

The role of palm oil in a sustainable dairy industry

This is the first of four articles looking at issues relating to the sustainability and use of palm oil in the dairy industry. The articles will cover the following topics :

1. **Palm oil in a sustainable world**
2. Efficient milk production and role of fat
3. Saturated fats in milk
4. UK's first fat supplement manufactured using only certified sustainable palm oil

1. Palm oil in a sustainable world

With a rapidly increasing global population (forecast to reach 9 billion by 2050 from the current level of around 7 billion) our ability to produce sufficient food in a resource-constrained world will become increasingly challenging. Cultivable land and inputs are a finite resource, and legislation continues to reinforce the necessity to significantly reduce the environmental impact of increased food production. Given these limitations, palm oil can play a key role in maximising production with minimal inputs.

Oil palm is the highest yielding vegetable oil source in the world and produces substantially more energy output per unit energy input than other common oil sources such as soybean and rapeseed (Figure 1).

Palm oil has an additional benefit of being entirely GM-free.

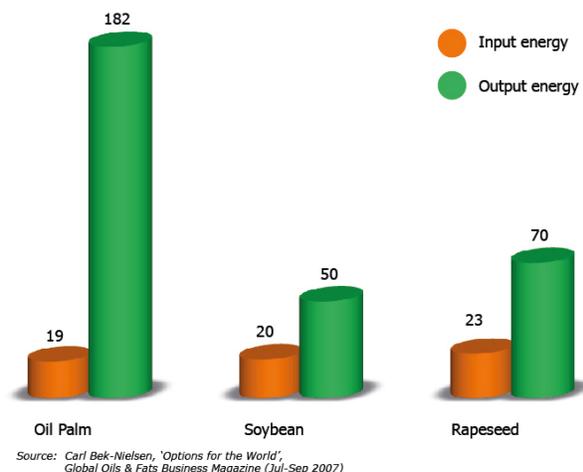


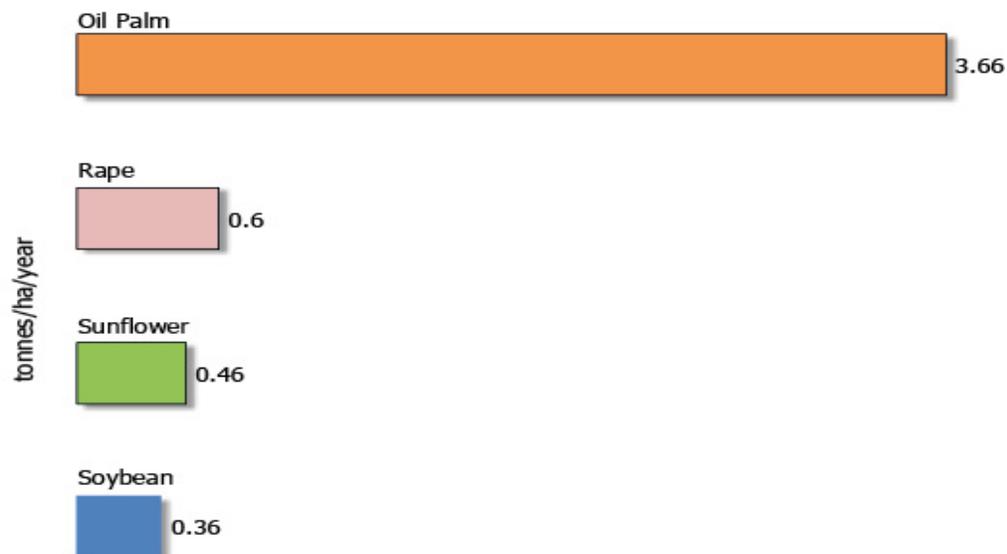
Figure 1 Energy balance of major oil crops

However, the production and use of palm oil periodically receives negative press, primarily due to concerns relating to effects on the ecology and ecosystems where palm is grown. Considerable work has been done in redressing environmentally-related concerns and Volac, as a company with a strong presence in the dairy sector, actively promotes sustainable use of palm oil within the industry.

Recently, farmers supplying milk to one of the major UK retailers were informed that palm oil will soon not be permitted in their dairy diets. However, such policies may overlook the important role that palm oil production can play in meeting the social and energy needs of the expanding global population with fewer available resources.

