

## Multimin PUTS MICRO MINERALS ON THE MAP!

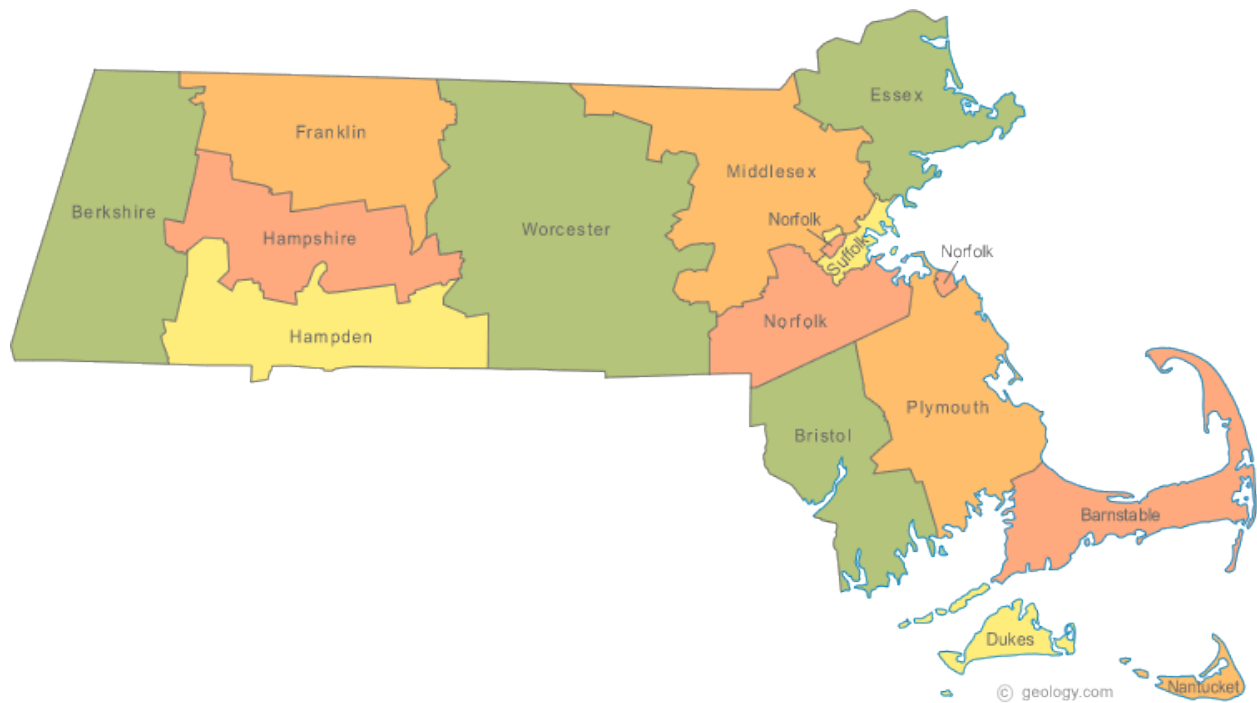
### MASSACHUSETTS – Micro Minerals (Cu, Mn, Zn, Se) in Cattle:

The supply of minerals in forages to grazing cattle does not meet the dietary requirement of most trace minerals, because of a low forage mineral content or the presence of antagonists.

Manganese content of feedstuffs is variable and usually higher than the animals' requirement.

Excess manganese supplementation does not create a problem because it is relatively non-toxic and has a wide margin of safety. Zinc is often deficient in forage-based diets. Other divalent cations (calcium, copper, manganese, iron) when found in the diet in excessive amounts can increase the requirement for zinc due to a reduced bioavailability. Diets containing excessive amounts of iron, molybdenum and sulfur result in significant increases in the requirement of copper and diets containing excessive amounts of copper will result in an increased requirement of zinc.

Forage selenium concentrations are highly correlated with soil selenium concentrations. Forages grown in the Plains often have high concentrations of selenium and forages grown in the northeastern and northwestern U.S. are low in selenium, with forages grown in other areas of the U.S. being highly variable in selenium content.



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 :

Greene L.W, Johnson A.B., Paterson J., Ansotegui R. Role of trace minerals in cow-calf cycle examined.