



**Gem**   
**Stone**®



*Improves performance in a wide range of  
health and growing conditions*

Talk With a Phibro Expert: 800.677.4623 | [www.pahc.com](http://www.pahc.com)  
HEALTHY ANIMALS. HEALTHY FOOD. HEALTHY WORLD.®

**Phibro**  
ANIMAL HEALTH CORPORATION™



**Introducing GemStone<sup>®</sup>  
from Phibro Mineral Nutrition. *GemStone* is  
our exclusive line of chelated organic trace  
minerals (Cu, Fe, Mn and Zn).**

Specifically formulated to meet the needs of the growing nutritional category of chelated minerals, **GemStone** technology combines years of leadership in the mineral business, the abilities and expertise built into our industry-leading **Dynamic Quality Assurance<sup>®</sup> (DQA<sup>®</sup>)** process and research expertise that customers have come to expect from Phibro Animal Health Corporation.

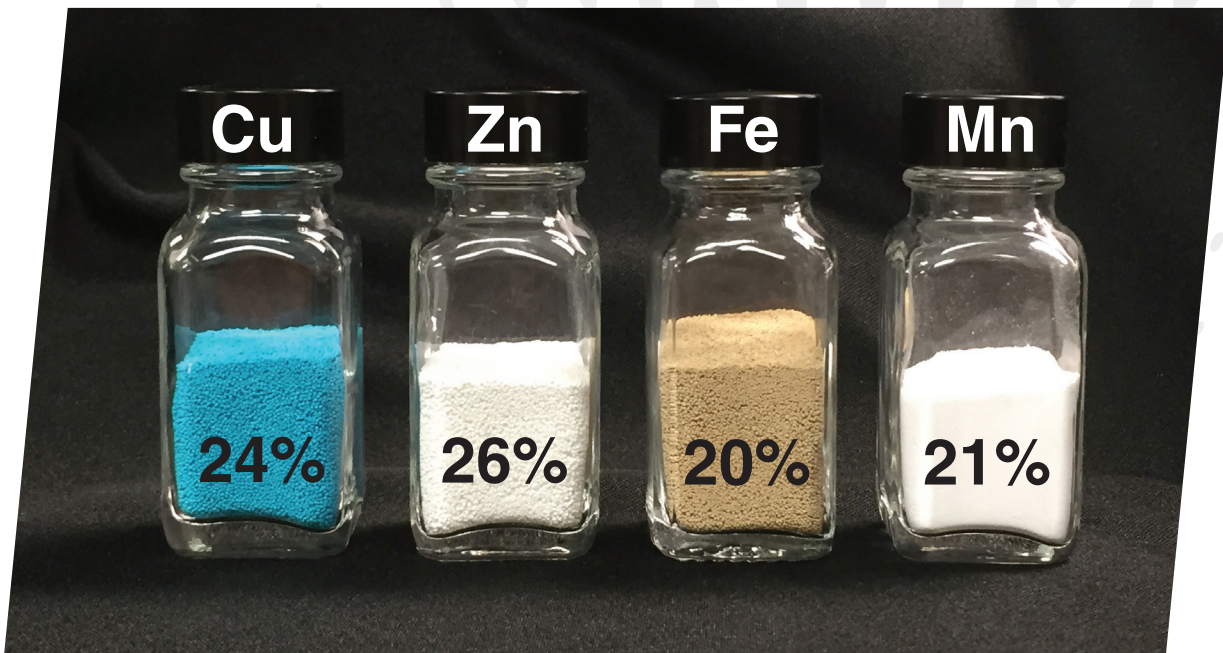
- “Classic Structure”
- Superior Technology
- Excellent Value

# Making the Best Ingredients Better

Innovation means continually improving and challenging the status quo. That's exactly what we've done with **GemStone**, our exclusive line of chelated organic trace minerals (OTM), which includes zinc, manganese, copper and iron glycine chelates.

These organic trace minerals use glycine as a ligand in the amino acid chelate and are available in a highly concentrated, easy-flowing granule. Glycine is highly soluble so it dissolves into solution and maintains chelation, which improves bioavailability for livestock production.

