Seeds	LC0978 VT2PRIB	31	109	235.9	201.7	235.2	**
Local Seeds	ZS1098 3330EZ	4	110	227.0	208.2	209.3	184.5
Local Seeds	LC1289 VT2PRIB	31	112	249.3	235.1	233.2	193.1
Local Seeds	ZS1487	Conv.	114	218.7	222.6	208.1	***
Local Seeds	LC1488 VT2PRIB	31	114	253.4	243.6	225.7	169.1
Nutrien-DynaGro	D52VC63	31	112	245.4	239.2	236.3	196.7
Seed Consultants	SCS 1087YHR	16	108	232.3	245.3	236.5	191.5
Seed Consultants	EX-SC 110YHR	16	108	222.2	205.6	224.9	146.3
Seed Consultants	SCS 1105AM	21	110	221.2	236.5	203.4	**
Seed Consultants	SCS 1139AM	21	113	234.1	236.6	215.4	143.1
Syngenta	NK0886-3120	6	108	227.4	201.2	185.6	164.7
Syngenta	NK0968-3000GT	3	109	238.6	211.4	219.0	144.1
Syngenta	NK1205-3120	6	112	227.3	216.0	217.3	167.6
Syngenta	NK1354-3220	8	113	230.1	221.9	219.1	128.1
		108-114 day means		**239.0**	**227.2**	**226.2**	**170.5**
Late (115-118 day) RM Grain Hybrids							
Augusta	1165	31	115	240.0	207.5	214.4	188.5
Augusta	4565	11	115	241.8	208.1	241.5	173.1
Augusta	9967	3	117	236.9	233.2	223.2	191.4
Augusta	1367	11	117	205.4	224.6	234.7	176.8
Hubner	H6763RCSS	34	115	227.2	243.3	244.9	187.9
Hubner	H6890RCSS	34	117	247.4	222.7	232.3	206.2
Hubner	H6846RCSS	34	118	246.2	215.4	238.4	166.1
LG Seeds	LG5650VT2RIB	31	115	228.3	234.1	242.1	175.3
LG Seeds	LG66C32VT2PRO	31	116	242.8	238.7	239.1	145.1
LG Seeds	LG68C22VT2PRO	31	118	237.7	222.3	236.3	177.7
Local Seeds	LC1577 VT2PRIB	31	115	243.5	223.9	242.3	158.2
Local Seeds	LC1586 TC	33	115	228.6	221.8	224.5	184.2
Local Seeds	LC1697 SSX	34	116	246.6	219.5	213.9	177.2
Local Seeds	LC1776 VT2P	31	117	251.1	228.9	230.7	127.7
Local Seeds	LC1898 TC	33	118	249.0	234.1	248.2	190.4
Seed Consultants	SCS 1158YHR	16	115	238.5	251.2	238.7	180.6
Seed Consultants	SCS 1168YHR	16	116	252.4	216.4	243.8	175.7
Seed Consultants	SC 11AQ74	3	117	240.7	239.8	248.7	159.6
Seed Consultants	SC-EX 115 YHR	16	117	253.2	248.9	261.9	179.3
Seed Consultants	SCS 1188AM	21	118	240.9	221.0	224.0	166.3
Syngenta	NK1573-3000GT	3	115	241.4	214.9	231.0	173.8
Syngenta	NK1573-3000GT	3	115	248.5	229.1	219.7	165.7
Syngenta	NK1808-3111	5	118	234.1	232.2	237.6	194.2
		115-118 day means		**240.1**	**227.5**	**235.3**	**174.8**
		Overall Mean		**239.4**	**227.3**	**230.0**	**172.5**
		LSD(0.1)		**14.97**	**22.81**	**20.55**	**25.41**
		LSD(0.25)		**10.45**	**15.92**	**14.34**	**17.72**
		CV%		**5.35**	**8.58**	**7.64**	**12.58**

*See "Trait Key" tab for individual trait designation, **Had severe deer damage in three of the four reps at the Dauphin location, ***Was ommitted b/c Halex was applied (Dauphin data will not be included in the combined data).

[1]. Not Significant

Prepared by: Alan Cook, James Breining, and Corey Dillon (Penn State Department of Plant Science).

