PennState Extension

Tool Name

Extension Team: Plant Science

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Website:

Tool Version:

Last Updated:

Description:

This report provides independent and unbiased information for the evaluation of commercial corn grain and silage hybrids available in Pennsylvania. The corn hybrid evaluation program provides farmers, seed corn companies and university personnel with information on the relative performance of corn hybrids gorwn under Pennsylvania conditions. It should be used to supplement other sources of information, such as seed industry performance tests, other independent testing data, and on-farm performance records, when making hybrid selection decisions.

User Instructions:

The "Background" tab provides information specific to each trial location. This information is useful to evaluate selected hybrids on your farm under your growing conditions and practices. The "Table" tab contains all the data needed to make a final determination of the proper hybrids for your operation. The first factor to consider when using this report is hybrid maturity. Moisture or dry matter is a good indicator of hybrid maturity. Hybrids with lower moisture or high dry matter are generally adapted to shorter season environments. Identify hybrids in the list that you know are adapted to your area. Then, select hybrids based on the qualities you are looking for on your operation. For grain, high yielding hybrids should be selected based on moisture and maturity. Silage has many quality factors that will vary from farm to farm. Dry matter is a good place to start when selecting a silage hybrid, but working with a nutritionist will help determine what forage qualities will be best for your operation. We do not recommend using data from a single site, even if it is close to your farm, to make hybrid selection choices. It is best to use data averaged over multiple locations. The last tab "Trait Key" contains all the commercial designation of individual traits. The "Table" tab will provide the company specific nomenclature, but the "Trait Key" will give a more in depth explanation of these traits.

References:

This report is prepared by: Alex Hristov (PSU Animal Sciences), Sergio Francisco (PSU Animal Sciences), Chris Canale (Cargill), Hanna Wells(PSU Plant Science), Dayton Spackman (PSU Plant Science), Charlie White (PSU Plant Science)

Acknowledgement of Risk:

2023
Penn State/PDMP Corn Silage Hybrid Performance Trial Results

Prepared by: Alex Hristov (PSU Animal Sciences), Sergio Francisco (PSU Animal Sciences), Chris Canale (Cargill), Hanna Wells(PSU Plant Science), Dayton Spackman (PSU Plant Science), Charlie White (PSU Plant Science)

Produced in cooperation with the Professional Dairy Managers of Pennsylvania (PDMP).

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Production Details: Penn State/PDMP Corn Silage Hybrid Evaluation Trials

Site:	Williamsburg, PA
Cooperator	Penn England Farms
Planting Date	5/19/2023
Soil Type	
Herbicides pre-	
post-	
Previous Crop	
Tillage	
Starter Fertilizer	
Insecticide	
Manure	
Fertilizer	
Harvest Date	9/19/2023

Field Summary:

This site had good emergence, good weed control and fertility. Insect pressure was minimal. There was some gray leaf spot at harvest, but it was minimal and not yield limiting.

Weather Summary:

Month	Precip. In.	GDD
May 19-31	0.10	154
June	5.10	456
July	5.60	703
August	4.90	625
September 1-19	0.90	329
Seasonal Total	16.60	2267

Precip. Data:

GDD data: http://climatesmartfarming.org/tools/csf-growing-degree-day-calculator/

Penn State/PDMP Corn Silage Hybrid Testing Program 2023
Medium maturity (100-110) day RM silage hybrids in Williamsburg, PA

PennState Extension College of Agricultural Sciences & PDMP Professional Dairy Managers of Pennsylvania

