



Trace Mineral Nutrition and Beef Cattle Health and Productivity

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Dillon MT

Multimin USA

MULTIMIN[®]90

SURE Trace Mineral Supply by Timed Injection



Nutrition

- Fat
- Carbohydrate
- Protein
- Vitamins
- Minerals

Nutrition

- Fat
- Carbohydrate
- Protein
- Vitamins
- Minerals
 - Macrominerals

Nutrition

- Fat
- Carbohydrate
- Protein
- Vitamins
- Minerals
 - Macrominerals
 - Microminerals (Trace minerals)

Nutrition

- Fat
- Carbohydrate
- Protein
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 - Macrominerals
 - Microminerals (Trace minerals)

Raw Materials

Nutrition

- Fat
- Carbohydrate
- Protein
- Vitamins
- Minerals
 - Macrominerals
 - Microminerals (Trace minerals)

Tools

Major Functions of Trace Minerals

Copper

-embryo

-nervous

-structural

-immune


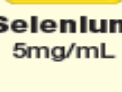
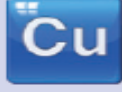
* pathog

* pathogen killing

* pathogen cleanup

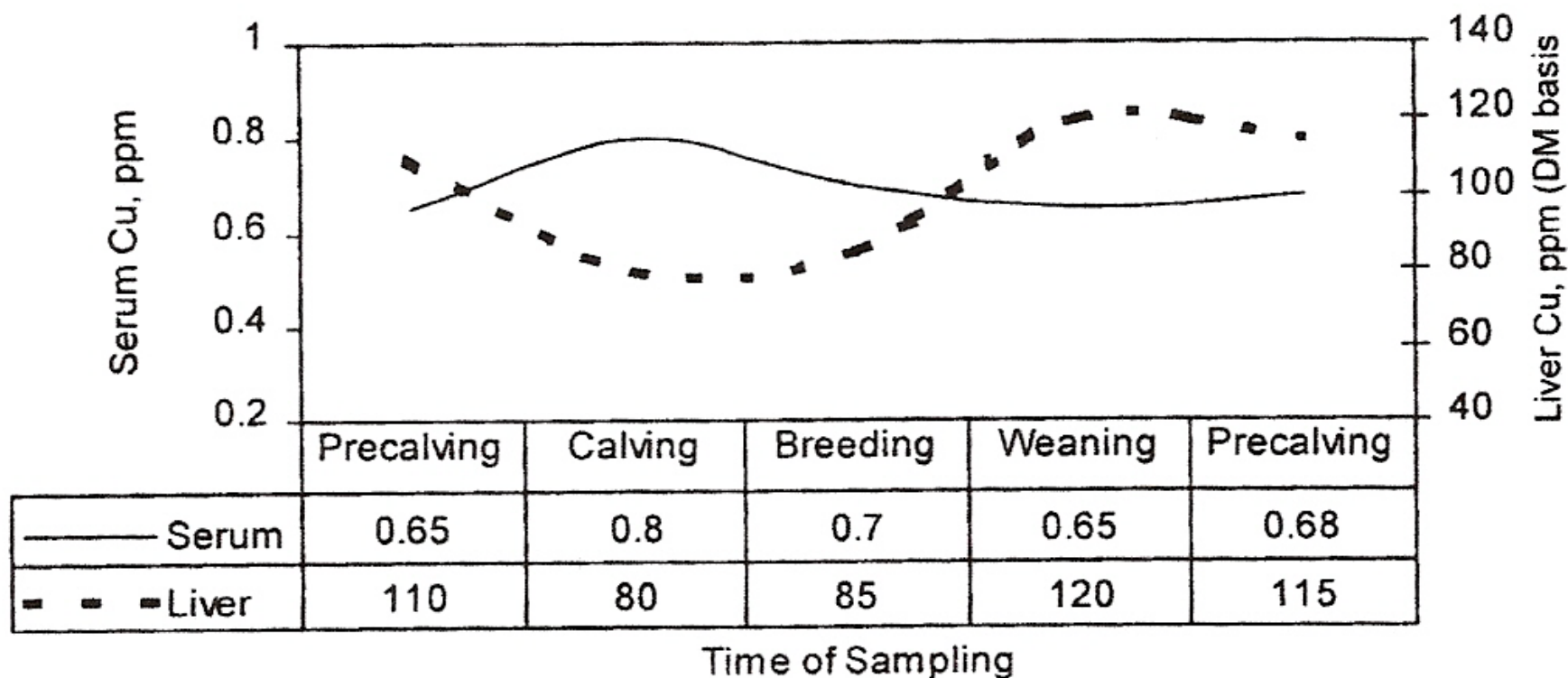
* a -power plant control

KEY PARTS OF MANY IMPORTANT ENZYME SYSTEMS, STRUCTURAL COMPONENTS, SYNTHESIS OF REPRODUCTIVE HORMONES, AND BREAKDOWN OF METABOLIC "WASTE" PRODUCTS.

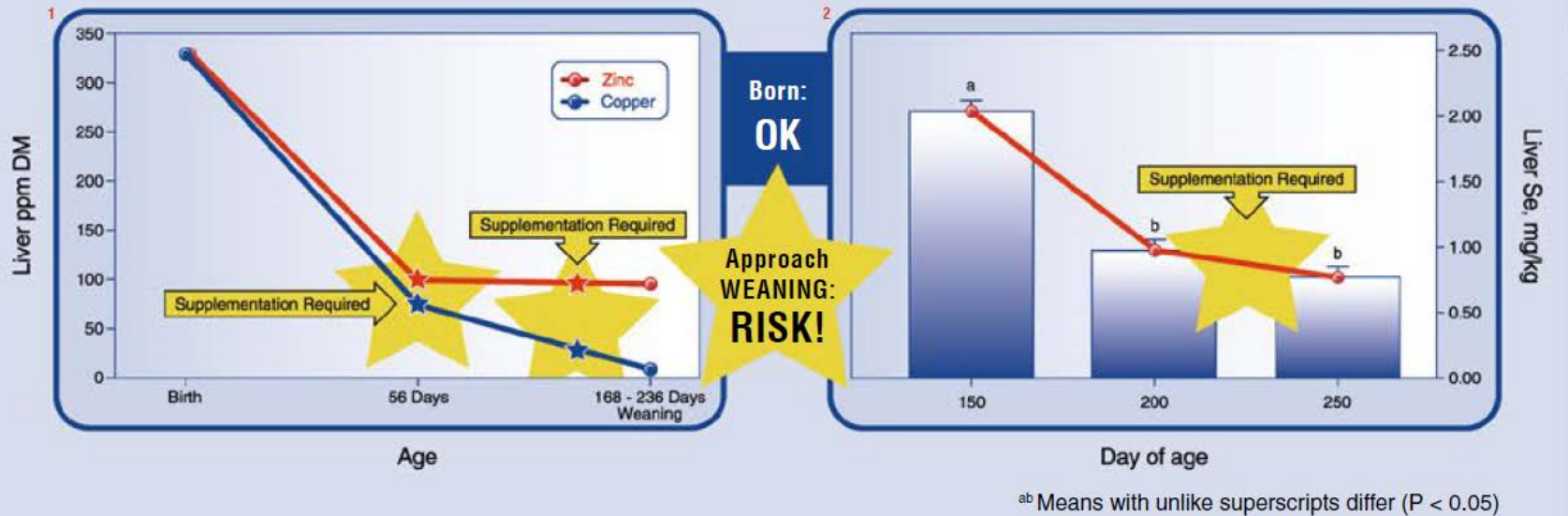
MULTIMIN ⁹⁰ Supplies	Major Functions	Major Antagonists	Absorption Coefficient
 Zinc 60mg/mL	<ul style="list-style-type: none"> • Component of more than 300 enzyme systems • Normal testicular development • Normal sperm production • Normal appetite • Proper skin and hoof development • Proper immune system functions 	Calcium Phosphorous Iron Sulphur Fiber Phytates (Soy Beans)	10-20%*
 Selenium 5mg/mL	afterbirth <ul style="list-style-type: none"> • Major mineral in the immune system 	Calcium Phosphorous Iron Sulphur Fiber	0.15-1.2%*
 Copper 15mg/mL	<ul style="list-style-type: none"> • Required for embryo survival • Proper bone formation • Proper nervous system development • Proper immune function 	Calcium Iron Sulphur Molybdenum	1-5%*