**GemStone** features a classic binding structure and high solubility, which further promotes improved absorption and bioavailability.



# Superior Research, Superior Results

Rapidly growing animals such as young broiler chicks have proven to be an effective research model when determining the availability of trace minerals.

For that reason, research studies in broiler chickens from 0–49 days were conducted to determine the deposition in bone and tissue of **GemStone** OTM compared to sulfate and oxide forms of the minerals. The effect of various commonly used organic mineral sources on nutritional bioavailability and broiler performance were also measured.

Results show in three studies that **GemStone** is a proven chelated product and is a highly available source of supplemental dietary trace minerals.

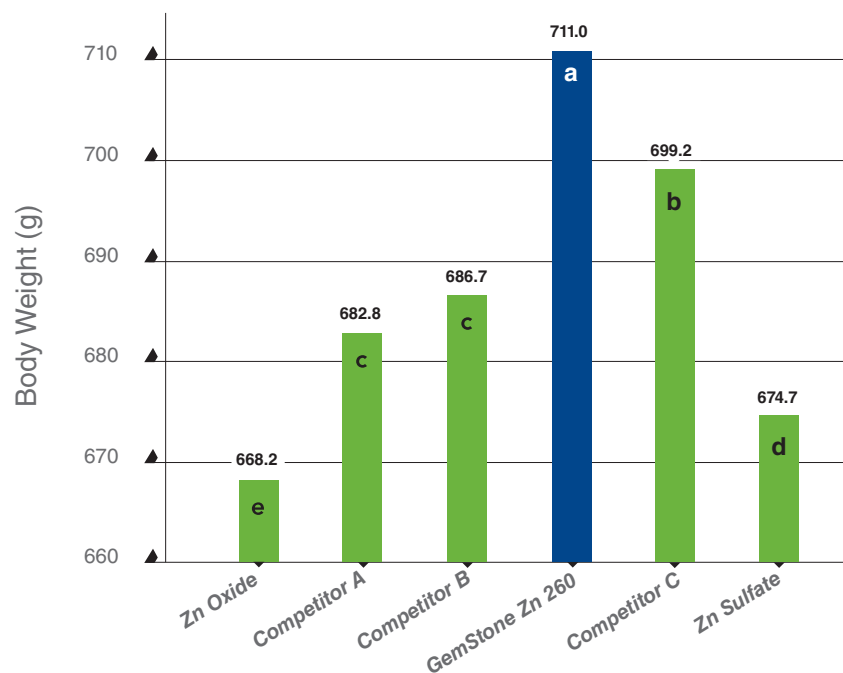
## Research Study #1

Purpose: To determine zinc availability of **GemStone** Zn 260 compared to zinc oxide and zinc sulfate.

Procedures: Ross 708 broiler chicks were fed a semi-purified, low-Zn ration from 0–7 days of age (Zn depletion) and then fed test diets from 8–21 days of age.