Notes: SEE BACKGROUND TAB

Cooperator: Penn England Farms

						NIRS[3]					FDMS[4]			WC[5]				
Brand	Hybrid	Traits[1]	Relative Maturity	Pop. Plants/ac	Dry Matter %[2]	Crude Protein %DM	Lignin %DM	Ash %DM	Starch %DM	TFA %DM	NDFom %DM	uNDF 240 hr %DM	NDFD 30 %NDF	IVSD %Starch[6]	Fresh Yield tons/ac[7]	OM Yield tons/ac[8]	DOM Yield tons/ac[9]	OMD %[10]
99-105 day hybrids																		
Kings Agriseeds	RT 53T49-D2	15	103	34,000	39.5	8.1	3.2	2.5	42.8	3.1	33.6	12.3	50.6	50.6	25.6	8.7	4.8	54.8
Kings Agriseeds	RT 55T79-D1	14	105	34,000	37.5	7.5	3.1	2.7	41.0	2.7	33.7	12.2	50.9	53.5	22.8	7.8	4.4	56.0
Growmark FS	FS 5115X RIB	32	101	34,000	36.5	7.7	3.0	2.5	43.3	2.9	31.7	11.6	49.8	51.6	24.9	8.5	4.7	54.9
Hubner	H9953P	35	99	34,000	35.6	7.6	3.2	2.7	41.6	2.7	33.6	12.7	49.3	49.8	23.1	7.9	4.2	53.6
Hubner	H0475P	35	104	34,000	35.2	7.3	2.9	2.7	43.5	3.0	31.8	10.9	53.3	54.8	22.8	7.8	4.5	57.6
Revere Seed	0518 VT2PRIB	43	105	34,000	35.1	7.1	3.2	2.4	40.6	2.5	34.8	12.7	49.7	54.5	22.4	7.7	4.3	55.8
Chemgro	6434PC	27	104	34,000	34.3	7.6	2.7	2.8	42.8	2.5	31.2	10.5	52.6	58.6	25.0	8.5	5.0	59.4
Masters Choice	MCT5375-AT	11	103	34,000	34.2	7.7	3.4	2.8	38.0	2.5	35.1	13.4	48.2	52.0	22.6	7.7	4.2	54.3
Kings Agriseeds	RT 51T86-PC	25	101	34,000	32.0	7.5	3.7	3.2	38.2	2.6	37.5	14.8	48.2	56.5	22.5	7.6	4.3	55.9
Channel	204-54SSPRIB	35	104	34,000	31.5	7.5	3.3	2.8	39.1	2.8	35.4	13.5	50.0	52.6	23.0	7.8	4.3	55.2
Seed Consultants	SC1042Q	28	104	34,000	31.2	8.0	3.5	3.0	34.5	2.4	38.3	14.4	50.4	58.0	24.7	8.4	4.8	57.8
Brevant	B05C33Q	28	105	34,000	30.9	8.4	3.0	2.9	38.9	2.5	32.9	11.9	52.0	53.3	22.5	7.6	4.3	56.7
			99-105 day means		*34.5*	*7.7*	*3.2*	*2.8*	*40.4*	*2.7*	*34.1*	*12.6*	*50.4*	*53.8*	*23.5*	*8.0*	*4.5*	*56.0*
106-110 day hybrids																		
Growmark FS	FS 6017V RIB	43	110	34,000	33.9	7.3	3.0	2.4	40.4	2.6	33.5	12.1	51.0	54.9	25.5	8.7	5.0	56.7
Syngenta	NK0696-D	14	106	34,000	33.7	7.3	3.3	3.1	39.9	2.3	36.1	13.3	50.6	59.1	24.2	8.2	4.8	58.1
Brevant	B08B37SXE	31	108	34,000	33.2	8.2	2.3	3.3	38.0	2.6	36.6	8.7	64.4	55.1	18.4	6.2	3.9	62.5
Seed Consultants	SC1093AM	1	109	34,000	32.8	7.6	2.7	2.4	41.7	2.4	32.2	10.6	54.1	53.3	26.8	9.2	5.2	57.2
Pine Creek Seed	R6018DV	15	110	34,000	32.8	7.2	3.0	2.7	42.4	2.6	32.7	11.9	50.0	57.6	26.3	9.0	5.2	57.8
