

Phyto Essential Oils Ltd

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THE LAVENDER STORY THE STORY OF ESSENTIAL OIL PRODUCTION

**BY
DR JANE COLLINS**



My first field of lavender, showing Ashdown Forest and Peter Pan (the darker coloured lavender in the left-hand side of the picture)

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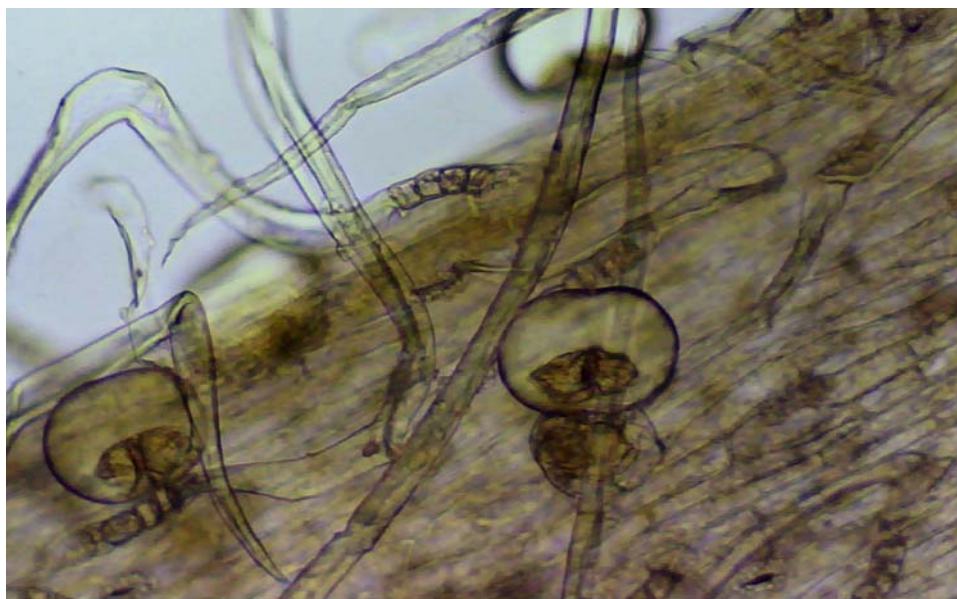
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INSTALMENT 2	Beginning at the start – the basics How do we divide, classify and name plants? Why is botany important when using essential oils ? What does “botanical authentication” mean ?
INSTALMENT 3	What exactly are essential oils ? Why do some Plants make them in the first place ?
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INSTALMENT 1: A brief description of my journey into the research and development of essential oils and essential oil crops.

Here we are at last. It has taken me over 15 years to write this story and to put on our website www.phytoessentialoils.com. Please feel free to download all of this story or part of it. The aim of the story is to recount all of the research I have undertaken since 1988 and to include information never before written about. It will also include my opinions, sometimes controversial, and observations.

I started my journey in 1985 when, after being an arable farmer, I decided to enter the academic world. I have to say with some trepidation at the time! If someone had told me at the time that I would end up with a Doctor's degree I would have laughed. I started with a Higher Diploma in Agricultural Sciences which was degree equivalent and was to take 3 years. In a group of 25 students, I was the only mature student. All of the other students had 3 A levels, recently completed, in science and maths. I had passed an A level in French 15 years previously and, with no offence to the French, it did me no good at all.



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Roman chamomile trichomes. In other words, the "bubbles" where the essential oil is made and stored. This is a magnification of about 500. These trichomes are found on the flowers in particular and also on the leaves.

I was terrified. However, I obtained my Diploma, somehow by my wits, and became bitten by academic life. I just loved it and felt privileged and honoured to be paid by the local Council to study. At that time all of our fees were paid and we were given a grant to cover basic living expenses. I decided to pursue my academic studies and went to Scottish Agricultural Colleges to study for the Graduate of the Institute of Biology course (Agricultural Sciences) which was BSc equivalent. I was taught by the authors of the global and UK literature covering agriculture. They certainly put me through my paces and, looking back, I don't really know how I got through it.

I met Dr Katya Svoboda who changed my life. She was just finishing her PhD on essential oil plant sciences and we became friends. I went with her to the essential oil farms in Slovakia and looked at the fields of crops (chamomile, calendula, lavender) with utter fascination. I looked at these unusual crops as a farmer, not as a student and became determined then and there to pursue the introduction of these crops to UK farmers. The seed was sown.



German chamomile at harvest

Close up of flowers, the oil is in the flower

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Following my GIBiol course, I returned to Merseyside and was accepted as a PhD student at Liverpool John Moores University to study herbs/medicinal plants. At that time the University was researching the biotechnology of medicinal plants. "Bio" means life and this research meant trying to grow plants in test tubes. As a farmer, I knew that plants did not really like test tubes, so I changed the research to "alternative non-food crops for UK farmers" ... in other words, for our farmers to grow herbs for the essential oil.

COMMENT...the correct term for any plants which "make" an essential oil is "medicinal and aromatic plants". This covers herbs, shrubs, trees etc.

At this time, Aromatherapy was really just beginning and was only taught in private schools in the UK. I began to meet therapists, tutors and other people interested in an alternative method of managing healthcare. I was struck by their dedication, commitment and persistence to learn more about essential oils. Many became good friends and helped me with my research. At that time, many essential oils were adulterated, ie mixed with synthetic oils or were in fact synthetic fragrances.

