Snaplage

Harvested with silage chopper equipped with a snapper head and processed with the internal kernel processor

(Pictures from Blood Dairy, State Center, Iowa Harvesting Snaplage in September, 2008)

Advantages:

- Early harvest…..fits between corn silage and dry grain.
- Increased yield/acre compared to dry grain harvest.
- 25-30% reduced harvesting cost compared to combining corn and processing at the storage structure.
- Increased starch digestibility compared to feeding dry corn or HMC <25% moisture.
- Additional source of digestible fiber (if cobs and "trash" are not sorted out of the TMR)

Disadvantages:

- Higher storage shrink loss
- Inventory carrying cost
- More inconsistent than dry grain
- Less flexibility

Pioneer, A DuPont Company

Snaplage versus “traditional” earlage

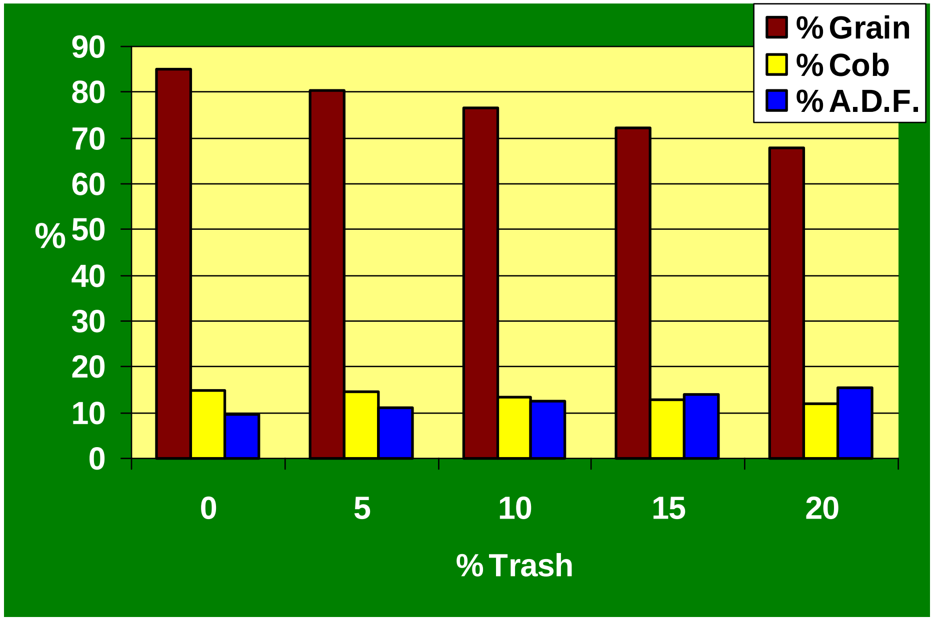
- Earlage has fallen out of favor with many nutritionists and producers because "typical" earlage or snaplage was:
  - Harvested way too late/mature/dry,
  - Not processed fine-enough (compared to what we have come to expect with HMSC)
    - problems with grain passing and cobs being refused
  - Often separated when blown into tower silos….
    - Inconsistent product out the unloader
    - Oftern with mold growing on the lighter cob fraction that was mostly blown toward the outer edge of the silo.

- The snaplage of the “modern era” is a distinctly different product in that:
  - It is harvested quickly by custom-cutters
  - It is harvested at kernel moistures exceeding 30% (preferably right at black-layer when kernels are about 34-36% moisture)
  - It is processed extremely well with a fine-tooth roller on the forage chopper
  - It is inoculated with Pioneer ® brand 11B91
    - Pioneer high moisture corn specific inoculant containing L. buchneri to improve feeding value and reduce mold/yeast/heating problems

Harvest Maturity and Moisture

- For issues impacting palatability, cob digestibility, ability to adequately process kernels, fermentation and starch digestibility, it is best to **err on the wet, rather than dry side, when harvesting snaplage or earlage.**
  - A common mistake is to let snaplage get too dry prior to harvest.
- **Start harvest when kernels are physiologically mature**
  - **kernel moisture at black layer will be 34-36% in most hybrids**
  - the milk line will have moved all the way down the kernel and the presence of the black layer at the tip of the kernel indicates starch deposition is complete
- The cob moisture is higher than in the kernel so the moisture level of the final mix will be in the high 30’s.

Relationship of snaplage composition to trash content as measured by Acid Detergent Fiber



% Trash	% Grain	% Cob	% ADF
0	85.0	15.0	9.7
5	80.4	14.6	11.1
10	76.5	13.5	12.6
15	72.3	12.7	14.0
20	68.0	12.0	15.4

Source: University of Idaho, Cooperative Extension Service.
All reported values on a 100% dry matter basis.

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Approximate Dry Matter Composition of Corn Harvest in Different Forms

	Snapped Ear Corn	Picked Ear Corn	Shelled Corn
Corn, %	72-78	80-84	100
Cob, %	16-19	16-20	--
Husk, %	6-8	--	--
Crude Protein, %	8.8	9.2	10.0
Crude Fiber, %	11.5	8.5	2.3
NE(m), Mcal/lb	.92	.98	1.04
NE(g), Mcal/lb	.54	.58	.67
Mader, et al., 1983			

Feeding Value

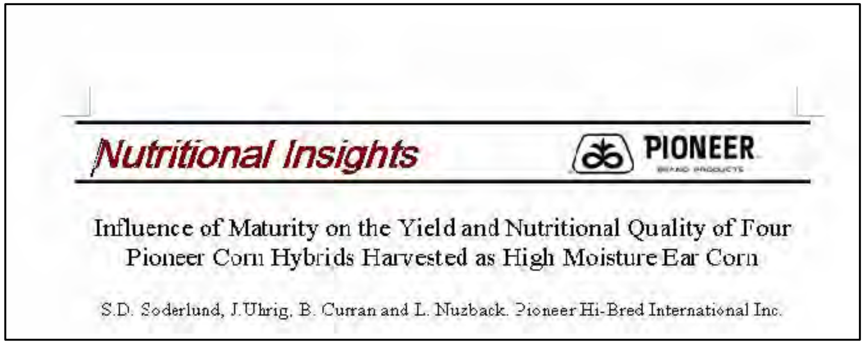
- Some of the original University and USDA research with HMEC indicated that on a pound for pound (dry matter) basis, HMEC was equal to shelled corn. In other words, the cob in the high moisture state was supplying as much energy as grain.
- While it has been suspected that the digestibility of the cob in HMEC is higher than that of the cob in dry ear corn it is <u>not</u> logical to assume that this difference would result in HMEC having a similar net energy energy to shelled corn.
- The unexpected performance with HMEC is more likely related to improved rumen function, palatability, reduced metabolic disorders or differences in rumen availability of starch (higher in wetter HMEC)
  - It should be noted that the HMEC used in these trials was harvested with a traditional corn picker or modified combine. It is generally recognized that snapped ear corn containing the husk and varying amounts of trash will have a lower feeding value than picked corn.

