

LECKFORD ESTATE RAPESEED OIL

What makes it so special?

External influences case study

The John Lewis Partnership is the UK's largest employee-owned business and the parent company of two retail brands – John Lewis & Partners and Waitrose & Partners. At the top level, the partnership has three governing authorities: the Partnership Council, the Partnership Board, and the Chairman. The Partnership Council is unique: it is directly elected by the partners, holds the Chairman to account and appoints five directors to the Partnership Board. The John Lewis Partnership comprises over 85,000 partners (i.e. staff), all of whom have a say in how the business is run and receive a share in the profits.

What is the Leckford Estate?

The Leckford Estate was purchased in 1929 by John Spedan Lewis, founder of the John Lewis Partnership. Part of Waitrose & Partners, it is the only UK retailer-owned farm and is managed according to '[The Waitrose Way](#)' actively promoting healthy living, fair treatment, environmental stewardship and championing British produce.

The Leckford Estate comprises 2,800 acres and includes property leasing, food production, farming, retail and leisure activities with all the food produced being sold through Waitrose & Partners stores across the country and abroad.

The Leckford Estate is passionate about British farming and the environment and has been a LEAF ([Linking Environment and Farming](#)) Demonstration Farm since 2004. Produce grown on the farm is eligible for the LEAF Marque as it has been grown according to the principles of [Integrated Farm Management](#), a sustainable approach to resource management, conservation and community engagement.

Examples of how the Leckford Estate have been reducing their impact upon the environment are:

- The mushroom plant moved from using black plastic trays to clear plastic packaging so that it is now recyclable.
- The milk processing unit has changed from stacking milk bottles on pallets to stacking them directly into cages. Whilst ensuring that the bottles will still be transported safely, efficiency is also increased as the bottles will not be handled at all until the customer picks the bottle up in the store and pops it in their trolley. Originally, the bottles were stacked on top of each other and therefore needed to be stronger and shrink wrapped so they could be transported securely. Consequently, the Estate will save 45 tonnes of plastic per year, by using lighter thinner bottles, and no shrink wrap.

What is rape seed oil?

Rapeseed was first introduced to the UK by the Romans. A member of the brassica family related to plants such as the turnip and cabbage, the yellow flowered plant is popular thanks to the high oil content of its seeds (>40%). Often heralded as the British equivalent to olive oil, there are many benefits to cold pressed rapeseed oil:

- Half the saturated fat of olive oil and ten times less than coconut oil
- Healthy balance of omega 3, 6 and 9
- Rich source of vitamin E
- Contains plant sterols and phenols
- High smoke point of 230C
- Subtle, nutty flavour with buttery notes

It is a tricky crop to grow requiring near perfect conditions to first germinate, in moist warm soil full of nutrients and no pests. Weather is vital throughout the growing seasons and at harvest time, affecting the quality of the finished oil. Ideally, the seeds need to be harvested in cool dry conditions; moist warm conditions can spoil the crop and enable mould to grow.

The Leckford Estate currently grows 120 hectares of rapeseed which produces over 450 tonnes of seed each autumn. Currently, over half the seed grown on the farm will be cold pressed to make rapeseed oil, with the rest being sold on the open market.



The market for rapeseed oil:

Refined rapeseed oil has become increasingly popular with food manufacturers as an alternative to imported refined oils and as such, the growing of rapeseed as a crop has increased dramatically since the 1970s. As well as being a popular cooking oil, it is also a major ingredient in many foods such as mayonnaise, a component of less obvious products such as toothpaste, plastic, a popular lubricant and biodiesel. As such rapeseed (and rape meal – the by-product of rapeseed oil production) are bought and sold within the global commodities market, with only non-genetically modified seeds permitted for human consumption within Europe.

Rapeseed Oil: Regional Segmentation

The geographical coverage for the global rapeseed oil market includes North America, Latin America, Europe, Asia Pacific and China (APAC) and Middle East and Africa (MEA). Europe accounts for the maximum production of rapeseed oil. UK accounts for the third-largest cultivator of rape plant. Asia-Pacific accounts for the second fastest growing market in the global rapeseed oil market. India and China are expected to be the major rapeseed oil consumers in APAC region thereby boosting up the global rapeseed oil market

www.transparencymarketresearch.com



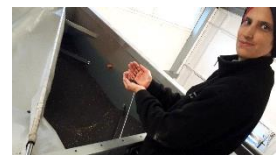
Zoe Bamford - Rapeseed Oil Production Unit Manager, Partner at Waitrose and Partners. A full-time member of the team solely responsible for the running of the unit. This includes a variety of tasks:

- Managing the process as a whole
- Making up boxes and printing labels
- Monitoring seed coming in
- Maintaining the presses
- Overseeing the cake going out
- Monitoring the filtering of the oil
- Bottling, labelling, etc

Before running the Rapeseed Oil Processing Unit on the Leckford Estate, Zoe worked at the Leckford Estate's large Mushroom Farm managing the pack house as a Senior Operator (packing, labelling and despatch). Now Zoe works on her own for most of the time, with just the occasional help from one part-time member of staff when the unit is particularly busy, such as when there is a promotion running.

