PennState Extension

Tool Name

Extension Team:	Plant Science	Tool Version:	
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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
PDMP/PSU 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)

Penn State/PDMP Corn Silage Hybrid Testing Program 2023
Combined Short Season Report from Bradford, Centre, and Clinton Counties

PennState Extension & PDMP — College of Agricultural Sciences — PROFESSIONAL DAIRY MANAGERS OF PENNSYLVANIA

Notes: SEE INDIVIDUAL LOCATION REPORTS

Cooperators: South Mont Farms, PSU Agronomy Farm, and Schrack Farms

Brand	Hybrid	Traits[1]	Relative Maturity	Pop. Plants/ac	Dry Matter %[2]	NIRS[3] Crude Protein %DM	Lignin %DM	Ash %DM	Starch %DM	TFA %DM	FDMS[4] NDFom %DM	uNDF 240 hr %DM	NDFD 30 %NDF	WC[5] IVSD %Starch[6]	Fresh Yield tons/ac[7]	OM Yield tons/ac[8]	DOM Yield tons/ac[9]	OMD %[10]
91-97 day hybrids																		
Revere Seed	9108 VT2PRIB	43	91	33,444	39.5	7.4	3.0	2.5	43.6	2.6	32.4	11.0	50.5	48.0	22.1	7.6	4.0	53.1
Seed Consultants	SC973AM	1	97	33,722	38.1	7.6	2.7	2.6	43.8	2.7	31.8	10.2	53.2	46.6	22.8	7.8	4.2	53.2
Pine Creek Seed	R9317D	14	93	33,500	35.9	8.1	3.1	3.0	42.7	2.7	32.8	11.7	49.2	48.2	21.2	7.2	3.8	53.1
Seed Consultants	SC964AM	1	96	33,477	35.9	7.3	2.9	2.9	42.2	2.6	33.2	11.1	53.2	55.9	23.6	8.0	4.6	58.1
Revere Seed	9538 DV	15	95	33,977	35.1	8.0	3.0	2.6	40.9	2.7	32.3	11.3	51.1	48.4	24.0	8.2	4.4	53.8
				91-97 day means	36.9	7.7	2.9	2.7	42.6	2.7	32.5	11.1	51.4	49.4	22.7	7.8	4.2	54.3
98-103 day hybrids																		
Brevant	B01B36SXE	31	101	34,000	43.8	7.9	2.3	2.7	40.5	2.6	37.0	8.1	61.6	55.3	18.1	6.2	3.8	61.3
Chemgro	5836RTC	37	98	32,722	37.6	7.3	3.1	2.5	41.9	2.6	34.5	12.2	50.7	50.8	22.8	7.8	4.2	54.5
Dekalb	DKC098-55RIB	32	98	31,778	37.2	7.5	2.5	2.3	43.9	2.7	31.5	9.7	54.9	51.3	23.8	8.1	4.6	56.3
Syngenta	NK0007-AA-EZ1	10	100	34,000	36.9	7.6	3.0	2.8	41.9	2.5	32.9	11.7	49.1	47.5	21.1	7.2	3.8	52.5
Revere Seed	0297 VT2PRIB	43	102	33,222	36.8	7.2	2.9	2.6	43.1	2.7	33.3	10.9	52.9	48.2	23.8	8.1	4.4	53.9
Dekalb	DKC48-34RIB	32	98	33,222	36.4	7.4	2.9	2.7	42.2	2.6	33.3	10.8	52.8	49.5	23.1	7.9	4.3	54.8
Hubner	H9953P	35	99	33,667	36.4	7.5	2.6	2.5	43.6	2.6	31.2	10.0	53.1	49.7	23.8	8.1	4.4	54.9
Seed Consultants	SC1003AM	1	100	32,944	36.3	7.5	2.8	2.6	42.0	2.5	32.3	10.8	52.2	49.2	25.8	8.8	4.8	54.4
Pioneer	P9823Q	28	98	33,444	35.7	8.1	2.7	2.8	42.3	2.6	31.2	10.3	53.3	50.2	24.7	8.4	4.7	55.7
Brevant	B99A24Q	28	99	34,000	35.3	7.4	2.9	2.7	40.0	2.4	33.3	11.1	52.5	52.1	25.5	8.7	4.8	56.0
Revere Seed	9827 SSXRIB	32	98	31,167	34.8	7.6	3.0	2.7	39.9	2.6	34.0	11.6	52.5	50.9	21.0	7.2	4.0	55.5
Pioneer	P0035Q	28	100	33,444	34.5	7.7	2.9	2.8	40.9	2.6	33.3	11.0	53.3	50.3	24.5	8.4	4.6	55.6
Dekalb	DKC53-94RIB	32	103	33,389	34.3	7.4	2.8	2.5	40.7	2.7	33.2	11.2	52.2	54.8	24.2	8.3	4.5	57.1
Channel	198-99SSPRIB	35	98	33,778	33.7	7.3	2.8	2.6	39.8	2.6	32.8	10.8	53.5	53.0	22.0	7.5	4.3	56.9
**Masters Choice	MC5160	0	101	34,090	33.1	7.5	2.8	2.9	42.7	2.8	32.7	11.1	51.7	50.6	23.2	7.9	4.3	55.0
				98-103 day means	36.4	7.6	2.8	2.7	42.0	2.6	32.9	10.8	52.6	50.5	23.0	7.9	4.3	55.2
				Overall Mean	36.4	7.6	2.8	2.7	41.9	2.6	33.0	10.8	52.7	50.5	23.1	7.9	4.3	55.3
				LSD(0.1)	2.1	0.2	0.2	0.3	NS	0.2	2.2	1.0	1.1	2.6	1.4	0.5	0.3	1.4
				CV%	7.0	3.7	9.8	11.9	8.6	7.1	8.3	11.1	2.6	6.3	7.6	7.7	7.8	3.1