Feeding Value

- Snaplage energy values can vary from one operation to another due to differences in the amount of non-ear plant parts (cob and “trash”) contained in the feed.
  - “Trash” can dilute out the feed and lower the energy content.
  - Wetter, greener hybrids usually have higher trash content.

- Data from the University of Idaho Cooperative Extension Service, as well as that Pioneer Hi-Bred indicates “trash” can range from 1 to 22% in samples of HMEC taken from plots harvested the same day using the same harvest equipment.
  - Variation in trash can also occur in the same hybrid depending upon time of day and how the snapper head/cutter head is adjusted.

Feeding Value


Nutritional Insights — PIONEER

Influence of Maturity on the Yield and Nutritional Quality of Four Pioneer Corn Hybrids Harvested as High Moisture Ear Corn

S.D. Soderlund, J. Uhrig, B. Curran and L. Nuzback. Pioneer Hi-Bred International Inc.

- In a recent Pioneer study at our LaSalle, Colorado Research Station showed that snaplage had an energy value approaching 85-90% of that of dry shelled corn by selecting suitable hybrids and harvesting at the proper maturity.
  - Suitable hybrid defined as high grain yield with range of maturities and perhaps a slower grain dry down score to facilitate harvesting large acreages

Yield of Snaplage (tons of DM/acre)

Harvest Date	35A30	34A86	35Y65	35D28
Sept 13	5.27	4.41	4.34	3.58
Sept 20	5.83	4.92	4.51	3.82
Sept 27	5.82	5.23	5.30	4.29
*Oct 4 **	5.47	4.60	4.12	3.44

* Harvest period 4 yields were lower than expected due to water stress and spider mite infestation in that area of the plot.

Average Nutrient Composition in Snaplage

Component	Protein %	Starch %	NFD %	Ash %
Grain	9.87	68.99	7.82	1.44
Cob	1.92	-	84.29	1.32
Husk/shank	4.00	-	78.97	3.81
Whole ear	8.23	52.14	23.74	1.56

Feeding Value

- One **important** finding from this study was that cob digestibility drops rapidly as the ear matures and will provide little nutritional value past 45% dry matter (approximately 28% grain moisture).

% in vitro Dry Matter Disappearance by Harvest Period

Component	Sept 13	Sept 20	Sept 27	Oct 4
Cob	67.57	55.77	56.23	48.21
Husk/shank	77.09	74.23	68.94	71.29
Whole ear	84.36	84.13	84.26	83.98

Table 4. Percent NDF in HMEC by harvest Period (100% DM Basis)

Component	Sept 13	Sept 20	Sept 27	Oct 4
Grain	7.55	8.03	7.89	7.82
Cob	78.92	84.58	85.81	87.86
Husk/shank	76.78	78.51	80.01	80.06
Whole ear	23.53	23.40	23.30	24.74

Pioneer, A DuPont Company

Further Study Findings

- HMEC yield, component mix and nutritional value are influenced by both harvest maturity and hybrid.
- Optimal harvest moisture for maximizing both yield and nutritional value of HMEC appears to be between 36-42%.
- Husk and shank digestibility was higher than expected and may provide a good roughage source if properly processed so that separation in minimized.
- The percent cob averaged 16% but ranged from 10-20% and was inversely related to the grain content.
- This trial suggests that whole ear moisture will be approximately 6% units higher than the grain moisture and will decline at approximately 1% unit per day (trial conducted in Colorado environment).
- In this trial, a one ton increase in HMEC DM yield equated to a dry grain (84.5% DM) yield increase of 33 bushel per acre.

Feeding Value

- Many nutritionists have observed that the feeding value of HMC is often variable and Intakes are often less than predicted particularly with corn ensiled at moisture levels above 30%.

- Owens and Thornton (1976) concluded from a review of 36 published beef feeding trials that for every 1% added moisture above 24%, dry matter intake deceased by about 1% when HMC was compared to dry rolled corn as the sole source of grain in the diet
  - They concluded that metabolizable energy content of HMC increases with moisture content. On average, energy value of HMC equaled dry corn at 23% moisture and increased by .3% for every 1% higher moisture.

- While moisture level in high moisture corn is highly correlated with voluntary dry matter intake it is not the moisture per se that is responsible for the observed intake depression.
  - Moisture level is the driving factor in the extent of the fermentation process and is related to the rate of starch digestion of the grain itself.

Feeding Value

Effect of Moisture Content and Processing on Feeding Value of High Moisture Corn

(similar effects would be expected for grain in snaplage or earlage)

Table 5: Effect of Moisture Content and Processing on Feeding Value of HMC for Finishing Feedlot Cattle (Owens, 1994)

Moisture	Content	Whole	Rolled	Ground
	DMI, lb/d	19.68	19.5	18.9
18-22%	ADG, lb/d	2.95	2.77	2.69
	Feed/gain	6.79	7.3	7.10
	DMI, lb/d		18.7	19.4
23-26%	ADG, lb/d	--	2.75	2.7
	Feed/gain	--	6.91	7.29
	DMI, lb/d	--	17.1	17.3
>27%	ADG, lb/d	--	2.97	2.59
	Feed/gain	--	5.86	6.77

Due to Increased STRD

Feeding Value….