## Results:

### EFFECT OF ZN SOURCE ON BIOLOGICAL DATA FOR YOUNG GROWING CHICKENS (0-21 DAYS OF AGE)<sup>†1</sup>



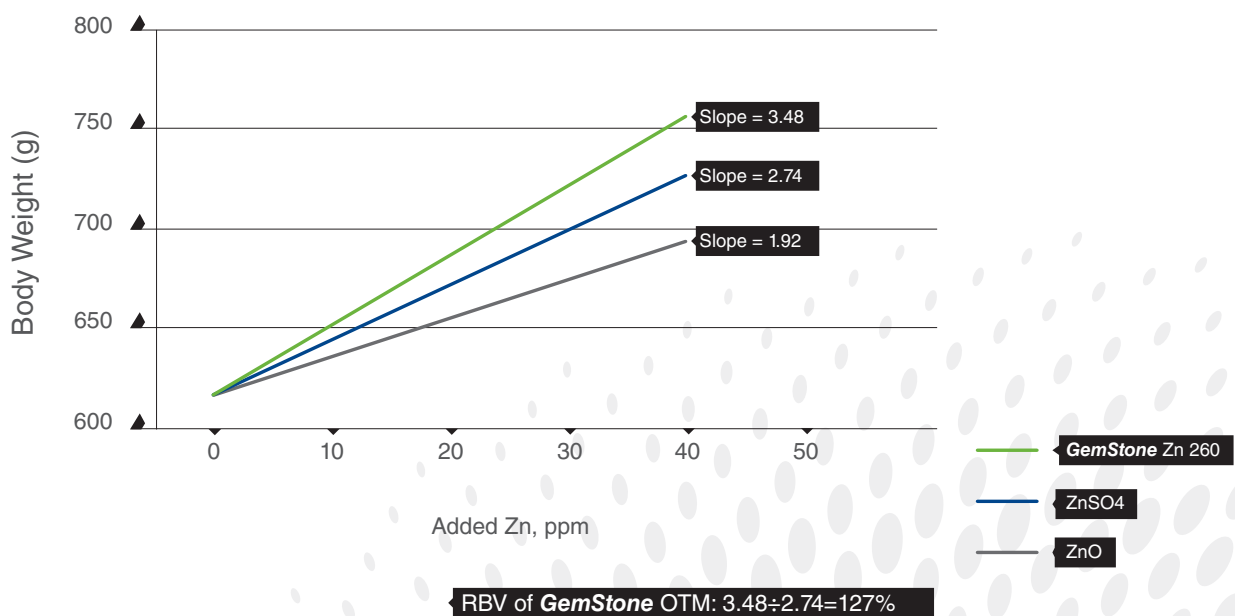
<sup>†</sup> Values are the average of all Zn levels from each source.  
Means with different superscripts are significantly different (P < 0.05).  
<sup>1</sup> Does NOT include zero (0) added Zn level (i.e., CONTROL group).

(AHPharma, 2014-1)





### SLOPE-RATIO USED TO DETERMINE RELATIVE BIOLOGICAL VALUE (RBV)



### RELATIVE BIOLOGICAL VALUE, %

#### SUMMARY:

The relative biological value, as measured by body weight and zinc measures in bone and organs, from **GemStone** OTM was 24% to 30% greater than zinc sulfate. This confirms effective chelation and greater bioavailability.

| Measurement   | % vs Sulfate Standard |
|---------------|-----------------------|
| Body Weight   | 127.1                 |
| Bone Ash, %   | 129.2                 |
| Liver Zinc    | 126.1                 |
| Pancreas Zinc | 124.3                 |
| Bone Zinc     | 130.1                 |

