



SHREDLAGE/CLAAS

Launch Exciting New Alliance

Roger Olson
Technical Director

History of Silage in USA

- Previous to processors chopped 3/8 inch (9,5 mm) to 1/2 inch (12,7 mm) do to cobs
- 90's added processors went to 19-21 mm
- Wanted to go longer but not able.
- 2010 SHREDLAGE®

What is SHREDLAGE®?

In addition to superior kernel processing, SHREDLAGE® brand silage is longer cut corn measuring 26 mm – 30 mm TLC (Theoretical Length of Cut) with the stalk ripped length wise into planks and strings allowing for improved effective fiber, better packing and a greater exposure to the inner cells of the plant for increased microbial activity.







Benefits of SHREDLAGE®

Superior Processing

SHREDLAGE® Consistently > 70 points

Conventional Average < 60 points

- ✓ Advantage with Short Fermentation

Increased peFiber

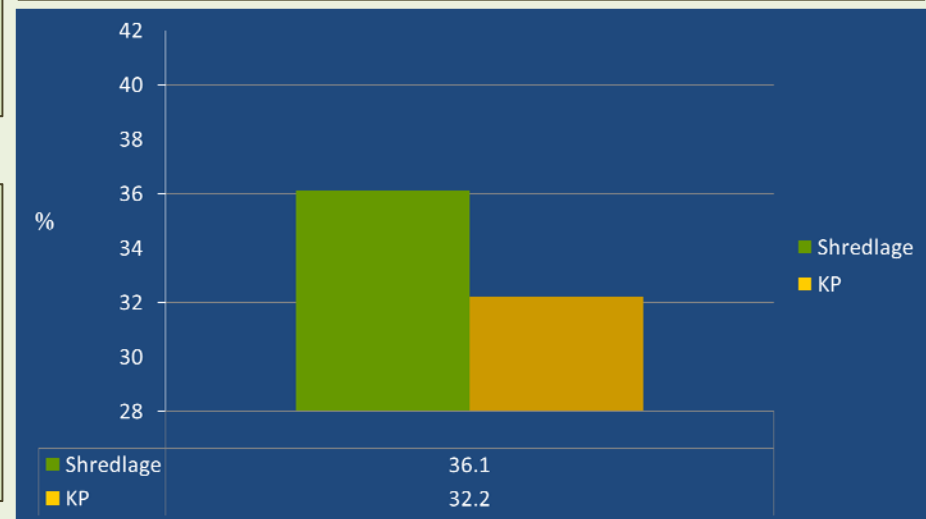
SHREDLAGE® = 25+, 40+, >20

Conventional = 5+, 55+, >20

- ✓ Increased Rumen Health
- ✓ Increase SHREDLAGE®, Lower Feed Cost

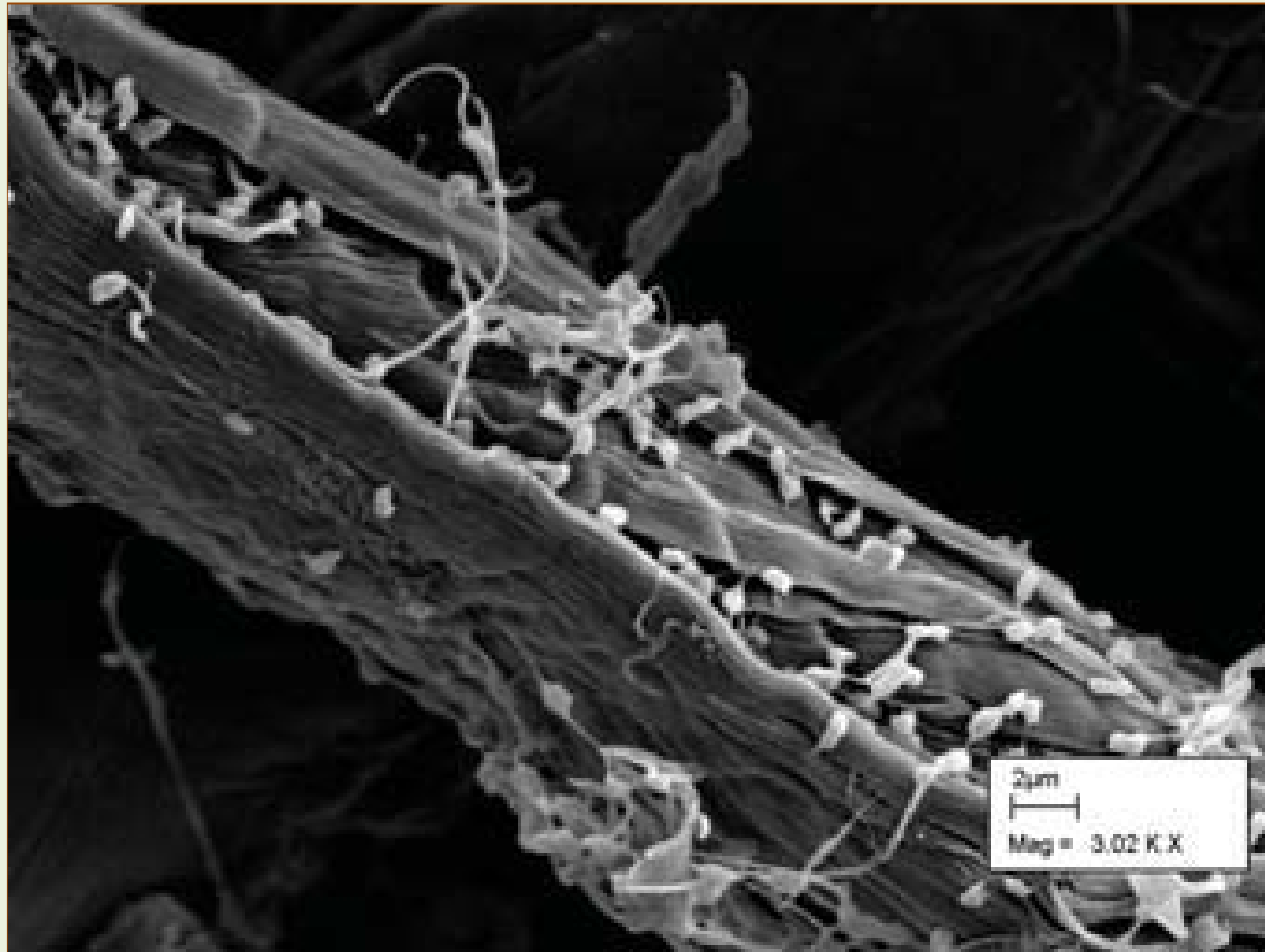
Increased Fiber Digestibility

- ✓ Increased Nutrients from SHREDLAGE®



Dairy Science Department, UW Madison

Microbial Attachment Surface Area



Bacteria attacking a strand of fiber that was taken from a cow's rumen.

Kernel Processing Score

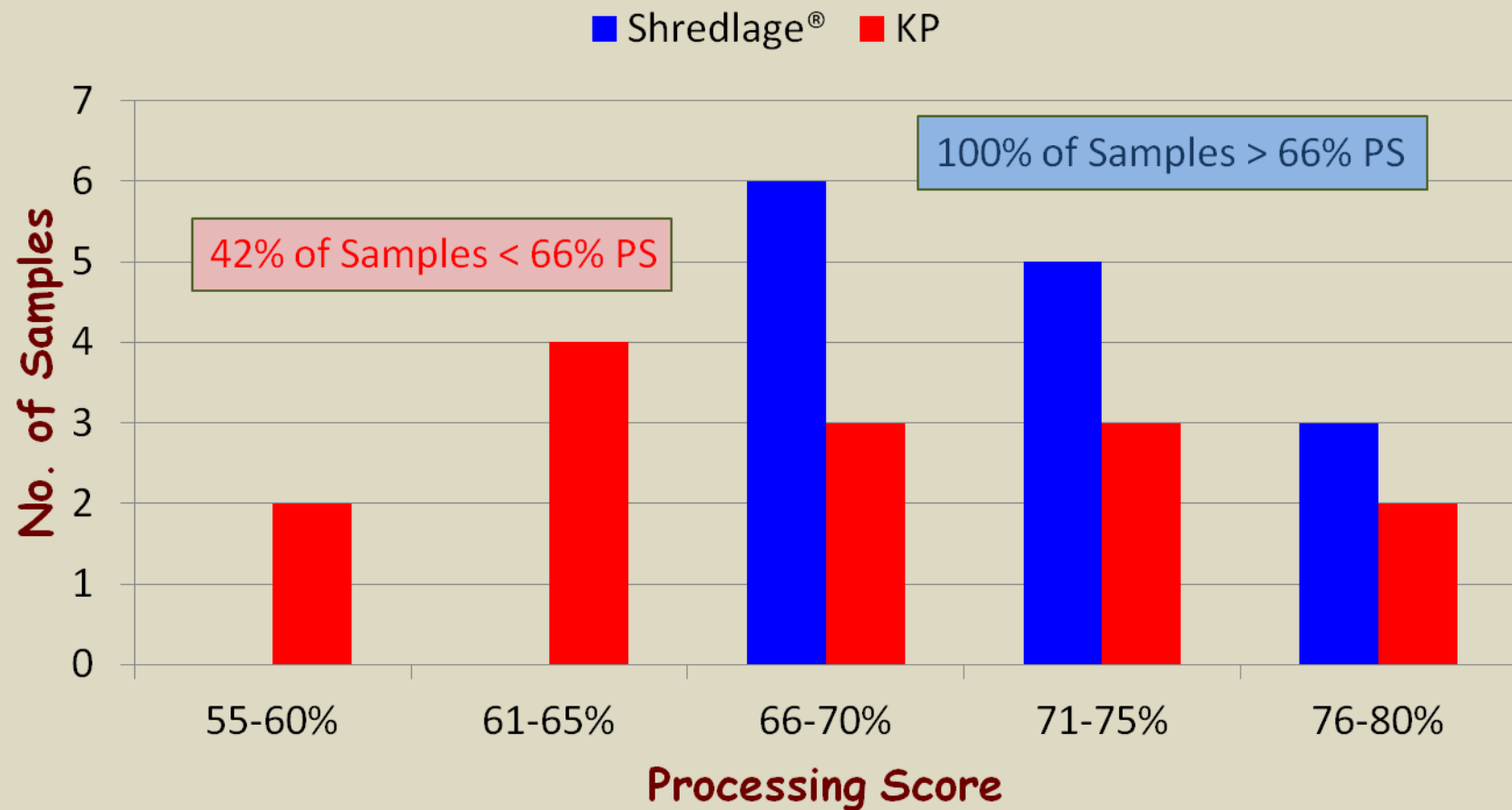
Samples obtained weekly during feed-out from the silo bags

