

## A Source of Doubling Farmers Income of Lavender Cultivation in Jammu and Kashmir

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### Abstract

Lavender is a small, aromatic shrub used in the fragrance, specialty food and alternative medicine industries. Although family farmers may find large-scale extraction of lavender's valuable oil too expensive and laborious, small-scale lavender production is feasible for some farmers using alternative marketing strategies. Like most herbs, lavender has few if any insect pests. Few fungal diseases attack lavender, but since there are no known remedies for them, chemical applications are not an issue. Farmers in the new livelihood options to supplement their income from traditional crops like; maize, paddy, wheat, vegetables, etc. have found a new lease of life. The **cultivation of lavender plants** has given them additional income. Therefore, governmental support to lavender can lead to improvements in profitability indicators.

### Introduction

Lavender (*Lavandula angustifolia*) is an herb that is grown in northern Africa and the Mediterranean mountains, and often used extraction of its essential oils. It is also grown for the production of its essential oil, which comes from the distillation of the flower spikes of certain lavender species. The lavender oil has cosmetic uses, and it is also believed to have some medicinal uses. The medicinal benefits of using lavender are used to treat anxiety, fungal infections, hair loss, and wound. Lavender is not used to treat depression, high blood pressure, nausea, menstrual pain, or eczema, and among other conditions. This herb is not approved by the Food and Drug Administration (FDA) and should not be taken in place of approved and prescribed medicines. The herb lavender is highly regarded for skin and beauty



and also used in fragrance and shampoos for purification of the skin. It can be purchased from the drug store counter. Some versions of lavenders are used to add flavours to baked goods and foods. This herb also contains many medicinal properties. Lavender oil is essential oil distilled from lavender flower. It has an anti-inflammatory, antiseptic, antibacterial, antifungal antimicrobial, antidepressant properties. This herb stimulates urine production and improves digestion, reduce emotional stress and anxiety, this herb heal burn and wound and improve sleep, improves eczema and psoriasis, reduce acne and store skin complexion. Lavender is also used in aroma therapy. It is an aromatic plant in the limacine family. Essential oil, aqueous extracts and dried part of these plants are used in cosmetics, hygiene products and traditional medicines. They are also used as food additives due to their pleasant flavors' and aroma and also, they are antibacterial, antifungal and insect repellent, insecticidal, and antioxidant properties. There are more than 20 commercially important lavender cultivars, with climate and plant culture requirements varying among some of the major lavender types. Large-scale lavender production in Jammu and Kashmir is limited by climatic requirements (low humidity and low winter temperatures), poorly drained soils and the scale requirements for essential oils processing. Lavender could be suited as a specialty/niche crop for farmers especially those with ongoing agritourism enterprises. The region where the farms are located, the structure of soil they have, and climate conditions restrict the production opportunities of cereals crop and vegetables. At this point, lavender production is an alternative and important source of income for producers in the region. According to study findings, lavender farming is a profitable activity in the region while farmers have to get more organized in order to maintain its sustainability. Some suggestions are listed to sustain profitability, to resolve farmers' problems. It is important to figure out production planning due to limited consumption of lavender market. Thus, it is recommended that promotions, campaigns should be organized in the CSIR-Aroma mission. CSIR-Institute should play a major role in these activities. Governmental support to lavender can lead to improvements on profitability indicators. Establishing producers' union and establishing organizations can provide positive effects in farms' costs and profitability indicators from the aspects of production input procurement and product marketing (Reddy *et al.*, 2004). Supporting medical and aromatic plants like lavender which helps protect the biodiversity of the region, will develop agriculture. Especially government can grant encouraging incentives

to products grown without damaging to nature and in high quality. Some positive impact in national economy such as increasing employment opportunities through an organization which will be founded to produce new lavender products might be market.

### **Description of the plant**

Lavender is the name given to several species of herbaceous, perennial shrubs in the genus *Lavandula* which are grown as ornamental plants or for essential oil. Lavender plants are small, branching and spreading shrubs with grey-green leaves and long flowering shoots. The leaves can be simple or pinnate measuring 30–50 mm (1–2 in) length. The plant produces flowers on shoots or spikes which can be 20–40 cm (8–16 in) long. The flowers are lilac or blue in color. Lavender can grow to 0.4 m (1.3 ft) in height and live for 20–30 years. Lavender may also be referred to as true lavender, medical lavender, smelling lavender, thin-leaved lavender or English lavender and is believed to originate from the Mediterranean, Middle East and India.



### **Suitable Locations for Lavender:**

Basic requirements Lavender grows very well in a wide range of climates, and optimally at temperatures between 7 and 21°C (44.6–69.8°F). Lavender plants require bright sunlight for adequate growth and should be positioned accordingly. The plants will grow best in light to sandy, well-draining soils with a pH of 5.8–8.3. The plants are drought tolerant once established but require regular watering while they establish.

### **Propagation**

Lavender is mainly propagated by seed, cuttings, layering, tissue culture and division of roots. To ensure genetic uniformity propagation by seed should not be used.

