

Sustainable Feed Fat Nutrition



VOLAC WILMAR
FEED INGREDIENTS





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Volac Wilmar Feed Ingredients

is a joint venture which combines the nutritional reputation, global brand and sales network of Volac with the operational raw material logistics and scale of Wilmar.

Volac and Wilmar aim to set the agenda for sustainable and ethical sourcing and we believe that feed fats play a vital role in sustainable and productive livestock nutrition.

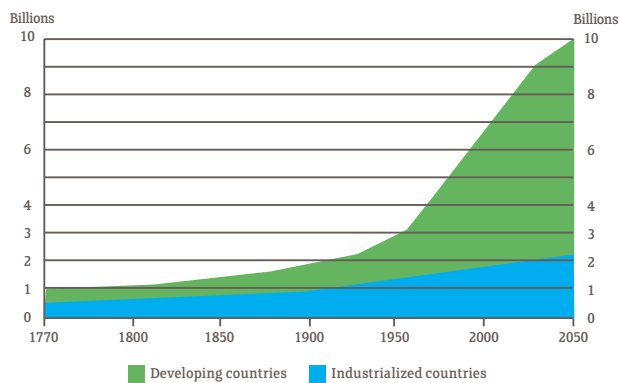
A Global Challenge

The global population is forecast to rise from 7 billion to 10 billion by 2050 which is estimated to increase the demand for meat by 75% and for milk by 53% compared to current production levels.

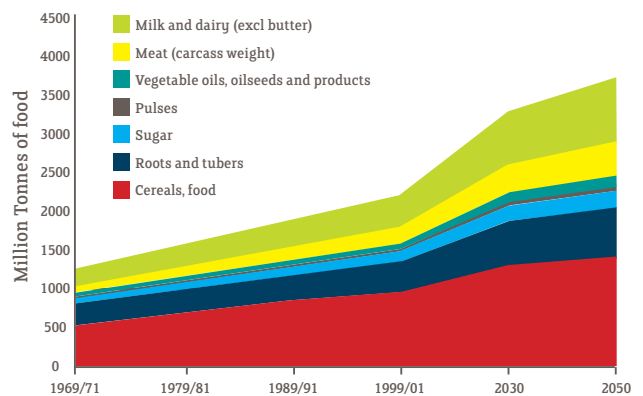
With finite land and resources available, livestock productivity must improve significantly to meet this demand, but it must be done in a way which respects and cares for the environment and animal welfare.

This is the global animal productivity challenge.

World Population Development



Future Food Requirements



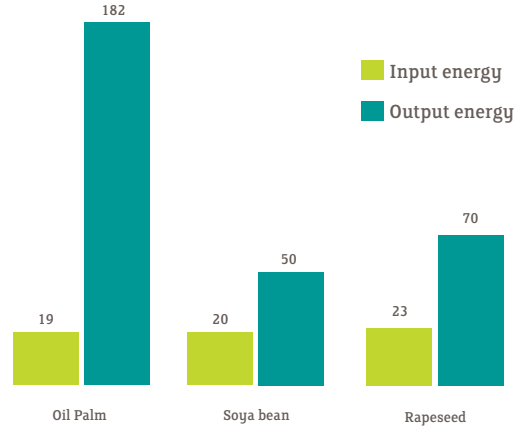
A Global Solution

A global animal productivity challenge needs global solutions. These solutions are complex but Volac Wilmar believes one part of the solution can be provided by feed fats, with particular benefits offered by palm oil. Feed fats have a very high energy concentration, are digested efficiently and can play a role in reducing methane from livestock production.

Palm oil is one of the most efficient sources of oil in the world. Compared to other oil crops, like soya bean, sunflower or rapeseed, palm trees produce by far the most vegetable oil per hectare of land and per unit of input.