2008 snaplage hybrid plot analysis from Southeast Minnesota (unfermented)

Hybrid	As Harvested Tons/acre	100% DM Ton/Acre	65% DM Tons/Acre	Moisture	Dry Matter	CP, % DM	NDF, % DM	NE-L, (mcal/lb DM)	NE-G, (mcal/lb DM)	Starch, % DM
A	9.9	6.6	10.1	33.67	66.33	9.3	13.57	0.89	0.63	63.56
B	9.8	6.5	10.0	33.27	66.73	8.76	16.42	0.87	0.61	62.19
C	9.5	5.8	8.9	39.38	60.62	8.65	17.11	0.87	0.60	59.47
D	10.0	6.3	9.7	37.12	62.88	9.05	15.94	0.88	0.62	61.53
E	9.4	5.7	8.8	39.67	60.33	8.64	17.86	0.87	0.61	58.87
F	9.5	5.3	8.1	44.5	55.5	9.29	20.65	0.86	0.60	55.77
G	10.3	5.5	8.5	46.17	53.83	8.82	22.21	0.85	0.59	55.44
Hybrid	11.2	5.9	9.1	47.17	52.83	9.34	21.33	0.85	0.59	54.61

Feeding Value

2008 sample analysis from Blood Dairy, Iowa (unfermented)

Moisture	**39.2**
Dry Matter	**60.8**
Crude Protein, %DM	**6.8**
ADF, % DM	**11.4**
NDF, % DM	**21.9**
NE-L, (mcal/lb DM) OARDC	**0.86**
NE-L, (mcal/lb DM) (digestion)	**0.87**
NE-G, (mcal/lb DM) (digestion)	**0.59**
Ash, %DM	**1.7**
Fat, % DM	**3.2**
Starch, % DM	**55.8**
NFC, %DM	**65.9**

Pioneer, A DuPont Company

The table below is a summary of the nutritional analysis of snaplage samples that Dr. Steve Soderlund has taken over the past few years from primarily CO and KS

	Min	Max	Average
NUTRITIONAL			
Moisture	27.1	43.5	34.9
Dry Matter	56.5	72.9	65.1
Crude Protein, %DM	6.6	9.9	8.1
Bound Protein % Insol pepsin/%TN	10.7	15.8	13.3
Water Soluble Protein, % CP	32.0	61.5	49.0
ADF, % DM	5.4	10.8	8.4
NDF, % DM	11.1	20.3	15.7
NE-L, (mcal/lb DM) OARDC	0.82	0.90	0.87
NE-G, (mcal/lb DM) (digeston)	0.58	0.65	0.62
Ash, %DM	1.5	3.2	1.9
Fat, % DM	2.6	4.0	3.2
Starch, % DM	53.7	64.3	59.3
Sugar, %DM	4.0	5.0	4.4
WSC, %DM	58.7	69.3	64.2
NFC, %DM	65.7	76.9	72.6
FERMENTATION			
pH	3.7	4.3	4.0
Lactic Acid %DM	0.4	1.2	0.8
Acetic Acid % DM	0.0	0.7	0.4
Propionic Acid % DM	0.0	0.0	0.0
Butyric Acid % DM	0.0	0.0	0.0
Ammonia Nitrogen, % CP	3.5	19.5	12.9
Ethanol	0.0	0.9	0.4

Feeding Value….*2008 sample analysis from Northeast, NY (unfermented)*

CUMBERLAND VALLEY ANALYTICAL SERVICES, INC. October 09, 2008
PO Box 669 Maugansville, MD 21767 301-790-1980 Sample No : 8431132

N I R A N A L Y S I S R E S U L T S

EAR CORN	As Sampled	Dry Matter	Unit
Moisture	46.3		%
Dry Matter	53.7		%
Crude Protein	3.6	6.8	% DM
Available Protein	3.2	5.9	% DM
Unavailable Protein	0.4	0.8	% DM
Neutral Det. Crude Protein	0.7	1.2	% DM
Adjusted Protein	3.6	6.8	% DM
Soluble Protein		20.7	% CP
Degradable Protein (calc.)		47.6	% CP
TDN	40.4	75.2	% DM
Net Energy Lactation	0.46	0.85	Mcal/lb
Net Energy Maintenance	0.44	0.81	Mcal/lb
Net Energy Gain	0.28	0.53	Mcal/lb
Acid Detergent Fiber	6.9	12.8	% DM
Neutral Detergent Fiber	13.9	25.9	% DM
Lignin	1.4	2.7	% DM
Lignin / NDF Ratio		10.2	
Crude Fat	1.9	3.5	% DM
Ash	0.9	1.7	% DM
Starch	30.9	57.5	% DM
Sugar	1.6	2.9	% DM
NFC	34.1	63.4	% DM
Calcium	0.03	0.05	% DM
Phosphorus	0.13	0.25	% DM
Magnesium	0.05	0.10	% DM
Potassium	0.28	0.52	% DM
Sulfur	0.05	0.09	% DM

Feeding Value….

2008 sample analysis from VT

(fully fermented)

Dairy One

FORAGE TESTING LABORATORY
DAIRY ONE, INC.
730 WARREN ROAD
ITHACA, NEW YORK 14850
607-257-1272 (fax 607-257-1350)

Sampled	Recvd	Printed	ST	CO
	10/27/08	10/27/08		

ALLANDRA SNAPLAGE
FEED COMMODITIES INTL, LLC
70 MEIGS ROAD
VERGENNES, VT 05491

ENERGY TABLE - NRC 2001

	Mcal/Lb	Mcal/Kg
DE, 1X	1.66	3.66
ME, 1X	1.48	3.25
NEL, 3X	0.88	1.93
NEM, 3X	0.92	2.03
NEG, 3X	0.62	1.37

TDN1X, % 85

Sample Description	Farm	Code	Sample
CORN SNAPLAGE, Wet		537	13050000

Analysis Results

Components	As Fed	DM
% Moisture	41.1	
% Dry Matter	58.9	
% Crude Protein	4.7	8.0
% Available Protein	4.5	7.6
% ADICP	.2	.4
% Adjusted Crude Protein	4.7	8.0
Soluble Protein % CP		26
Degradable Protein %CP		38
% NDICP	.5	.9
% Acid Detergent Fiber	4.5	7.6
% Neutral Detergent Fiber	10.7	18.1
% Lignin	.9	1.5
% NFC	40.8	69.2
% Starch	37.7	64.0
% Crude Fat	2.3	3.9
% Ash	.95	1.62
% TDN	50	84
NEL, Mcal/Lb	.56	.95
NEM, Mcal/Lb	.56	.95
NEG, Mcal/Lb	.38	.65
% Calcium	.03	.05
% Phosphorus	.17	.28
% Magnesium	.06	.10
% Potassium	.26	.44
% Sulfur	.06	.10
% Lysine	< .01	< .01
% Methionine	< .01	< .01
Horse DE, Mcal/Lb	.97	1.65

Feeding Value….

