Phosphorus (P-Mix) Growth and Reproduction

- **Phosphorus and calcium together make up 75% of the total amount of minerals in the bodies of farm animals, 90% of the minerals in the skeleton.**
- **Phosphorus is especially important as more bodily functions are tied to it than to any other nutrient. Besides building strong bones and teeth, it is an important part of many proteins, including the casein in milk.**
- **Phosphorus regulates enzyme activity and helps maintain vital pressure balance between cells.**
- **Phosphorus deficiency results in rickets in young animals, osteomalacia in older animals, reduced growth rates, reduced production and silent heats in cattle.**
- **Vitamin D is involved in kidney re-absorption of phosphorus and phosphorus deposition into bone.**
- **Excess calcium & magnesium decrease phosphorus absorption. Excess phosphorus may reduce feed intake, may have a slight laxative effect and in ruminants may contribute to urinary calculi.**
- **Excess phosphorus may result in lameness and spontaneous fractures of long bones.**

Phosphorus (P-Mix) 2

- **Calcium:Phosphorus ratio is important - low calcium can depress phosphorus absorption; high phosphorus may result in urinary calculi (water belly in ruminants).**

- **Low calcium and phosphorus appear to cause low vitamin D-3 production. Parathyroid hormone decreases fecal loss of phosphorus which may also be controlled by vitamin D-3.**

- **Phosphorus absorption takes place mainly in the proximal (upper) small intestine. This absorption system can become saturated under certain conditions; 1. Too much dietary phosphorus or 2. When hormonal control of absorption is out of balance.**

Phosphorus (P-Mix) 3

Approximately 70-80% of phosphorus is recycled via saliva. This is particularly important in ruminants. Feed, water consumption and other factors that affect feed intake and reduce saliva flow will reduce absorbed phosphorus. Under these conditions, there will usually be increased urinary phosphorus losses.

Monogastric animals do not efficiently utilize plant phosphorus from grains and oilseed sources. Phosphorus deficiency leads to – anestrus, silent heats in dairy and beef cattle.

If a cow is starved of phosphorus, she is very unlikely to bear a calf.

Phosphorus is the only mineral known to-significantly affect the eating quality of beef.

- **Ca, Mg, Mn, Zn, Fe, Al and Be interfere with the adsorption of P, as well as the opposite being true, due to the formation of insoluble phosphates.**

- **Low Cu – high Mo intakes increase the loss of body P (Cu is required for phospholipid synthesis).**

Phosphorus (P-Mix) 4

The optimum amount is in a range of 0.37-0.41% to the total dry matter. An excess amount of calcium will increase the need for phosphorus. These elements go hand in hand. There is a definite ratio between calcium and phosphorus. When calcium is excessive cattle will eat phosphorus to an excess and then excrete both calcium and phosphorus down to optimum. Phosphorus is acid in nature.

EFFECT OF AN EXCESS OF PHOSPHORUS

- **Excess phosphorus causes and imbalance of zinc, manganese, magnesium, calcium, iron and other elements and symptoms of phosphorus are the same as deficiencies of these other elements because it ties them up as insoluble phosphate salts which are not usable by an animal.**
- **Increases need for iron, aluminum, calcium, magnesium, zinc and manganese.**
- **Poor skeletal growth.**

EFFECT OF A DEFICIENCY OF PHOSPHORUS

- **Increases need for Vitamin D.**
- **Deficiency can be created by excess iron, aluminum, calcium and magnesium.**
- **Depraved appetite-chewing wood, bones, dirt etc.**
- **No heat period, delayed heat period, silent heat period and prolonged interval between calving and first heat period.**
- **Depresses the appetite, reduced rate of gain, milk production falls off.**
- **Un-Digested grain in manure.**
- **Higher incidence of bloat.**
- **Milk fever in dairy herds.**