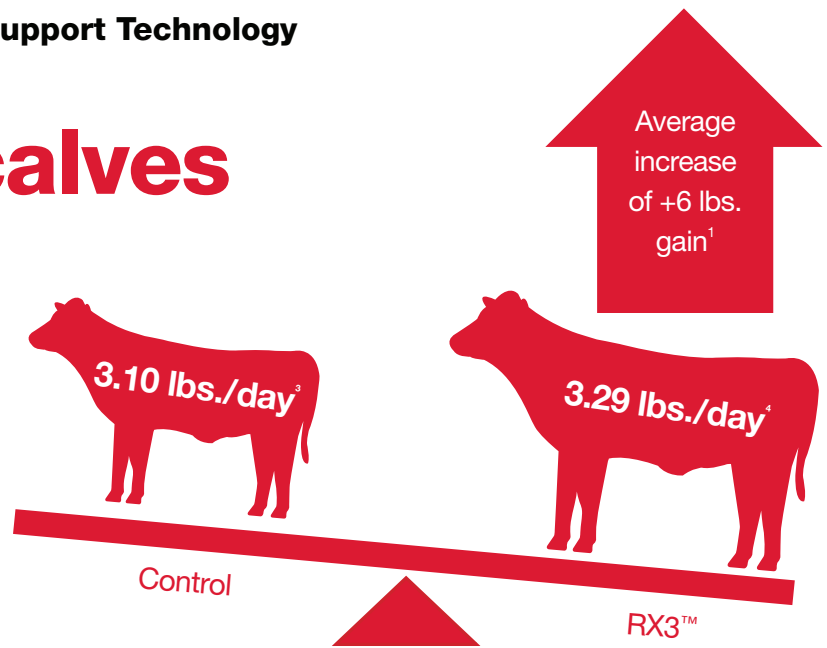


# A tale of two calves

## Performance and health data summary<sup>2</sup>

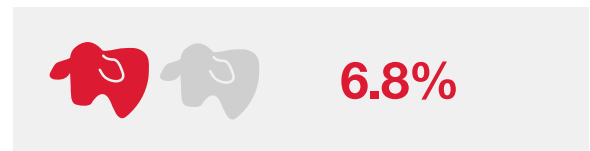
- 28-35 days (30-day avg.)
- 6 performance studies completed over 4+ years
- 1 immune challenge study conducted
- 500+ head of cattle observed
- 2,900+ body weights collected
- 3,100+ blood samples taken



### Control calves<sup>3</sup> (n=245)

### Calves fed starters with RX3™ Immune Support Technology<sup>4</sup> (n=247)

Average morbidity rate



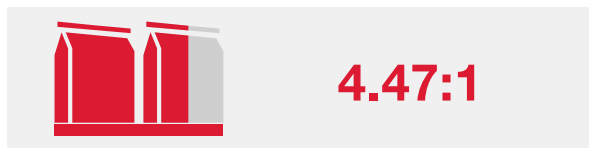
Total # of head that received respiratory treatment



Total respiratory treatment cost<sup>5</sup>



Feed:Gain<sup>6</sup>



Effect of respiratory treatment on average daily gain



<sup>1</sup> Increase over the 30-day receiving period.

<sup>2</sup> Summary of Purina studies CG131, CG153, CG165 CG171 and PMI studies at University of Minnesota and North Dakota State University.

<sup>3</sup> Performance data averages across all control calves.

<sup>4</sup> Performance data averages across all RX3™ calves.

<sup>5</sup> Encompasses all costs associated with respiratory treatment.

<sup>6</sup> Average dry matter intake was similar in control (15.2 lbs./day) and RX3™ (15.5 lbs./day) treatment groups.



FEED GREATNESS®

# RX3™ Immune Support Technology improves performance, reduces morbidity in weaned calves, research shows

Six studies conducted at North Dakota State University, University of Minnesota and the Purina Animal Nutrition Center were pooled for statistical analysis comparing performance of weaned calves fed RX3™ Immune Support Technology vs. control.