2008 sample analysis from SD (fully fermented)

Much drier than most nutritionists desire

PRODUCT: HMEC snaplage 1-7-09

RESULTS:	Moisture			24.01%	
	Dry Matter			75.99%	
		DRY BASIS:		AS IS:	
	Crude Protein	7.67%		5.83%	
	A D F	13.65%		10.37%	
	aN D F	25.00%	(w/ Na2SO3)	19.00%	(w/ Na2SO3)
	AD-ICP % of CP	8.61%		8.61%	
	AD-ICP % of DM	0.66%		0.50%	
	Starch	53.28%		40.49%	
	Calcium	0.06%	0.27 g/lb	0.05%	0.21 g/lb
	Phosphorus	0.30%	1.36 g/lb	0.23%	1.03 g/lb
	Magnesium	0.14%	0.64 g/lb	0.11%	0.48 g/lb
	Potassium	0.55%	2.49 g/lb	0.42%	1.90 g/lb
CALCS:	T.D.N. - ADF	73.42%		55.79%	
	Adjusted Crude Protein	7.67%		5.83%	
	N.F.C.	62.31%		47.35%	
	N.E.L. - ADF	75.89	Mcal/cwt	57.67	Mcal/cwt
	N.E.- G. - ADF	58.15	Mcal/cwt	44.19	Mcal/cwt
	N.E.- M. - ADF	87.32	Mcal/cwt	66.36	Mcal/cwt

This sample was tested twice to confirm the values listed.

Feeding Value…

2008 sample 1 analysis from CA (fully fermented)

CUMBERLAND VALLEY ANALYTICAL SERVICES, INC. September 05, 2008
PO Box 669 Maugansville, MD 21767 301-790-1980 Sample No : 8322044

A N A L Y S I S R E S U L T S

EAR CORN	As Sampled	Dry Matter	Unit
Moisture	41.8		%
Dry Matter	58.2		%
Crude Protein	4.5	7.7	% DM
Unavailable Protein	0.3	0.4	% DM
Neutral Det. Crude Protein	0.3	0.5	% DM
Adjusted Protein	4.5	7.7	% DM
Soluble Protein		30.8	% CP
Degradable Protein (calc.)		56.2	% CP
TDN	46.9	80.5	% DM
Net Energy Lactation	0.49	0.85	Mcal/lb
Net Energy Maintenance	0.52	0.89	Mcal/lb
Net Energy Gain	0.35	0.59	Mcal/lb
Acid Detergent Fiber	7.3	12.6	% DM
Neutral Detergent Fiber	13.8	23.7	% DM
Lignin	1.1	2.0	% DM
Lignin / NDF Ratio		8.3	
Crude Fat	2.1	3.6	% DM
Ash	1.3	2.3	% DM
Starch	34.8	59.8	% DM
Sugar	1.4	2.4	% DM
NFC	36.7	63.1	% DM
Calcium	0.03	0.05	% DM
Phosphorus	0.19	0.32	% DM
Magnesium	0.06	0.10	% DM
Potassium	0.28	0.47	% DM
Sulfur	0.13	0.23	% DM
Sodium	0.009	0.015	% DM
Iron	72	123	PPM
Manganese	8	13	PPM
Zinc	19	33	PPM
Copper	1	2	PPM
Chloride Ion	0.04	0.07	% DM
pH	4.0		

CUMBERLAND VALLEY ANALYTICAL SERVICES, INC. February 03, 2009
PO Box 669 Maugansville, MD 21767 301-790-1980 Sample No : 8746048

Feeding Value…

2008 sample 2 analysis from CA (fully fermented)

A N A L Y S I S   R E S U L T S

EAR CORN	As Sampled	Dry Matter	Unit
Moisture	42.7		%
Dry Matter	57.3		%
Crude Protein	5.3	9.2	% DM
Unavailable Protein	0.2	0.4	% DM
Neutral Det. Crude Protein	0.4	0.7	% DM
Adjusted Protein	5.3	9.2	% DM
Soluble Protein		63.2	% CP
Degradable Protein (calc.)		76.1	% CP
TDN	47.2	82.4	% DM
Net Energy Lactation	0.50	0.87	Mcal/lb
Net Energy Maintenance	0.52	0.91	Mcal/lb
Net Energy Gain	0.35	0.62	Mcal/lb
Acid Detergent Fiber	6.1	10.6	% DM
Neutral Detergent Fiber	12.3	21.5	% DM
Lignin	0.9	1.6	% DM
Lignin / NDF Ratio		7.2	
Crude Fat	2.2	3.8	% DM
Ash	1.2	2.1	% DM
Starch	29.0	50.7	% DM
Sugar	1.4	2.4	% DM
NFC	36.7	64.0	% DM
Calcium	0.02	0.04	% DM
Phosphorus	0.20	0.35	% DM
Magnesium	0.07	0.12	% DM
Potassium	0.32	0.56	% DM
Sulfur	0.07	0.12	% DM
Sodium	0.004	0.006	% DM
Iron	36	63	PPM
Manganese	5	9	PPM
Zinc	15	27	PPM
Copper	1	2	PPM
Chloride Ion	0.06	0.10	% DM
pH	4.2		