Table Key #	Trait Family Product	Bt protein(s)	Marketed for control of:	Resistance to a Bt protein in the trait package has developed in :	Herbicide tolerant?
Conv.	Conventional	None	None	---	No
RR2	Roundup Ready 2	None	None	---	GT
		Agrisure			
1	Agrisure GT	None	None	**---**	GT
2	Agrisure 3010 & 3010A	Cry1Ab	ECB SWCB	---	GT LL
3	Agrisure 3000 GT, 3011A	Cry1Ab, mCry3A	ECB SWCB RW	RW	GT LL
4	Agrisure Viptera 3110	Cry1Ab, Vip3A	BCW CEW ECB FAW SB SWCB TAW WBC	---	GT LL
5	Agrisure Viptera 3111	Cry1Ab, mCry3A, Vip3A	BCW CEW ECB FAW SB SWCB TAW WBC RW	RW	GT LL
6	Agrisure 3120 E-Z Refuge	Cry1Ab, Cry1F	BCW ECB FAW SB SWCB	FAW WBC	REFER TO BAG FOR SPECIFIC LETTER CODE: EZ0=GT ONLY EZ1= GT LL
7	Agrisure 3122 E-Z Refuge	Cry1Ab,Cry1F, mCry3A, Cry34/35Ab1	BCW ECB FAW SB SWCB RW	FAW WBC RW	
8	Agrisure Viptera 3220 E-Z Refuge	Cry1Ab, Cry1F, Vip3A	BCW CEW ECB FAW SB SWCB TAW WBC	---	
9	Agrisure Viptera 3330 E-Z Refuge	CryAb, Vip3A, Cry1A.105+CryAb2	BCW CEW ECB FAW SB SWCB TAW WBC	---	
10	Agrisure Duracade 5122 E-Z Refuge	Cry1Ab, Cry1F, mCry3A, eCry3.1Ab	BCW ECB FAW SB SWCB RW	FAW WBC RW	
11	Agrisure Duracade 5222 E-Z Refuge	Cry1Ab, Cry1F, Vip3A, mCry3A, eCry3.1Ab	BCW CEW ECB FAW SB SWCB TAW WBC RW	RW	
		Herculex			
12	Herculex 1 (HX1)	Cry1F	BCW ECB FAW SB SWCB	ECB FAW SWCB WBC	LL RR2 (most)
13	Herculex RW (HXRW)	Cry34/35Ab1	RW	RW	
14	Herculex XTRA (HXX)	Cry1F, Cry34/35Ab1	BCW ECB FAW SB SWCB RW	FAW SWCB WBC RW	
		Optimum			
15	TRIsect (CHR)	Cry1F, mCry3A	BCW ECB FAW SB SWCB RW	ECB FAW SWCB WBC RW	LL RR2
16	Intrasect (YHR)	Cry1F, Cry1Ab	BCW ECB FAW SB SWCB	FAW WBC	LL RR2
17	Intrasect TRIsect (CYHR)	Cry1Ab, Cry1F, mCry3A	BCW ECB FAW SB SWCB RW	FAW WBC RW	LL RR2
18	Leptra (VYHR)	Cry1F, Cry1Ab, Vip3A	BCW CEW ECB FAW SB SWCB TAW WBC	---	LL RR2
19	Intrasect Xtra (YXR)	Cry1F, Cry1Ab, Cry34/35Ab1	BCW ECB FAW SB SWCB RW	FAW WBC RW	LL RR2
20	Intrasect Xtreme (CYXR)	Cry1F, Cry1Ab, mCry3A, Cry34/35Ab1	BCW ECB FAW SB SWCB RW	FAW WBC RW	LL RR2
21	AcreMax (AM)	Cry1F, Cry1Ab	BCW ECB FAW SB SWCB	FAW WBC	LL RR2
22	AcreMax CRW (AMRW)	Cry34/35Ab1	RW	RW	LL RR2
23	AcreMax1 (AM1)	Cry1F, Cry34/35Ab1	BCW ECB FAW SB SWCB RW	FAW SWCB WBC RW	LL RR2
24	AcreMax Leptra (AML)	Cry1Ab, Cry1F, Vip3A	BCW ECB FAW SB SWCB TAW WBC *CEW*	---	LL RR2
25	AcreMax TRIsect (AMT)	Cry1F, Cry1Ab, mCry3A	BCW ECB FAW SB SWCB RW	FAW WBC RW	LL RR2
26	AcreMax Xtra (AMX)	Cry1F, Cry1Ab, Cry34/35Ab1	BCW ECB FAW SB SWCB RW	FAW WBC RW	LL RR2
27	AcreMax Xtreme (AMXT)	Cry1F, Cry1Ab, mCry3A, Cry34/35Ab1	BCW ECB FAW SB SWCB RW	FAW WBC RW	LL RR2
		Yieldgard/Genuity			
28	YieldGard CB (YGCB)	Cry1Ab	ECB SWCB	---	RR2
29	YieldGard VT Rootworm (YGRW)	Cry3Bb1	RW	RW	RR2
30	YieldGard VT Triple	Cry1Ab, Cry3Bb1	ECB SWCB RW	RW	RR2
31	VT Double PRO VT Double PRO RIB complete	Cry1A.105, Cry2Ab2	CEW ECB FAW SB SWCB	CEW	RR2
32	VT Triple PRO VT Triple PRO RIB complete	Cry1A.105, Cry2Ab2, Cry3Bb1	CEW ECB FAW SB SWCB RW	CEW RW	RR2
33	Trecepta (or RIB complete)	Cry1A.105, Cry2Ab2,Vip3A	BCW CEW ECB FAW SB SWCB TAW WBC	---	RR2
		Others			
34	Smartstax Smartstax Refuge Advanced Smartstax RIB Complete	Cry1A.105, Cry2Ab2, Cry1F, Cry3Bb1, Cry34/35Ab1	BCW CEW ECB FAW SB SWCB RW	CEW WBC RW	LL RR2
35	Powercore (or Refuge Advanced)	Cry1A.105, Cry2Ab2, Cry1F	BCW ECB FAW SB SWCB CEW	CEW WBC	LL RR2
36	QROME (Q)	Cry1Ab, Cry1F, mCry3A, Cry34/35Ab1	BCW ECB FAW SB SWCB	FAW WBC RW	LL RR2
	BCW = black cutworm	**SB** = stalk borer	**GT** = glyphosate tolerant		
	CEW = corn earworm	**SWCB** = southern corn borer	**LL** = Liberty Link, glufosinate tolerant		
	ECB = European corn borer	**TAW** = true armyworm	**RR2** = Roundup Ready 2, glyphosate tolerant		
	FAW = fall armyworm	**WBC** = western bean cutworm			
	RW = corn rootworm				

Source: https://www.texasinsects.org/bt-corn-trait-table.html