*NRC 2001

Figure 3: Changes in liver and serum copper concentrations for beef cows
(Swenson, 1998).



THE CHALLENGE

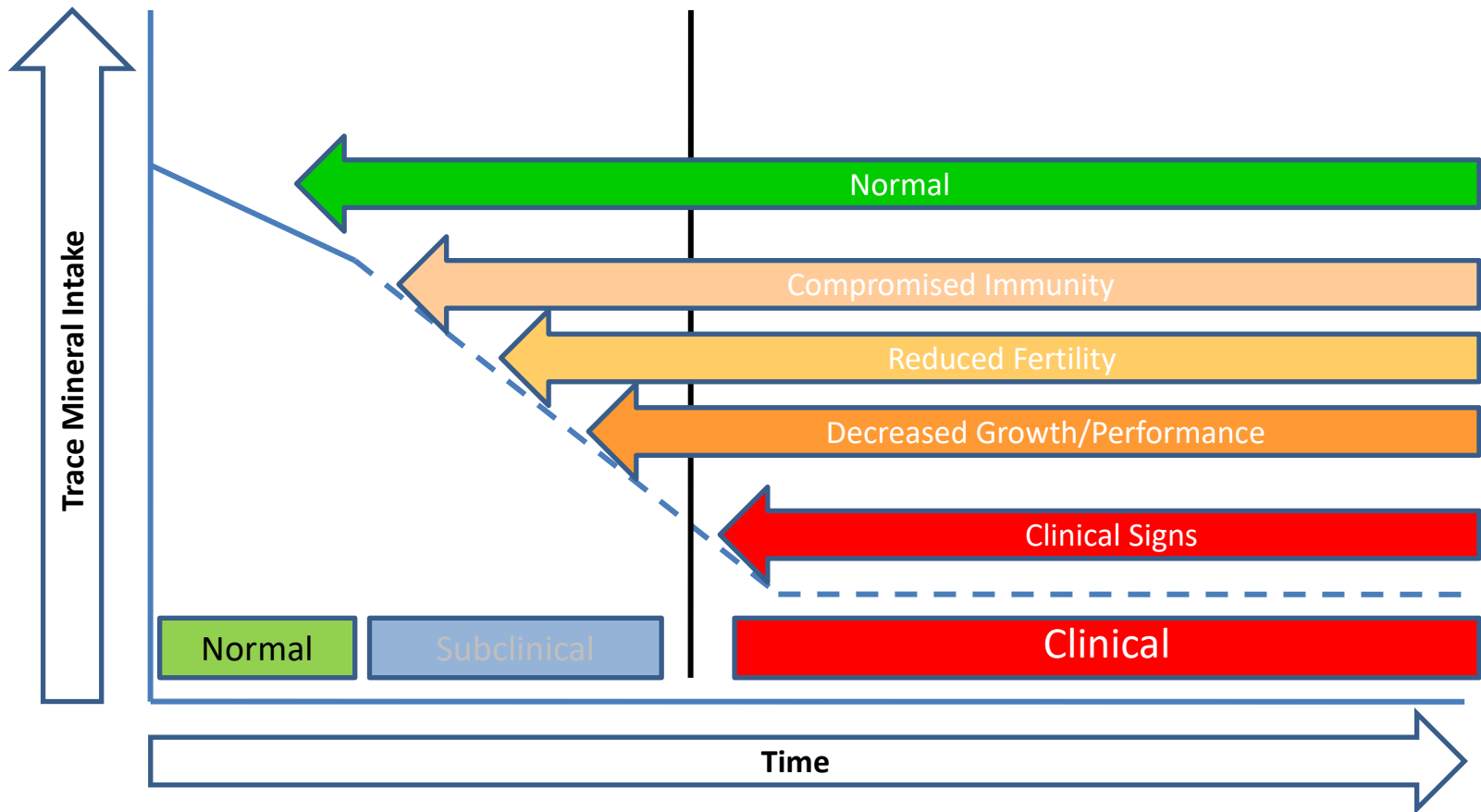


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SURE Trace Mineral Supply by Timed Injection



Trace Mineral Functions



Wikse, 1992 Texas A&M Beef Cattle Short Course

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Injectable Trace Mineral

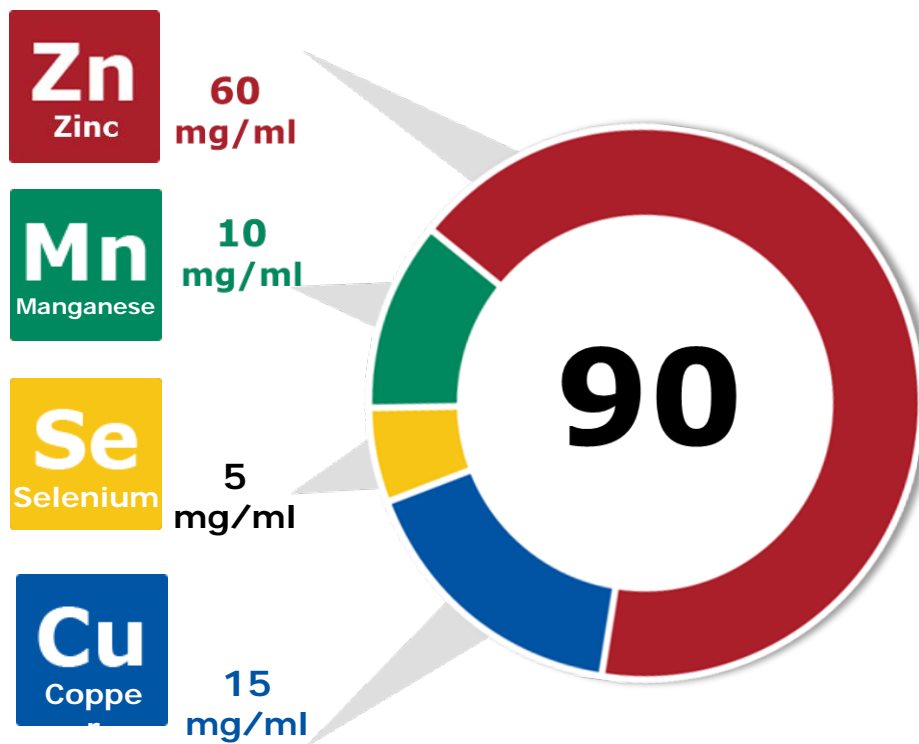


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SURE Trace Mineral Supply by Timed Injection



MULTIMIN[®]90 provides **Zinc, Copper, Manganese and Selenium** in a readily available injection



MULTIMIN[®]90

SURE Trace Mineral Supply by Timed Injection



- Absorption & Avail.
 - Storage
 - Utilization
- All start immediately
 - Absorption peak 8-10 hours & finished 24 hours
 - Storage packs away mineral not immediately used in the first day and keeps it available for 4-6 weeks
 - Enzymes last 1-2 months
 - Immediate boost provides benefit for 2-3 months

Multimin 90

- Does not replace year-round oral trace mineral supplementation program
- Designed to supplement oral program
 - Demands during high production
 - Demands during high stress
 - Where antagonistic minerals hinder absorption (in basin and range: iron, molybdenum, sulfur)