Feeding Value

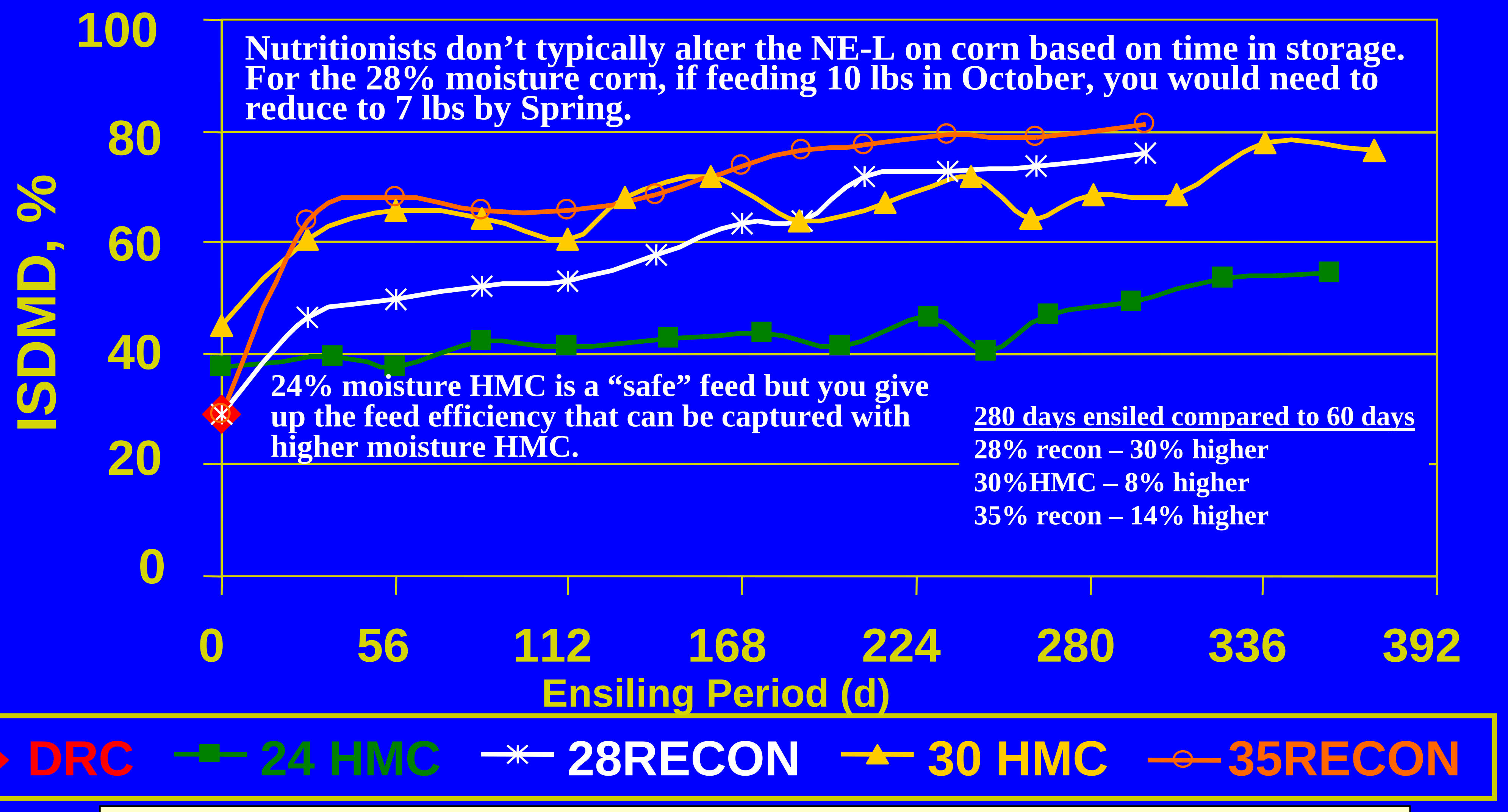
Feeding Wet HMC (or snaplage)

- Nebraska research (next slide) shows that wetter HMC (>26% moisture) is getting more digestible over time in storage.

HMC is a relative term – 22-24% moisture HMC feeds much differently than 28-30% moisture HMC

Some of our spring acidosis may be explained by this Nebraska study looking at the rate of in situ (ruminal) DM digestion of HMC of varying moistures and time in storage

Source: J.R. Benton, G.E. Erickson, and T.J. Klopfenstein U of NE, Lincoln. Abstract # 936 2004 ASAS/ADSA Sessions, St. Louis, MO



DRC = dry rolled corn that showed no change over time for ISDMD, but when the same hybrid is harvested as wetter HMC, ISDMD increased over time in storage.

Feeding Value

- Nebraska research shows that wetter HMC (>26% moisture) is getting <u>more</u> digestible over time in storage.
  - Nutritionists may not be accounting for this as they tend to put an energy value on HMC at harvest and vary ration HMC inclusion rates based <u>only</u> on changing forage quality.
  - The availability of starch digestibility testing by various laboratories will help nutritionists better quantify these changes in storage.
    - Consider taking a sample of 60 day ensiled HMC and CS and freezing. Take another sample of these feeds at 150-200 day ensiled and send them to the lab together to compare relative STRD values.

If this is understood, HMC can successfully be fed as a supplement to high corn silage rations. However come spring, ration adjustments will likely need to be implemented by either: 1) backing out some HMC (70% starch) and increasing the inclusion rate of CS (30-35% starch) to reduce overall ruminal starch loads or 2) replacing some HMC with dry corn. Buffers and attention to peNDF can also help.

Feeding Value

Results from 2005 HMC (27% moisture, processed through tub-grinder with a ¼” screen) analyzed for 12-hr in vitro STRD at Dairyland Labs comparing a (saved-frozen) 60-day (Fall) sample against a 200-day (spring) sample (both samples incubated in the same in vitro run)

Dairyland Laboratories, Inc.

Arcadia, WI • St Cloud, MN • Stratford, WI • Lansing, MI

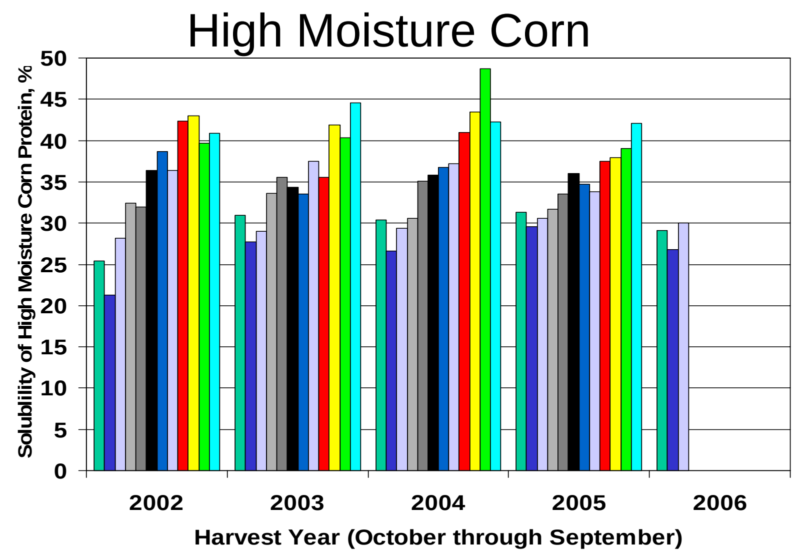
If a cow was receiving 10 lbs DM from this HMC, her rumen would see 6.8 lbs of starch in the Fall, increasing to 8.5 lbs by Spring

