

## **Practical: OIL EXTRACTION OF MEDICINAL CROPS**

### **Mentha**

**Distillation of Oil:** Mint oil is obtained by distilling either the fresh or the dry herb. The distillation is done both in primitive and modern stills; in the former the principle of water and steam-distillation is followed. While in the later steam generated in a separate boiler is employed. The stems are removed from the dried material prior to distillation, because they constitute 30 to 50% of the material and contain only traces of the oil. The average yield of oil is 50-70 kg/ha. Although bergamot mint as well as Japanese mint give an average yield of 70-100 kg/ha, the yield of peppermint oil is lower with an average of 50 kg/ha.

**Storage of Oil:** Mint oil is a light and golden-coloured, motile liquid and it should be completely free from moisture before storage. It is stored in large steel, galvanized steel or aluminium containers, filled up to the brim to protect against any air remaining inside and placed in a cool storage godown, away from light and humidity.

### **Citronella**

#### **Distillation**

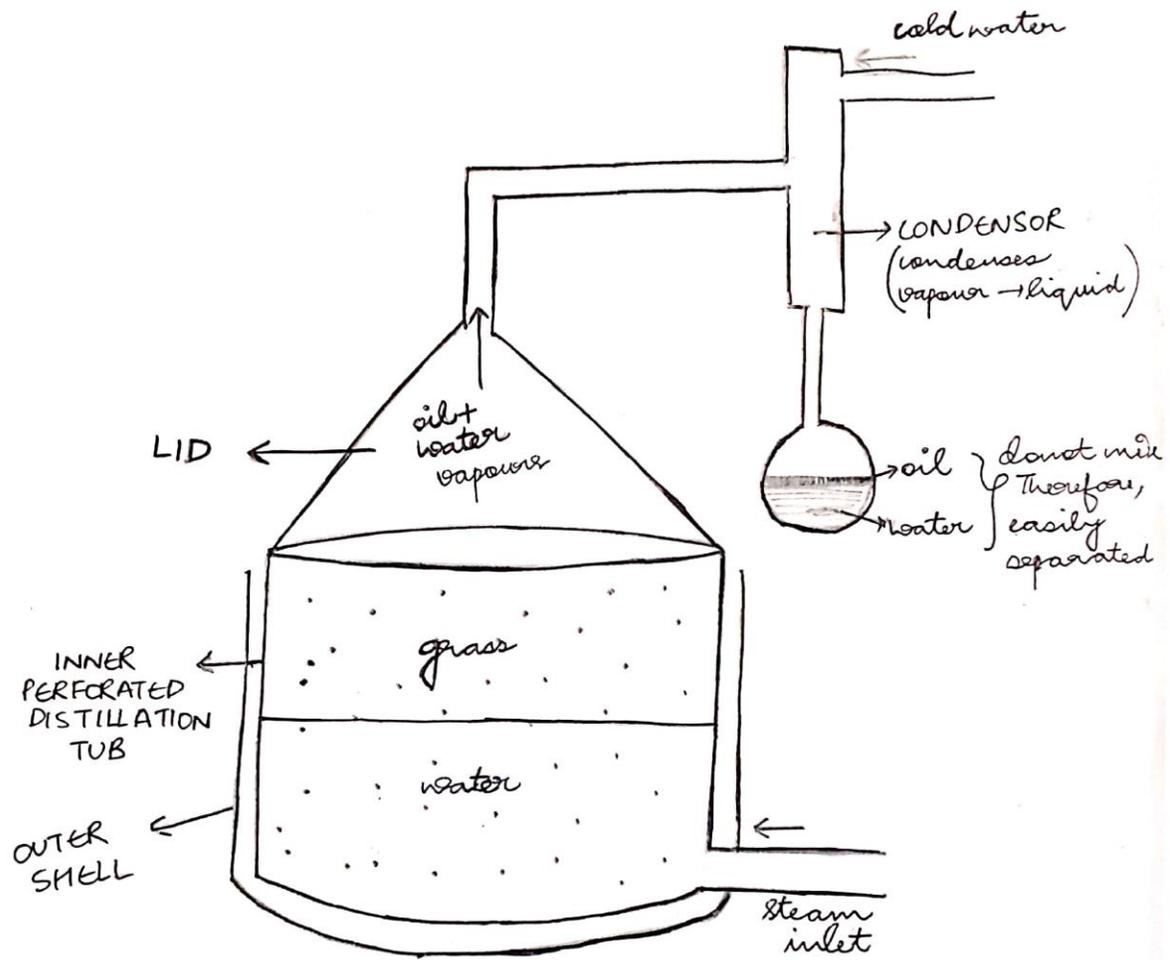
The grass is steam-distilled for better recovery of oil and economical purposes. The distillation equipment consists of a boiler in which steam is produced, a distillation tub for distilling the grass, a condenser and 2-3 receivers /separators. The distillation tub is made steel with a perforated bottom, which of mint called false bottom, on which the grass rests. It has two opening: one at the bottom for steam entry and the other at the top through which the oil vapour and steam escape. The top of the still is fitted with a lid, which is removable. Oil vapours coming out from the distillation tub, enter from the top of the condenser and cool down while passing through the tubular tubes. Oil and water vapour after condensation are led to a receiver where the oil separates out from the water and floats on the top and is drawn off. The harvested grass sometimes contains dead leaves. These should be removed. The remaining leaves are cut into shorter lengths. This reduces the volume of the grass and facilitates firm and even packing within the still. Further, chopping the grass gives a higher yield of oil compared to uncut grass. Generally, distillation is complete within 2 1/2 to 3 hours under normal pressure starting from the initial condensation of the oil. About 80% of the total oil yield is recovered in the first hour, 19% in the second hour and about 1% in the 3<sup>rd</sup> hour, of distillation. Larger percentages of the major components in the total oil, such as citronellal, geraniol, citronellal and geranyl acetate are

recovered on the first hour of distillation. Citronella oil should preferably be stored in glass /aluminum containers.

## **Lemongrass**

### **Distillation**

The grass is either distilled afresh or is allowed to wilt for 24 hours. Wilting reduces the moisture content and allows a larger quantity of grass to be packed into the still, thus economizing the fuel use. For good quality oil, it is advisable to adopt steam-distillation. The equipment for distillation consists of a boiler to produce steam, a distillation tub, a condenser and 1-3 separators. To obtain the maximum yield of oil and to facilitate release of oil, the grass is chopped into shorter lengths. Chopping the grass has further advantages that more grass can be charged into the still and even packing is facilitated. The grass should be packed firmly. The stills are provided with a boiler at the bottom of the tub. This is separated by a false bottom from the rest of the tub. Water is poured at the bottom of the tub and grass is charged in the top portion. In the still, the water does not come in contact with the grass. The distillation tub is made of mild steel and has a perforated bottom, on which the grass rests. A removable lid is fitted on to the top. Different types of condensers are available, but tubular condensers are better than others. The condenser is provided with an inlet and outlet by means of which cold water is made to flow through the chamber to cool the pipes when the distillate flows through them. The mixture of vapours of water and lemongrass oil passes into the condenser. As the distillation proceeds, the distillate collects in the separator. The oil being lighter than water and insoluble floats on the top of the separator and is continuously drawn off. The oil is then decanted and filtered. The oil is stored in containers, preferably of glass or well tinned iron. Containers should completely be filled to exclude any air and protect from sunlight as they affect the citral content.



• perforated = has holes