My research covered the botany of essential oil plants, growing medicinal and aromatic plants in various environments, extracting the essential oil and analysing the essential oil components. Eventually I also investigated the industries using essential oils (flavour, fragrance, pharmacy, complementary healthcare), their values and legislation covering their uses.

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German chamomile oil during the extraction process (hydrodistillation). This blue oil will form a layer on the top of the water. We can take off using the tap on the RHS of the image.

I found no global, EU or national legislation covering the sales of essential oils. In fact, anyone could put anything in a bottle and call it an essential oil. Today the industry is self-regulating and there are some very good suppliers out there, also some very poor ones.

During this time I visited many UK private colleges and attended many conferences both in the UK and the EU. A picture began to emerge of a new industry using essential oils, the Aromatherapy industry, which although wanting genuine oils, did not know how to be discerning. In fact, at that time, Katya and I were the only scientists analysing essential oils to ensure they were genuine.

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Lavender harvest. The machine gathers the lavender flowering tops. The oil is in flowers.

One other incidence confirmed my determination to pursue my research and to supply genuine oils to the growing industry of Aromatherapy. I was analysing the components of a number of lavender essential oils I had purchased. I found that in every analysis, the two major components were the same percentage amount, ie 30% of component 1 and 30% of component 2. This was unusual (more later on this) and I was alerted. I went to the university library to look for information on lavender oil analyses. I did not find one piece of data which showed that the two major components would be this amount. In fact, each lavender oil, analysed from different lavender plants, showed real differences in the amounts of these two major components. I found that the lavender oils I had analysed were in fact mixed with synthetic chemicals identical to the two components.

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As we know, for essential oils to be therapeutic, they must be genuine. In other words, the only human intervention between a growing plant and an oil should be a method of extraction. Not someone round the back mixing the oils with synthetic chemicals!



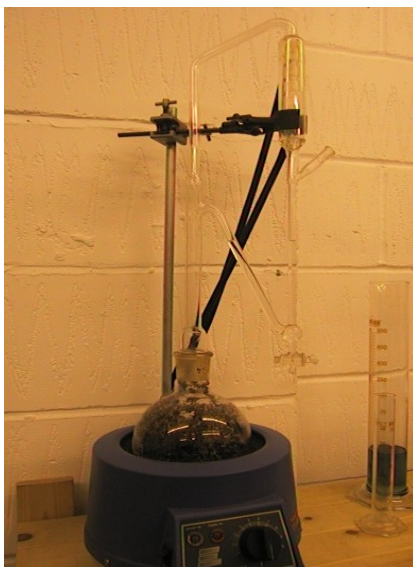
Image of peppermint plants in the field at flowering. This is when the oil is at maximum quality. However the lower leaves fall from the plant thus reducing the oil yield.

Eventually I obtained funding to direct Merseyside farmers to grow medicinal and aromatic plants for their essential oils. We decided to grow using organic methods of production (more on this later) and chose lavender, Roman chamomile, German chamomile and peppermint. We had to install a commercial distillation unit on the farm and, in reality, change the agricultural wheel. Farmers had never before grown essential oil crops.

Numerous visitors came to the farm for educational events and I met hundreds, if not thousands, of students, tutors and therapists of Aromatherapy and Complementary Therapies and many other people interested in the subject. I began Phytobotanica in 1995 (now Phyto Essential Oils).

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This is the British Pharmacopoeia Distillation Apparatus which I use to obtain essential oil samples. The blue structure is the heater which holds a round-bottomed flask which holds the plant material. This flask is filled with water which heats and, at boiling point turns to steam. The oil "dissolves" in the steam which rises. The black tubes circulate water to the condenser (the bulbous structure on the RHS) from the tap to keep it cool. Once the steam with the oil in hits the condenser, they separate into oil and water. Because of differences in density the oil "sits" on top of the water. I have extracted thousands of essential oils over the time !

I have thought long and hard about how to structure this story. I have read numerous books, scientific papers and journals and have not found one piece of published information about the whole story of essential oil production from the plant seeds to the oil in the bottle. I will explain how we design experiments to prove our point, how we contribute to the global area of essential oil research and how, many times, our research may take an unexpected turn.

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This is how we bottle essential oils. Sterility is vital. We use micro-pipettes which delivers 2.5mls, 5mls and 10mls of essential oil. Amber glass is the best colour of bottle to use as it prevents light damaging the essential oil. Oils should be stored in an even temperature, eg in a cool place. I don't recommend a fridge.

I think I am uniquely qualified to write this story because I am a farmer, first and foremost. Also, now, a scientist who studied and researched all aspects of essential oil production. Modesty is wonderful and I have a lot to be modest about!

By writing this story I have decided to include everything. In other words, I cannot write about lavender and other essential oil crops without describing classification, agriculture, basic sciences and botany. However, I hope this journey will be understandable and even enjoyable. I fully admit I am leaving out other science subjects, eg, physics, geography, astronomy. I also admit that some of my comments may be controversial and I await your responses with interest.

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So here goes.....

INSTALMENT 2 WILL FOLLOW SHORTLY

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