

## Deficiency Symptoms of Major Nutrients

### Iron (Fe)

- Deficiencies are virtually unheard of except in horses who have lost large amounts of blood

### Selenium (Se)

- Decreased immune function
- Poor stress tolerance
- Exercise related problems
- Decreased performance

### Cobalt (Co)

- No known deficiency symptoms in horses

### Copper (Cu)

- Poor stress tolerance
- Exercise related problems
- Frequent infections and poor wound healing
- Premature aging
- Bone and joint abnormalities
- Arthritis, tendon and ligament problems
- Blood vessel disease

### Zinc (Zn)

- Poor wound healing
- Decreased fertility
- Increased infections
- Suboptimal performance
- Poor stress tolerance



### Calcium (Ca)

- Most potential in pregnant and growing horses
- Trembling, excitability, muscular cramps
- Irregularities of heart beat

### Manganese (Mn)

- Increase of bone and joint diseases such as arthritis

### Phosphorus (P)

- Bone deformities in developing and growing horses
- Reduced reproductive performance
- Fertility problems

### Magnesium (Mg)

- Deficiency unlikely with typical horse diets
- Muscular problems
- Hypersensitivity

### Sodium (Na)

- Dehydration
- Weakness, trembling, loss of appetite, excessive thirst
- Increased temperature and decreased ability to exercise

### Potassium (K)

- Muscular weakness
- Cramping
- Irregular heart beat

### **Vitamin A**

- Poor night vision
- Dry, thick skin
- Poor hair coat/hair loss
- Abnormal/weak bones
- Decreased fertility

### **Vitamin D-3**

- Abnormal bone growth
- Loss of appetite
- Inability to stand

### **Vitamin E**

- Decreased immune function
- Excessive muscle damage
- Exercise related problems and poor stress tolerance

### **Riboflavin (B Vitamin)**

- Decreased aerobic energy
- Abnormal functioning of other B vitamins

### **Thiamin (B Vitamin)**

- Nervousness and irritability
- Muscle cramping and pain
- Picky appetite and swelling of muscles

### **Biotin (B Vitamin)**

- Shelly, brittle hooves

### **Methionine (Amino Acid)**

- Poor growth
- Poor stress tolerance
- Poor hoof quality
- Tendon and ligament problems