Hubner	H0881D	43	108	32,833	32.7	7.6	3.2	2.6	39.6	2.6	33.8	12.4	49.8	52.5	26.4	9.0	5.0	55.1
Dekalb	DKC59-81RIB	32	109	34,000	32.4	8.2	3.3	2.8	38.8	2.6	34.0	12.7	49.4	52.2	25.5	8.7	4.8	55.1
Mid-Atlantic	MA5083D	14	108	34,000	32.0	7.6	3.2	2.9	40.0	2.6	33.9	12.7	50.0	53.1	24.3	8.3	4.6	55.7
Pioneer	P13476Q	28	110	34,000	31.9	8.0	3.1	3.1	38.5	2.6	33.4	12.2	51.2	54.0	26.1	8.9	5.0	56.7
Syngenta	NK1040-AA	10	110	34,000	31.9	7.5	3.4	3.0	38.5	2.7	34.4	13.4	49.0	51.9	25.3	8.6	4.7	54.6
Growmark FS	FS 6121X RIB	32	111	34,000	31.5	8.0	3.5	2.8	36.2	2.6	36.5	14.0	49.6	53.9	28.0	9.5	5.3	55.8
Brevant	B06F18Q	28	106	34,000	31.4	7.8	3.2	2.5	37.4	2.3	34.9	12.4	50.5	55.3	27.3	9.3	5.3	56.8
Seed Consultants	SC1084AM	1	108	34,000	31.3	7.4	3.0	2.8	41.2	2.6	34.2	11.8	53.1	55.2	25.2	8.6	4.9	57.6
Hubner	H6390RCSS	32	108	34,000	31.3	7.7	3.0	2.5	38.9	2.5	33.8	12.3	50.5	60.7	24.5	8.3	5.0	59.5
Dekalb	DKC61-40RIB	32	111	34,000	30.9	7.7	3.3	2.7	38.3	2.6	34.5	13.1	49.4	55.9	23.8	8.1	4.6	56.6
Growmark FS	FS 5722V RIB	43	107	34,000	30.7	7.7	3.1	3.2	36.8	2.5	34.6	11.9	53.8	56.0	22.4	7.6	4.4	58.4
Dekalb	DKC108-64RIB	33	108	32,333	30.7	7.6	3.4	2.7	37.0	2.6	35.8	13.6	48.5	52.6	22.4	7.6	4.1	54.6
Chemgro	7045G2Z	10	110	34,000	30.5	7.4	3.4	2.6	36.3	2.3	37.6	14.2	50.0	55.0	24.8	8.5	4.8	56.2
Revere Seed	0918 VT2PRIB	43	109	34,000	30.0	7.9	3.6	3.1	35.6	2.4	37.2	14.4	48.7	56.1	23.5	8.0	4.5	56.4
Dekalb	DKC61-80RIB	32	111	34,000	29.8	7.9	3.7	2.7	34.6	2.3	38.2	15.0	47.8	56.5	25.5	8.7	4.8	55.8
Pioneer	P0817Q	28	108	34,000	29.2	7.9	3.4	2.9	34.4	2.3	37.1	14.0	49.7	57.8	26.1	8.9	5.1	57.5
Mid-Atlantic	MA5103D	14	110	34,000	29.1	7.3	3.4	3.0	34.1	2.1	37.7	14.0	49.6	60.3	22.7	7.7	4.5	58.4
Brevant	B09F18Q	28	109	34,000	27.1	8.3	3.6	3.4	30.0	2.1	40.3	15.1	51.3	59.0	22.0	7.4	4.4	58.5
			106-111 day means		*31.3*	*7.7*	*3.2*	*2.8*	*37.8*	*2.5*	*35.3*	*12.9*	*51.0*	*55.6*	*24.7*	*8.4*	*4.8*	*57.0*
				Overall Mean	**32.4**	**7.7**	**3.2**	**2.8**	**38.7**	**2.5**	**34.9**	**12.8**	**50.8**	**55.0**	**24.3**	**8.3**	**4.7**	**56.7**
				LSD(0.1)	**3.1**	**0.4**	**0.5**	**0.5**	**5.7**	**0.3**	**NS**	**NS**	**1.9**	**5.4**	**3.3**	**1.1**	**0.7**	**2.8**
				CV%	**6.9**	**3.5**	**10.7**	**12.6**	**10.7**	**9.1**	**9.6**	**12.0**	**2.7**	**7.2**	**10.0**	**10.2**	**10.4**	**3.6**