## Research Study #2

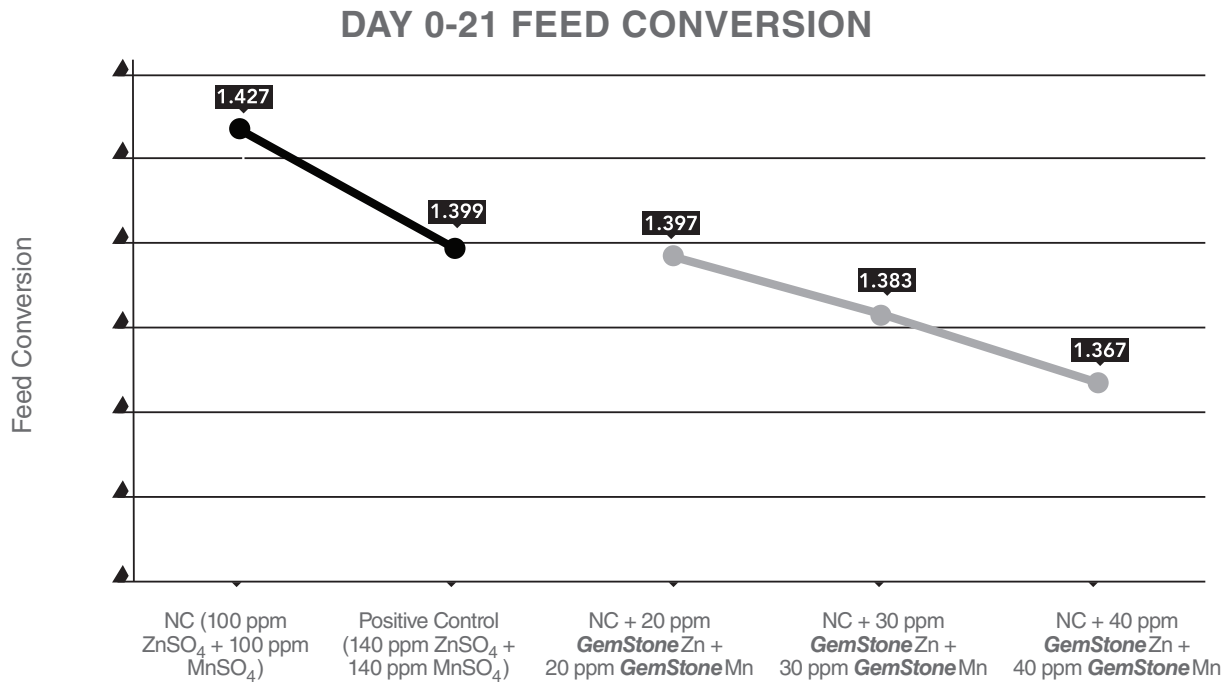
Purpose: To determine effects of prophylactic zinc and manganese from **GemStone** OTM compared to sulfates on live performance, bone ash, and lesion score of broilers reared from 0–49 days of age (full grow out) in floor pens.

Procedure: Ross 708, mixed-sex broiler chicks (50 birds/pen, 12 pens per treatment) were fed commercial-type mash feed:

Starter: Days 0–21 | Grower: Days 22–42 | Finisher: Days 43–49

Body weight and feed consumption were measured at days 21, 42 and 49. Bone ash and lesion scores were determined at days 21 and 49.

