



A regular series on cost-effective supplementation strategies, sponsored by CRYSTALIX® Brand Supplements. Results By the Barrel.™

Take another look at the efficiency of ionophores

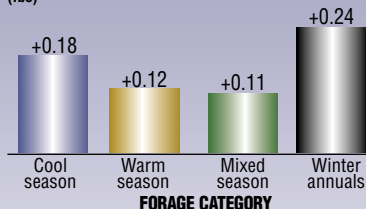
For return on investment, it's tough to beat the impact 25 years of ionophore use has made. The just over \$100 million spent annually to purchase ionophore feed additives returns the cattle industry—beef and dairy—as much as \$1 billion per year in productivity improvements.

Improved rumen efficiency

Shortly following their approval in the 1970s, ionophores were found to improve feed efficiency in cattle and sheep by altering the mix of microbes in the rumen. Researchers believe ionophores improve rumen function by three key pathways:

- They improve energy capture of forage by limiting the rumen microorganisms that produce hydrogen and waste energy as methane.

TABLE 1. ADG IMPROVEMENT DUE TO BOVATEC®
(lbs)



SIGNIFICANT, MEASURABLE GAINS ON ANY FORAGE, IN ANY SEASON In 84 pasture studies conducted between 1980 and 2002, Bovatec® improved ADG by an average of 9.82%, or 0.14 lb/head/day. Table 1 shows Bovatec® ADG improvement for pasture cattle on all forages during any season, with response not dependent on pasture quality. Table 2 depicts the dollar value of increased growth rate per head over a 100 day grazing period, using "low", "average" or "high" levels of ADG increase.

TABLE 2. VALUE OF INCREASED GROWTH RATE
(\$/head/100 days)

	ADG Increase	Cattle value (\$/lb)		
		0.60	0.80	1.00
Low	0.12 lb	\$7.20	\$9.60	\$12.00
Average	0.15 lb	\$9.00	\$12.00	\$15.00
High	0.18 lb	\$10.80	\$14.40	\$18.00

- By allowing more time for the digestive process and rumen fermentation of fiber, ionophores improve forage digestibility.
- By sparing protein and reducing rumen organisms that produce ammonia, they divert relatively more feed nitro-

gen into available protein, not surplus ammonia that could be wasted.

The production benefits of those rumen changes—some proven, some still under investigation—include a greater percentage of propionate, and thus energy, passing to the lower digestive system, plus a moderation in feed intake extremes which can help avoid metabolic diseases, like bloat and feedlot acidosis.

Other studies over the years have suggested ionophores might also improve the retention of some minerals, including phosphorus. Additional research has shown ionophores to help heifers reach puberty earlier, achieve higher conception rates and optimize reproductive efficiency.

More than 90% of U.S. feedlots benefit from the improved performance provided by ionophores and almost one-half of all dairies (replacement heifers)!

Reduced antibiotic concerns

Although classified as a subclass of antibiotics, ionophores are believed to present little or no risk of causing human drug resistance. Two recent studies confirm that belief. In one, Cornell microbiologist James Russell, a pioneer in ionophore bio-mechanics, reviews 30 years of research to note:

- Ionophores attack bacteria differently than therapeutic antibiotics, so there's no reason to believe they share a mechanism of resistance.
- Resistance genes in rumen bacteria don't spread easily between bacteria.
- Studies show withdrawing ionophores after long periods of use immediately return bacterial populations to their pre-ionophore state.

In the second study, researchers at Texas A&M evaluated the effect of ionophores on food-borne pathogens. The results of this study show no effect on resistance patterns. Furthermore, it is important to note, there currently are no applications for ionophores in human medicine.

Source: FAMU Microbiological Reviews, April 2003; Journal of Applied Microbiology, February 2003.

Grazing cattle growth boost

When growing cattle eating high-roughage diets—whether pasture, hay, silage or straw—are supplemented with ionophores, those alterations in rumen function help extract and use more energy from forage, resulting in increased rate of weight gain. For that reason, feeding ionophores has been a recommended practice in stocker cattle production for years. Dozens of trials have demonstrated you can typically expect a 10 to 15 percent improvement in rate of gain. The improvement is consistent across forage types and season.