Penn State/PDMP Corn Silage Hybrid Testing Program 2023

Medium maturity (100-110) day RM silage hybrids in Williamsburg, PA

Notes: SEE BACKGROUND TAB

Cooperator: Penn England Farms

						NIRS[3]					FDMS[4]			WC[5]				
Brand	Hybrid	Traits[1]	Relative Maturity	Pop. Plants/ac	Dry Matter %[2]	Crude Protein %DM	Lignin %DM	Ash %DM	Starch %DM	TFA %DM	NDFom %DM	uNDF 240 hr %DM	NDFD 30 %NDF	IVSD %Starch[6]	Fresh Yield tons/ac[7]	OM Yield tons/ac[8]	DOM Yield tons/ac[9]	OMD %[10]

[1] **Traits:** See tab " Trait Key" for individual trait designation.

[2] **Dry Matter:** Tables are sorted by dry matter. *Avoid making comparisons with hybrids that differ significantly in dry matter.*

[3] **NIRS**: Near Infrared Spectroscopy

[4] **FDMS:** In 2022 Cumberland Valley Analytical Services introduced a new in vitro fiber digestibility system, called Feed Degradation Modeling System (FDMS), to predict NDFD for all major forage classes, including fresh corn silage. We determined the relationship between FDMS NDFD30 and wet chemistry NDFD30 was strong enough to use FDMS NDFD30, and avoid the extra charge for wet chemistry NDFD30. Hence, FDMS NDFD30 will be used to calculate OMD

[5] **WC**: Wet Chemistry

[6] **IVSD:** Starch digestibiliy (% of starch) is analyzed by an in vitro wet chemistry method on samples ground through a 1-mm screen and incubated for 4 hours (IVSD).

[7] **Fresh Yield:** Silage yields are expressed on a 35 percent DM basis; all other parameters are expressed on a dry matter basis.

[8] **OM Yield:** Silage yield (tons/ac) expressed on an organic matter (OM) basis.

[9] **DOM Yield:** Yield of digestible organic matter.

[10] **OMD: Organic Matter Digestibility -** Please see "OMD Story" tab for information on how to use this column

NS = Not Significant

Prepared by: Alex Hristov (PSU Animal Sciences), Sergio Francisco (PSU Animal Sciences), Chris Canale (Cargill), Hanna Wells(PSU Plant Science), Dayton Spackman (PSU Plant Science), Charlie White (PSU Plant Science)

Handy BT Trait Table - https://www.texasinsects.org/uploads/4/9/3/0/49304017/bttraittable_feb_2023.pdf

Trait ID #	Trait packages, listed A-Z = former name if applicable	Bag-Tag code	Toxins in package**** Font type denotes target Caterpillar or *rootworm*	BCW	CEW	ECB	FAW	SB	SCB	SWCB	TAW	WBC	CRW	Resistance cases for all Bts in package	Non-Bt refuge, cornbelt	Herbicide tolerance
0	Conventional															
1	AcreMax	AM	Cry1Ab - Cry1F	x	x	x	x	x	x	x				CEW FAW WBC	5% in bag	GLY LL
2	AcreMax CRW	AMRW	*Cry34Ab1 - Cry35Ab1*										x	NCR WCR	10% in bag	GLY LL
3	AcreMax1	AM1	Cry1F - *Cry34Ab1 - Cry35Ab1*	x		x	x	x	x	x			x	ECB FAW NCR SWCB WBC WCR	10% in bag 20% ECB	GLY LL
4	AcreMax Leptra	AML	Cry1Ab - Cry1F - Vip3A	x	x	x	x	x	x	x	x	x			5% in bag	GLY LL
5	AcreMax TRIsect	AMT	Cry1Ab - Cry1F - *mCry3A*	x	x	x	x	x	x	x			x	CEW FAW WBC WCR	10% in bag	GLY LL
6	AcreMax Xtra	AMX	Cry1Ab - Cry1F - *Cry34Ab1 - Cry35Ab1*	x	x	x	x	x	x	x			x	CEW FAW NCR WBC WCR	10% in bag	GLY LL
7	AcreMax Xtreme	AMXT	Cry1Ab - Cry1F - *Cry34Ab1 - Cry35Ab1 - mCry3A*	x	x	x	x	x	x	x			x	CEW FAW WBC WCR	5% in bag	GLY LL
8	Agrisure 3010	3010	Cry1Ab		x	x			x	x				CEW	20%	GLY LL
9	Agrisure 3000 GT & 3011A	3000GT 3011A	Cry1Ab - *mCry3A*		x	x			x	x			x	CEW WCR	20%	GLY LL
10	Agrisure Above = Agrisure 3120EZ	AA	Cry1Ab - Cry1F	x	x	x	x	x	x	x				CEW FAW WBC	5% in bag	GLY LL - check bag
11	Agrisure Total = Agrisure 3122EZ	AT	Cry1Ab - Cry1F - *Cry34Ab1 - Cry35Ab1 - mCry3A*	x	x	x	x	x	x	x			x	CEW FAW WBC WCR	5% in bag	GLY LL - check bag
12	Agrisure Viptera 3110	3110	Cry1Ab - Vip3A	x	x	x	x	x	x	x	x	x			20%	GLY LL
13	Agrisure Viptera 3111	3111	Cry1Ab - Vip3A - *mCry3A*	x	x	x	x	x	x	x	x	x	x	WCR	20%	GLY LL
14	Duracade = AgrisureDuracade 5122EZ	D	Cry1Ab - Cry1F - *eCry3.1Ab - mCry3A*	x	x	x	x	x	x	x			x	CEW FAW WBC WCR	5% in bag	GLY LL - check bag
15	Duracade Viptera = AgrisureDuracade 5222EZ	DV	Cry1Ab - Cry1F - Vip3A - *eCry3.1Ab - mCry3A*	x	x	x	x	x	x	x	x	x	x	WCR	5% in bag	GLY LL - check bag
16	Duracade Viptera Z3 = AgrisureDuracade 5332EZ	DVZ	Cry1Ab - Cry1A.105 - Cry2Ab2 - Vip3A - *eCry3.1Ab - mCry3A*	x	x	x	x	x	x	x	x	x	x	WCR	5% in bag	GLY LL - check bag
17	Herculex I	HXI	Cry1F	x		x	x	x	x	x				ECB FAW SWCB WBC	20%	GLY LL