Palm oil production - Yield

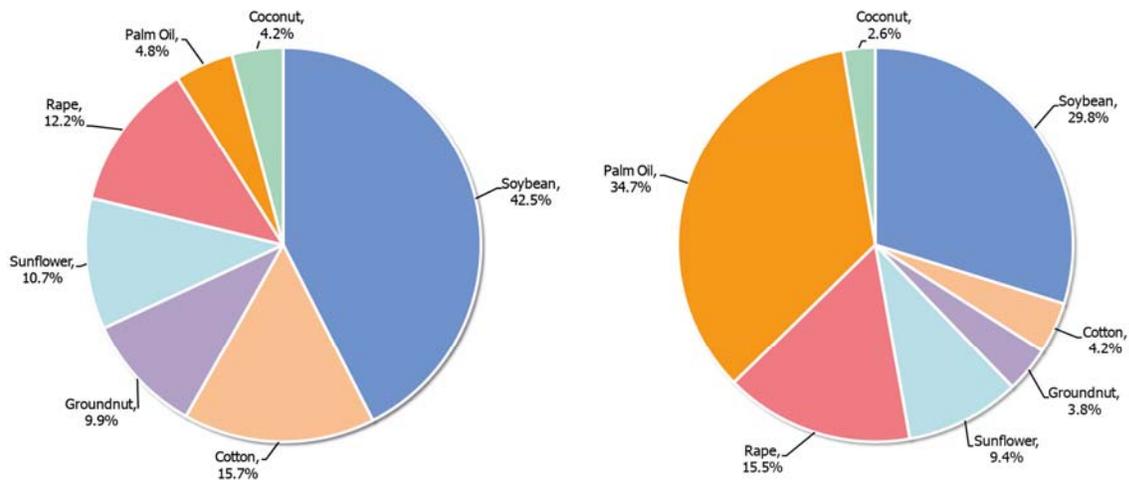
Oil palm trees have a commercial lifespan averaging 25 years, bear fruit all year round and are the highest yielding source of vegetable oil in the world, typically producing up to 5 tons of crude palm oil per ha per year; this is approximately 10 times higher than that of soya per unit area (Figure 2).



Source: Oil World Annual 2006

Figure 2 Oil productivity of major oil crops

This high yield makes oil palm the most efficient oil-bearing crop in the world. On a global scale, oil palm produces more than 34% (palm and palm kernel oil) of the world's major vegetable oils but critically, this is achieved on less than 5% of the total area under oil crops (Figure 3).



Source: Oil World, Feb 2007

Figure 3 Planted crops area (left) and Production of vegetable oils (right)

From these data, it is apparent that relying solely on non-palm sources of oil would dramatically increase the land area required to meet global oil demand, reducing the cultivatable area available for other food production.

Palm oil production - Social implications

Production of palm oil also has a strong influence on the social and economic make-up of many regions. Palm oil production is ideally suited to equatorial climates and offers people in these areas a source of employment and income which in many cases would not be otherwise available. As consumers and users of oil we have a responsibility to not only ensure that the environment and ecology of areas of palm oil growth are protected and controlled to minimise damage to existing ecosystems, but that we also consider aspects of social sustainability of people living and working in palm-producing areas.

Volac's sustainability policy clearly defines our commitment to work with suppliers providing sustainably-sourced raw materials. In this respect, we aim to work with those in the supply chain who operate in a responsible manner and focus on ensuring maximum production is achieved from existing plantations while preserving virgin rainforests.

Palm oil sustainability

The Round Table on Sustainable palm Oil (RSPO) was established in 2004 with the objective of promoting the growth and use of sustainable palm oil. Volac are members of the RSPO and our policy is to source raw material (palm fatty acid distillate; PFAD) only from members of the RSPO. All our PFAD is sourced from accredited suppliers, all of whom are fully certified under internationally-recognised quality assurance schemes such as FEMAS and GMP+, and our Liverpool factory is the only calcium salt factory in the world certified to supply TRUSQ customers.

NBOL – supplying segregated, fully-traceable, certified sustainable palm oil

Within Volac, a more recent development is our relationship with New Britain Oils Ltd (NBOL) in Liverpool. This new facility is the first global palm oil refinery dedicated to processing solely palm oil grades that can be traced back to an identifiable and sustainable source which is fully segregated within the supply chain. The primary focus of the NBOL strategy is to optimise production yields of existing palm plantations and among small-holders, rehabilitation of old estates and planting on low carbon areas like grasslands that were already part of the agricultural landscape. This strategy is targeted to reduce the pressure on biodiversity and carbon-rich tropical forests.