[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.

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

[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

**Entry was only planted at one location, but averages have been statistically adjusted to allow comparisons with entries planted at all sites

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Short Season Hybrids
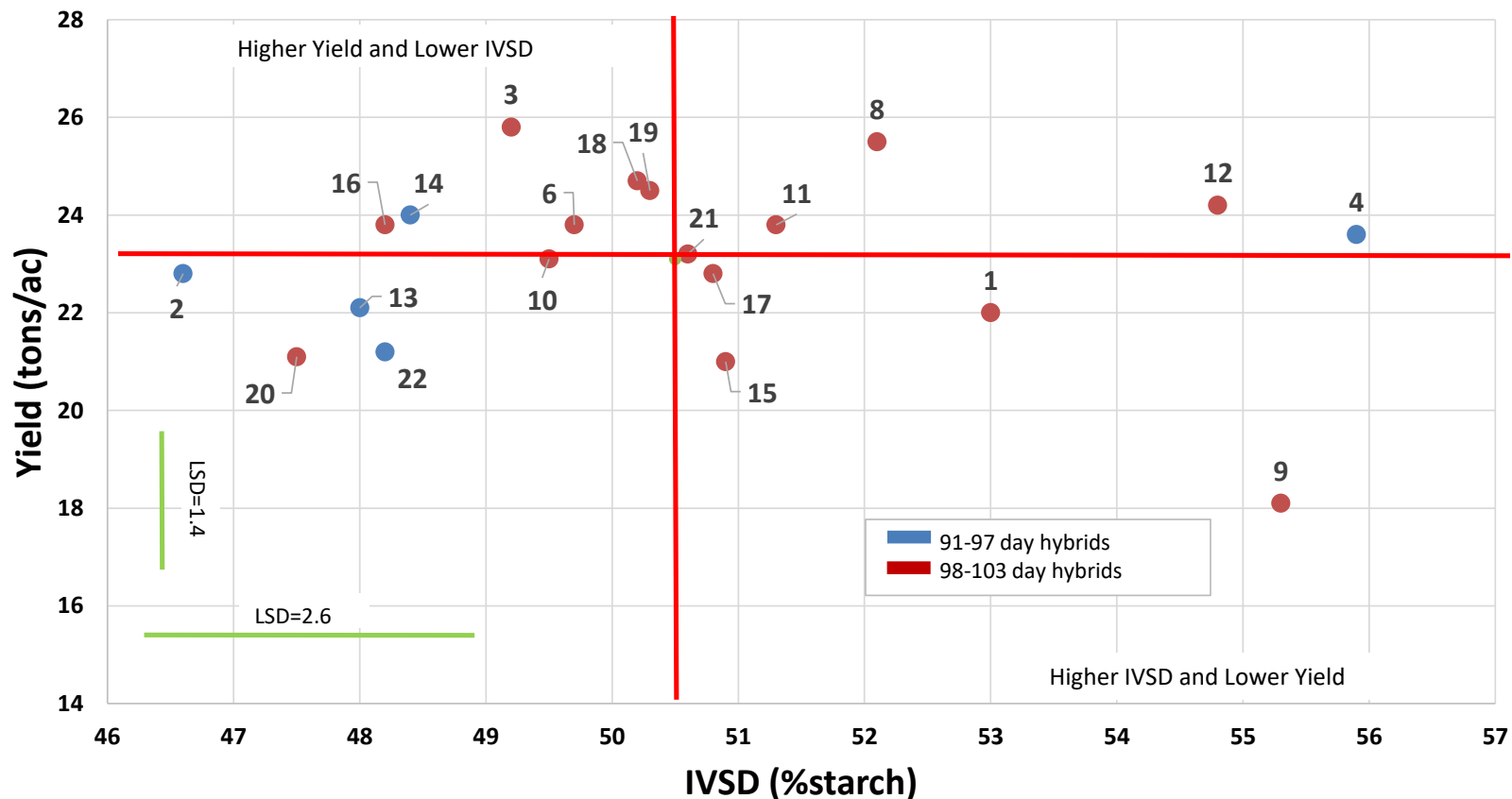
Yield (tons/ac) and Starch (%DM)
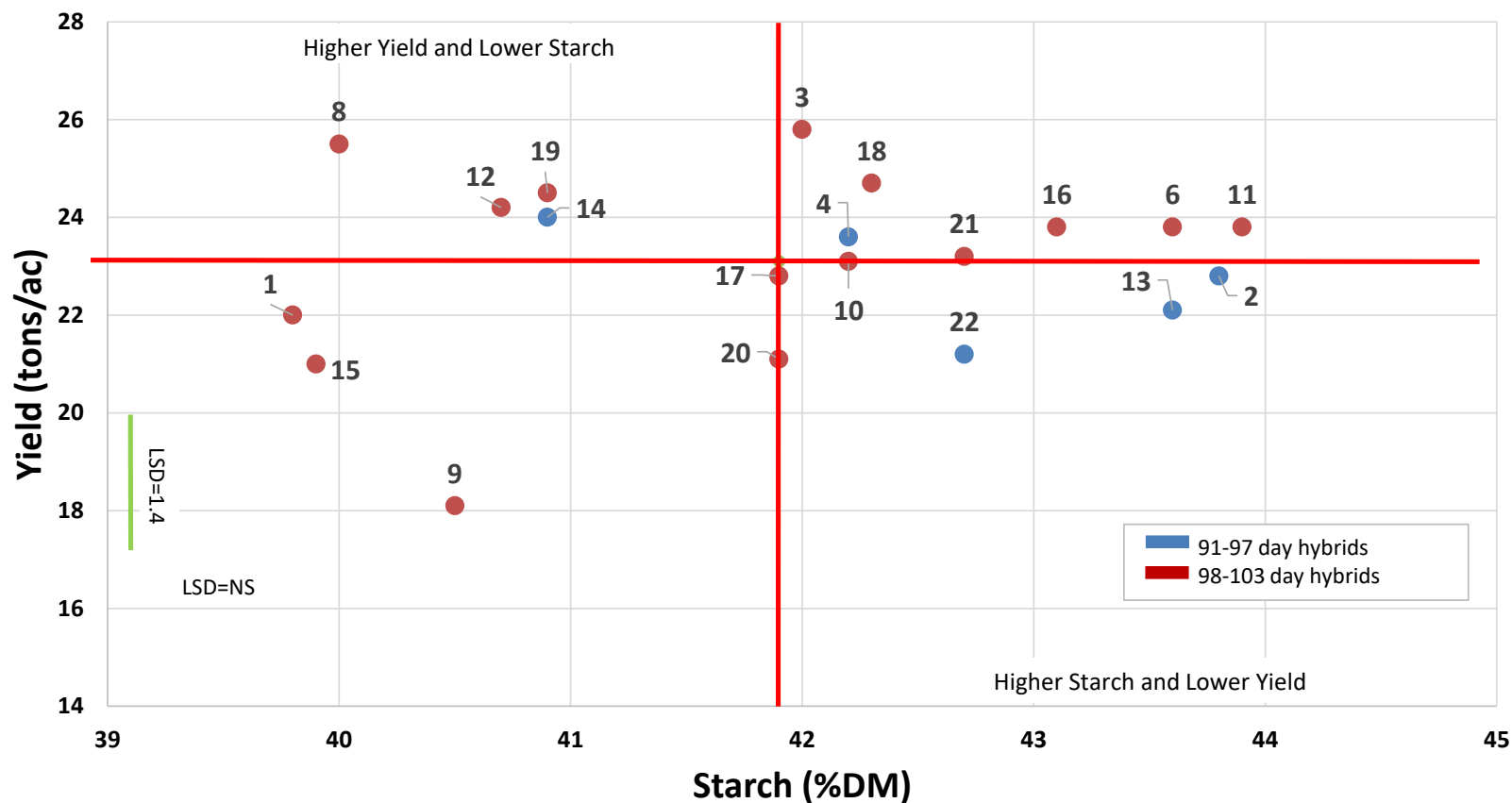
Legend
1.) Channel 198-99SSPRIB
2.) Seed Consultants SC973AM
3.) Seed Consultants SC1003AM
4.) Seed Consultants SC964AM
6.) Hubner H9953P
8.) Brevant B99A24Q
9.) Brevant B01B36SXE
10.) Dekalb DKC48-34RIB
11.) Dekalb DKC098-55RIB
12.) Dekalb DKC53-94RIB
13.) Revere Seed 9108 VT2PRIB
14.) Revere Seed 9538 DV
15.) Revere Seed 9827 SSXRIB
16.) Revere Seed 0297 VT2PRIB
17.) Chemgro 5836RTC
18.) Pioneer P9823Q
19.) Pioneer P0035Q
20.) Syngenta NK0007-AA-EZ1
21.) *Masters Choice MC5160
22.) Pine Creek Seed R9317D