18	Herculex RW	HXRW	*Cry34Ab1 - Cry35Ab1*										x	NCR WCR	20%	GLY LL
19	Herculex XTRA	HXX	Cry1F - *Cry34Ab1 - Cry35Ab1*	x		x	x	x	x	x			x	ECB FAW NCR SWCB WBC WCR	20%	GLY LL
20	Intrasect	YHR	Cry1Ab - Cry1F	x	x	x	x	x	x	x				CEW FAW WBC	5%	GLY LL
21	Intrasect TRIsect	CYHR	Cry1Ab - Cry1F - *mCry3A*	x	x	x	x	x	x	x			x	CEW FAW WBC WCR	20%	GLY LL
22	Intrasect Xtra	YXR	Cry1Ab - Cry1F - *Cry34Ab1 - Cry35Ab1*	x	x	x	x	x	x	x			x	CEW FAW NCR WBC WCR	20%	GLY LL
23	Intrasect Xtreme	CYXR	Cry1Ab - Cry1F - *Cry34Ab1 - Cry35Ab1 - mCry3A*	x	x	x	x	x	x	x			x	CEW FAW WBC WCR	5%	GLY LL
24	Leptra	VYHR	Cry1Ab - Cry1F - Vip3A	x	x	x	x	x	x	x	x	x			5%	GLY LL
25	Powercore	PW	Cry1A.105 - Cry2Ab2 - Cry1F	x	x	x	x	x	x	x				CEW WBC	5%	GLY LL
26	Powercore Refuge Advanced	PWRA	Cry1A.105 - Cry2Ab2 - Cry1F	x	x	x	x	x	x	x				CEW WBC	5% in bag	GLY LL
27	Powercore Enlist Refuge Advanced	PWE	Cry1A.105 - Cry2Ab2 - Cry1F	x	x	x	x	x	x	x				CEW WBC	5% in bag	GLY LL 2,4-D fops
28	QROME	Q	Cry1Ab - Cry1F - *Cry34Ab1 - Cry35Ab1 - mCry3A*	x	x	x	x	x	x	x			x	CEW FAW WBC WCR	5% in bag	GLY LL
29	SmartStax	SS, SX	Cry1A.105 - Cry2Ab2 - Cry1F - *Cry3Bb1 - Cry34Ab1 - Cry35Ab1*	x	x	x	x	x	x	x			x	CEW NCR WBC WCR	5%	GLY LL
30	SmartStax Refuge Advanced	SXRA	Cry1A.105 - Cry2Ab2 - Cry1F - *Cry3Bb1 - Cry34Ab1 - Cry35Ab1*	x	x	x	x	x	x	x			x	CEW NCR WBC WCR	5% in bag	GLY LL
31	SmartStax Enlist	SSE	Cry1A.105 - Cry2Ab2 - Cry1F - *Cry3Bb1 - Cry34Ab1 - Cry35Ab1*	x	x	x	x	x	x	x			x	CEW NCR WBC WCR	5% in bag	GLY LL 2,4-D fops
32	SmartStax RIB Complete	SS SSRIB	Cry1A.105 - Cry2Ab2 - Cry1F - *Cry3Bb1 - Cry34Ab1 - Cry35Ab1*	x	x	x	x	x	x	x			x	CEW NCR WBC WCR	5% in bag	GLY LL
33	SmartStax PRO Refuge Advanced	SSPro	Cry1A.105 - Cry2Ab2 - Cry1F- *Cry3Bb1 - Cry34Ab1 -Cry35Ab1 - dvSnf7*	x	x	x	x	x	x	x			x	CEW WBC	5% in bag	GLY LL
34	SmartStax PRO Enlist Refuge Advanced		Cry1A.105 - Cry2Ab2 - Cry1F- *Cry3Bb1 - Cry34Ab1 - Cry35Ab1 - dvSnf7*	x	x	x	x	x	x	x			x	CEW WBC	5% in bag	GLY LL 2,4-D fops