Multimin 90 in Cows



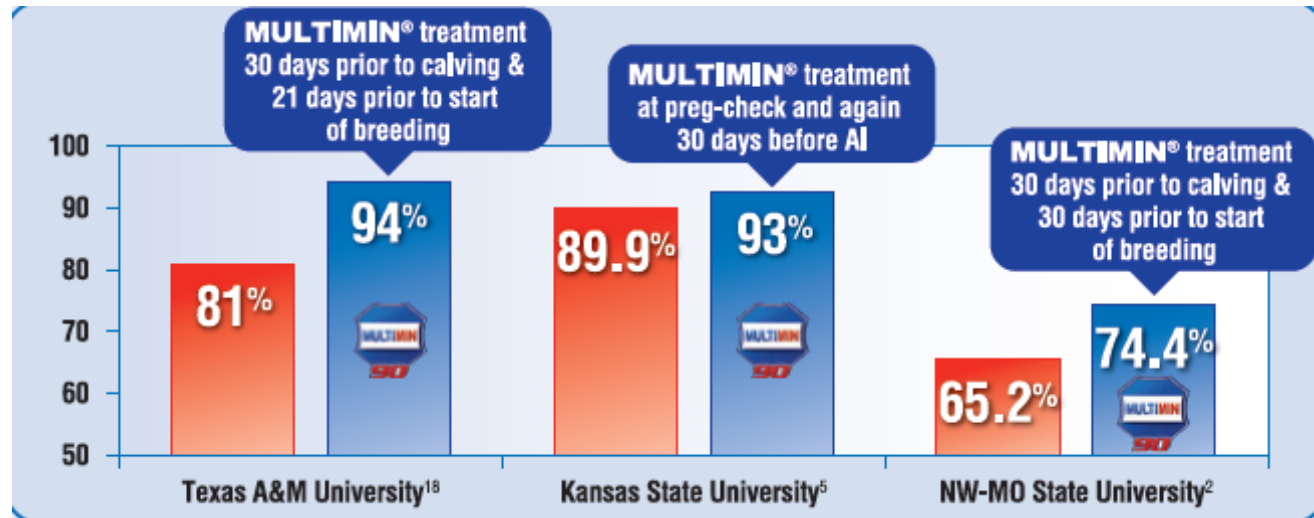
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SURE Trace Mineral Supply by Timed Injection



MULTIMIN® University Study Data

Overall pregnancy %



¹⁸ S.R. Daugherty, G.E. Carstens, D.B. Herd, K.S. Barling, R.D. Randel, "Effects of prenatal and prebreeding trace mineral/vitamin E injections on calf health and reproductive performance of beef cows."

⁵ L.R. Mundell, J.R. Jaeger, J.W. Waggoner, J.S. Stevenson, D.M. Grieger, L.A. Pacheco, J.W. Bolte, N.A. Aubel, G.J. Eckerle, M.J. Macek, S.M. Ensley, L.J. Havenga, K.C. Olson, "Effects of prepartum and postpartum bolus injections of trace minerals on performance of beef cows and calves grazing native range." The Professional Animal Scientist 28 (2012):82-88