Higher Yield and Lower Starch

Higher Starch and Lower Yield

LSD=1.4

LSD=NS

■ 91-97 day hybrids
■ 98-103 day hybrids

*How to use this chart: This chart can be used to determine yield (tons/ac) and starch(%DM) of corn silage hybrids. The horizontal line represents the starch mean in this group of data. The vertical line represents the fresh yield mean in this group of data. Each point represents a data point that reflects fresh yield to starch. The number beside the data point can be referenced to the hybrid name located within the legend. The LSD lines represent differences between hybrids that are significantly different at the 0.1 level. These lines can be moved around within the plot of data.

Short Season Hybrids
Yield (tons/ac) and IVSD (%starch)

*How to use this chart: This chart can be used to determine yield (tons/ac) and IVSD(%starch) of corn silage hybrids. The horizontal line represents the IVSD mean in this group of data. The vertical line represents the fresh yield mean in this group of data. Each point represents a data point that reflects fresh yield to IVSD. The number beside the data point can be referenced to the hybrid name located within the legend. The LSD lines represent differences between hybrids that are significantly different at the 0.1 level. These lines can be moved around within the plot of data.

Short Season Hybrids
Yield (tons/ac) and FDMS NDFD30 (%NDF)

Higher Yield and Lower NDFD30

Higher NDFD30 and Lower Yield

Yield (tons/ac)

