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Dairy Field Studies

One-Year Matrix Performance Review-Aukeman Dairy

- Aukeman Dairy, Shafter, CA - 2017/2018
- Matrix was fed to 2,800 lactating Holsteins at 1oz/hd/d for 1 year
- Ration consisted of corn silage, alfalfa hay, wheat straw, WCS, canola meal, CG feed, rolled corn, distillers dried grains, wheat millrun, almond hulls, wet brewers grains, wet citrus pulp, vit/min pack, Rumensin, and Matrix
- Weather was typical for the Bakersfield, CA area throughout the trial
- At a cost of 15 cents per head daily and a milk price of \$14.5 per cwt, addition of Matrix resulted in a **ROI of 4.2 to 1 based on increased 150 d FCM yield alone**

After 1 year on Matrix, the results were as follows:

PARAMETER	DAY 0 (no Matrix)	DAY 365 (w Matrix)	Year Avg (w Matrix)
Herd FCM, lbs	73.3	76.3	76.0
Days in milk, DIM	160	174	166
Stnd 150d FCM, lbs	75.0	81.2	79.3
Milkfat, lbs	2.81	2.79	2.78
Protein, lbs	2.53	2.32	2.44
Peak milk cows, lbs	91.0	97.0	98.5
Peak milk 1 st calf, lbs	74.0	73.0	76.0
SCC, 1000	110	186	156

One-Year Matrix 10X Performance Review – Osterkamp Dairy

- Osterkamp Dairy, Hereford, Texas; August 2017 – August 2018
- Matrix 10X was fed to 3,800 Holstein cows at 3g/hd/d and replaced both Diamond-V® XP Yeast and Nova-Cell®
- Ration consisted of corn silage, wheat silage, WCS, canola meal, CG feed, GR corn, SF corn, minerals, Megalac, buffer, Rumensin, One Trak and Matrix 10X
- At an average daily cost of 15 cents per head and a milk price of \$15 per cwt, addition of Matrix 10X resulted in a **ROI of a 9:1 based on increased milk yield alone**
- When taking into account the replacement of the other additives with Matrix 10X, the resulting **ROI is over 27:1**

After 1 Year on Matrix, the results were as follows:

PARAMETER	AUG '17	AUG '18	NET CHANGE	% CHANGE
<i>Herd FCM, lbs</i>	79.0	88.1	+9.1	+11.5
<i>Stnd 150d FCM, lbs</i>	81.4	93.1	+11.7	+14.4
<i>% Milkfat</i>	3.28	3.37	+0.09	+2.7
<i>% Protein</i>	2.97	3.19	+0.22	+7.4
<i>Peak Milk Cows, lbs</i>	108.0	115.0	+7.0	+6.5
<i>Peak Milk 1st Calf, lbs</i>	84.0	94.0	+10.0	+11.9
<i>SCC, 1000</i>	216	159	-57	-27.4
<i>Daily DMI, lbs</i>	53	55	+2	+3.8
<i>Gross Effic, lbs FCM/lbs DMI</i>	1.49	1.6	+0.11	+7.4

Matrix 150 Day Dairy Study

- Aukeman Dairy, Shafter, CA - 2017/2018
- Matrix was fed to 2,800 lactating Holsteins at 1oz/hd/d for 150 days
- Ration consisted of corn silage, alfalfa hay, wheat straw, WCS, canola meal, CG feed, rolled corn, distillers dried grains, wheat millrun, almond hulls, wet brewers grains, wet citrus pulp, vit/min pack, Rumensin, and Matrix
- Weather was typical for the Bakersfield, CA area throughout the trial
- At a cost of 15 cents per head daily and a milk price of \$14.5 per cwt, addition of Matrix resulted in a **ROI of 5.5 to 1 based on increased yield alone**

After 150 days on Matrix, the results were as follows:

PARAMETER	DAY 0	DAY 150	NET CHANGE	% CHANGE
<i>Herd FCM, lbs</i>	73.3	79.0	+5.7	+7.8
<i>Days in milk, DIM</i>	160	185	+25	+15.6
<i>Stnd 150d FCM, lbs</i>	75.0	86.5	+11.5	+15.3
<i>Milkfat, lbs</i>	2.81	2.88	+0.07	+2.5
<i>Protein, lbs</i>	2.53	2.60	+0.07	+2.8
<i>Peak milk cows, lbs</i>	91.0	101.0	+10.0	+11.0
<i>Peak milk 1st calf, lbs</i>	74.0	77.0	+3.0	+4.1
<i>SCC, 1000</i>	110	83	-27	-24.5