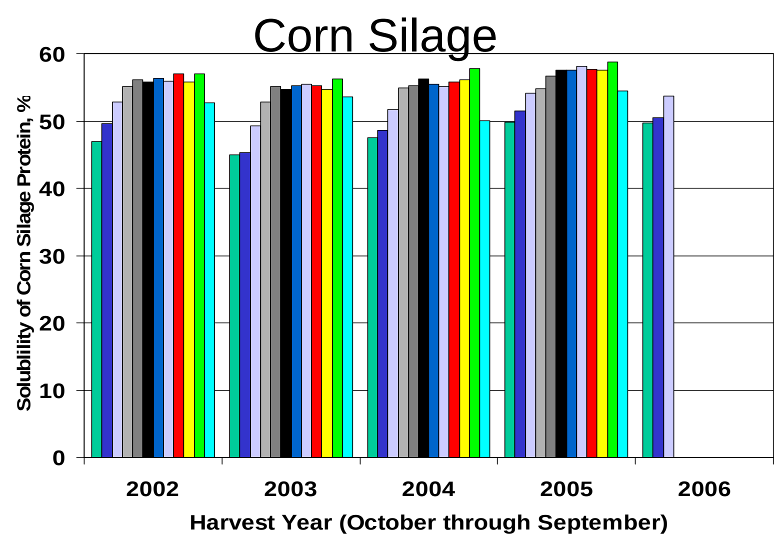
Sample ID	%Dry Matter	%Starch	%STRD 12 hrs (Ruminal Starch Digestibility)
spring HMSC	72.73	68.02	85.50
fall HMSC	72.97	68.29	68.10

Feeding Value

Mining Lab Data to See How STRd Changes over Time in Storage

- Assuming that rate of starch digestion is proportional to solubility of protein in the grain (e.g. as zein is solubilized in the fermented crop by ethanol and lactic acid, starch granules become increasingly more available for ruminal digestion), changes in acidosis stress over time might be expected, particularly when diets contain both high moisture corn and corn silage.
- Mean solubility of protein within corn grain and corn silage samples from DairyOne were graphed to see if they changed with the assay month after harvest (assumed to be September).
- The continued increases in protein solubility for samples assayed later in the year were obvious with high moisture corn.
  - Within high moisture corn, higher moisture levels also will increase protein solubility.
  - Consequently, it was surprising that time effects were sufficient to override that effect.
- With corn silage, protein solubility seems to hit a plateau after 5 or 6 months. This may be due to the higher moisture content of the grain within the corn silage, less maturity, or other factors.





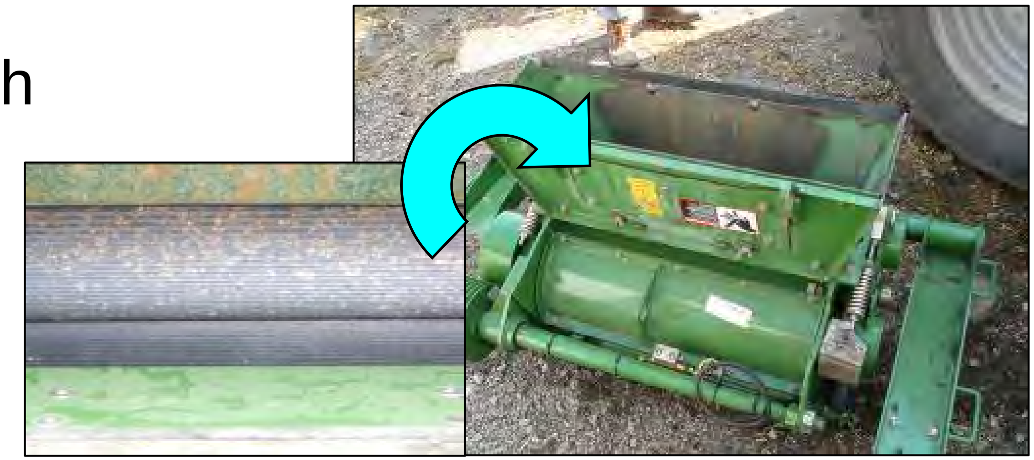
Source: Dr. Fred Owens, Pioneer Senior Research Scientist

Why Process Grains?

- The primary reasons to process grains is to improve the starch availability **by increasing surface area or disrupting starch granule:protein matrix.**

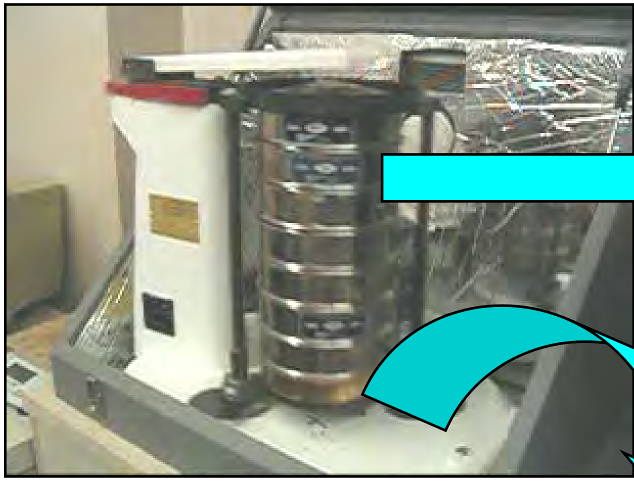
- Processing generally improves the feeding value of grains from 5-15%.

- If harvesting **snaplage**, talk with your chopper manufacturer
  - generally fine rolls are recommended (5-7 teeth/inch) and rolls may need adjusting to a higher differential (e.g. 40%) than when chopping corn silage.
  - Set chop length as short as possible as still have the product feed



Pioneer method to quantify snaplage kernel particle size – without bias from husks and shank.

