



Christopher Henney
President and CEO
614-326-7520, ext. 2
chenney@oaba.net

Talking Points - Why do we need Phosphorus Fertilizer?

Overall Message

- As plants grow, they take up nutrients from the soil. Just as we take food out of the pantry or the refrigerator when we eat, plants pull their food from the soil.
- As the refrigerator needs to be re-stocked with nutritious food, nutrients in the soil must be replenished after crops have been harvested.
- Usually, soil nutrients do build naturally over time in most areas, but often they build slowly and are not immediately available for crop nutrition.
- That's where the nutrients from fertilizers play an essential role, ensuring each season's crops have the nutrients necessary to yield nutritious food.

Did You Know?

Phosphorus, the 11th most common element on earth.

It is fundamental to all living things.

- It is essential for the creation of DNA, cell membranes, and for bone and teeth formation in humans.
- It is vital for food production since it is one of three nutrients (nitrogen, potassium and phosphorus) needed for plant productivity.
- Phosphorus cannot be manufactured or destroyed, and there is no substitute or synthetic version of it available.

P is Essential for Animal Nutrition

- P is a major component of bones and teeth
- It is important for lactating animals
- P and calcium (Ca) are closely associated in animal nutrition
- It is essential for energy transfer and utilization

P is Essential for Plant Nutrition

- Taken up mostly as phosphate (H_2PO_4^- and HPO_4^{2-})
- Involved in photosynthesis, energy transfer, cell division and enlargement
- Important in root formation and growth
- Improves the quality of fruit and vegetable crops
- Is vital to seed formation
- Improves water use
- Helps hasten maturity

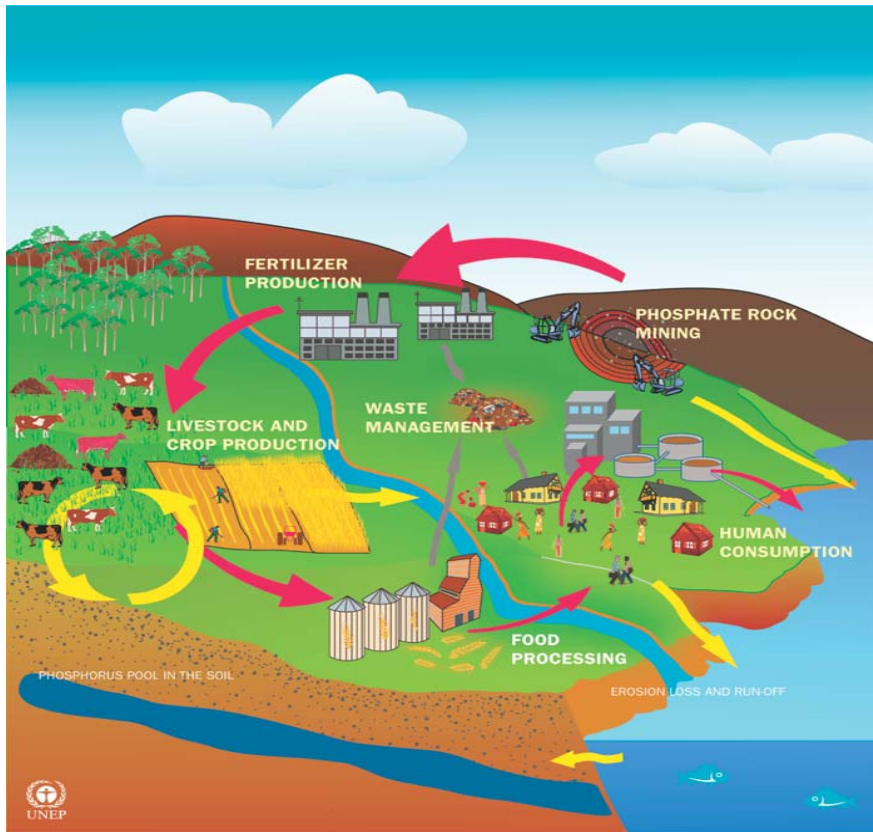
Phosphorus Fertilizer and the Soil

- Common commercial P fertilizers are highly water soluble (equal to or greater than 90%)
- Once dissolved in soils, orthophosphate is available for plant uptake

Phosphorus Fertilizer and the Soil, cont.

- P fertilizer may be broadcast on the soil surface (liquid or dry) or it can be placed in a concentrated band in the seed bed
- There may be advantages to banding, including
 - o Early crop growth enhancement
 - o Concentration of P to minimize soil contact and reaction
 - o Placement in the root zone

What are the different contributors of phosphorus into our waterways?



Red arrows show the primary direction of phosphorus flows.

Yellow arrows show the recycling of phosphorus in the crop and soil system and movement toward water bodies.

Gray arrows show phosphorus lost through food waste in landfills.

How does phosphorus impact the environment?

Phosphorus and the Environment

- Eutrophication – the natural aging of lakes or streams by nutrient enrichment
- Nutrient additions can accelerate the process
- P is often the limiting element
- Dissolved oxygen is depleted by excessive plant growth
- Best management practices (BMPs) can help minimize P runoff from fields

Sources

The Earth Institute, Columbia University

The Fertilizer Institute

International Plant Nutrition Institute

United Nations Environment Programme