Matrix 10X 120 Day Dairy Study

- Osterkamp Dairy, Hereford, Texas – Summer 2017
- Matrix 10X was fed to 2,800 Holstein cows at 3g/hd/d and replaced both Diamond-V® XP Yeast and Nova-Cell®
- Ration consisted of corn silage, wheat silage, WCS, canola meal, CG feed, GR corn, SF corn, minerals, Megalac, buffer, Rumensin, One Trak and Matrix 10X
- At an average daily cost of 15 cents per head and a milk price of \$15 per cwt, addition of Matrix 10X resulted in a **ROI of a 4:1 based on increased milk yield alone**
- When taking into account the replacement of the other additives with Matrix 10X, the resulting **ROI is over 8:1**
- Additional economic value was also derived from a downward trend in the incidence of abortions

After 120 Days on Matrix, the results were as follows:

PARAMETER	DAY 0	DAY 120	NET CHANGE	% CHANGE
<i>Herd FCM, lbs</i>	79.0	83.0	+4.0	+5.1
<i>Stnd 150d FCM, lbs</i>	81.4	85.6	+4.2	+5.2
<i>% Milkfat</i>	3.28	3.61	+0.33	+10.0
<i>% Protein</i>	2.97	3.19	+0.22	+7.4
<i>FCM 1st test cows, lbs</i>	94.0	100.0	+6.0	+6.4
<i>FCM 1st test 1st calf, lbs</i>	70.0	82.0	+12.0	+17.1
<i>SCC, 1000</i>	216	205	-11	-5.1
<i>Daily DMI, lbs</i>	53	55	+2	+3.8
<i>Gross Effic, lbs FCM/lbs DMI</i>	1.49	1.51	+0.02	+1.3

Matrix 30 Day Wisconsin Dairy Study

- 63 head of high producing Holstein cows were fed 30 grams of Matrix for one month (April 13 – May 13)
- The on-farm study was administered and supervised by Mr. Vern Metcalf of Land O'Lakes Purina Feed
- Milk yield was monitored daily via Dairy Comp 305 dairy software
- Based on the cost of Matrix and the value of both milk and milkfat in the U.S. currently, the economic return of Matrix in this study equated to over a 4 to 1 return on investment

After 30 days on Matrix, the results were as follows:

PARAMETER	PRE-MATRIX	POST-MATRIX	NET CHANGE
<i>Milk Yield lbs All Cows</i>	83.6	86.9	+3.3
<i>Peak Milk lbs All Cows</i>	98.7	105.3	+6.6
<i>% Cows >100 lbs Milk</i>	21.7	25.4	+3.7
<i>% Milk Fat All Cows</i>	4.05	4.14	+0.09
<i>% Milk Protein All Cows</i>	3.20	3.18	-.02

Matrix 6 Month Dairy Study

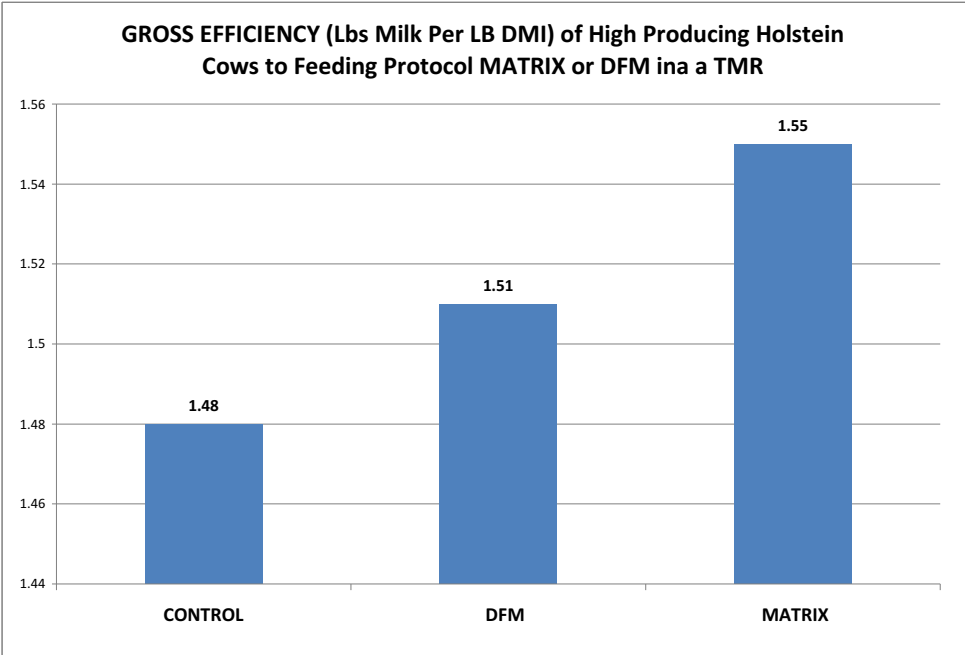
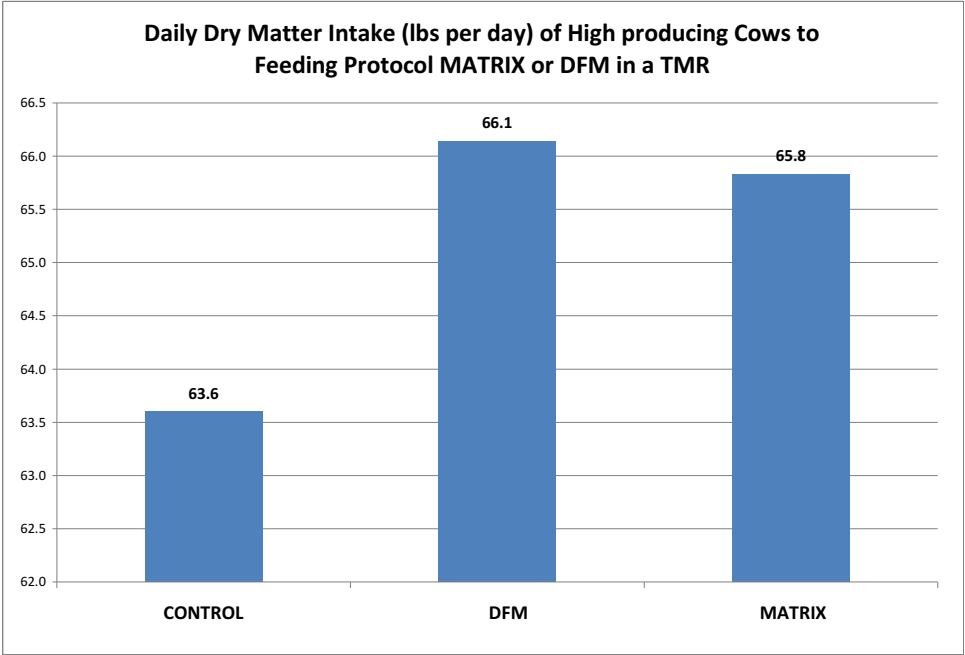
- Creekside Dairy, Escalon, CA
- 500 head of high producing Holstein cows were tested over 6mos
- Cows were housed in adjacent pens in freestall barns with 125 cows per pen
- All cows received the same diet for the duration of the trial
- Treatment groups received an additional 1oz of Matrix blended in a TMR daily
- Data was averaged across 17 weeks with a 60 day pre-test period used as a covariate to adjust for treatment response
- All milk yield data is reported as 150 day standardized milk yield to adjust for DIM