	SHREDLAGE®	KP
n	14	14
% Starch Passing 4.75 mm Sieve	72.4% ± 3.6 Min = 68% Max = 79%	67.6% ± 6.5 Min = 57% Max = 78%



Kernel Processing Score

Samples obtained weekly during feed-out from the silo bags



Industry Makes Advances in Corn Silage Processing

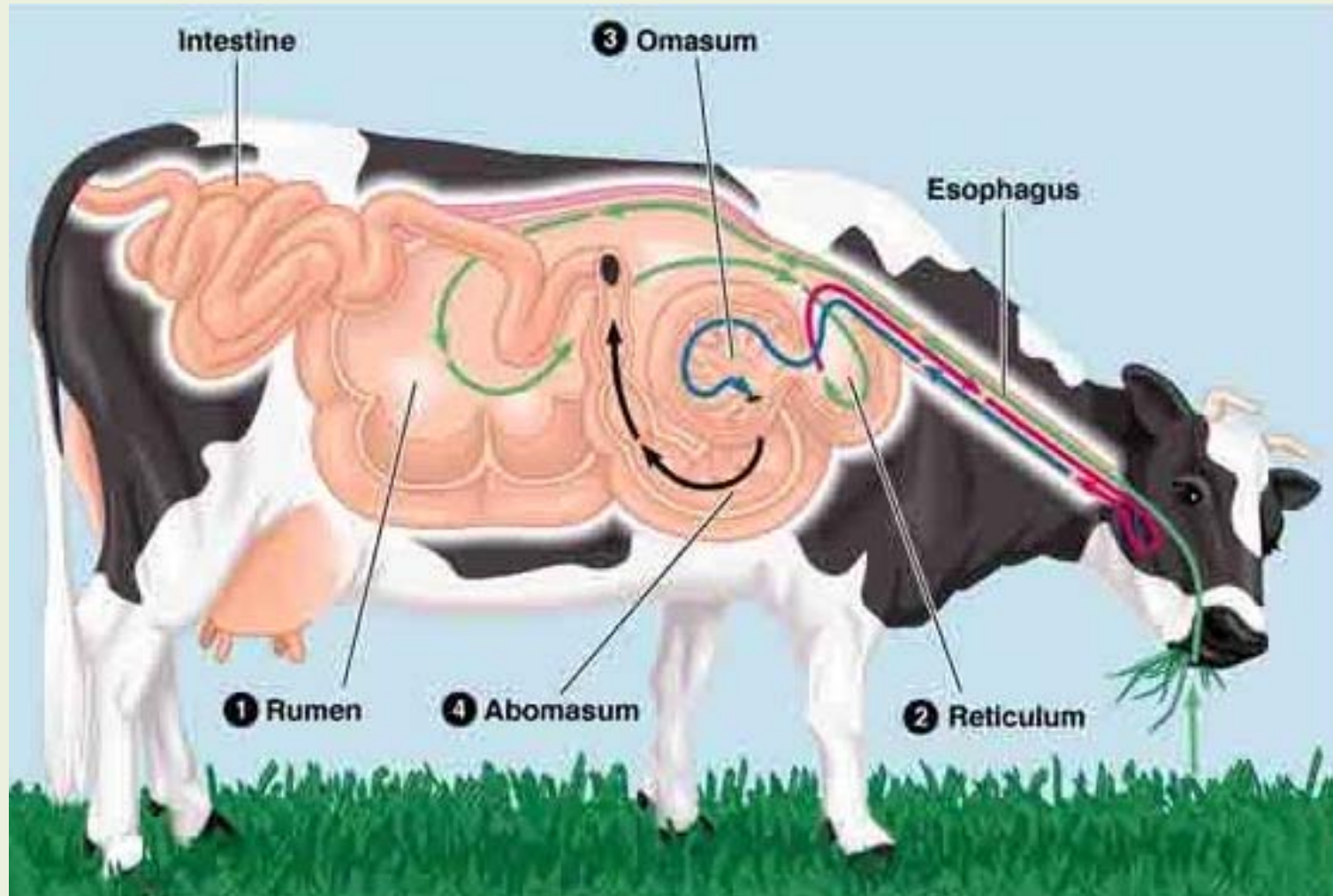
(CVAS Data, 2006 to 2013)