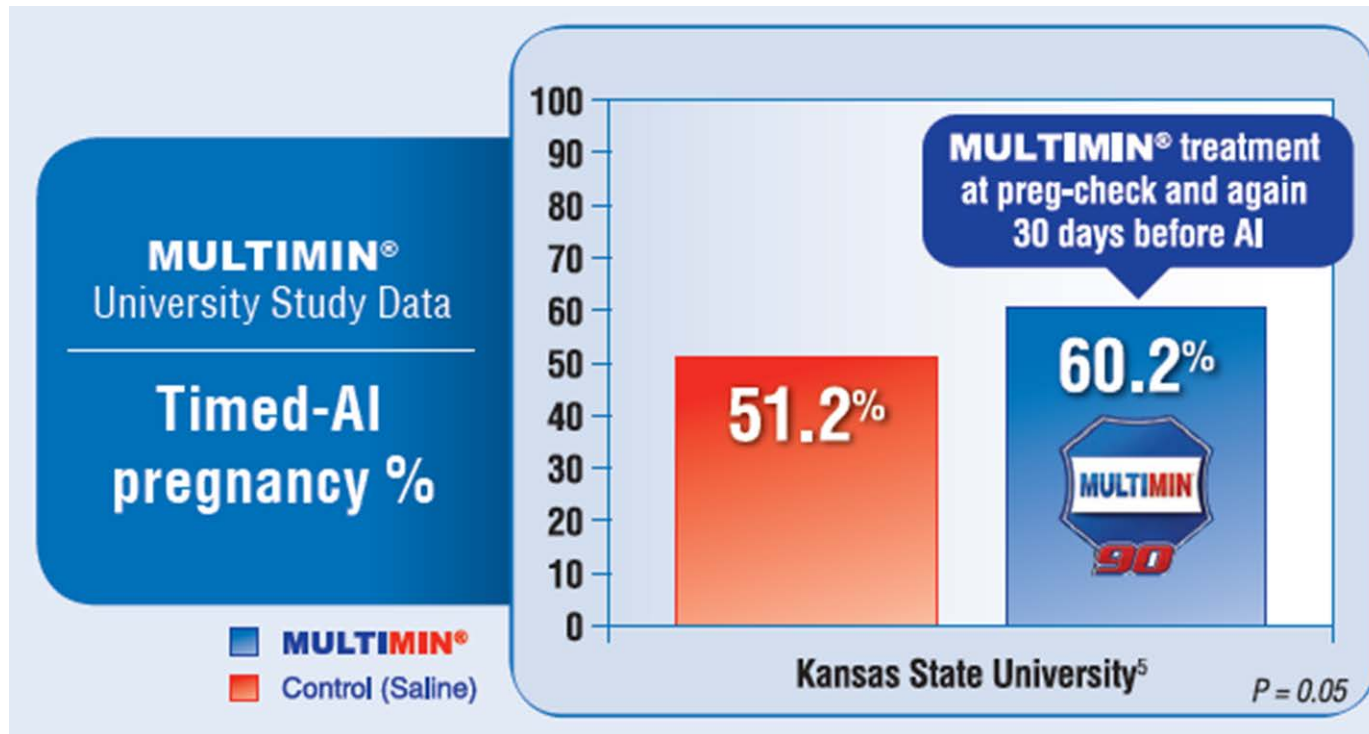
² J. Allen, "Effect of Multimin 90 on foot rot prevalence, health parameters, and growth parameters of beef cows and calves in Northwest Missouri." Study data on file

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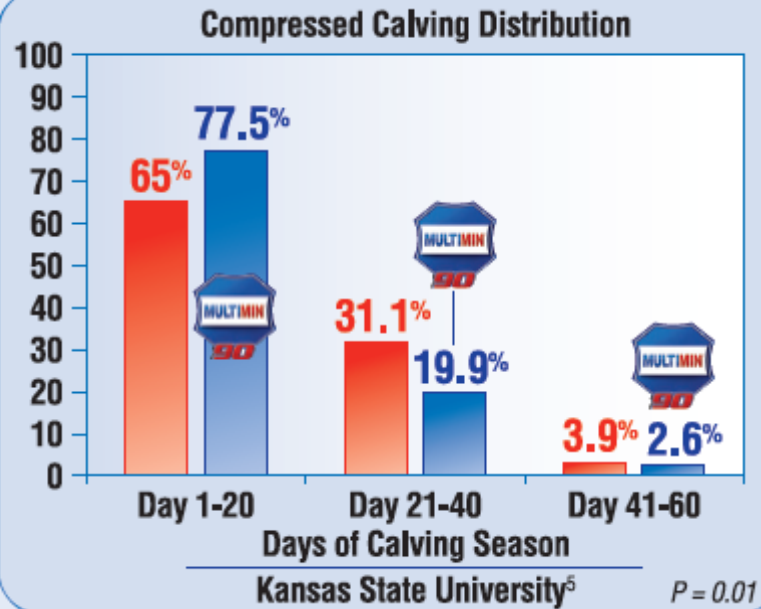
Fixed Time AI Pregnancy Rates



