



KYNOFOS 21

THE CHOICE OF GRAZIERS IN THE KNOW



The Northern Australian summer rainfall season is a time of active growth for pasture and cattle. Cows in particular need additional nutrients and minerals to facilitate growth, lactation, and pregnancy. Although green summer pasture has a sufficient supply of energy and protein, it lacks **phosphorus (P)** and cannot fulfil the high phosphate requirements of animals.

Of all the minerals, it is almost impossible to overstate the importance of phosphorus in the nutrition of cattle. After calcium, phosphorus is the most plentiful mineral in the body. It is present in all the cells of the body (mostly in the skeleton) and it is important in nearly every biochemical function. Therefore, any production above maintenance will increase the P requirement of the animals and supplementation will be required.

Phosphorus supplementation in the summer rainfall areas is very important to overcome the gap between the animal's requirements and what the pasture can provide. The P requirements of an animal is directly correlated with its production status. The higher the production needs of animals e.g. growth, lactation, and pregnancy (as is traditionally seen in a summer rainfall area in Northern Australia), the higher their P requirements. Ruminants have the ability to mobilize P from their skeletons and other body organs. These reserves can however not last forever and must be constantly replenished. It is important to remember that (depending on the P status of a herd) this year's P supplement will only be reflected in next year's herd health, performance, calving and weaning percentage. Choosing a high-quality Phosphorus supplement, with proven digestibility, that will deliver consistent results, is therefore a long-term investment in your herd's health, growth, performance, fertility, and profit.

When choosing a Phosphorus source, consider more than just the cost per bag or tonne and instead **focus on the digestibility of the Phosphorus and performance of the animals**. The quality of raw materials used, the consistency of manufacturing, inclusion of trace minerals, weather resistance ability and technical advice, are all further factors that should also be considered when buying feed phosphates for wet season supplementation programs.

Global Independent trials have all shown significant variances in the quality and digestibility of phosphorus between the different sources. Factors causing digestibility variances between different MAP, MSP, MCP, MDCP and DCP sources, arise because of the different manufacturing process and chemical formulations.

In the manufacturing process of any Inorganic Feed Phosphate (IFP), the two most important factors to consider are the **quality of the raw materials** used such as the Phosphoric Acid and the **type of manufacturing process**.



BEC Feed Solutions is the exclusive distributor of Yara Animal Nutrition South Africa phosphates in Australia.

Knowledge grows

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Raw Material Quality

The first factor that can influence the phosphoric acid is the type of phosphate rock ore. There are two types of phosphate rock ore found in nature.

The first type of ore is Sedimentary rock. Most of the Phosphate rock deposits around the world are sedimentary rock (old seabed's) as seen in Australia, Morocco, China, USA, and some places within Europe.

The second type is Igneous rock. The Phosphoric acid produced from Igneous apatite rock is a much cleaner, higher quality Phosphoric acid than that produced from Sedimentary rock. Foskor's Phosphate rock mine in South Africa and Yara's Phosphate rock mine in Finland are 2 of only a handful of (maybe 5 - 6) Igneous apatite Phosphate rock mines globally. These 2 types of phosphate rock ore differ significantly (Globally) in the P content as well as other minerals and heavy metals.

Yara Animal Nutrition South Africa use only defluorinated Phosphoric acid from Foskor in South Africa and their own Yara produced Phosphoric acid from Europe in the production of their Mono-Di-Calcium Phosphate (Kynofos 21). Both these sources of Phosphoric acids are produced from Igneous apatite phosphate rock.

The phosphoric acid is defluorinated to reduce the undesirable elements such as Fluorine, Cadmium, Arsenic, Lead and Mercury to ensure a consistent, high Quality and Digestible feed phosphate source with very low levels of heavy metals that meet the EU Standards continuously.

Manufacturing Process

Phosphate products can be produced in two different processes. The first process is a continuous manufacturing process. Factors such as the design of the plant, temperature, pressure and reaction time of raw materials can be controlled, creating product with a consistent quality. Secondly, phosphate products can be produced in single batches. For each batch the raw materials are mixed together with no (or limited) control over the actual process or critical factors such as temperature, pressure and reaction time. This results in differences between batches, product of poorer quality, inconsistency in total P %, as well as variable solubility of P in citric acid and water.

In the production of Kynofos 21, Yara Animal Nutrition SA uses a continuous manufacturing process where finely milled, high quality calcium carbonate is reacted with high quality, defluorinated Phosphoric Acid.

Quality Control & Traceability

To ensure that Yara Animal Nutrition South Africa delivers a consistently high-quality product, a stringent quality control system is followed. Sampling and testing are performed before, during and after the manufacturing process of Kynofos 21. All raw materials arriving on site gets tested. Throughout the manufacturing process numerous samples are tested. The final samples are taken and tested just before bagging.



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Yara Animal Nutrition South Africa keeps retention samples for 3 years. At the Yara laboratory samples are tested and analysed daily. External analysis is conducted on a monthly basis to verify and crosscheck results.

BEC Feed Solutions keep retention samples for 3 years of each batch of Kynofos 21 received and conduct surveillances testing 3 – 4 times a year as part of our stringent Quality Assurance protocol.

Yara Animal Nutrition adhere to strict GMP as well as ISO standards to ensure products of high quality. Kynofos 21 is tested for the following:

- Phosphate content – to ensure the product falls within the 21 % minimum specification.
- Calcium content – Calcium must be within 15 – 18 %
- Moisture – Must be below 2 % to ensure product stays free flowing and does not form lumps.
- Water soluble P – All IFP's are chemical mixtures of MCP, DCP and sometimes even TCP compounds. As the P from MCP is 100 % soluble in water and the P from DCP and TCP is insoluble in water, the water soluble P is an indication of the ratio of MCP and DCP in a phosphate product.
- Citric soluble P – This value should not be less than 95% – Any product testing under 95% citric acid solubility is classed as being a low quality material.



Do not be fooled – The water solubility % of a phosphate is not the product's digestibility or availability.

Digestibility

There are many ways to determine the P digestibility of products. TAC (True Absorption Coefficient) values of a product, is but one of them. The TAC values for phosphate products were determined by the French National Agriculture Research Institute. The TAC values are stated to be "The relationship between the TAC of different phosphates and their solubility in citric acid and ammonium citrate has been determined by INRA. From its results, it can be observed that, apart from alumino-calcium phosphate, a phosphate's true absorption coefficient increases linearly in relation to its solubility in both media.

Independent studies were conducted at Wageningen University to determine the pre-caecal P digestibility of MDPCP sources such as Kynofos 21, in broilers. From the above-mentioned study it was determined that Kynofos 21 has a Pre-Caecal Digestibility of 80.2%.

Conclusion

For cattle to meet their phosphate requirements, they need to bridge the phosphate short falls of the pasture and/or feeds. The correct phosphate supplement, one with high consistent quality and proven digestibility, will increase the performance of your herd. Kynofos 21, has proven its worth for over 30 years in Australia. It can be used in loose licks, compound feeds, lick blocks or fed straight from the bag.

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