AUSTRALIAN MEAT PROCESSOR CORPORATION

# Phosphorus on irrigation sites

Phosphorus is a naturally occurring nutrient which is essential for both plants and animals for bone and muscle growth, metabolic activity and reproduction.

Australian soils are generally deficient in phosphorus for a number of reasons, including low phosphorus content in the parent rock and long periods of in-situ ageing.

To increase phosphorus content in soils, a phosphorus material, for example, superphosphate and effluent is typically applied in Australia to stimulate plant growth.

**Abattoir effluent is especially useful for plant growth as over 80% of the contained phosphorus is in the highly available orthophosphate form**

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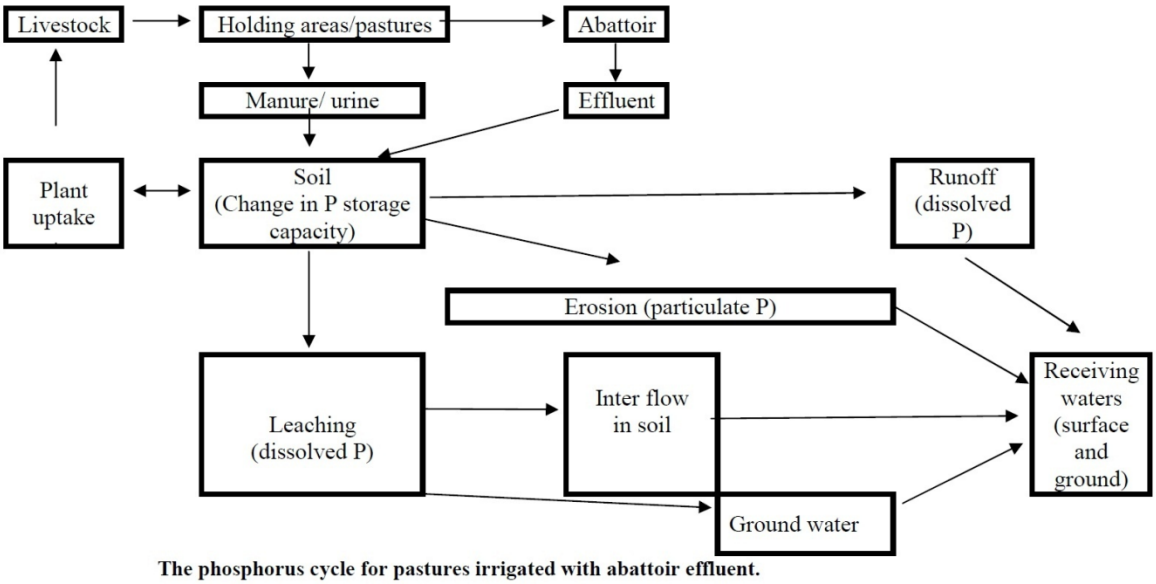
Orthophosphates are dissolved in the soil solution for take up by vegetation.

**Australian soils have a significant ability to sorb phosphorus**

Phosphorus accumulation on soil is not normally an issue, the transfer of phosphorus to a body of water is of more concern as it could stimulate excess biological activity resulting in algal blooms.

Algal blooms can be toxic and reduce oxygen concentration in water when they die off and decompose resulting in fish kills. Irrigation using abattoir effluent should be managed to minimise opportunities for phosphorus to be conveyed to a susceptible body of water




**The phosphorus cycle for pastures irrigated with abattoir effluent.**

Contact:
ampc@ampc.com.au
cis@mla.com.au

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## *Runoff management*

About 80% of the phosphorus in runoff from pasture is in a form that is readily available.

**Therefore, management of run-off is essential in controlling phosphorus levels**

Vegetated buffers reduce the rates of phosphorus transfer from effluent irrigated fields to surrounding bodies of water.

## *Percolation to groundwater*

Phosphorus in groundwater is unlikely to cause excessive algal growth unless it is exposed to sunlight, however, it is not a sustainable practice.

The sorption of phosphorus to soil is an equilibrium reaction and not all phosphorus can be retained in the soil if it becomes saturated. Once the soil becomes saturated with phosphorus, the dissolved phosphorus can travel through the soil and enter the groundwater.

Some soil types are more susceptible to this phenomenon than others, including sandy soils, low Al and Fe content soils, strong clay soils where phosphorus can move to the groundwater through cracks and the soil overlaying shallow groundwater.

## *Erosion*

Erosion is the main cause of phosphorus removal from soil after absorption. Maintaining a thick vegetation layer on the irrigated lands can reduce the erosion rate. Soil type will indicate the susceptibility of a site to erosion.

Soil type can vary greatly, so a site specific inspection will identify areas to be targeted for intensive management.

Abattoir effluent contains a number of nutrients and attributes other than phosphorus that can impact surrounding soils and bodies of water, such as nitrogen.

Concentrations of key contaminants can vary between processing sites and should be verified at each site as part of the irrigation management.

## *Further information*

Full reports from projects on phosphorus in abattoir effluent, can be found at the website:

**www.redmeatinnovation.com.au**

The following reports are currently available:

- Phosphorus sustainability on irrigation sites

**Other environment management information can be found in the Red Meat Industry environment Best Practice Gruidelines**

Contact:
ampc@ampc.com.au
cis@mla.com.au