	A	B	C	D	E	F	G	H	I	J
1						Rotap	Rotap	Rotap	KSU Kernel Particle Size	
2	Sample ID	Lab Sample #	ADF	NDF	Starch	Coarse Sieves	Medium Sieves	Fine Sieves	(excluding coarse material)	Standard Deviation
3	Face #1	7349	9.6	18.4	55.0	19.7	50.3	30.3	1506	2.78
4	Face #2	7350	7.3	15.3	57.4	22.9	50.6	26.5	1571	2.85
5	Composite Right	7351	9.5	18.2	55.7	24.0	50.3	25.7	1637	2.62
6	Composite Left	7352	7.4	14.1	59.4	26.1	54.0	20.0	1893	2.68
7	Composite Center	7353	10.0	18.6	56.1	21.6	50.7	27.8	1591	2.76
8	**Average**		**8.76**	**16.9**	**56.72**	**22.86**	**51.18**	**26.06**	**1640**	**74**



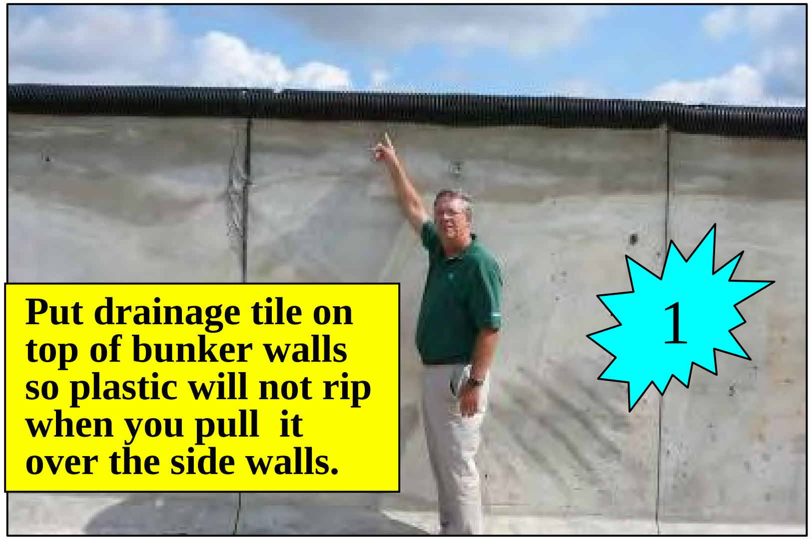
2 – Removed the top 4 sieves of material because it was mostly non-grain material

1 - ran snaplage through Corn Silage RoTap Sieves

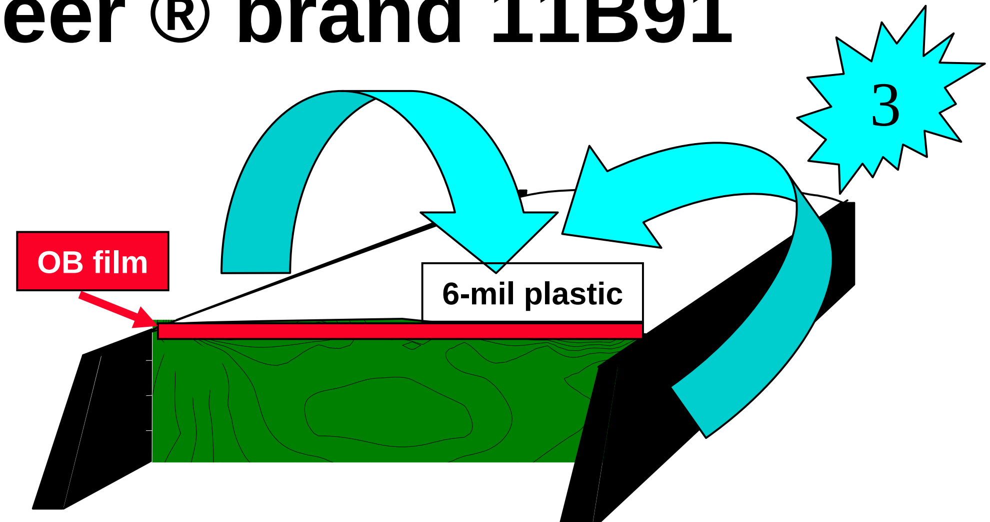
3 – Put the material on the remaining sieves thru the normal K-State grain sieves to better quantify the kernel particle size without interference from non-grain material (cob, husk)

It is important to understand the <u>kernel</u> particle size in snaplage especially if transitioning from very-well processed HMSC

Making a “*Snaplage Bag out of a Bunker*” and also treat with Pioneer ® brand 11B91

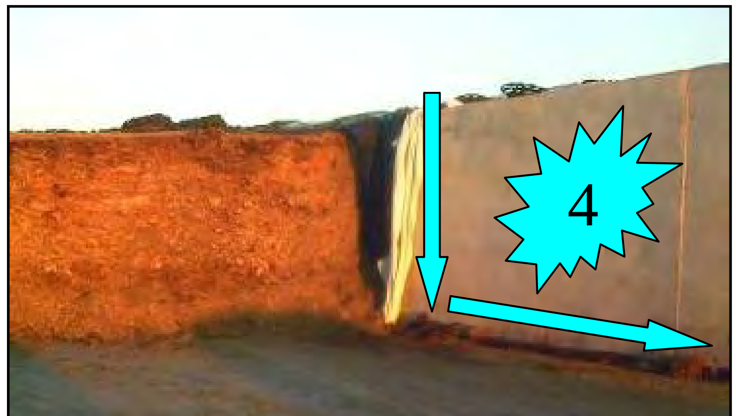


Put drainage tile on top of bunker walls so plastic will not rip when you pull it over the side walls.



Pull plastic over walls and cover silage…lapping the sheets. OB Film can be used on the top under the plastic for added protection

Secure plastic with some feed and drape it over the wall. Lay down 4-6” drainage tile behind plastic. Don’t worry if you rip it a little when packing…it will still serve its purpose.



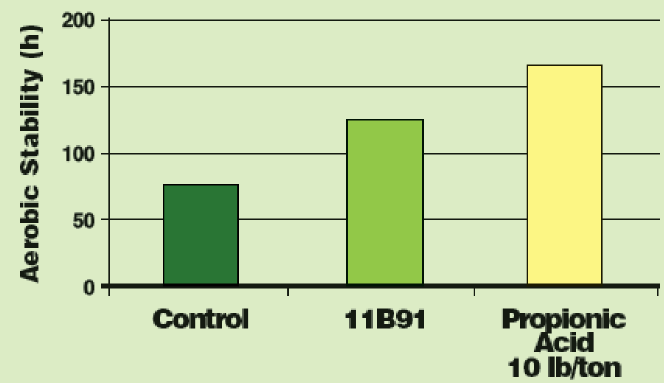
Rain/melted snow runs down between wall and plastic and exits via drainage tile providing enhanced preservation for silage against the wall