35	SmartStax PRO with RNAi Technology	SSPRORIB	Cry1A.105 - Cry2Ab2 - Cry1F- *Cry3Bb1 - Cry34Ab1 - Cry35Ab1 - dvSnf7*	x	x	x	x	x	x	x			x	CEW WBC	5% in bag	GLY LL
36	Trecepta	TRE,TRC	Cry1A.105 - Cry2Ab2 - Vip3A	x	x	x	x	x	x	x	x	x			5%	GLY
37	Trecepta RIB Complete	TRERIB TRCRIB	Cry1A.105 - Cry2Ab2 - Vip3A	x	x	x	x	x	x	x	x	x			5% in bag	GLY
38	TRIsect	CHR	Cry1F - *mCry3A*	x		x	x	x	x	x			x	ECB FAW SWCB WBC WCR	20%	GLY LL
39	Viptera = AgrisureViptera 3220EZ	V	Cry1Ab - Cry1F - Vip3A	x	x	x	x	x	x	x	x	x			5% in bag	GLY LL - check bag
40	Viptera Z3 = AgrisureViptera 3330EZ	VZ	Cry1Ab - Cry1A.105 - Cry2Ab2 - Vip3A	x	x	x	x	x	x	x	x	x			5% in bag	GLY LL - check bag
41	Vorceed Enlist	V	Cry1A.105 - Cry2Ab2 - Cry1F- *Cry3Bb1 - Cry34Ab1 - Cry35Ab1 - dvSnf7*	x	x	x	x	x	x	x			x	CEW NCR WBC	5% in bag	GLY LL 2,4-D fops
42	VT Double PRO	VT2P VT2PRO	Cry1A.105 - Cry2Ab2		x	x	x	x	x	x				CEW	5%	GLY
43	VT2P RIB Complete	VT2PRIB	Cry1A.105 - Cry2Ab2		x	x	x	x	x	x				CEW	5% in bag	GLY
44	VT TriplePRO	VT3P	Cry1A.105 - Cry2Ab2 - *Cry3Bb1*		x	x	x	x	x	x			x	CEW NCR WCR	20%	GLY
45	VT3P RIB Complete	VT3PRIB	Cry1A.105 - Cry2Ab2 - *Cry3Bb1*		x	x	x	x	x	x			x	CEW NCR WCR	10% in bag	GLY
46	VT4Pro w/RNAi Tech.	VT4PRO	Cry1A.105 - Cry2Ab2 - Vip3A - *Cry3Bb1 - dvSnf7*	x	x	x	x	x	x	x	x	x	x		5% in bag	GLY
47	YieldGard Corn Borer	YGCB	Cry1Ab		x	x			x	x				CEW	20%	GLY
48	YieldGard Rootworm	YGRW	*Cry3Bb1*										x	NCR WCR	20%	GLY
49	YieldGard VT Triple	VT3	Cry1Ab - *Cry3Bb1*		x	x			x	x			x	CEW NCR WCR	20%	GLY

The OMD Index

The digestibility of nutrients in corn silage is paramount when determining nutritional value. Starch and NDF are responsible for much of the digestible energy in corn silage. In order to give dairy producers and nutritionist a tool to evaluate corn silage hybrids, we developed a new digestibility index, called the Organic Matter Digestibility Index (OMDI or just OMD), and is based on digestibility of protein, fat, NDF, and starch. The sum of which makes up approximately 86-88% of the organic matter in corn silage.