- A. Cuttings:** Lavender is usually propagated vegetative from cuttings or by dividing the mother plant. Cuttings are best taken directly after the plants bloom. The cuttings should be taken from stems with no flower buds and should be prepared for planting by removing the leaves at the bottom of the stem. The cuttings should then be planted in pots containing a high quality, sterile potting soil and watered regularly until they

root the cuttings should develop a root system of their own in approximately 3 weeks. (Fig. A)

- B. Layering:** Layering propagating is the best choice if you're looking for a low-effort way of increasing your lavender plants. Layering means to start a plant from a living stem while it is still attached to the "mother" plant. It is achieved by taking a low-growing stem on a healthy, established lavender plant and bending the midpoint of the stem down toward the ground. After removing the foliage from the middle portion of the stem, make a shallow wound on the underside of the stem using a sanitized razor blade. Dust the wound and the surrounding portion of the stem with rooting hormone; then bury the wounded portion of the stem 1 to 2 inches below the surface of the soil. Place a stone on it to hold it in place or use a piece of bent metal to "staple" the stem to the soil. Most stems will root in about eight weeks, at which point you can sever the stem and transplant the new lavender plant into a pot of fast-draining soil or directly into the garden (Fig. B).
- C. Tissue culture:** Tissue culture methods are used for the mass propagation of lavender from selected mother plants. It produces disease-free, genetically identical plants. Tissue culture is the most expensive way of propagation. (Fig. C)



*Fig. (A) Cuttings of lavender (B) Sample layering of lavender (C) Tissue culture of lavender*

#### **Seed:**

Propagation by seed is not recommended for commercial lavender production. Plants grown from seed are variable in growth habit, colour and essential oil composition. If seeds

are to be used, these should be sown in late spring or early summer. Germination rates are low and seedlings are slow to reach transplanting size.

### **Planting:**

Lavender plants can be planted Spring through to fall. If planting in the fall, care should be taken to use larger plants with an established root system to allow the plants to establish in the soil quickly before winter sets in. Spring planted lavender can be smaller as it can establish over the summer. Rooted cuttings can be planted directly in the garden after they have been hardened. Spacing should be maintained, 75×75 cm with plant density of 18,000 plants per hectare.



*Fig. Transplanting of lavender*

**General care and maintenance:** Once established, lavender requires little care. It benefits from prompt harvest if the flowers are to be used for further processing. Faded blooms should be removed to promote further blossoming. Light pruning encourages the plant to branch. Care should be taken not to over water the plants by allowing the plants to dry out between watering.

### **Harvesting:**

The majority of lavender is hand-harvested, and timely harvests are necessary to maintain product quality. Harvest times vary for lavender intended for essential oils and flowers. Harvest of lavender for essential oils occurs when flowers are less open than harvest for fresh and dried flowers. Lavender flowers may be dried on the stem and either sold as flower bundles or as dried buds. Harvesting of flowers is done by a sharp sickle on bright sunny days when 50-60 % florets are open. Plants are cut 10-15 cm above the ground level



during November to December. Essential oils require distillation of lavender buds after harvest. This requires flower bud removal from stems, followed by distillation of the buds. Lavender buds are usually distilled by steam. Essential oils may also be extracted from buds by the use of organic solvents or carbon dioxide.

### **Marketing:**

Lavender products can be marketed in many ways *viz.*, as dried, fresh, or processed products. The market of essential oils is divided into local buyers and international buyers. The local buyers include florists & decorators, households (on special occasions like religious festivals, marriage ceremonies and temple offerings), local hoteliers and tour operators and chemical and pharmaceutical industries as well as food and flavouring industries. The international buyers include flavour and fragrance houses, cosmetics and personal health care, aromatherapy and food manufacturers. The major market in the world for essential oils is the United States, followed by Japan and Europe. In the United States, the major users of essential oils are the soft drink companies by the 10 per cent in used in essential oils.

**Production levels:** The world production of high-quality lavender oil is 200 metric tons per year. The ratio of lavender to lavandin production worldwide is 1:5. The price of Lavandin is lower than for lavender oil. Lavandin plants produce more oil and are harder than lavender plants. In India lavender yields 8 - 30 kg and lavandin 40 - 220 kg essential oil ha<sup>-1</sup> from 500 to 1000 kg of dried flower with stem of lavender per hectare.

**Economic return:** A high oil yielding variety known as RRL-12 was developed by CSIR-IIIM. It is reported that the farmers cultivating Lavender achieve 5-6 folds more income (Rs 5.00 - 7.00 lakh per hectare) than the traditional crops.

### **Conclusion**

Lavender essential oil is an herb which is used in our daily life for many purposes. It is popular as a complementary medicine in its own right and as an additive to many over the counter complementary medicine and cosmetic products. The oil is traditionally believed to have sedative, carminative, anti-depressive and anti inflammatory properties. The profit from lavender essential oil has doubled the income of farmers as compared to traditional cereal crops and vegetables. This venture can earn high profit only when farmers adopt good agronomic management practices including mechanization of farm operations, intercropping with other crops during first year of its plantation and by following optimum processing



parameters on efficiently designed distillation units without compromising on the quality of the soil. CSIR-IIIM plays an important role to evaluate strategic plan for betterment of the region by providing planting materials, creating proper infrastructural facilities such as distillation units which can earn more income for farmers. Since the world wide consumption of this oil is increasing, owing to increasing demand in the industry, there is an urgent need to augment lavender oil production in India through large scale cultivation of the crop for which the Government and the industry should strongly join and support the farmers.

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