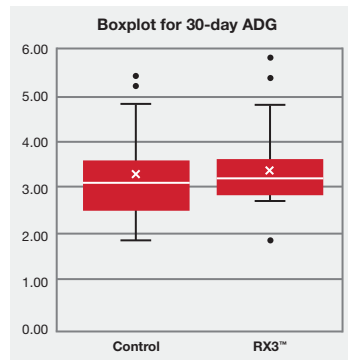
**Table 1 | Performance Research Overview**

Study	Location	Year	No. Head	Avg. Initial Weight (lbs.)	Sex	Test Length (days)	Starter Feed Program
1	MO	2015	70	640	Mixed	35	Purina® Stress Care® 5 + Hay
2	MO	2017	70	541	Mixed	28	Purina® Precon® Complete Feed
3	ND	2017	70	650	Steers	28	TMR
4	MN	2017	122	579	Mixed	28	TMR
5	MO	2018	80	521	Steers	27	Purina® Accuraction® Starter HL
6	MO	2018	80	509	Steers	32	TMR
			<b>Sum=492</b>	<b>Avg.=574</b>		<b>Avg.=30</b>	

**Table 2 | Performance and Morbidity: Control vs. RX3™**

	Control	RX3™
Initial Weight (lbs.)	567	573
Out Weight (lbs.)	657	669
Gain (lbs.)	90	96
ADG (lbs./day)	3.10	3.29
Dry Matter Intake (lbs./day)	15.2	15.5
Gain:Feed (DM)	0.2126	0.2239
Morbidity (%)	13.6	6.8
Days to First Treatment	18.1	16.1

**Figure 1**



**Table 3 | Treatment costs: Control vs. RX3™**

	Control	RX3™
Total Number of Head	245	247
Total Number of Head Treated	28	16
Number of Head Treated 1x	22	10
Number of Head Treated 2x	5	5
Number of Head Treated 3x	1	1
Total Treatments	35	23
Total Treatment Costs*	\$718*	\$394*
Cost Per Treatment**	\$20.51*	\$17.13*
Cost Per Head Treated**	\$25.63*	\$24.64*
Cost Per Total Number of Head**	\$2.93*	\$1.60*
ADG of Treated Calves	1.72	1.90

(X) Total treatment costs/total no. of treatments, (Y) Total treatment costs/total head treated, (Z) Total treatment costs/total no. head

## Internal Document Only

Because of factors outside of Purina Animal Nutrition LLC's control, individual results to be obtained, including but not limited to financial performance and animal condition, health or performance, cannot be predicted nor guaranteed by Purina Animal Nutrition LLC.

\*Prices to vary from the time of these trials to present day

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## Background information

The data set represents 6 studies conducted between 2015 and 2018 which utilized approximately 500 head of cattle.

Calves were vaccinated (IBR, BVD, PI3, BRSV and clostridials) and dewormed upon arrival with revaccinations for IBR, BVD, PI3, and BRSV 7 to 21 days later, depending upon the study.

All calves in Study 5 and Study 6 received a metaphylactic treatment, Zuprevo™, when processed on arrival at start of each study.

All calves within a study were managed the same and were fed the same starter feed with or without RX3™ Immune Support Technology.



## Key takeaways

Compared to control calves, RX3™ calves:

- Gained 6 lbs. more at the receiving period conclusion (Table 2)
- Gained 1.9 lbs. per day when treated for respiratory challenges, vs. control calves at 1.72 lbs./day (Table 3)
- Had better Average Daily Gain (ADG) at 3.29 lbs./day vs. control calves at 3.1 lbs./day (Table 2)
- Experienced improved Feed:Gain conversion by 5.3% (Table 2)
- Had similar average dry matter intake (Table 2)
- Morbidity was reduced by approximately 50% in RX3™ calves compared with Control (6.8% vs. 13.6%) (Table 2)
- Had more consistent ADG, yielding more uniform growth (Figure 1)
- Showed respiratory challenge signs 2 days sooner (Table 2)
- Saved \$324 in medicine cost\*, representing savings of \$1.33 per head (Table 3)



## Cost breakdown\*

- RX3™ Immune Support Technology costs \$0.15 per head per day. Feeding for 30 days represents a \$4.50 cost
- Based on the additional 6 lbs. of body weight gained, it costs \$0.75/lb. for the additional gain when using RX3™
- If calf prices are \$1.50/lb. this will result in a 2:1 ROI based only on the additional weight gain



## What the research tells us

Calves fed RX3™ Immune Support Technology have improved ADG, feed conversion and reduced morbidity compared with control calves. When calves fed RX3™ contracted a respiratory challenge, they recognized the infection 2 days sooner, responded to medicinal intervention, and recovered faster than control calves, demonstrated by increased weight gain during the 30-day receiving period. All support data can be found in tables 1, 2 and 3.



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