

Linseed

The difference between linseed and flax is often confused. Linseed is grown for its seed to make oil, it grows to around 18 inches high, has lots of branches and many pods with loads of seeds. Flax is grown as a fibre plant that is used for linen it has tall stems of around 3 feet high and fewer branches and about 30% less seeds.

Both linseed and flax, for whatever purpose it is grown is the species *Linum usitatissimum*. Within the species different strains have been developed depending on environment and its end use.

History

Linum usitatissimum was grown 6 – 8,000 years ago in Egypt and Samaria, it is one of the oldest cultivated crops. In ancient Egypt the royal mummies were wrapped in linen and linseed oil was used to embalm the bodies of deceased Pharaohs.

Many references to flax appear in the Domesday book. Flax was used for sailcloth and riggings during the Elizabethan period and by the 18th century growing and processing flax was an important industry throughout the British Isles. The industrial revolution saw a shift towards cotton and the flax industry declined. France, Belgium & Eastern Europe still have a flax growing and processing industry but overall in recent years global production of flax has decreased, though linseed has seen a slight increase in production in Canada and Egypt as well as Europe where various policies have affected production (subsidies!) In the UK linseed has been grown for the oil it produces, this is added to paints and varnishes and assists with the drying and hardening processes. Linseed has long been processed into a food grade oil & linseed meal both have many health benefits.

Present day & future

In Britain, many companies are looking at the potential of growing alternative fibre crops like flax. If fibres can be grown long enough, such crops offer greener sustainable solutions to a variety of industrial processes. For example, flax fibres can be a major component of fibre boards, widely used in the construction industry, also car manufacturers are using techniques to make interior car panels from plant fibres.

Various research studies and breeding initiatives with flax and linseed, include potentially producing a dual purpose variety of flax a plant that can produce both linseed oil and good long fibres. However, at the moment this research into dual purpose flax involves GM. Field trials of GM flaxseed were conducted during 2005 – 2007 in Sweden, Poland and the Czech Republic. No GM flax is currently being grown commercially. Up to date methods of flax/ linseed breeding can be found in the *Handbook of Natural Fibres* edited by R Kozlowski Woodhead Publishing 2012

Growing *Linum usitatissimum*

Flax/linseed is an annual plant which prefers a moist cool climate and grows best in well drained but moisture retentive soils with a pH of 6 – 7. Sown in March linseed is planted more spaced out than flax which is sown closer together to encourage long stalks.

Flax/linseed is a valuable preceding crop in rotation. A rotation of 4/5 years is recommended in flax which is good for encouraging diverse crop growing and supporting biodiversity.

Unlike hemp, flax does not smother weeds and flax is often treated with herbicides but this need not be the case as mechanical or hand hoes can be used.

Flax flea beetle is a potential problem but considerably less of one if the crop is grown in proper rotation and sown in warm soils. In some cases farmers resort to pesticides but there are many organic farmers of flax that don't. Libeco a co-operative in France grows flax organically and processes from beginning to end with maximum respect for the environment you can discover more on their website <https://www.libeco.com/en>

Harvesting linseed

The seed head is allowed to mature before harvesting, small scale can be harvested by hand but generally a combine is used. As with all seed crops harvesting is a critical time weather wise, excessive rain can encourage the seeds to sprout in the pod whilst still in the field if this happens the crop is lost. Seeds need to be dried and kept at about 8% moisture content and stored ready for pressing or milling.

Harvesting flax

Flax is ready to be harvested for its fibers when the stem begins to turn yellow and the seeds turn brown. Sometimes the plant is harvested prior to seed germination because this yields exceptionally fine fibers, however this means the grower is without any seeds for the next planting and subsequently will be dependent upon foreign imports.

TERMINOLOGY	
Rippling	- The flax plants are rippled to remove their seeds
Retting	- Softens and separates out the fibers (traditionally a several week process)
Braking	- Separates the inner fiber core
Scutching	- Scraping remaining unwanted fibres off
Hackling	- Separating out the longer fibers

The stems of the flax plant are considered best when pulled up with the root which maximises the quality of the fibre, this makes flax well suited to small size cultivation however larger cultivation does use machinery that cuts at the base of the stem. After harvest, flax stalks are allowed to dry in the open air for several weeks before rippling to remove seeds

Flax fibres are considered bast fibres. Bast fibres are fibres collected from the phloem, or the inner-bark of the plant and to do this the stalks undergo a process known as retting. This process employs the action of bacteria and moisture on plants to dissolve or rot away the tissue and gum surrounding the bast fibre. There are three kinds of retting used, dew retting, water retting and chemical retting. The best quality linen is retted in slow-moving natural water sources such as streams and rivers. The highest quality linen in the world is retted in Belgium in the River Lys, though scientists have never been able to determine what makes the waters so conducive to the retting process. The retted stalks, called straw, are dried mechanically or in natural air, and are then stored to allow curing to take place. After curing, the next process is breaking, this is when the woody stalks that still cling to the bast fibers are broken, to reveal the flax fibres, this can be achieved by hand or with a flax break machine. The next process is known as heckling, this is when the fibres are combed through a bed of nails that splits and polishes them and removes the shorter fibres before spinning.