## Results:

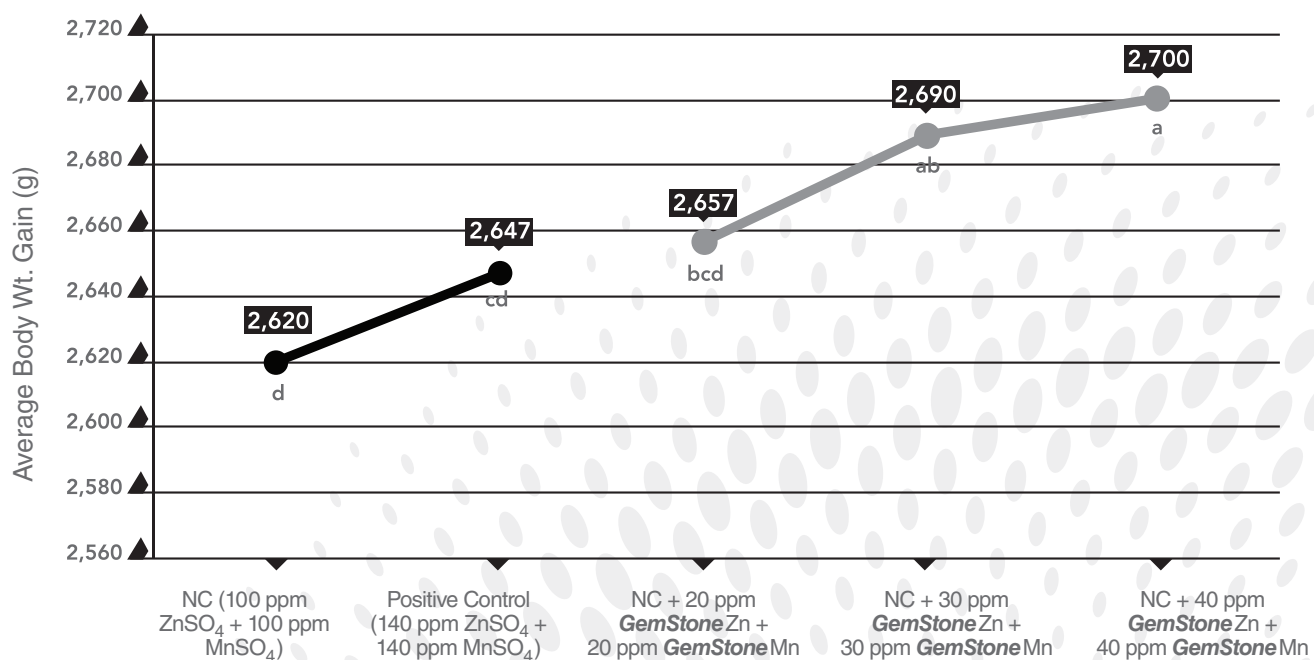


Negative Control = NC  
Means with different superscripts are significantly different (P < 0.05).

(AHPharma, 2014-2)



### DAY 0-49 AVERAGE BODY WEIGHT GAIN (g)



Negative Control = NC  
 Means with different superscripts are significantly different (P < 0.05).

(AHPharma, 2014-2)

# Research Study #3

Purpose: Determine the effect of **GemStone** Zn compared to other commercially available zinc sources on the live performance of broiler chickens (0–49 days of age) including market weights, feed conversion, bone ash and hock disorders.

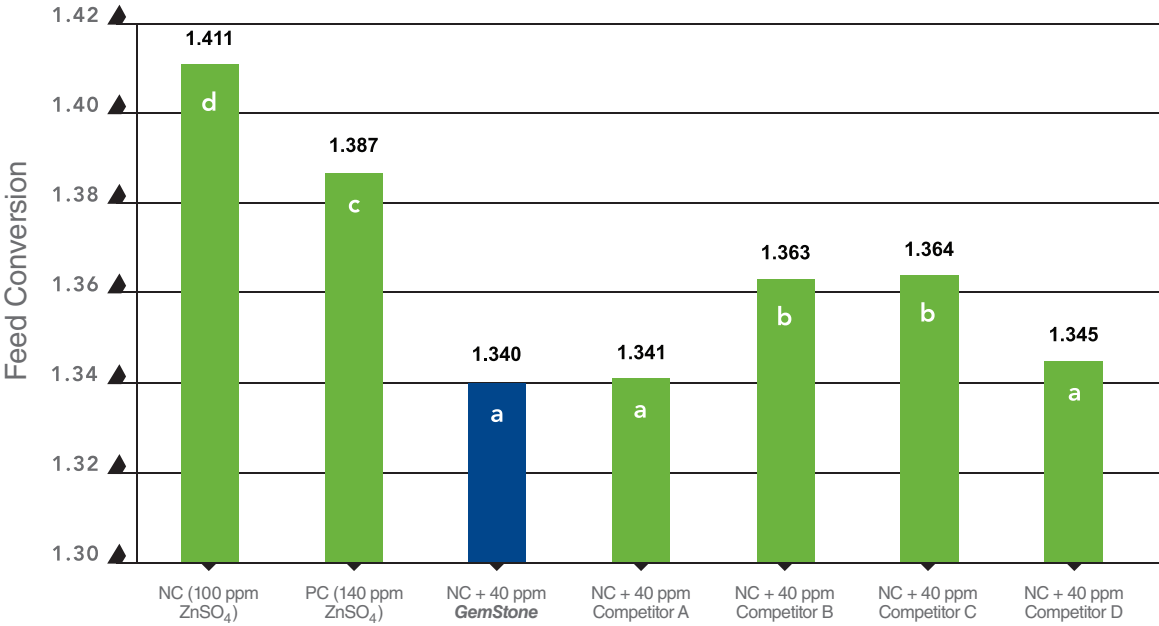
Procedures: Each test group contained 50 mixed-sex broilers (50:50 ratio) randomly assigned into 12 replicates per group for a total of 600 animals per treatment.

Starter: Days 0–21 | Grower: Days 22–42 | Finisher: Days 43–49

Body weights and feed conversion were measured on days 21 and 49. Percentage bone ash was determined on days 21 and 49.