MULTIMIN®
University Study Data

**Female
calving %**

 **MULTIMIN®**
 Control (Saline)



L.R. Mundell, J.R. Jaeger, J.W. Waggoner, J.S. Stevenson, D.M. Grieger, L.A. Pacheco, J.W. Bolte, N.A. Aubel, G.J. Eckerle, M.J. Macek, S.M. Ensley, L.J. Havenga, K.C. Olson, "Effects of prepartum and postpartum bolus injections of trace minerals on performance of beef cows and calves grazing native range." The Professional Animal Scientist 28 (2012):82-88

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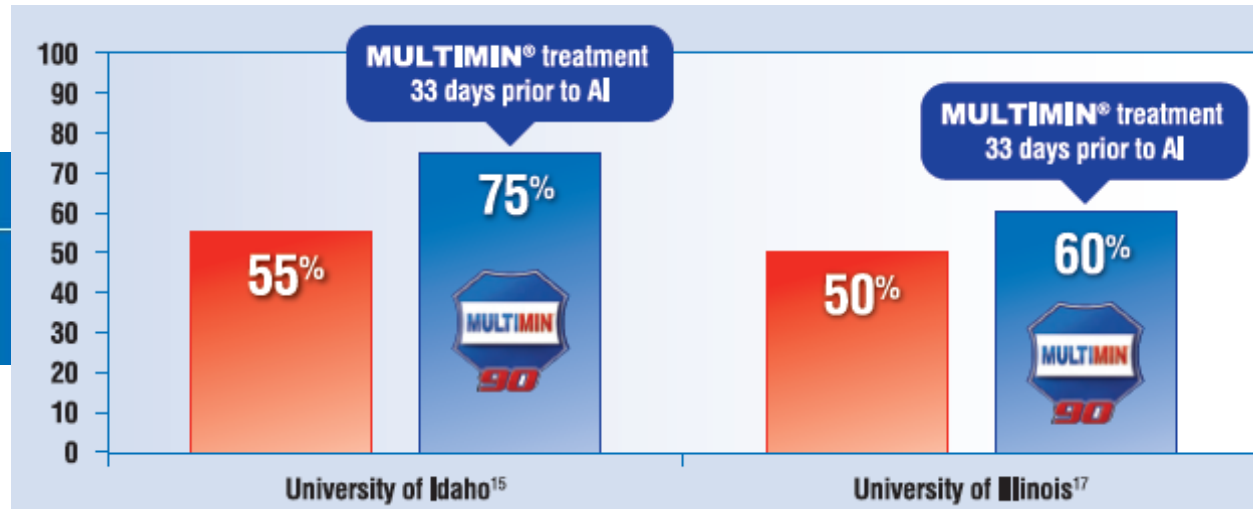
SURE Trace Mineral Supply by Timed Injection



HEIFERS

MULTIMIN® University Study Data

Pregnancy % to timed-AI
after 14d CIDR-Protocol



¹⁵ C.J. Brasche ¹, J.B. Hall², M.E. Drewnoski¹, "Effect of an injectable trace mineral on pregnancy rate of virgin heifers when synchronized using the 6-d Co-Synch plus CIDR or 14-d CIDR-PG protocol." J. Anim. Sci. Vol. 92, E-Suppl. 2/J. Dairy Sci. Vol. 97, E-Suppl. 1

¹⁷ University of Illinois study data on file

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SURE Trace Mineral Supply by Timed Injection

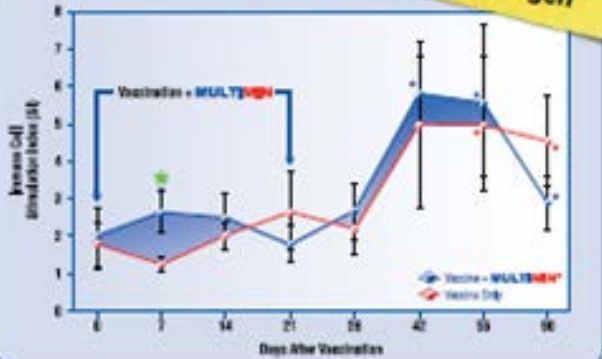




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Bovine Respiratory Syncytial Virus (BRSV)