Overcoming hurdles to use

Still, despite those performance advantages, estimates say about four in 10 stocker operations still don't use an ionophore. The traditional hurdle to taking advantage of ionophores has been the same one that limits many grazing supplementation programs: Lack of cost-effective delivery options that dependably control consumption.

Controlling consumption is even more critical when using ionophores than when supplementing protein or energy. Trials using dairy heifers, for instance, showed that when 100 milligrams per head daily is the consumption target, animals given free access will vary their actual consumption from as little as 70 percent of that target to more than 3.5 times.

Until now there has not been a convenient system for controlled delivery of energy, protein, vitamin and mineral nutrients, plus safe, accurate feeding of an ionophore to grazing cattle. All of that changes with a recent approval from the Food and Drug Administration (FDA) of a new animal drug application filed by Ridley Block Operations. The FDA has recently approved the first low moisture block supplement with an ionophore (Bovatec®), marketed as IONO-LYX® B300 for increased rate of weight gain in pasture cattle.

Bovatec® is a registered trademark of Alpharma®, Inc.

RESULTS BY THE BARREL™

CRYSTALYX® with Bovatec® New IONO-LYX® B300

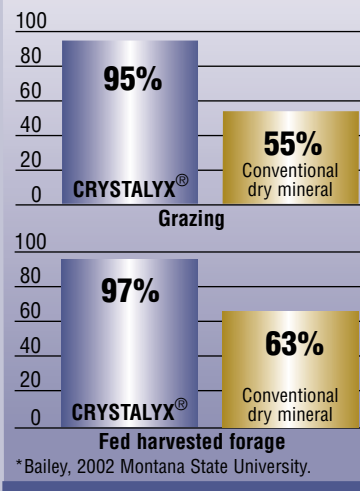
supplement, from the makers of CRYSTALYX® Brand Supplements, now gives you the advantages of an ionophore without the difficulties of traditional delivery methods. Combining the leading block supplement with the premier ionophore for grazing cattle, IONO-LYX® B300 offers all the advantages of a CRYSTALYX® supplement program—and the added benefits of Bovatec®:

- Improves growth rate by increasing rumen efficiency.
- Reduced variability of intake, compared to traditional hand-fed or salt-limited free-choice supplements.
- Significantly lowers labor and delivery costs compared to hand-fed supplements.
- Maximizes utilization of pasture by encouraging animals to visit otherwise underutilized grazing areas.

Ideal delivery method

Like all CRYSTALYX® products, IONO-LYX® B300 is designed to be fed on a free-choice basis. University research shows when cattle are given a choice between CRYSTALYX® and conventional dry mineral, a significantly larger percentage consume

PERCENTAGE OF GPS COLLARED CATTLE VISITING SUPPLEMENT*



CRYSTALYX®. The impact of CRYSTALYX® supplement delivery is realized both:

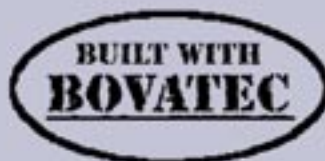
- When cattle are grazing under extensive range conditions, and
- When cattle are fed harvested forages in smaller pastures.

This research also found a higher percentage of cattle visited CRYSTALYX® 3 times more often when compared to conventional dry mineral.

Specially formulated

IONO-LYX® B300 is formulated to improve weight gain in pasture cattle—specifically stockers, feeders and dairy and beef replacement heifers.

iono-LYX®
B300
in the **BLUE**
CRYSTALYX® Barrel



To request your **FREE 20-page CRYSTALYX® FactBook**, our new **IONO-LYX® brochure**, or have a representative contact you with the name and location of your nearest dealer, call **1-800-727-2502**, or visit our web site at **www.crystalyx.com** or **www.ionolyx.com**