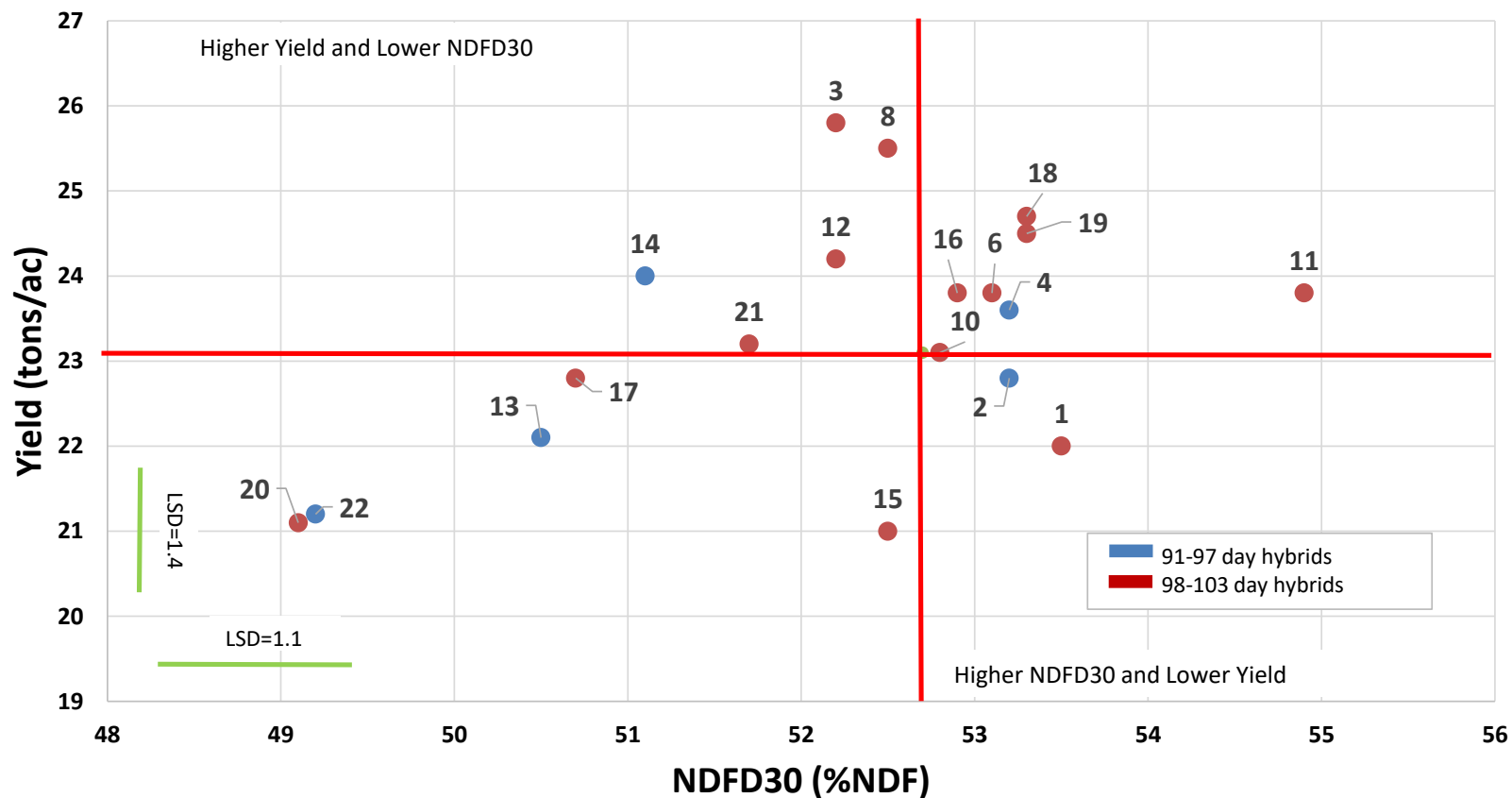NDFD30 (%NDF)

LSD=1.4

LSD=1.1

91-97 day hybrids
98-103 day hybrids

Legend
1.) Channel 198-99SSPRIB
2.) Seed Consultants SC973AM
3.) Seed Consultants SC1003AM
4.) Seed Consultants SC964AM
6.) Hubner H9953P
8.) Brevant B99A24Q
9.) Brevant B01B36SXE
10.) Dekalb DKC48-34RIB
11.) Dekalb DKC098-55RIB
12.) Dekalb DKC53-94RIB
13.) Revere Seed 9108 VT2PRIB
14.) Revere Seed 9538 DV
15.) Revere Seed 9827 SSXRIB
16.) Revere Seed 0297 VT2PRIB
17.) Chemgro 5836RTC
18.) Pioneer P9823Q
19.) Pioneer P0035Q
20.) Syngenta NK0007-AA-EZ1
21.) *Masters Choice MC5160
22.) Pine Creek Seed R9317D

