

www.cropwatch.org



THE FIRST TRULY INDEPENDENT WATCHDOG FOR THOSE
WORKING WITH NATURAL AROMATIC MATERIALS

E: info@cropwatch.org T: ++44 (0)7771 872 521

Juniper is disappearing in Britain.

[Modified from an article first appearing on *Aromaconnection* Feb 27th 2007].

Copyright ©Tony Burfield 2007-2009.

Juniper Berries & Gin-making.

Juniper berries from varieties of *Juniperus communis* L. constitute a traditional flavouring, which, combined with purified grain spirit, is commonly recognised as gin. Juniper berries are also used to flavour the arguably Nordic-originated alcoholic beverage jenever (or 'genever' in Flemish), which some regard as a fore-runner of London dry gin. Jenever is strongly associated with Belgium, the Netherlands and N. France. Juniper berries in a sweet sauce are also used as an accompaniment to meat, game & fish dishes, being traditionally harvested by hand in late summer (or by knocking onto sheets with sticks to avoid the thorns!), and collected in traditional wooden trugs in Tuscany & in many parts of Europe / Eastern Europe. Although some slight fermentation may occur during gathering, too much will impart a turpentine-like note if intended for beverage use, making the ingredient unsuitable. Field-distilled 'juniperberry liquor' from gathered berries which have undergone a considerable degree of fermentation has been traditionally made in several Eastern European sources (former Czechoslovakia, former Yugoslavia, Hungary and the Tyrol) associated with 'Borovicka' beverages. Distillation of the stirred fermented mass produces a mixture of water, ethanol and juniper berry oil, which can be isolated as a by-product (due to its poor solubility) by further rectification. This type of oil is inferior to steam distilled oil produced from dried unfermented berries, which may be obtained in 0.5% to 2% yield, sometimes higher, especially if Hungarian or Italian sourced berries are used. But it is the terpeneless, sesquiterpeneless or re-rectified essential oil prepared from the berries which is the most favoured ingredient used as a component of gin-making, & cheaper beverages rely almost exclusively on juniper berries to provide the flavour components. More exclusive gin brand names include several other botanical flavouring components as beverage ingredients (from ingredients such as coriander, lemon & orange peels, angelica, cardamom & liquorice extract) to give the characteristic brand taste (London dry gin is considered to be characteristically 'citrus' by some European gin-producers). Surprisingly, you might think, one or two well-known leading gin brand-names have more recently invited gin-flavouring submissions from a group of core flavourings suppliers, with a view to long-term gin flavouring supply

contracts. So much for the traditional in-house secret recipes & centuries of passed-down knowledge of the gin trade!

The essential oil of juniper berries contains mainly hydrocarbons, especially α -pinene, the content of which can typically vary from 25-55%, some gin manufacturers preferring the α -pinene level to be over the 50%-, some even over the 60%- mark. Small amounts of other monoterpenes (like myrcene) or monoterpene alcohols (such as α -terpineol, nerol and geraniol) may also be important for odour quality, and, according to some opinions, characteristic 'berry notes' might be provided by components such as junionone, juniper camphor and other substances. Interestingly, the urine of individuals taking juniper berries as a herbal diuretic (the essential oil has a known diuretic effect) is said to smell of violets. Fruity notes are more pronounced in juniper berry CO₂ extracts, which have better keeping qualities (from the high oxygenates / lower monoterpene hydrocarbon content), but which often have little evident gin-like flavouring characteristics to impart. Commercial juniper berry oil is often adulterated with limonene [for example, see Lawrence (2006) commenting on the analysis of three Polish juniper berry oils by Filipowicz *et al.* (2003)], and / or juniper needle / twig oils. "Berry oils" containing added juniper twig oils or even juniper branch oils, invariably reveal an analysis profile that has increased levels of α -cedrene, thujopsene and α -cedrol, although an expert odour appraisal will quickly distinguish good quality (unadulterated) berry oils from twig oils.

A little goes a long way: the use of juniper oil in beverage flavourings is limited to 0.01% concentration in practice, due to the gastric irritation effect of juniper oil at more elevated concentrations. Various studies have also revealed that kidney irritation from juniper oil has been ascribed to the terpinen-4-ol content (e.g. Schilcher H *et al.* 1993); & diuretic activity has also been ascribed to terpinen-4-ol which has been said to increase the renal glomerular filtration rate.

Juniper Berry Oil: Perfumery Uses.

In perfumery juniper berry oil is seen as a colourless to pale yellow or pale green which is particularly employed in men's fragrances to impart a fresh resinous top note. Pine accords too may be lifted and freshened by the addition of juniper berry oil. The oil has powerful terpenic odour, which is conifer-like, becoming bitter after a short while. The dry-out on a perfumers strip is sweet, with a hint of fir-needle balsam absolute, and is slightly resinous. Overall the berry oil dry-out is stronger than the needle oil dry-out (Burfield 2000).

Juniper spp. : Ecological Situation in the UK.

Now to main the point of this feature! A newspaper story (Randall 2007) reports on a study by the plant conservation charity *Plantlife*, which suggests that the relatively slow-growing juniper, one of only three native conifers, is rapidly dying out in British hillsides. Numbers have shown a 50% decline since the 1970's - and it is suggested that the species could disappear altogether if nothing is done. The most common form of juniper in the UK is *Juniperus communis* ssp. *communis*, followed by the prostrate *J. communis* ssp. *nana*, although some

authorities favour cultivated *J. communis* var. *erecta* Pursh for the purposes of gin-making (juniper berry supplies derive from both limited cultivation & wild-collection). So although *J. communis* spp. are not threatened worldwide as such, in the UK juniper is now the subject of a Biodiversity Action Plan (BAP), under the government's response to the Convention on Biological Diversity agreed at the 1992 Earth Summit. This can be followed in some detail on the *Plantlife* website at [http://www.plantlife.org.uk/uk/assets/saving-species/saving-species-dossier/Juniperus communis dossier %20part2.pdf](http://www.plantlife.org.uk/uk/assets/saving-species/saving-species-dossier/Juniperus%20communis%20dossier%20part2.pdf).

Diminishing demand for UK juniper berries (most are now imported, or imported as crude juniper berry liquor), reduced demand for juniper as firewood, and for the prickly branches as fencing, and changing land management patterns, are all blamed for the situation. Juniper is becoming yet another example of the 'use it or lose it' phenomena amongst economically important plants. Planting juniper species in gardens as ornamentals might help to offset its continuing decline in the wild.

References.

- Burfield T. (2000) *Natural Aromatic Materials – Odours & Origins*. Pub AIA (Tampa, U|S) 2000.
- Filipowicz N., Kamaniski M., Kurlenda M., Asztemborska M. & Ochocka J.R. (2003) "Antibacterial & antifungal activity of Juniper berry oil & selected components." *Phytotherapy Res.* **17**, 227-231.
- Lawrence B.M. (2006) "Progress in Essential Oils: Juniper berry & extract. " *Perf & Flav.* Vol **32** (March/Aprilb2006), 50-56
- Randall D. (2007) "Nations gin tree in need of a tonic" *Independent on Sunday* 18.02.07 p31.
- Schilcher H *et al.* (1993) *PZ Wissenschaft* **138**(3-4), 85-91.