Crop Year	Number	Average	Percent Optimum	Percent Poor
2006	97	52.8	8.2	43.3
2007	272	52.3	9.2	37.9
2008	250	54.6	5.2	34.8
2009	244	51.1	6.1	48.0
2010	373	51.4	5.9	43.4
2011	726	55.5	12.3	33.1
2012	871	60.8	14.8	19.9
2013	2658	64.6	36.0	12.9

Dairy Cows Are Crepuscular

- They eat at dawn and dusk
- Find a quite out of the way place to go ruminate and avoid the lion (Herd Animal of pray)
- They can turn forage into valuable nutrients (we can not do)
- Rumen bacteria actually do degrading
- Can take low quality protein and increase the value

Feed Efficiency



4 Stomach's

- 1. Rumen= (fermentation vat with bacteria)
- 2. Reticulum= works with rumen
- 3. Omasum= absorbs nutrients
- 4. Abomasum= true stomach like a human or pig.

Rumen

- Washing machine fermentation vat
- Has a chemical fiber requirement
- Has a Physically effective fiber requirement (i.e.: longer SHREDLAGE)
- Rumen bacteria like PH's in the 6's (to much grain not enough fiber cause low PH)

Shaker Box Results

Penn State 3 Screen Shaker Box

SHREDLAGE (26 mm) 25-55-18-2

- Conventional KP(19 mm) 8-60-30-2

Why SHREDLAGE® ?

***It's All About The Cow®
and the rumen!!!!***

- Increase physically affective fiber while increasing fiber digestibility.
- Eliminate straw, alfalfa hay etc.(Add more digestible SHREDLAGE®)
- Increase corn silage (usually low cost ingredient)

