



PERFORMANCE MINERALS®

Feed the best for a lifetime

Birth. Growth. Production. Reproduction.

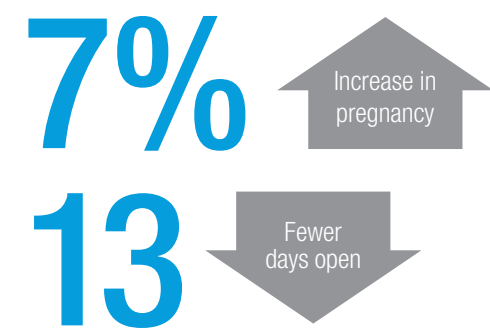


Lifetime Performance[®]

To truly thrive, dairy cattle must receive optimum trace mineral nutrition throughout their productive life stages.

Reproduction

Trace mineral status before and after calving directly affects reproduction.



Beginning trace mineral supplementation in the dry and prepartum periods and continuing through lactation is critical for improving health. Research results by Rabiee, Lean, Stevenson and Socha show that feeding Zinpro Performance Minerals[®] to dry and lactating cows can help aid in an earlier return to ovarian function, which can lead to improved pregnancy rates and fewer days to conception².

Milk Production

Healthy cows produce more milk per lactation. Studies by Rabiee, Lean, Stevenson, Socha and Gomez showed improved milk production along with higher yields of fat and protein. This research demonstrates 604 lb more milk per lactation in mature cows, while heifers in the rearing phase produced 441 lb more milk in their first lactation^{2,4}.

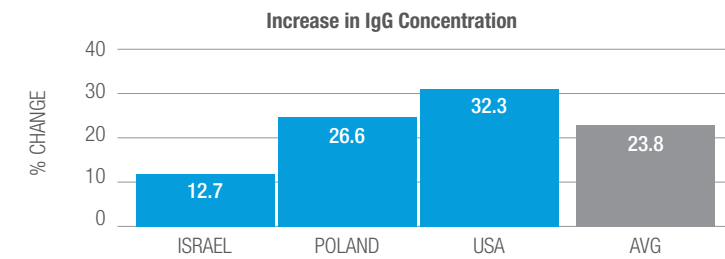
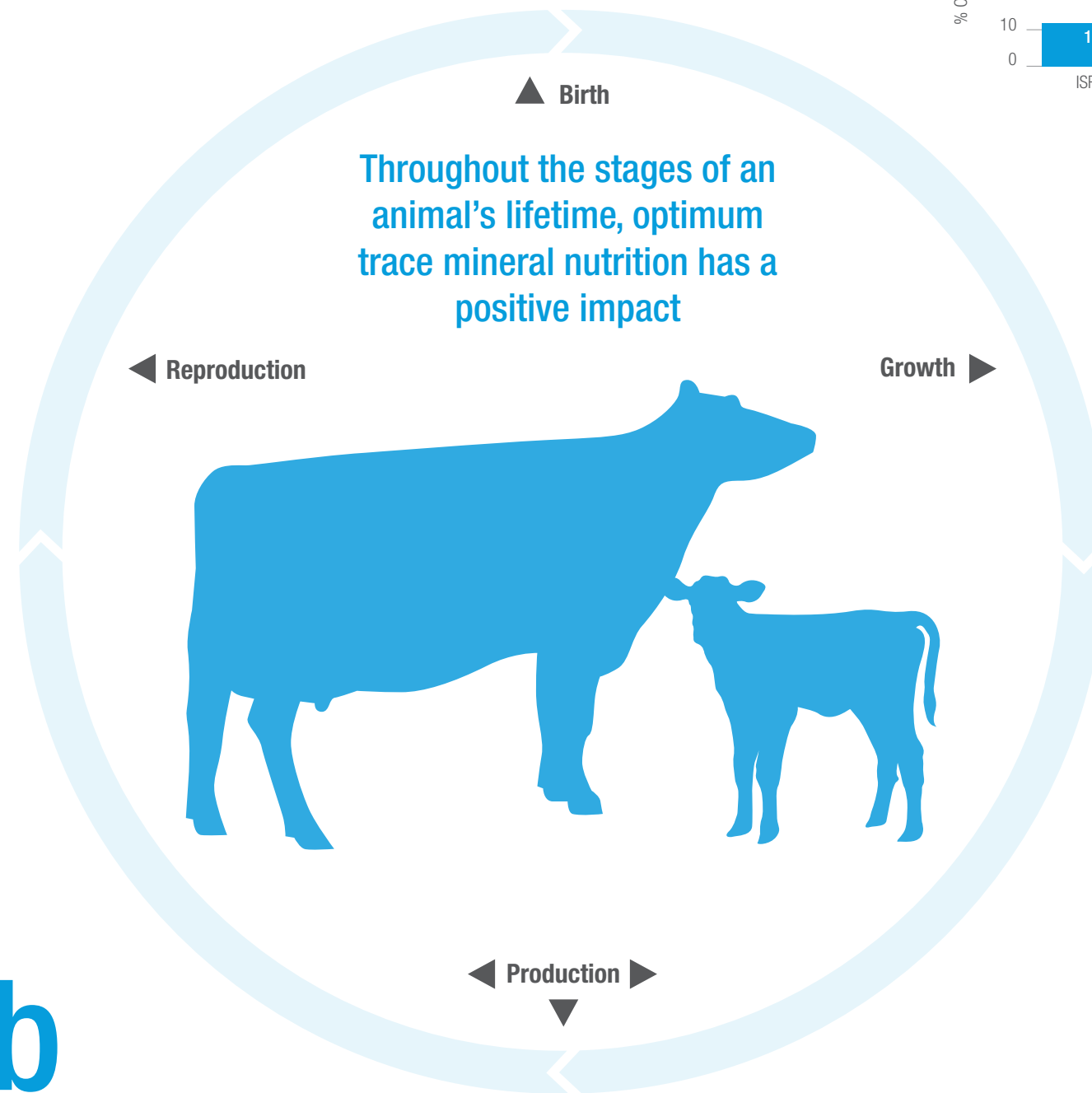