## Results:

### DAY 0-21 FEED CONVERSION

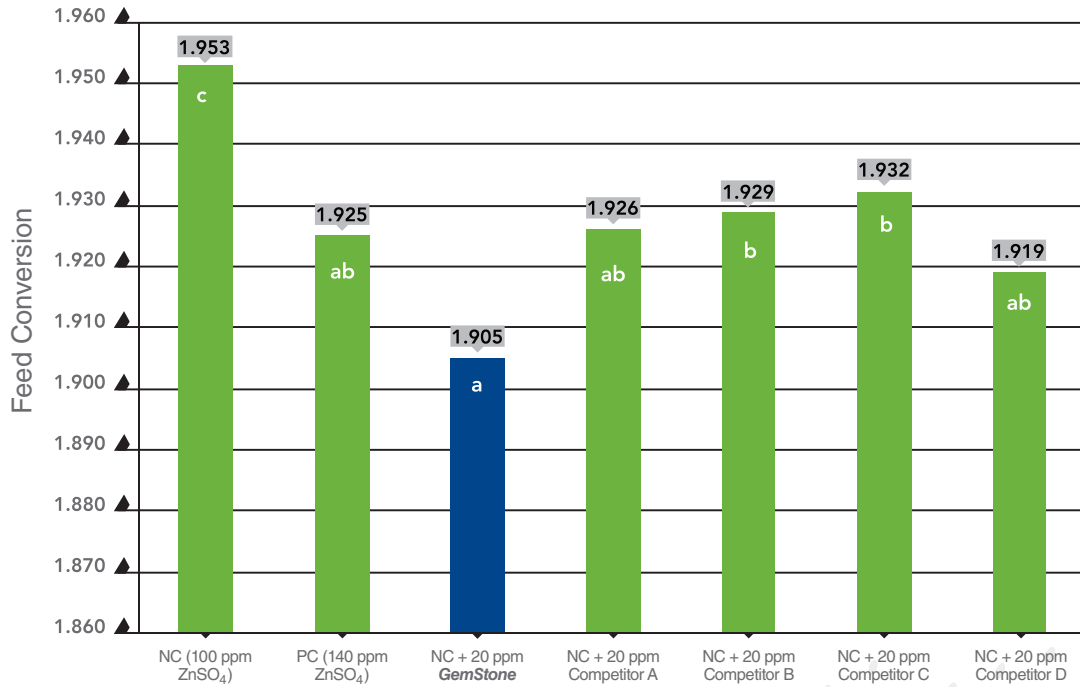


Negative Control = NC  
 Means with different superscripts are significantly different (P < 0.05).

(AHPharma, 2014–3)