Volac currently source 15% of PFAD from segregated RSPO-certified sustainable sources and plan to increase this to 25% by 2012. The volume of this certified raw material used by Volac will further increase as availability of certified oil increases. Volac is committed to sustainable global food production. We believe this can only be achieved by working closely with our customers, suppliers and the industry to set and achieve realistic and relevant improvement targets. We are also partners with Forum for the Future - the sustainable development charity – which works in partnership with leading organisations in business and the public sector to promote “a future that is environmentally sustainable and socially just.”

Palm and the dairy industry

Palm is important in the future world and can be produced and sourced in a sustainable and responsible manner. Similarly, the dairy industry provides products that promote health and well-being, helps sustain rural communities and plays a vital role in land stewardship. However, the dairy industry also faces some enormous challenges, such as the environmental impacts of climate change, climate policy, economic difficulties and changing demands from civil society and from retailers. The benefits of palm in the dairy industry will be considered in more depth in the next bulletin (2) in this series.

These challenges are not new and major improvements in production and efficiency have already been achieved, but it is essential that further improvements are implemented to feed a future sustainable world. The final section highlights how the dairy industry has increased production to meet growing demand with limited resources while reducing carbon footprint.

Increasing dairy production from limited resources – what's been achieved

The importance of implementing modern technological developments and using productive feed resources is highlighted dramatically in the work by The Bauman Research Group in the USA (Figure 4).

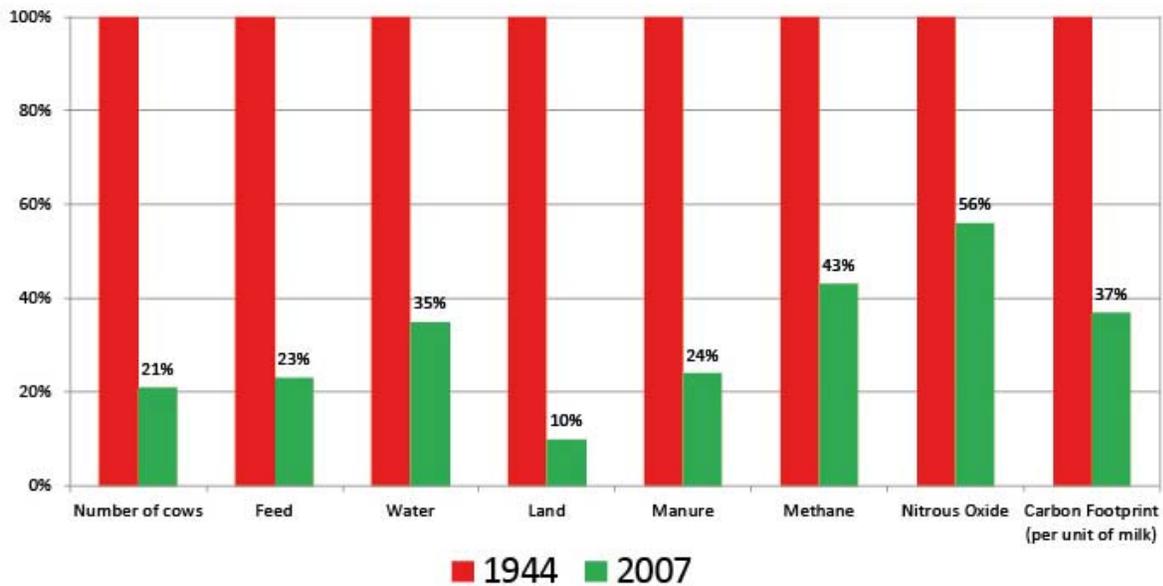


Figure 4 Resources required to produce one billion lbs. of milk : 2007 requirement as a proportion of 1944 (USA) (Capper *et al.*, 2009)

These data show very clearly how developments within the dairy industry in the 63-year period to 2007 have resulted in major improvements in agricultural efficiency and greatly reduced the environmental impact of the dairy industry. Producing a given volume of milk in 2007 required only 10% of the land area to that required in 1944, with considerably lower greenhouse gas emissions. As demonstrated in Figure 4, the carbon footprint per unit of milk produced using 2007 production systems was only 37% of that in 1944.

These data indicate that the necessity to improve production efficiency is not new and developments in this area have been on-going for many decades; this has resulted in increased production from a smaller land area with reduced environmental impact.

Conclusions

With a rapidly increasing global population, the challenge of producing more food from a decreasing land area and limited resources will continue to increase. Palm oil is the highest yielding vegetable oil and will continue to play a vital role in contributing to the oil and energy needs of the population and its cultivation helps provide social and economic security for the inhabitants of palm-producing regions.