Making up boxes and printing labels - Each morning Zoe will make up enough cardboard boxes and print the labels for that day. These cannot be done in bulk as the lot number and best before date must be altered every time. The labels ensure full traceability for each bottle – when it was filtered, bottled, etc.

Monitoring seeds coming in - Harvested seeds are cleaned and dried at the farm, to be stored in a dedicated air-cooled bunker at 8% moisture. When the production unit needs more seeds, they are brought over by a tractor and trailer to be stored in a silo at the Unit (maximum capacity of 7 tonnes).



Maintaining the presses - Seed travels along an auger from the silo into the press hopper, down chutes into presses which squeeze the seed to release the oil which runs into an Intermediate Bulk Container (IBC). Presses can run continuously with only periodic monitoring when preparing for increased demand due to a promotion, then Zoe will check on them even over the weekend.

Overseeing the cake going out - The leftover husk and shell are compressed together to form a pellet which is fed to the dairy cows at the Estate's milk production unit.



Monitoring the filtering of the oil - An IBC will hold 900 litres at full capacity. The contents of each IBC will be filtered individually. The filtration process involves:



- adding some filter aid (diatomaceous earth – naturally occurring soft sedimentary rock that is easily crumbled into a fine white powder) which helps to draw the sediment out.
- The mixture is then agitated for at least an hour before being pumped through the filter.
- The filter contains 15 filter cloths, which draw sediment away from the oil.

The oil travels between the IBC and the filter system through a series of pipes to be filtered multiple times over a period of 3 hours until the oil is clear.

- The pads are scraped, and the sediment collected from the filtration process is mixed with farmyard manure and used as a fertiliser on the farm

WAITROSE & PARTNERS

- To check whether the oil has been sufficiently filtered, a small sample is taken which is then compared with a colour chart.
- When the oil is clean enough, valves are switched to enable the oil to be pumped through to the bottling room rather than through the filters and IBC tanks.



Bottling, labelling, etc – All of the bottles used at the Unit are made from recycled glass, and are air rinsed using compressed air to give the bottles a thorough clean (removing any dust and foreign bodies), before being placed in a crate upside down and then carried into the bottling room.



An Operator places each bottle under a nozzle for it to be filled, then onto a semi-automatic capper, which puts the cap on and adds a thread.

Labels are then put on by hand, one bottle at a time, before each bottle is put into a cardboard box by hand, and then onto the pallet before the pallet is shrink wrapped ready to be taken to the distribution centre.



With the new automated system, it will still be necessary to print out labels each day, but the process will be quicker. The new automated line can't cope with the 250ml bottles so they will still need to be bottled and labelled by hand.

Growth within the Processing Unit: As the only supplier of own-brand Waitrose rapeseed oil to stores across the UK and abroad, the production unit is experiencing increasing demand. Since it opened in 2012 new presses have been installed, but output is still limited to only 1,000 bottles per day as the filling, labelling and packing of each bottle is done by hand. In order to increase capacity, it has been necessary to invest in a new automated system which will enable the bottling and labelling of bottles to become more efficient and ultimately triple the output of the unit.



The new automated system has also meant that the labels have had to be redesigned to work with the technology and this has been an opportunity to personalise them, adding Zoe's name to the labels, as the one full time member of staff, every bottle has been bottled by her!!



Consequently, pallet sizes have increased to 810 bottles, almost twice the quantity compared to the 480 bottles per pallet used by the manual system. However, the new automated system is unable to cope with the cardboard packaging, so a new packing system has been developed to cope with the larger pallet sizes. This involves shrink wrapping batches of 9 bottles together to protect them.

A transit trial was required to check that the new larger pallets met the needs of the distribution centres i.e. National Distribution Centre at Milton Keynes, and involved a trial pack of pallets being sent to the NDC to check they can handle it, and to those at the stores who stock the shelves. The larger pallets were well received, although it is not yet possible to use them for the smaller 250ml bottles.

Andrew Ferguson - Farm Production Manager, Partner at Waitrose and Partners.

Andrew has been a full-time member of the Leckford Estate team since 2011. His role is to improve the financial and environmental performance of the production activities on the Estate, to increase the commercial efficiency of the farm's produce and to add value wherever possible.

When Andrew joined the Leckford team in 2011, the Estate was producing about 400 tonnes a year of rapeseed which was being sold into the open market via local grain merchants. Research at the time showed that there were 37 oilseed rape farmers within the UK who were adding value to their rapeseed by selling it as cold pressed rapeseed oil, a high value premium cooking oil. However, not one of these had the advantage of direct access to 340 shops to sell through – a convenient USP which the buyers at the Waitrose stores were happy to help with.