PIONEER® Brand

11B91

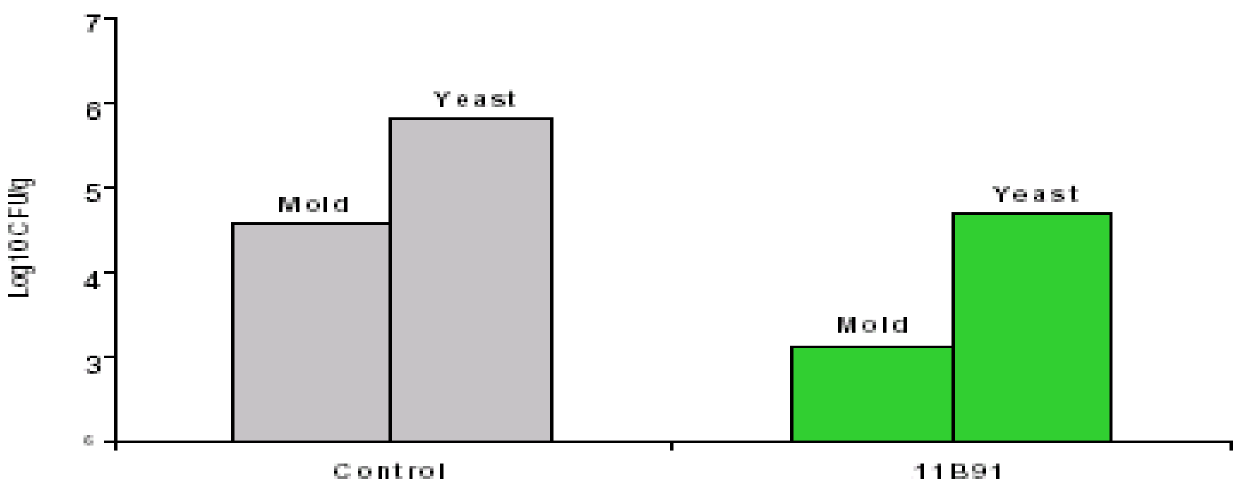
HIGH-MOISTURE CORN INOCULANT

Improve Bunklife



Aerobic stability of high-moisture corn treated with Pioneer® brand 11B91. HMC was ensiled for 50-80 days and aerobic stability determined as the number of hours HMC remains cool when exposed to air under the specifications of the Honig model. Data is an average from 15 locations.

Reduce Yeast and Mold Counts



PIONEER® Brand

11B91

HIGH-MOISTURE
CORN INOCULANT

Improve Animal Performance

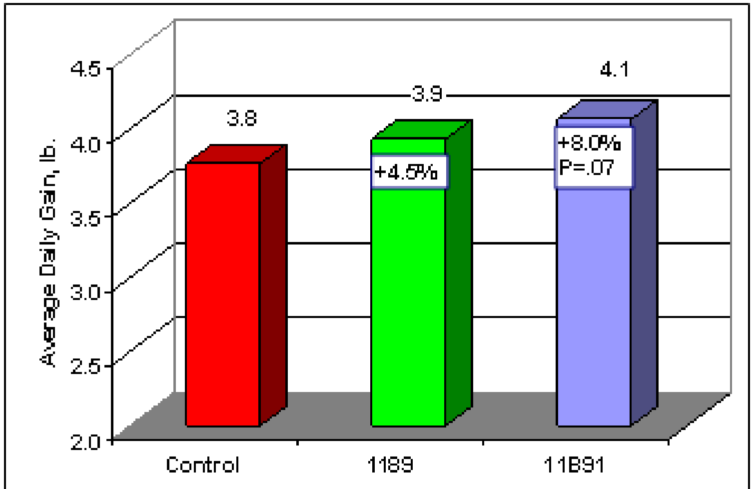


Figure 1: Average Daily Gains for the 91-Day Finishing Trial

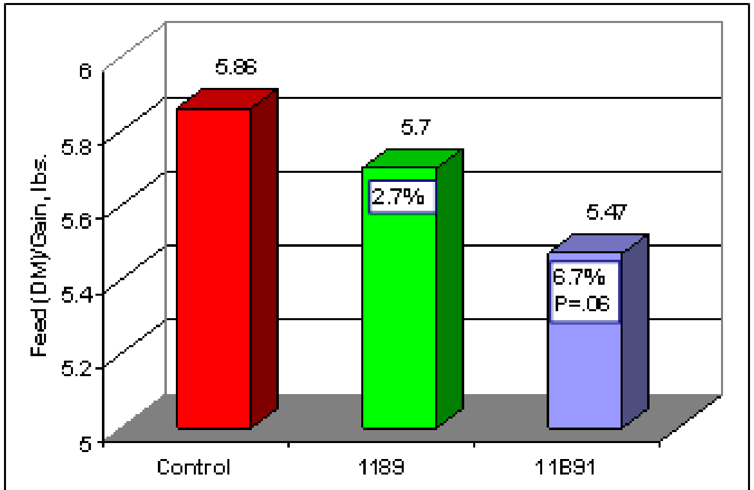


Figure 2: Feeding Efficiency (lbs feed dry matter/gain) for the 91-Day Finishing Trial

Pioneer, A DuPont Company

Pricing Snaplage and HMEC

- Pricing of snaplage has not been well addressed because traditionally, most producers using HMEC grow their own feed.
- There are three main factors that influences the value:
  - price of corn grain
  - moisture content
  - composition of the feed (% cobs, trash, starch)

Estimated Price to Pay for HMEC Based on Corn Grain Price		
(Input all variables in yellow cells. Hold cursor over cells with red triangle for notes)		
Wet Yield, ton per acre		7.50
HMEC Dry Matter Content, %		60.00%
HMEC DM Yield, ton per acre		4.50
HMEC Starch Analysis, % DM basis		56.00%
Estimated bu of corn per acre, 15.5% moisture basis		152.2
Estimated % Grain in the HMEC		80.00%
Est. % Non-grain material in the HMEC		20.00%
Corn Price, $/bu, @15.5% moisture	$	4.50
Value of grain in HMEC, $/ton	$	91.29
Value of non-grain material (% of grain value)		50%
Value of non-grain material	$	11.41
Total Value of Ton of Wet HMEC (as fed, unshrunk basis)	$	102.70
Total Value of Ton of DM HMEC (DM, unshrunk basis)	$	171.17
Storage shrink adjustment, % (optional, leave at 0 if not applicable)		0.0%
Shrink Adjusted Price, $/Wet Ton	$	102.70
Shrink Adjusted Price, $/DM Ton	$	171.17
Shrink Adjusted HMEC Value, $/acre, as fed basis	$	770.29

Contact your Pioneer Sales Professional for a copy of a spreadsheet Pioneer developed to help our customers price snaplage/HMEC