The OMD index represents the digestible portion of silage organic matter and is based on chemical analyses only. It does not predict dry matter intake or milk production, although numerous studies clearly show that digestibility of forage organic matter is directly related to lactation performance of dairy cows. The OMD index does not represent the absolute digestibility of silage organic matter, as this can be reliably determined only in experiments with live animals. But, OMD is representative of the potentially digestible organic matter of the whole plant and can be used to compare silage hybrids. Furthermore, simulation analyses using the Cornell Net Carbohydrate and Protein System (CNCPS v. 6.55; Cornell University, Ithaca, NY) show that OMD correlates reasonably well with model-predicted milk production of dairy cows fed a standard diet containing approx. 40% corn silage (dry matter basis).

How is the OMD Index Used?

Feeding value of corn silage is mostly associated with digestibility of NDF or starch. A long-standing goal of PDMP is to create a single measure of silage nutritive value using several variables associated with digestibility. Traditional variables, crude protein (accounted for fiber-bound nitrogen), NDF, starch, lignin, and fat, are combined with digestibility determinations for NDF (FDMS NDFD30*) and starch (IVSD; 4-hour, 1-mm grind). Once combined, these digestibility coefficients sum to predict OMD.

* FDMS: In 2022 Cumberland Valley Analytical Services introduced a new in vitro fiber digestibility system, called Feed Degradation Modeling System (FDMS), to predict NDFD for all major forage classes, including fresh corn silage. We determined the relationship between FDMS NDFD30 and wet chemistry NDFD30 was strong enough to use FDMS NDFD30, and avoid the extra charge for wet chemistry NDFD30. Hence, FDMS NDFD30 will be used to calculate OMD. Hence, FDMS NDFD30 = 100

The OMD Index is calculated using the following equation: OMDI (%) = {[(crude protein – NDFCP) × 0.89] + (total fatty acids × 0.75) + (starch × IVSD ÷ 100) + [(FDMS NDFom - lignin) × FDMS NDFD30 ÷ 100)]} ÷ [(crude protein – NDFCP) + total fatty acids + starch + (aNDFom – lignin)] × 100.

Where: OMDI (%) is Organic Matter Digestibility Index; crude protein, total fatty acids, starch, NDFCP (NDF-bound crude protein), aNDFom (ash-free basis, amylase-treated NDF), and lignin (ash-free) are expressed as % of corn silage dry matter; 0.89 is assumed (based on literature data) coefficient of digestibility of silage crude protein; 0.75 is assumed (based on literature data) coefficient of digestibility of silage total fatty acids; IVSD is starch digestibility (by wet chemistry at 4-hour and sample ground through a 1-mm sieve) expressed as % of starch; and FDMS NDFD30.

Use of OMDI: The OMD index is intended to represent the digestible portion of silage dry matter and is based on chemical analyses. OMD does not represent the absolute digestibility of silage organic matter, but it is representative of the potentially digestible organic matter and can be used when comparing silage hybrids. ***Simply put, the higher the OMD value, the higher the overall expected digestibility of the silage.*** OMD reflects the digestibility of key nutrients within the entire plant. Producers without carryover of silage should consider the interaction of OMD and DOM (digestible organic matter yield per acre) as yield of digestible organic matter will be equally as relevant as OMD.

Conclusion

Organic matter digestibility is not a new measure. For years, researchers and nutritionists have used digestibility estimates to formulate rations for dairy cattle. Today, integrating these data is a useful practice to gauge silage value and match hybrid to farm needs. Put simply, OMD measures whole plant digestibility. Emphasis is on digestibility of all main nutrients. In the end, we hope OMD serves to facilitate discussion among producer, seed consultant, and dairy nutritionist as to which hybrids offer the best nutrient value for dairy cows.