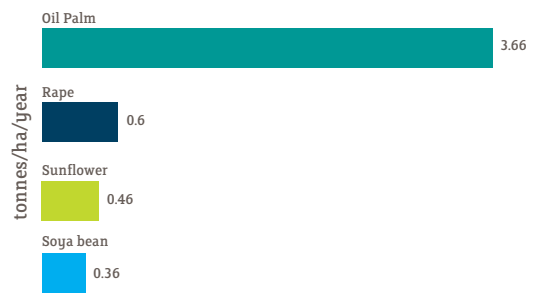
Because of its wide benefits, it is predicted that demand for palm oil will increase from 51 million tonnes today to between 120 and 156 million tonnes by 2050. If palm oil is to play a leading role in future global animal production it must be produced in a sustainable and responsible way.

Energy Input to Output



Source: Carl Bek-Nielson, 'Options for the World', Global Oils & Fats Business Magazine (Jul-Sep 2007)

Yield per hectare



Source: Oil World Annual 2006



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“No Deforestation, No Peat,
No Exploitation” Policy**

Sustainable and Responsibly-Sourced Palm Oil

Volac Wilmar is a member of the Round Table on Sustainable Palm Oil (RSPO) which was established in 2004 with the objective of promoting the growth and use of sustainable palm oil.

To support its aspiration to set the agenda for sustainable and ethical sourcing, Volac Wilmar sources palm oil products from Wilmar who have an industry-leading “No Deforestation, No Peat, No Exploitation” policy, with which it expects suppliers to be fully compliant. Wilmar works closely with communities, NGOs, industry partners, and financial institutions to ensure effective implementation of the policy.

Wilmar recognizes that while plantation development has contributed significantly to economic development, deforestation and other unsustainable practices can have negative consequences for people and the environment.

Core to the policy is a commitment to create a transparent sourcing network with full traceability.

Volac Wilmar holds an RSPO Trader’s License and an RSPO Distributor’s License is under application.

Volac Wilmar’s RSPO Ordinary Membership No. is 2-0646-16-000-00



Wilmar Policy

1. No Deforestation

- > No development of High Carbon Stock (HCS) Forests
- > No development of High Conservation Value (HCV) Areas
- > No burning
- > Progressively reduce Greenhouse Gas (GHG) emissions on existing plantations

2. No Development on Peat

- > No development on peat regardless of depth
- > Best Management Practices for existing plantations on peat
- > Where feasible, explore options for peat restoration by working with expert stakeholders and communities

3. No Exploitation of People and Local Communities

- > Respect and support the Universal Declaration of Human Rights
- > Respect and recognize the rights of all workers including contract, temporary and migrant workers
- > Facilitate the inclusion of smallholders into the supply chain
- > Respect land tenure rights
- > Respect the rights of indigenous and local communities to give or withhold their Free, Prior and Informed Consent (FPIC) to operations on lands to which they hold legal, communal or customary rights
- > Resolve all complaints and conflicts through an open, transparent and consultative process

Feed Fats to Improve Productivity

Fat supplements are used in diets for dairy cows and other species primarily to increase energy supply. This reflects the very high energy density of fat, containing around 2.5-times the energy concentration of cereal sources.

In the dairy sector, fat becomes increasingly important as the milk production potential of dairy cows' increases and the ability to supply sufficient energy to meet this genetic potential becomes increasingly difficult.

Fat is an essential nutrient; in the same way that animals have distinct requirements for nutrients such as protein, starch and fibre. Optimal production can only be achieved if the animal is supplied with sufficient fat to meet its requirements.

Improved efficiency

Fat is a unique nutrient and offers particular advantages over cereal sources traditionally used to increase energy supply for dairy cows. Unlike fermentable starch sources of energy such as cereals, fat does not add to the acid load in the rumen,

enabling energy density to be increased without increasing risk of acidosis (low rumen pH) and the negative effects this can have on animal productivity. Fat is therefore a very 'safe' form of energy.

Energy from fat is converted very efficiently to milk production, more so than for other sources of energy. Conversion of the metabolisable energy in fat to the net energy in milk output is in the region of 80% (Chilliard, 1993), compared to standard energy sources where efficiency is closer to 60-65%. This improves feed efficiency in dairy herds.

