



# Reduced Level of Zinpro® Performance Minerals® Maintains Or Improves Production Parameters in White Shrimp, *Litopenaeus vannamei*

## Study Objective



Evaluate supplemental Zn, Mn, Cu, Fe, and Se, from Zinpro Performance Minerals (ZPM), on growth performance, immune status, and meat quality of white shrimp, *Litopenaeus vannamei*

## Study Duration



Shrimp received experimental diets for 8 weeks; 90 total shrimp underwent immune challenge with decreased water temperature and *Vibrio harveyi* injection

## Animals



1080 juvenile white shrimp, *Litopenaeus vannamei*; 4.43 g initial body weight

## Treatments

**Inorganic:** 120 ppm Zn as ZnSO<sub>4</sub> + 60 ppm Mn as MnSO<sub>4</sub> + 32 ppm Cu as CuSO<sub>4</sub> + 100 ppm Fe as FeSO<sub>4</sub> + 0.3 ppm Se as Na<sub>2</sub>SeO<sub>3</sub>

**Inorganic/ZPM:** Iso total mineral levels, with substitute of 50, 20, 10, 50, and 0.3 ppm from ZPM Zn, Mn, Cu, Fe, and Se, respectively

**ZPM:** 50% inclusion rate of minerals from Inorganic treatment, using ZPM

## Location



Kasetsart University, Bangkok, Thailand



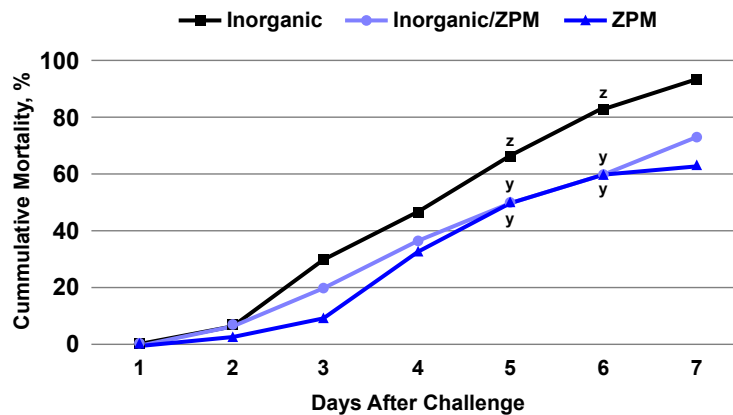
## Results Summary

ZPM fed in combination with inorganic minerals, or alone:

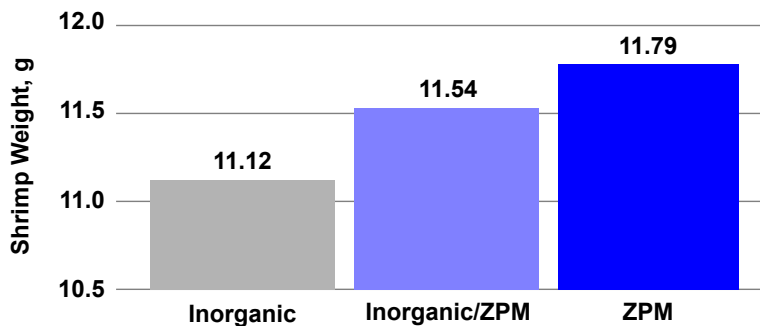
- Decreased cumulative mortality of shrimp challenged with *Vibrio harveyi*
- Numerically increased growth, with the highest value observed for shrimp consuming 50% supplemental mineral levels from ZPM

ROI was 16% greater for shrimp fed less total mineral from ZPM and 11% greater for shrimp consuming a combination of ZPM and inorganic mineral.

## Cumulative Morality of Challenged Shrimp



## 8-Week Shrimp Weight



Jintasatoporn, O., T. Ward, S. Chumkam, and O. Jintasatoporn. 2015. The efficacy of mineral-amino acid complex (Zn, Mn, Cu, Fe, and Se) in diets to growth performance, immune status and meat quality of white shrimp, *Litopenaeus vannamei*. *Aquac. Indones.* 16(1):33-37.