Modified Live Antigen



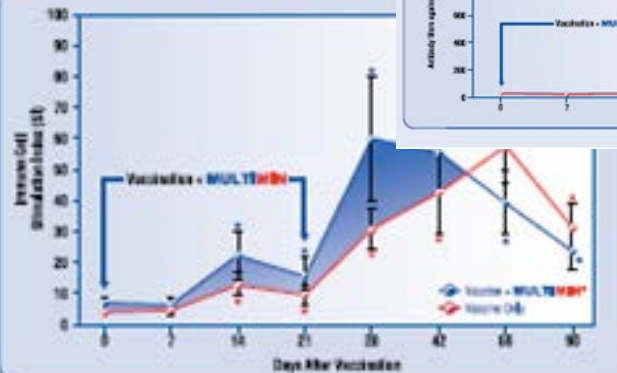
* Difference between groups ($P = 0.01$)

** Value differs significantly from the value on day 0 ($P < 0.05$)

Streptococcus haemolyticus



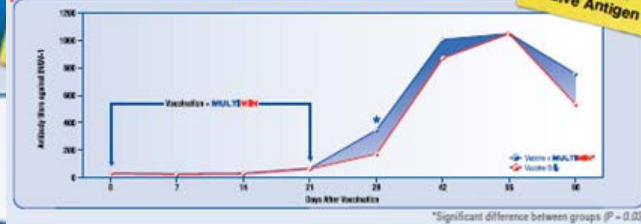
Bovine herpesvirus-1 (BHV-1)(IBR)



** Value differs significantly from the value on day 0 ($P < 0.05$)

Bovine Viral Diarrhea Virus Type 1 (BVDV-1)

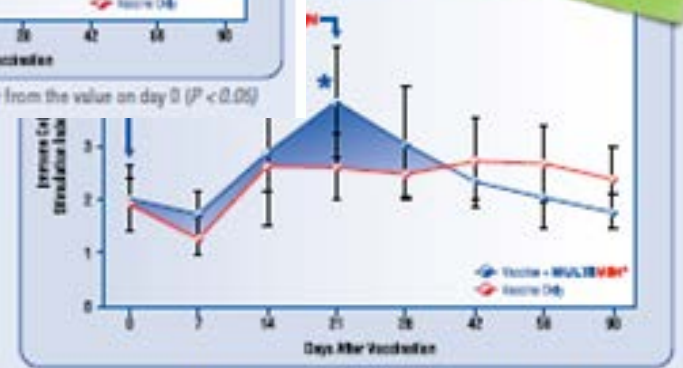
Modified Live Antigen



* Significant difference between groups ($P = 0.03$)

Leptospira

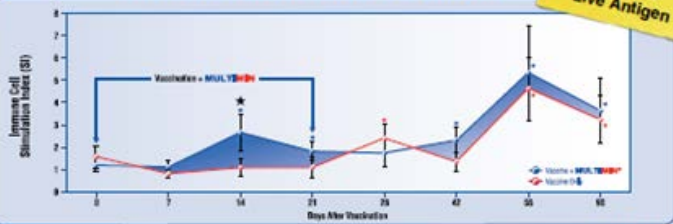
Attenuated-Live Bacterin



* Value differs significantly from the value on day 0 ($P = 0.02$)

Bovine Viral Diarrhea Virus Type 1 (BVDV-1)

Modified Live Antigen



* Difference between groups ($P = 0.03$)

** Values differ significantly from the value on day 0 ($P < 0.05$)



With Injectable Multimin 90

- You supplement every animal you inject
- You provide supplementation quickly
- You by-pass any antagonists
- You target periods of high challenge and demand for your cattle



MULTIMIN 90 SURE Trace M





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