Further research indicated that the demand for cold pressed rapeseed oil within the UK was growing at 30% each year, with supply not managing to keep up with demand. Within the first year, sales of the Leckford Estate rapeseed oil surpassed expectations and paid off the initial investment. Since then, the market has continued to grow by 30% each year, providing ample opportunity to expand the business but also presenting challenges as the market isn't fixed, so the Leckford Estate must continually evolve in order to meet the increased demand but also maintain efficiency as the scale of the enterprise increases.

Strengths: Production has the capacity to expand to meet increasing demand, as it is possible for Waitrose to add more lines, including other food lines that would use the Leckford Estate's cold pressed rapeseed oil as a main ingredient i.e. mayonnaise. From a supply perspective, the Leckford Estate can supply more oil than Waitrose can market. But the challenge with such a small unit, a one partner unit, is that once the maximum capacity of 90,000 bottles a year has been exceeded, it becomes too much for the unit and partner to cope with. Being a long shelf life product, managing the production process is not about producing to demand, as it is possible to build up stock, and have a buffer should there be an instore promotion which would dramatically increase demand. Being part of a large organisation meant that it was possible to invest in an automated bottling line meaning that output is no longer tied to the manual process.

As a LEAF marque certified farm, Waitrose has a history of seeking out sustainable solutions to problems with crop management practices. By including rapeseed within its wider crop rotation chemical input is reduced whilst the use of manures, spent mushroom compost and livestock slurries enhances soil health and fertility as part of an integrated farm management approach.

There are things that the farm does as a LEAF Estate that allows it to demonstrate that they are growing a crop in an environmentally responsible way and then adding value to that crop in a very short supply chain:

- Growing the crop
- Harvesting the crop
- Pressing the crop
- Bottling the crop
- Dispatching the crop to Waitrose stores

A buffer stock of harvested rapeseed is always held in storage so that there are sufficient quantities available for the Processing Unit to avoid the position where it becomes necessary to use freshly harvested seeds, as those which have not undergone any post-harvest ripening can create quite a different taste.



Weaknesses: The downside of the investment in the bottling plant, is that it doesn't enable the farm to be as environmentally friendly as it would like. It was purchased three years ago before plastic and packaging were deemed to have such a negative impact on the environment, consequently the processes used are now under review.

It is important not to demonise plastic too much as cardboard, when the energy production and lifecycle perspective are considered, isn't always better than plastic. There is of course the option of biodegradable plastic, and that is being investigated, but really the question is more about what can be done to minimise packaging as a whole.

Opportunities: It has been a couple of years since the use of neonicotinoids were banned across Europe. Prior to the ban being introduced, Waitrose was already very conscious that they were producing a food product for which demand could be dulled due to the use of the seed treatment, so stopped using them several years before the ban came in, much earlier than many other growers.

This wasn't an issue initially, but recently extra care has been taken as Waitrose doesn't have the option, like other oil seed rape growers, of being able to easily change the variety being grown as this would affect the taste of the oil. Such a decision requires a year of growing the new variety, cold pressing those seeds and then taste testing with focus groups – a change of variety is not a quick decision. Ultimately, the easiest option is to stick with the same variety but there is the risk that the variety gets more susceptible to disease which will impact yields.

Planning ahead to minimise the impact of such decisions is vital and each year the HGCA produce a recommended list of different seed varieties: there are those that are higher yielding, or require lower inputs, perhaps more disease resistant. When looking at which would be suitable there are probably 50 varieties to choose from, with some better for their oil than others, as well as giving a different taste. Soil type, season, time of harvest and storage time can also affect the taste of the oil, so when the crop is grown on different parts of the farm it is possible that the taste would vary, but as it is all stored together in the grain store, there haven't been any recognisable variations.

Threats: Until recently, flea beetles were not a problem for the farm, but it has been increasingly necessary to use, non-neonicotinoid formula sprays. This autumn 10% of the crop failed due to flea beetle damage; the challenge is to minimise the chance of that happening again by developing non-chemical sustainable approaches.



Indeed, other farms have given up on rapeseed, but this means very little as the arable crop exists within a global commodities market. Rapeseed is almost in the same market as soya, so if there is a surplus of soya in the world, prices for soya suffer. The oilseed rape prices will track that, as demand and prices are not just affected by the production of rapeseed in this country. The aim is always to ensure that crop production is as efficient as the processing rather than the processing subsidising the crop production. So, other than being careful with choosing varieties that are disease resistant and using non- neonicotinoid seed treatments, the key is to continue add value as the company strives to improve the sustainability of its rapeseed growing practices.