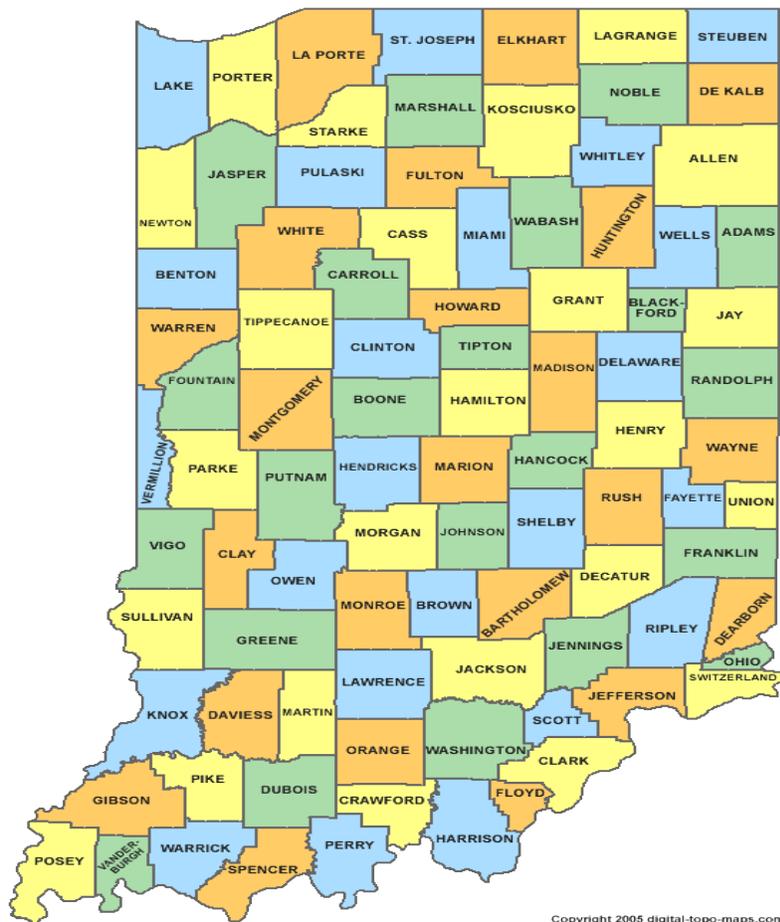


## Multimin PUTS MICRO MINERALS ON THE MAP!

### INDIANA – Micro Minerals (Cu, Mn, Zn, Se)in Cattle:

A deficiency of manganese in beef cattle under natural conditions has been reported in only a few areas of the northwestern United States. Deficiency symptoms include reduced fertility in cows and crooked calf syndrome in young calves. Crooked calf syndrome is typified by weak legs and swollen joints in newborn calves. States east and northeast of Missouri (i.e., Illinois, Michigan, Ohio, and Indiana) produce feed grains and forages that are deficient in selenium (less than 0.1 ppm selenium). Generally, cattle feeds grown on sandy or acidic soils in other areas may also be deficient in selenium. Occasional soil tests are necessary to determine if selenium deficiency may be a problem on a particular farm. Zinc deficiency is observed most frequently in corn and occurs throughout the state. Conditions which favor zinc deficiency are: (1) high pH generally above 7; (2) high soil phosphorus especially when combined with high rate of phosphorus as a row starter and (3) cool wet soil conditions. Wheat corn and soybeans occasionally are found to be copper deficient. Such deficiencies are most apt to occur in acid organic soils, such as the Adrian muck, but can also show up on the black sandy soils of northwestern and north central Indiana.



Cattle with trace mineral deficiencies often show no clinical signs until they are severely deficient, but a chronic deficiency inhibits performance and decrease production.

Clinical signs of copper deficiency include:

- Immune suppression – disease breakouts and failure to respond to vaccination
- Rough, red dull hair coat
- Anemia

Clinical signs of selenium deficiency include:

- Muscle degeneration (white muscle disease)
- Reproductive failure
- Immune suppression

Clinical signs of manganese deficiency include:

- Bone abnormalities
- Reduced growth rate
- Reduced fertility

Clinical signs of zinc deficiency include:

- Compromised hoof integrity
- Bull reproductive failure
- Anorexia and weight loss esp. in calves

Where does Multimin fit in?

- Multimin provides zinc, manganese, copper and selenium in a readily available form as an injection.
- Multimin rapidly increases trace mineral status of animals.
- Multimin rapidly increases liver storage of trace minerals following injection.
- Multimin bypasses antagonists in feed, forage, distillers grain and drinking water that can reduce the absorption of these critical trace minerals.

Reference :

Hale C, Olson K.C. Mineral supplementation for Beef Cattle

Mengel D.B. Role of micronutrients in efficient crop production.