Process Comparison

Kernel Processor



SHREDLAGE® Brand Processor



Photos taken of silage bags from the University of Wisconsin study

University of Wisconsin

Land Grant University Est. 1862



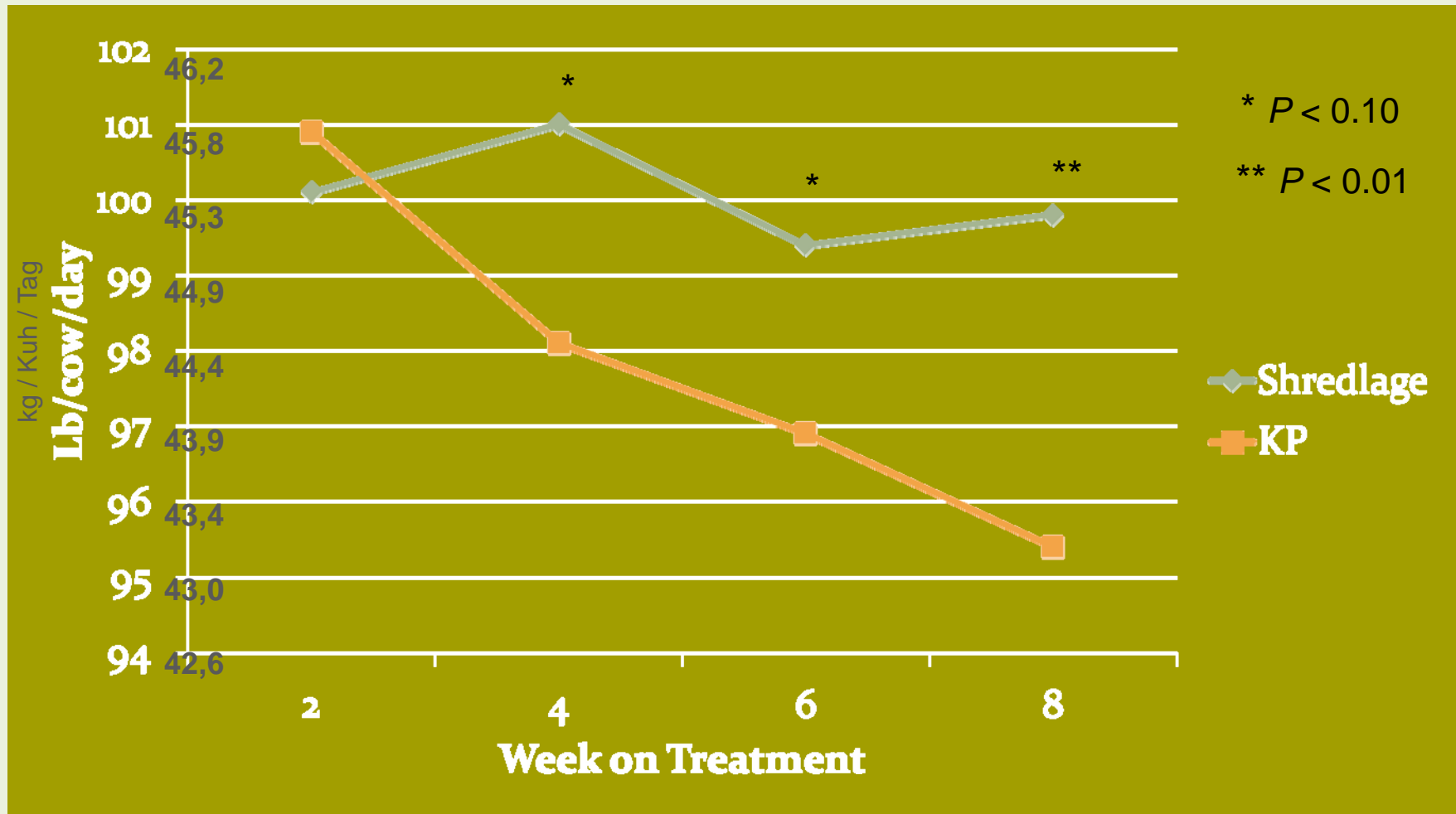
Dr. Randy Shaver

- Has been a researcher Extension Presenter for 27 years plus
- Co-authored 104 peer-reviewed journal Pub.
- 182 Scientific abstracts
- 108 popular press articles
- 260 newsletter articles
- Presented 630 invited papers at Industry Conf.

Trial #1 Professional Animal Scientist 28 (2012) 639-647

- 2012
- Dr. Randy Shaver and L.F. Ferraretto

3.5% FCM Yield by Week



Week \times Treatment Interaction ($P < 0.03$)

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TMR Sorting – PSU Shaker Box

% of Predicted Intake

Screen, mm	SHREDLAGE®	KP	<i>P</i> <
19	99.3	99.5	0.72
8	99.7	99.8	0.66
1.18	100.1	99.7	0.09
Pan	102.1	101.7	0.54

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UW Trial 1 Summary & Conclusions

- **> % on top (coarsest) screen of PSU box for SHREDLAGE (30 mm TLOC) & SHREDLAGE TMR**
 - There was no sorting of either TMR
- **DMI tended to be greater for SHREDLAGE**
- **FCM & ECM tended to be 2 lb. greater for SHREDLAGE**
- **> Kernel processing score and > Ruminal & Total tract Starch digestibility for SHREDLAGE**
- **> Total tract NDF digestibility for SHREDLAGE TMR**
 - Ruminal NDFD response to SHREDLAGE varied by in situ methods
- **Similar packing densities in bags and bunker**

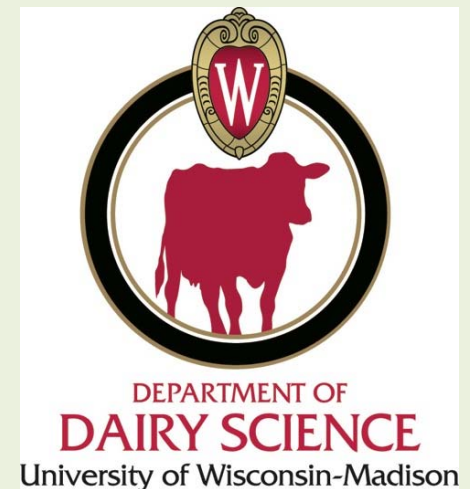
Ferraretto & Shaver, PAS, 2012

TLOC: Theoretical Length of Cut
TMR: Total Mixed Ration
FCM: Fat-Corrected Milk
ECM: Energy-Corrected Milk
DMI: Dry Matter Intake
NDF: Neutral Detergent Fiber