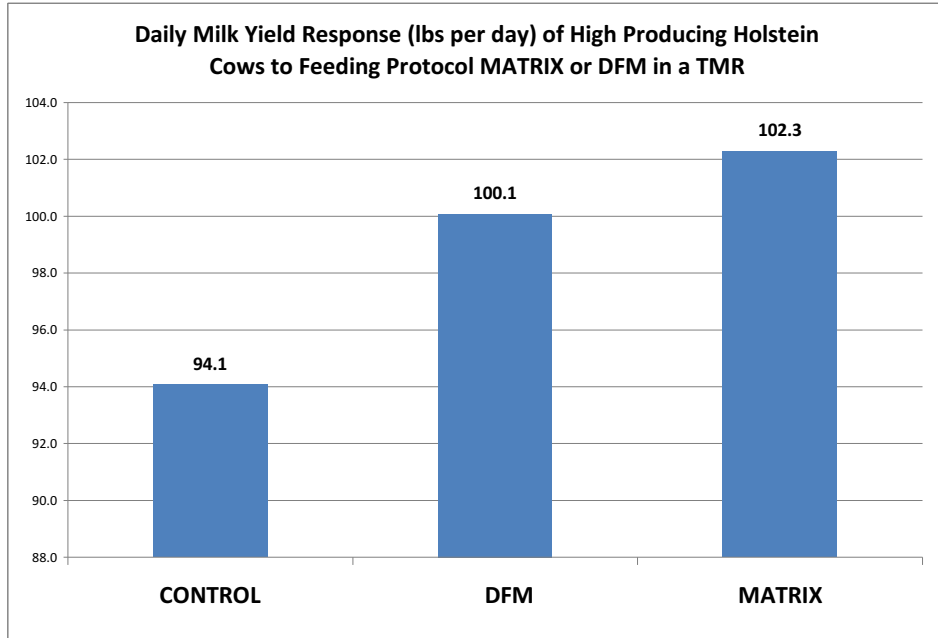
MEASUREMENT	MATRIX	CONTROL	NET CHANGE	% CHANGE
<i>Milk Yield, lbs</i>	102.3 ^a	94.1 ^b	+ 8.2	+8.7
<i>DMI, lbs</i>	65.8 ^c	63.6 ^d	+ 2.2	+3.5
<i>Gross Efficiency (M/DMI)</i>	1.55	1.48	+ .07	+4.7
	20 cents	-		
<i>ROI*</i>			7.9 to 1	

a,b - means with different superscripts are significantly different at P<.03

c,d - means with different superscripts are significantly different at P<.07

*ROI based on \$25 cwt milk and feed cost of 12.5 cents per lb DM





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