Irish linen is the best known linen in the world and most valuable. Flax was grown in Ireland as far back as 1000 BC and the linen business has been through many different fortunes, adjusting to different challenges until the present day. Companies that remain weaving linen in Ireland today focus on the quality end of the market, though most of the flax used for manufacturing is grown elsewhere and imported into the country for processing.

Flax is a natural, annually renewable material that can contribute to the preservation of non renewable sources and helps to reduce CO2 emissions. Flax offers an alternative solution to chemical and plastic based products and can be used for textiles, geo-textiles, insulation and plastic composites.

Flax is easy to grow in gardens, allotments and on small scale community projects and there is lots of advice and courses available

Small scale growing information

https://www.wildfibres.co.uk/html/grow_flax.html

<http://www.wildfibres.co.uk/html/articles.html>

<http://www.flaxland.co.uk/break.html>

For larger scale farming information visit

<https://thelinseedfarm.co.uk/events/2016/09/04/open-day-the-linseed-farm>

Courses

Preparing flax for spinning

<https://www.cotswoldsaonb.org.uk/looking-after/rural-skills/>

<https://www.wealddown.co.uk/courses/>

Flax to fabric demonstrations

<https://www.flaxmill-maltings.co.uk/flax-to-fabric>

Flax co-operative

<https://www.libeco.com/en>

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Big Book of Flax Christian Zinzendorf Schiffer Publishing Ltd (US) 2011

Handbook of Natural Fibres edited by R Kozlowski Woodhead Publishing 2012



Linseed

Linseed can be grown successfully on a small scale or grown commercially to provide both oil and seeds for human consumption or the oil can be used industrially.

Linseed Farm

Durwen, Gay & Wendy, on their family run farm in Sussex, have been growing, processing and selling linseed since 2000. Today they grow just over 200 acres and are also supplied by other, mostly local, farmers.

The crop is grown in the Spring. It is a critical time as the young plant emerges because at this stage it can be vulnerable to linseed/flax flea beetle – drilling thick and warm weather can help prevent this problem but sometimes the crop is sprayed. Rotation is a very important part of controlling pests and maintaining the soil.

The growing season is around 4 – 5 months and when ready to harvest a combine harvester is used. Generally the straw remains are used baled and used as animal bedding.

Durwen takes the utmost care of his seed harvest ensuring the correct moisture content and storing in a clean dry store. The seeds are either crushed into meal or pressed into oil; both are processed to order ensuring a very fresh product.

Linseed oil can be rather strong with a not very pleasant after taste – signs of rancidity! Durwens golden oil is a mild nutty tasting oil because it is gently cold pressed to order and it is completely delicious.

Durwen has a vast knowledge about linseed it is well worth contacting him for advice on growing harvesting and processing see resources



Linseed Nutrition

Lignans

Linseeds are the richest dietary source of lignan precursors.

Lignans are a type of plant compound which when ingested are converted from plant lignans to human lignans by bacteria in the intestines. These lignans have weak oestrogenic activity which can be particularly helpful for women with high oestrogen levels as the plant oestrogen blocks the effect of strong oestrogen activity. On the other hand they also have the ability to supplement levels that are low, either way they help hormonal balance.

Research shows that the ability of lignans to block the effect of oestrogen can help reduce the risk of hormone associated cancers like breast, ovarian and prostate.

There is also evidence that a diet rich in plant lignans may be linked to a lower risk of heart disease, and osteoporosis. Lignans may also be useful in combating specific bacteria, fungi, and viruses, including those that cause cold sores and shingles.

Alpha-linolenic acid

Linseed oil is the richest known source of alpha-linolenic acid, an omega 3 essential fatty acid (EFA). Oily fish contains two very different omega-3s, EPA (eicosapentaenoic acid) and DHA (docosahexaenoic acid). The vast majority of the research on the health benefits of omega-3s has been done on DHA and EPA and whilst the body has an ability to take the 18 carbon long omega-3 found in linseed and lengthen into EPA and DHA, it is not an efficient process. Research indicates that the conversion of ALA to EPA and DHA is limited some research suggests as little as 5% of ALA gets converted to EPA, and less than 0.5% of ALA is converted to DHA.

Linseed oil has been used therapeutically to treat cardiovascular disease cancer, diabetes and inflammatory diseases. Fresh unrefined linseed oil contains potent anti-oxidants carotene and vitamin E which helps stabilize the oil both in the bottle and in our bodies.

In general we are deficient in omega 3 and consume too much omega 6 so linseed is a good oil to help restore balance. Once balance is restored other oils (hemp) may provide a better balance of omega 3 to omega 6 for long term use.

Protein

Linseed contains easy to digest protein with all the essential amino acids but is low in lysine and methionine

Mucilage

One of the most extraordinary benefits of flax seeds is that they contain high levels of mucilage gum content. Mucilage is a gel-forming fiber that is water soluble and has incredible benefits on the intestinal tract.