Update on corn shredlage

Lauryn Vanderwerff, Gustavo Salvati,
Luiz Ferraretto & Randy Shaver

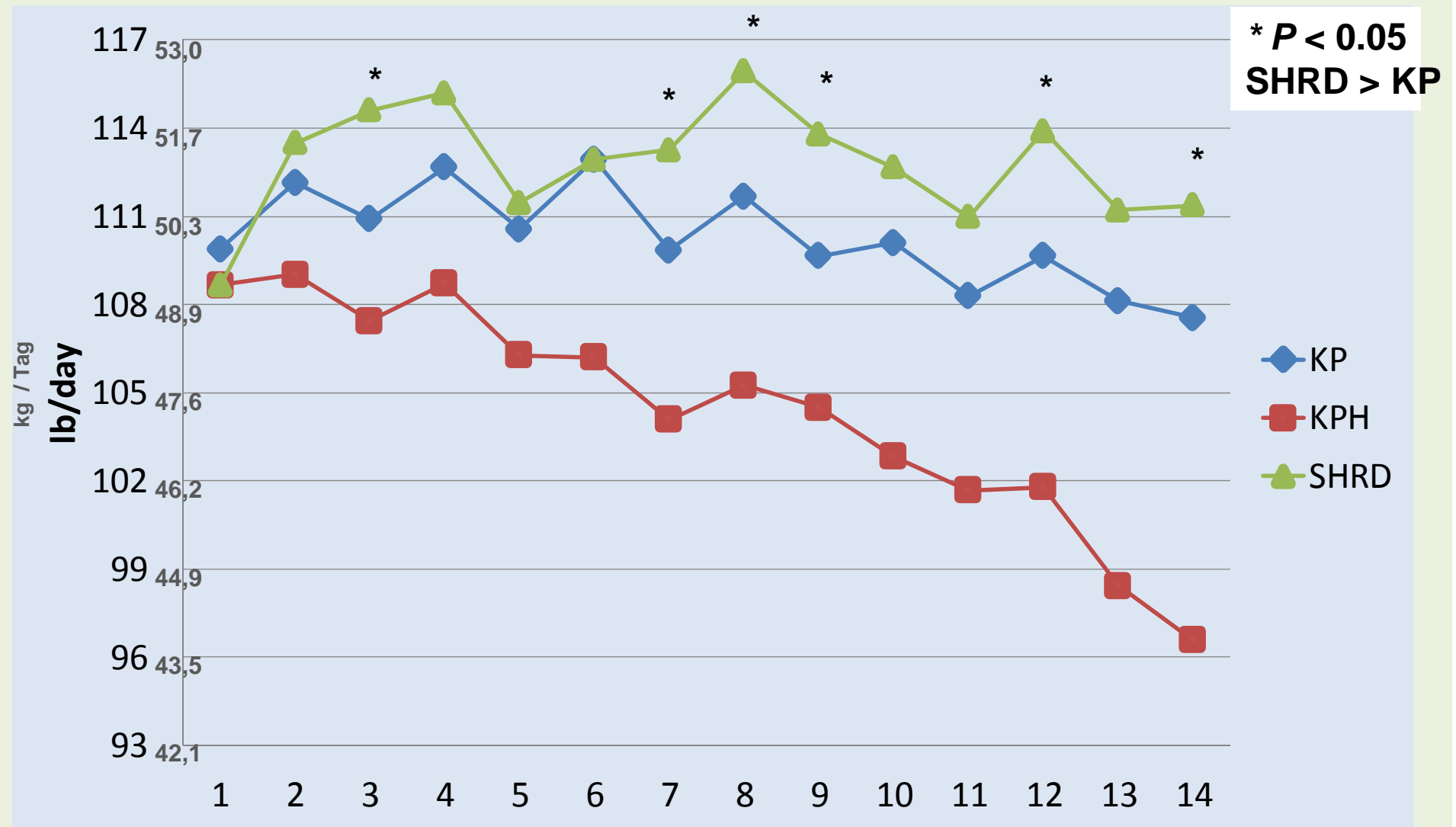
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Univ. of Wisconsin - Madison



SHREDLAGE® and BMR

➤ University of Wisconsin Study Sponsored by Mycogen Seed

Milk Yield by Week on Treatment



Week × Treatment Interaction ($P < 0.0001$)

SHRD: SHREDLAGE

KP: Kernel Processing, conventional-processed corn silage

KPH: KPH: KP plus chopped alfalfa hay

Dry Matter Intake & Milk Yield

	KP	KPH	SHRD	<i>P</i> <
DMI, lb/d (kg/Tag)	58.8 (26,67)	58.7 (26,62)	59.5 (26,9)	0.72
Milk, lb/d (kg/Tag)	110.3 (50)	104.4 (47,3)	112.8 (51,1)	0.001
Milk/DMI	1.88	1.78	1.89	0.01

- Cows milked 2x
- All cows injected with BST every 14 d starting on d 1 of trial

DMI: Dry Matter Intake

SHRD: SHREDLAGE

KPH: KP plus chopped alfalfa hay

BST: Bovine Somatotropin

May 2014 Economic Calculations

<u>\$/cow/day</u>	KP	KPH	SHRD
Feed Cost	\$7.63 (6,80 €)	\$7.55 (6,70 €)	\$7.79 (6,90 €)
IOFC	\$17.92 (15,90 €)	\$17.53 (15,60 €)	\$18.14 (16,14 €)

- Based on observed treatment DMI, milk & component yields, & TMR ingredient composition.
- Assumed Midwest feed ingredient & milk component prices.
- Included \$2 (1,78 €) per as fed ton charge for SHREDLAGE harvest over price of conventional-processed corn silage.

What did we learn about SHREDLAGE®?

***Dr. Sally Fliss (Dairy One) New York Just completed
(unpublished)***

Acknowledgements

Thank you to the Allenwaite Farm and Staff, Sue Greth and Russ Seville from Cargill Animal Nutrition, the Dairy One Forage Lab Staff, Dairy One DHIA technicians, and Heather Dann, Ph.D. of the William H. Miner Agricultural Research Institute.

References

Ferraretto, L.F. and R.D. Shaver, 2012. Effect of corn shredlage on lactation performance and total tract starch digestibility by dairy cows. The Professional Animal Scientist 28:639-647.