Lameness Management

Optimal nutrition is necessary for improved claw integrity during a cow's productive life. Research shows that prevention of nutritional deficiencies allows for fewer non-infectious claw lesions⁵.

Immunity

Milk production, reproductive function and hoof integrity are greatly influenced by a strong immune system. Less-than-optimal trace mineral nutrition can result in greater susceptibility to deficiencies. Proper nutrition has been shown to raise immunoglobulin (IgG) levels in maternal colostrum, which aids in passive immunity for the newborn calf¹.



Hoof Health Management

When a heifer contracts digital dermatitis before calving, she produces less milk and suffers decreased reproductive performance⁴. In a study on digital dermatitis and lactation performance in cows, Gomez, et al. found that heifers having incidences of DD showed a significant decrease in first lactation performance.

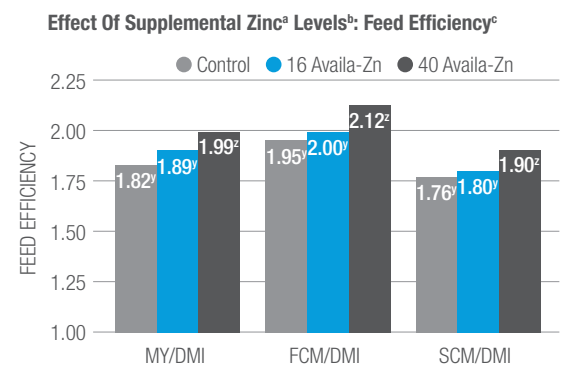
The study also showed that heifers that were fed the DD Formula as part of a balanced nutrition program showed improvements in hoof health. One of the improvements was a decrease in DD prevalence of more than 60%.