Minerals and vitamins

Linseeds contain an array of minerals including potassium, phosphorous, magnesium, calcium, sulphur, manganese & copper, fat soluble vitamin E & carotene plus water soluble vitamins B1 B2

Johanna Budwig Diet

The Johanna Budwig diet to heal cancer uses quark or cottage cheese and linseed oil (along with a minimally processed vegetarian diet). Dr. Johanna Budwig (1908 -2003), was a qualified German pharmacologist, chemist, physicist and a leading authority on fats and oils. Dr. Budwig studied in depth the effect of hydrogenated and other denatured fats upon human health and found it to be disastrous, while she discovered the truly healing nature of essential fatty acids on all manner of degenerative diseases including cancer.

It is said that the diet works because of a chemical reaction takes place when the sulphhydryl groups in quark or cottage cheese bind with the unsaturated fatty acids in flaxseed oil. This reaction allows the flaxseed to become water soluble and enter into a cell to supply energy.

Through improved oxygen supply to their cells her cancer patients found relief from all forms of cancer

Linseed food products

Whole seeds

Whole linseeds provide good nutrition in the form of protein, oil, minerals, vitamins, soluble and insoluble fibre and lignans. Whole linseed can be soaked and the liquid used in drinks to soothe inflammation in the digestive tract. Whole seeds will last for a year stored in a cool dry place, it is best to eat them ground, just before use, to benefit from the nutrition.

Linseed meal

You can grind your own linseed as and when you need it in a coffee grinder. Linseed meal should be kept refrigerated, as it will quickly turn rancid. Aim to consume within a week.

Linseed oil

Allotment or community grown linseed can be turned into a cold pressed oil as needed. Larger scale linseed farming will sell the seed for oil into the commercial market. The benefits of linseed oil are well documented.

Linseed oil is not suitable for cooking, so use it in salad dressings instead. Keep the linseed oil in small dark bottles in the fridge to prevent the oil going rancid.

Linseed cake

Linseed cake, left after oil pressing has traditionally been fed to horses (like us they cannot produce EFA's LA & ALA), also fed to pigs and beef and dairy cattle but not poultry

Linseed straw can be used for animal bedding or portable pens

LINSEED

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For information about growing, harvesting and processing contact Durwen Banks at the Linseed Farm
info@thelinseedfarm.co.uk

Muntham Home Farm, Muntham, Horsham RH13 0NH 01403 730326

<https://www.thelinseedfarm.co.uk/>

Recipes

Linseed tea

Linseed tea is simple to make by pouring 250 ml of boiling water over one tablespoon of linseeds, then letting it steep overnight. Next morning drain out the seeds and its ready to drink. This simple beverage provides healing support to the intestines. It is the mucilage that is of benefit the whole seeds can irritate further inflamed intestines.

Linseed & chilli dressing

2 tablespoons linseed, soaked overnight in ¼ pint carrot juice
1 small red chilli
1 tablespoon olive oil
1 clove garlic, crushed
2 tablespoons chopped parsley

Blend all the ingredients together until you have a smooth dressing, adding a little water if necessary.

Caesar dressing

200ml Greek yoghurt
2 tablespoons lemon juice
4 tablespoons linseed oil
1 teaspoon Dijon mustard
1 clove crushed garlic
sea salt and pepper to taste.

Combine well together and use to dress a big bowl of salad

Linseed crackers

250ml carrot, beetroot or green vegetable juice
175g linseed

Roughly grind the linseed, tip into carrot juice and leave for 20 minutes to thicken

Using a spatula or the back of a dessertspoon spread the mixture thinly onto 2 baking parchment lined dehydrator trays. Dehydrate for 10 hours at 45°C. Flip the sheets over and peel away the paper, place back into tray and dehydrate until crisp. Break into pieces and store in an airtight container for up to 4 weeks

Variations

add chopped garlic & tamari
chopped chilli and finely chopped parsley.
finely diced red peppers and basil
a handful of very finely chopped walnuts pinch sea salt and twist of black pepper

Berry – linseed smoothie

250g seasonal berries
2 tablespoons ground linseed
250ml yogurt
½ tsp vanilla essence
1 teaspoon honey

Place all the ingredients into a processor and blend well together

Linseed & cobnut scone

350g spelt flour

110g butter

3 tablespoons rapadura sugar

2 tablespoons golden linseeds

2 teaspoons baking powder

zest of 1 lemon

75g toasted cobnuts chopped

250g plain yoghurt

1 egg

Oven 200°C

Mix the flour and baking powder together. Cut the butter into small pieces and rub into the flour until it resembles fine breadcrumbs. Add the sugar, lemon zest, linseed and cobnuts and mix well.

Add the yoghurt to the dry ingredients stirring until it gathers into a ball.

Turn the dough out onto a floured board and shape into a round about 8" across.

Place on a lightly buttered baking sheet and cut the round into 8 wedges brush well with beaten egg and bake for 25 minutes. Delicious served warm with fresh raspberries.

Flax



Linseed

