

Clover Fonterra Ingredients Newsletter

MARCH TRENDING NEWS: Whey Protein Concentrates

High in protein, with an almost endless list of applications, Whey Protein is rapidly digested by the body, allowing fast absorption of its nutritional benefits into the blood stream and muscles. It is also naturally high in the three essential branched chain amino acids (leucine, iso-leucine and valine) compared to other protein sources, helping support muscle maintenance, build and recovery. Application is in yoghurts, beverages and dairy desserts; as a superior source of protein fortification for nutritional products and infant food; as a gelling agent for meat products; as the ideal ingredient for sports nutrition applications e.g. protein bars, sport beverages and protein gels.

Supply:

EU: Milk production has been affected by limited feed at the beginning of winter and a decline in herd size. As per reports milk supply is not expected to increase until the second half of the year.

NZ: The region is currently at the end of its production season and supply is tight. Dry conditions during the season also contributed to the tight supply.

US/America: Current milk supply is just enough to meet local demand. Future supply out of the region will be determined by the effects of the trade and economic challenges, which might lead to recession.

SA: The Eastern Cape continues to experience water challenges, with the Northern Cape also reported to have lower than normal winter rains as well. The region generally experiencing reduced rainfall levels that is affecting farming.

Demand and product information:

Low milk production in the EU has affected butter production out of the region. Supply out of Oceania is reported to be tight due to seasonal lower milk production and demand remaining strong.

Cheese production out of the EU has been affected by the low milk volumes in the region. Production out of Oceania is also on the decline as the season tails off, with available stock fulfilling contracts.

Market tone for SMP is reported to generally be calm. SMP production out of Oceania is on a seasonal decline as available milk is directed to other products where contracts need to be fulfilled. EU production is mostly committed, which limits supply. The March tender for intervention stock is reported to have only sold 244 MT and has a balance of approximately 1000MT. Even though Oceania's WMP production remains strong, supply is tight as stock is committed for Q2

and Q3. Most of the WMP production out of the EU is focussed on its internal market, with very little available for the global market.

Outlook:

Reports show that supply out of all regions is tight and expected to stay that way for the rest of 2019. Global trade and economic challenges are affecting milk production and collection, over and above the normal seasonal declines.

Local: The Brexit challenges are reported to affect the SA exports as they affect the trade agreements currently in place. The International Monetary Fund's review of South Africa's 2019 projected GDP growth from 1.4% to 1.2% has put the country among the worst performers in sub - Saharan Africa.

You can, you should and if you are brave enough to start, you will – Stephen King





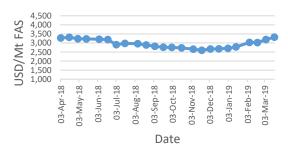
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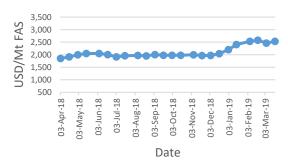
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COMMODITY PRICE MOVEMENTS

WMP Average Price Trend



SMP Average Price Trend



Butter Average Price Trend



ZAR/USD Movements



Let's get Technical: Protein

In this edition, we reviewing the 2 types of proteins and their associated characteristics.

Two types of milk protein









The natural state of casein in milk is called a casein micelle. This is a table aggregate made up of many casein proteins and calcium phosphate.

micelle. This is a table up of many casein cium phosphate.

milk takes the form of individual molecules or pairs of molecules 100x smaller than a casein micelle.





The large size of casein micelles gives milk its white appearance.

The small size of the whey proteins forms a clear solution in water (e.g. protein water).





Very tolerant of heat.

Sensitive to heat.



Caseins are sensitive to acidic conditions and become unstable (e.g. separate from milk) at a specific \underline{pH} range ($\sim pH 4.6$).

Remains soluble and stable under acidic conditions.



Caseins are heat stable but sensitive to acid.

Whey proteins are sensitive to heat but stable at acid pH in contrast to casein.







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