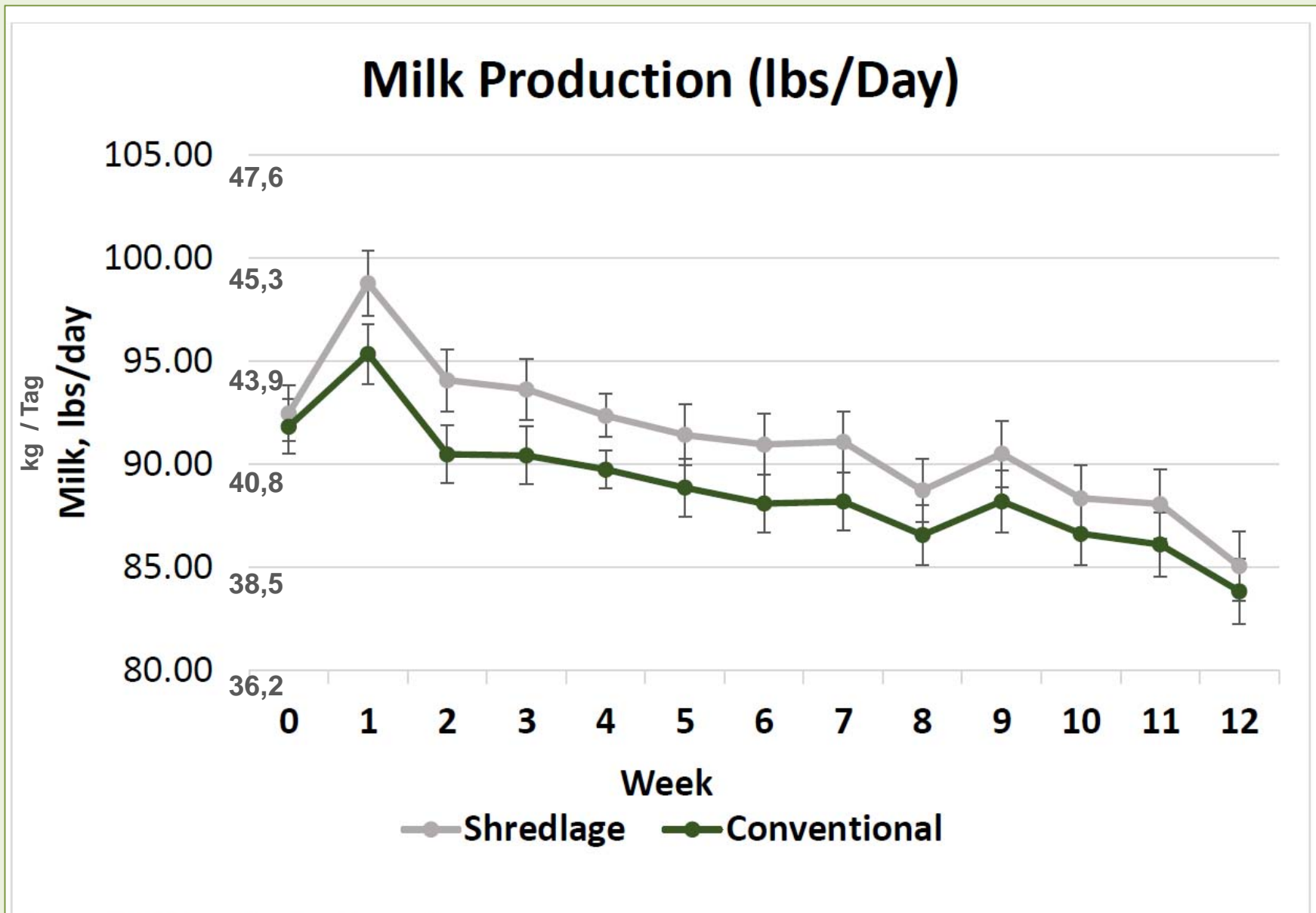


Figure 1. Milk production by week.

Components Very Similar.