Better for the environment

Fats are not fermented in the rumen. Replacing carbohydrate sources of energy with fat reduces production of methane, one of the key greenhouse gases. Research data reported a 13.3% reduction in methane production per unit of milk when Volac's Megalac fat supplement was added to a dairy diet.



Improved fertility

Fat also plays a key role in improving cow fertility.

The key hormone associated with pregnancy is progesterone, which has its origins in the fat supplied in the diet. Research data show that feeding Volac's Megalac fat product to increase dietary fat concentration increases production of progesterone (Garnsworthy et al., 2008), which in turn increases the chances of successful pregnancy. Research has also demonstrated the ability of certain fats to improve quality of ovulated eggs and the developmental potential of embryos (Fouladi-Nashta et al., 2007).

Fat for monogastrics

Fat supplements are used in the monogastric sector as an energy source in a similar manner to that in ruminants. These solid fat products offer greater flexibility in diet formulation and can be used strategically to help improve meat quality.

Fat is a key nutrient in dairy and other diets and offers flexibility in ration formulation with the benefits of improved efficiency of production and more-sustainable farms.



Volac Wilmar feed fat products

The Volac Wilmar range of feed fats covers all the major categories within the animal feed sector while also providing raw materials for specific niche products. Fats are composed of individual fatty acids and their combination in a specific supplement influence the output achieved from that diet.

Products within our ruminant range are 'rumen-protected'. This means they pass through the animal's rumen and are digested in the small intestine, avoiding the negative effects on fibre digestion associated with 'rumen-active' sources of fat.

Megalac – more milk, better fertility

Megalac is the original rumen-protected fat. With over 30 years of research, backed-up with practical on-farm experience, it is one of the most proven feed ingredients on the market. Megalac is a calcium salt that combines fatty acids with calcium to produce solid granules of fat that pass through the rumen.

The key benefits of Megalac are that it increases milk production and improves dairy herd fertility. On average, adding Megalac to an animal's diet adds 2.3 litres of milk to what the animal produces each day. As a source of unsaturated fatty acids, Megalac also reduces the concentration of saturated fatty acids in milk.

Mega-Fat range – more milk fat

The Mega-Fat range is primarily for those farmers targeting an improved milk fat percentage.

Mega-Fat products contain a high concentration of the C16 (palmitic) fatty acids proven to increase milk fat production and overall productivity.

Mega-Fat is a calcium salt that contains a proportion of fat from our Megalac formulation. So in addition to increasing milk fat percentage, it also comes with the benefits of improved milk yield and fertility.

Mega-Fat 88 is a unique product targeted at increasing milk fat percentage while offering a near complete rumen-inert formulation, unlike some other high-C16 products on the market.

Mega-Fat Extra contains a very high concentration (97%) of the target C16 fatty acids.

Mega-Energy and Mega-Boost

Additional Volac Wilmar products include Mega-Energy and Mega-Boost. Both are designed as general energy supplements composed of differing types of fat and fatty acids that will fill particular niches in the fats market.

Megalac co-products

A variety of calcium salt products are produced at Volac's Liverpool factory. These include Megalac Plus, Mega-Pro and Mega-Flax:

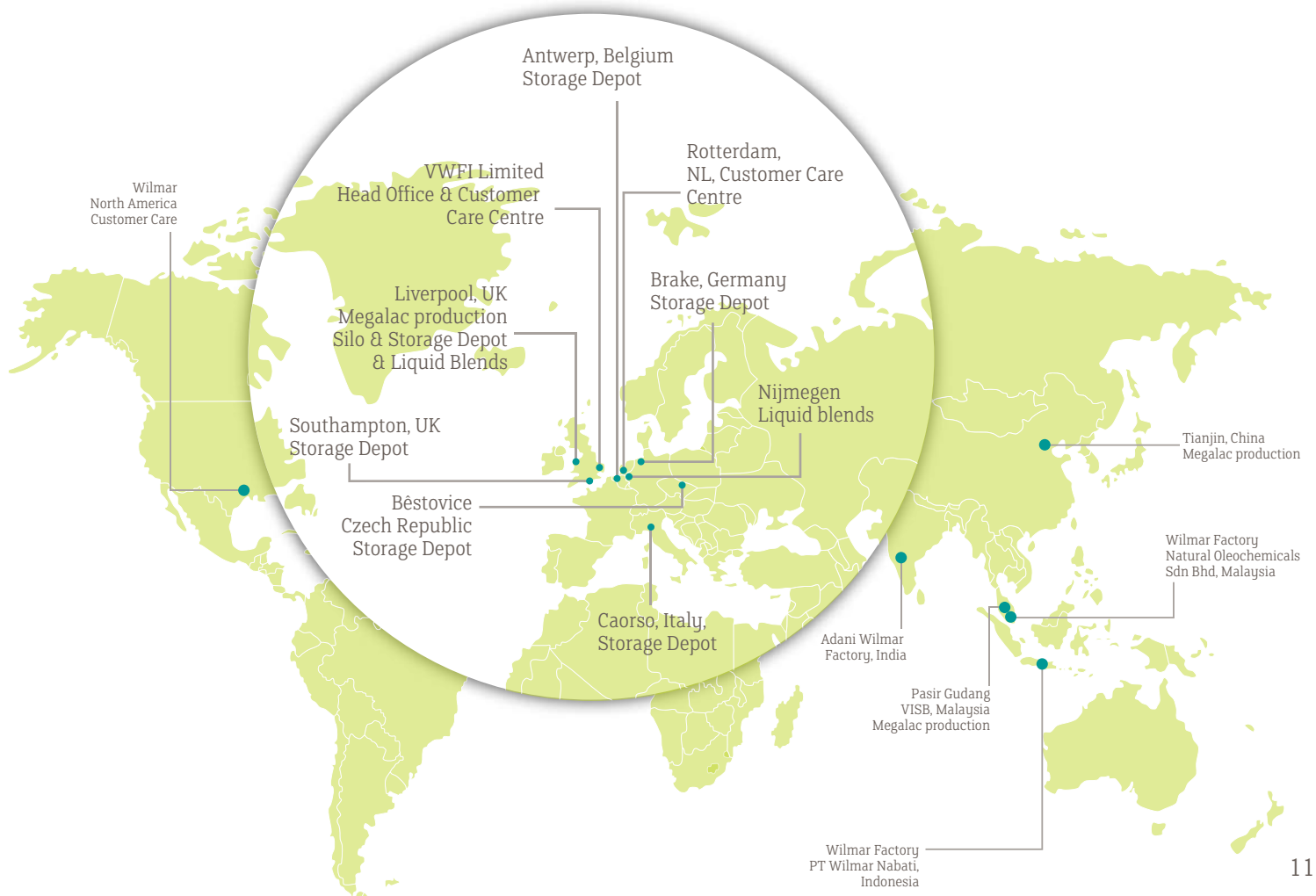
- > Megalac Plus is similar to Megalac, but contains a source of methionine to improve milk protein
- > Mega-Pro is a combination of rumen-protected fat from Megalac and rumen-bypass protein from rapeseed meal which together are targeted to improve milk production
- > Mega-Flax provides a source of omega-3 fatty acids from linseed, specifically aimed at improving cow fertility

Mega-One range

Mega-One and Mega-One Extra are concentrated sources of energy for monogastric animals (particularly pigs and poultry). They are provided in triglyceride form and contain a high proportion of palmitic acid.

Specific phospholipids are included to enhance digestibility and maximise the efficiency of the energy supplied. Mega-One products are targeted for two different applications:

- > A lipid source for easy application when dry fats are preferred over liquid oils
- > A lipid source to improve the sensory quality of pig and poultry meat by increasing the content of saturated fatty acids. As a result, the risk of soft back fat and oxidation of the meat is reduced, leading to increased shelf life





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