*How to use this chart: This chart can be used to determine yield (tons/ac) and FDMS NDFD30 (%NDF) of corn silage hybrids. The horizontal line represents the NDFD30 mean in this group of data. The vertical line represents the fresh yield mean in this group of data. Each point represents a data point that reflects fresh yield to NDFD30. The number beside the data point can be referenced to the hybrid name located within the legend. The LSD lines represent differences between hybrids that are significantly different at the 0.1 level. These lines can be moved around within the plot of data.
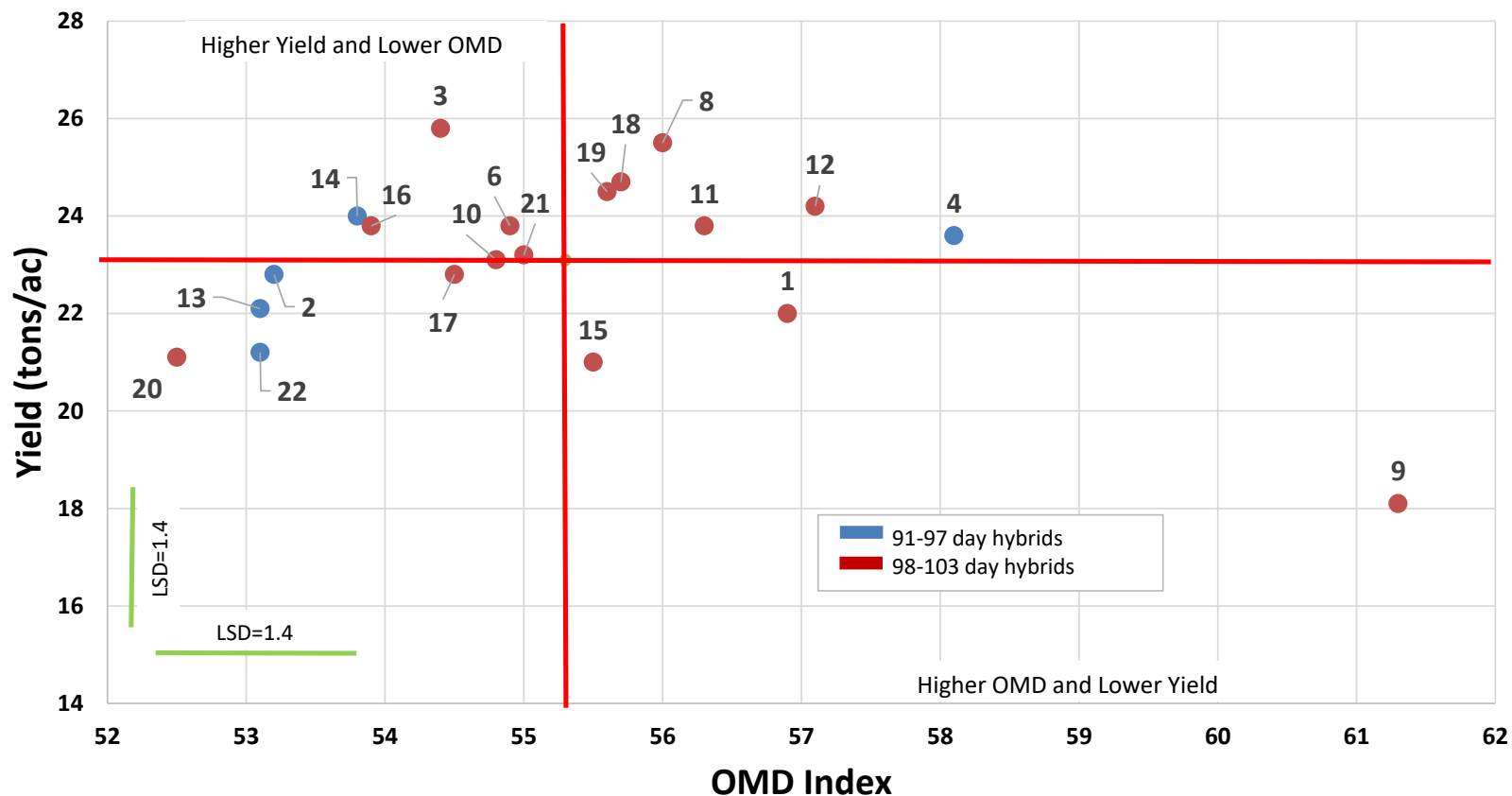
Short Season Hybrids

Yield (tons/ac) and OMD Index

Higher Yield and Lower OMD

Higher OMD and Lower Yield

Yield (tons/ac)

OMD Index

LSD=1.4

LSD=1.4

91-97 day hybrids
98-103 day hybrids

*How to use this chart: This chart can be used to determine yield (tons/ac) and the OMD Index of corn silage hybrids. The horizontal line represents the OMD Index mean in this group of data. The vertical line represents the fresh yield mean in this group of data. Each point represents a data point that reflects fresh yield to the OMD Index. The number beside the data point can be referenced to the hybrid name located within the legend. The LSD lines represent differences between hybrids that are significantly different at the 0.1 level. These lines can be moved around within the plot of data.

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

#	Name	Code	Traits											Other pests	Refuge	Herbicide
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.