Table 5. Average milk quality measures

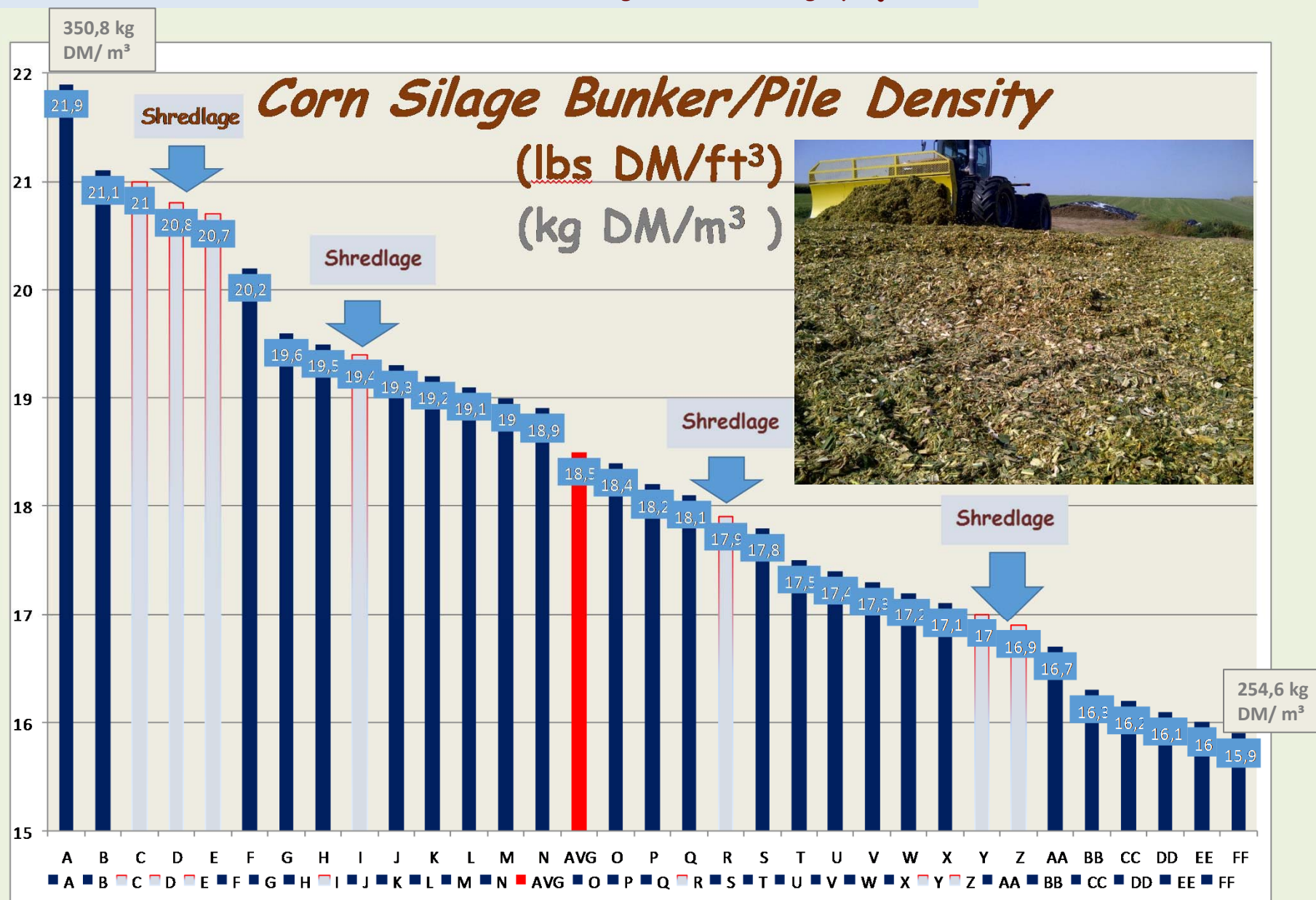
Treatment	Week 6				Week 12			
	Fat %	Protein %	SCC x1000	MUN	Fat %	Protein %	SCC x1000	MUN
S Pen	3.68 ±	3.09 ±	75.2 ±	12.9 ±	3.68 ±	3.01 ±	76.1 ±	13.0 ±
	0.67	0.33	127.8	1.99	0.83	0.46	277.9	2.34
C Pen	3.73 ±	3.10 ±	88.8 ±	13.2 ±	3.71 ±	3.06 ±	53.6 ±	12.9 ±
	0.67	0.33	277.3	2.08	0.72	0.39	87.2	2.09

SCC : Somatic Cell Count
pounds of dry forage per cubic foot

How Does It Pack?



Data from the Chr. Hansen Cattle Team & GPS Consulting 2013 corn silage project



Adapted from source slide provided by Roger Olson, 2014

lbs. DM/ft³ : pounds dry matter per cubic foot

Harvesting SHREDLAGE®

Guidelines For Making Proper SHREDLAGE®

SHREDLAGE® Targets

The goals for making SHREDLAGE® are:

- Moisture between 66% and 68%
- Starch Development at ½ Milk Line
- Particle Length between 26 mm and 30 mm TLC
- Fermented Kernel Score >70

What Should Shredlage® Brand Silage Look Like?

- * Harvest recommendation of 66 - 68% moisture
 - * No whole kernels, many pieces 1/8 - 1/4 of the kernel
- Refer to Shredlage®
Harvest Recommendations on
reverse side of card

Desired Cuts

Photos are not to scale



Undesired Cuts



Adjust roll gap closer



For more information go to:
www.shredlage.com

 Made in USA

SHREDLAGE® GUIDE



95% of Forage “Fits”

Guide for SHREDLAGE®

<u>Moisture</u>	<u>TLC</u>	<u>Roll Gap</u>
70%	26	1.75
69%	26	1.75
68%	26	1.75
67%	26	1.75
66%	26	1.75
65%	26	1.50
64%	23	1.50
63%	23	1.50
62%	21	1.25
61%	21	1.25
60%	21	1.25

MCC SHREDLAGE® Corncracker



Thank You



www.shredlage.com