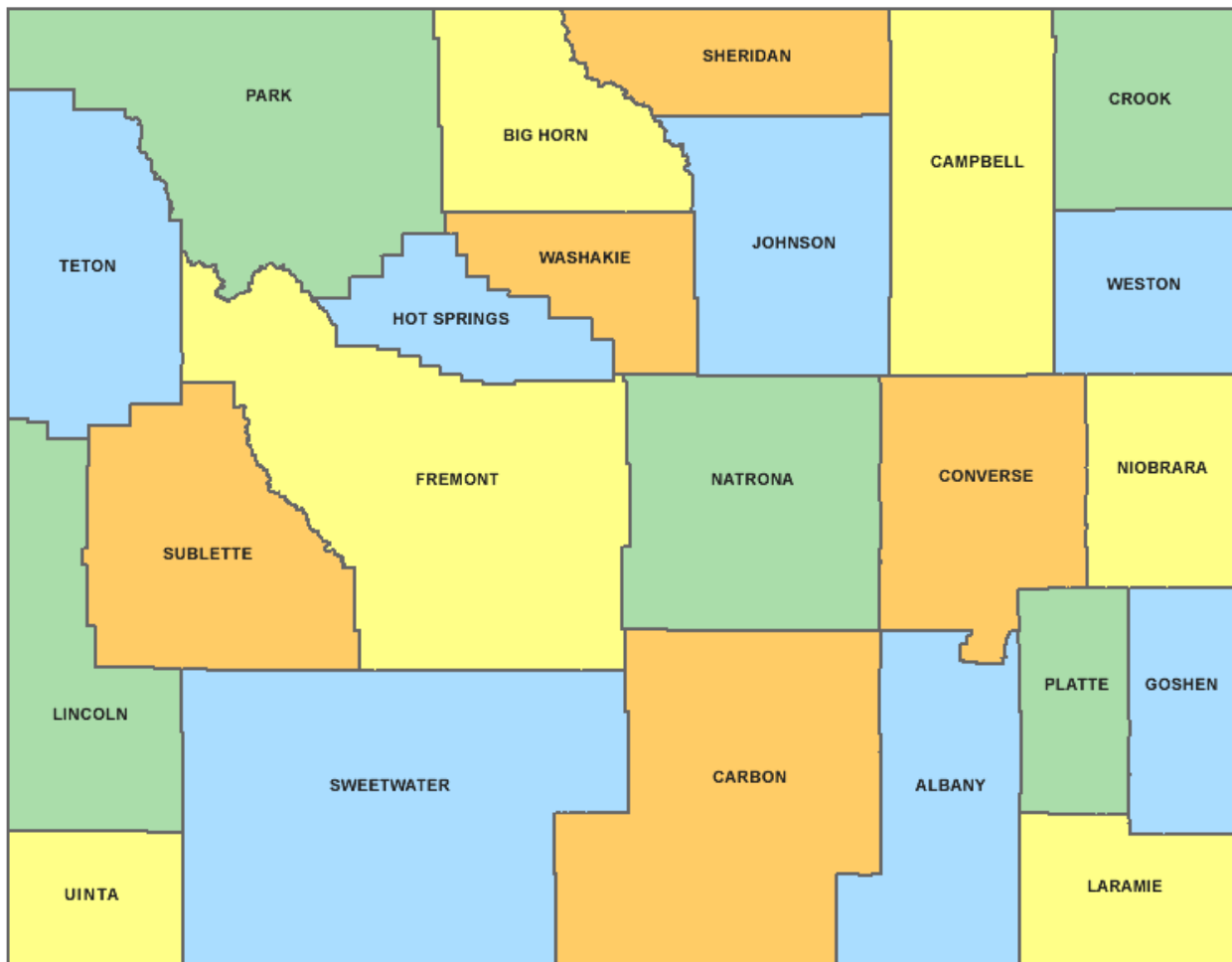


## Multimin PUTS MICRO MINERALS ON THE MAP!

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

The occurrence of abomasal ulcers/tympani in range calves of eastern Wyoming has been an increasing problem. The causes of abomasal ulcers are complex. Previous data showed a high correlation between abomasal ulcers and copper deficiency as determined by hepatic copper concentrations. A feed analysis of Wyoming hay indicated improper copper: molybdenum ratios of less than 3:1, low zinc and high iron. Copper values of hay were in low normal range. Excessive levels of zinc and molybdenum or sulfur will reduce availability of copper and copper and selenium and zinc play major roles in the immune system. Copper deficiency induced by an excess of either molybdenum or iron impairs neutrophil phagocytic function even more than a diet with low levels of copper.



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 :

Mills K.W., Johnson J.L., Jensen R.L., Woodard L.F., Doster A.R. Laboratory findings associated with abomasal ulcers/tympany in range calves.