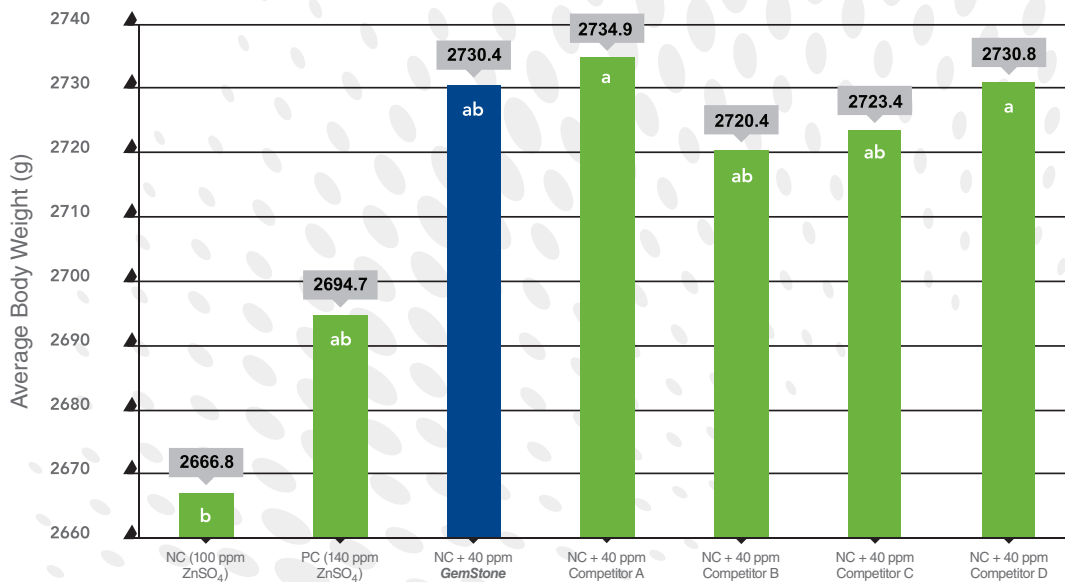
## DAY 0-49 FEED CONVERSION



Negative Control = NC  
Means with different superscripts are significantly different (P < 0.05).

(AHPPharma, 2014-3)

## AVERAGE BODY WT. (g) DAY 49



Negative Control = NC  
Means with different superscripts are significantly different (P < 0.05).

(AHPPharma, 2014-3)

## Research Study Summary

Study #1. Relative biological value and zinc deposition measures of Zn from **GemStone** was approximately 24% to 30% greater than Zn from zinc sulfate.

Study #2. The 40 ppm of added Zn and Mn from **GemStone** improved live performance and coccidial lesion scores versus the 40 ppm added Zn and Mn from sulfate sources.

Study #3. The 20 or 40 ppm of added Zn from **GemStone** provided either equal or better results for live performance versus today's premium organic trace minerals.

Overall: **GemStone** OTM's are a highly available source of supplemental dietary trace minerals.

## Guaranteed Service & Support

As a leader in mineral nutrition, Phibro has been committed to providing excellent customer service. Our customer solutions team is available to meet your order and logistical needs; and our technical experts are ready to address and resolve all of your mineral nutrition questions and challenges.

Our long history gives us the knowledge and skills to understand that every customer has different needs and applications. Phibro has extensive experience in blending mineral premixes. We can also create specific OTM concentrations – 18%, 15%, 12%, 10%, etc. – to match your specific formulation needs.

Contact your Phibro Representative or Customer Solutions Representative to request more information or to place your order for **GemStone** organic trace minerals today!

(800) 677-4623  
229 Radio Road, Quincy, IL 62305





## Start with excellence

At Phibro, we are committed to excellence, and we prove it every day with comprehensive product approval processes, robust process controls, superior sourcing, material evaluations, manufacturing systems and methodical finished-product analysis.

More than a stringent system of checks and balances, beyond science-driven programs, **Dynamic Quality Assurance** is the backbone of everything we do. It all starts here. **DQA** is the essential ingredient in what we produce.

### **DQA: a five-fold program:**

1. Education of our employees, suppliers and customers.
2. Process reviews to identify potential quality issues, contaminants and points of contamination.
3. Ongoing analysis to confirm effective implementation of established controls.
4. Identification of unknown hazards to ensure continuous product integrity.
5. Adaptability through continuous improvement to meet ever-changing feed safety issues.

We think of **DQA** as our responsibility, guiding every decision and influencing every aspect of how we do business to provide solutions for our customers.



## Our History

In 1858, a businessman from New York named Robert Prince bought a slate quarry near Bowmanstown, PA, which contained iron ore that eventually led Prince to the invention of “barn red paint.” It was in Bowmanstown that he founded the Prince Manufacturing Company, later known as Prince Agri Products, Inc., which is now a part of Phibro Animal Health Corporation.

Prince expanded into new markets for zinc, copper, manganese and iron serving the coal, brick, battery, glass, foundry and animal feed markets. To serve the large markets in the Midwest, Prince opened a grinding plant in Quincy, Illinois, in 1960, followed by major additions to the facilities and production capabilities.

In 1993, the company formed the Nutritional Specialties division to develop advanced, science-based animal nutrition products.

Today, Phibro is one of the largest providers of animal nutrition microingredients in the U.S. and continues to expand its line of technically advanced nutritional products.

**Gem**   
**Stone**®