Heifer Type (Pre-Calving)	First Lactation Milk Loss (305 Days in Milk)
One DD Event	438 lb
Multiple DD Events	738 lb

Feed Efficiency

Feeding zinc at a 40 ppm level has been shown through research to result in cows consuming less feed per pound of milk produced³.



^a Availa-Zn: zinc amino acid complex
^b Treatments in lactation were (DM basis): Control, 75 ppm Zn from ZnSO₄; 16 Availa-Zn, 16 ppm Zn from Availa-Zn zinc amino acid complex + 60 ppm Zn from ZnSO₄; 40 Availa-Zn, 40 ppm Zn from Availa-Zn + 35 ppm Zn from ZnSO₄; All diets included 51 ppm Mn from MnSO₄, 9 ppm Mn from Availa-Mn manganese amino acid complex, 10 ppm Cu from CuSO₄, 5 ppm Cu from Availa-Cu copper amino acid complex, 1.1 ppm Co from COPRO[®] cobalt glucoheptonate; Calculated vitamin levels, Vitamin A, 4.14 KIU/lb (9.12 KIU/kg); Vitamin D, 1.25 KIU/lb (2.76 KIU/kg); Vitamin E, 11.34 IU/lb (25 IU/kg)
^c MY/DMI = milk yield/DM intake; FCM/DMI = 3.5 % fat-corrected milk/DM intake; SCM/DMI = solids-corrected milk/DM intake
^{yz} Within a category, LS means lacking a common superscript letter differ, *P* < 0.01



¹ Kincaid and Socha, 2004. Prof. Anim. Sci. 20:66; Kinal et al., 2005. J. Food Ag. and Environ. 3:168. ² Rabiee, A. R., I. J. Lean, M. A. Stevenson, and M. T. Socha. 2010. Effects of feeding organic trace minerals on milk production and reproductive performance in lactating dairy cows: A meta-analysis. J. Dairy Sci. 93:4239.

³ Nayeri, A., N. C. Upah, E. Sucu, M. V. Sanz-Fernandez, J. M. DeFrain, P. J. Gordon and L. H. Baumgard. 2014. Effect of the ratio of zinc amino acid complex to zinc sulfate on the performance of Holstein cows. J. Dairy Sci. 97:4392. ⁴ Gomez, A. et al., 2015. First-lactation performance in cows affected by digital dermatitis during the rearing period. J. Dairy Sci. 98:4487.

⁵ Nocek et al., 2000. Digital characteristics in commercial dairy herds fed metal-specific amino acid complexes. J. Dairy Sci. 83:1553.



Research-Proven Zinpro Performance Minerals®

At Zinpro Corporation, our investment in data and the scientific research of our products has led us to produce more than 200 peer-reviewed research publications. Zinpro provides customers with quality information to better explain how our products deliver a positive animal response and improved return on investment.

Trace Minerals are essential during the animal's full productive life, from birth, to growth through production and reproduction. The table below summarizes the relationship between some of the different productive stages and the essential role that minerals play.

Birth	Growth	Production	Reproduction
Intestinal Epithelium Zn, Mn, Cu	Appetite Zn, Co	Milk Production Zn, Co	Bone Development Zn, Mn, Cu
Immune Function Zn, Mn, Cu, I	Muscle Development Zn	Hoof Health Zn, Mn, Cu, I	Fertility Zn, Mn, Cu
	Hoof Health Zn, Mn, Cu, I	Feed Efficiency Zn, Co	Fetal Development Zn, Mn, Cu
			Colostrum Quality Zn, Mn, Cu

From minerals to benefits to productive stages, Lifetime Performance shows our commitment to stand by producers at all life stages offering solutions, tools and answers to help their animals show their full potential and live a lifetime of performance.



To learn more about Lifetime Performance® and to find out what products are available in your area, visit zinpro.com/lifetime-performance or contact your local Zinpro Representative.

All trademarks herein are property of Zinpro Corp.
©2017 Zinpro Corp. All rights reserved.
D-4119