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RESEARCH OF LAVENDER PLANT PROPAGATION IN THE PROVINCE OF DIYARBAKIR

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Abstract: *Lavender flowers are from the family Ballibagiller (Labiatae) and grow in North west and South west Anatolia Between June and August, blue or purple flowers open, 20-60 cm in length, aromatic smelling, perennial, herbaceous or playful plants. More widespread in western regions where marine climate is present. There are two species that grow in Turkey. These are Lavandula x intermedia and Lavandula angustifolia Lavender is an important perfume, cosmetics and medicine plant cultured in the world due to its high content and high quality oil content The purpose of our research is to cultivate this plant and to reveal its medicinal and aromatic properties. In the study, pre-seedling stems were prepared from 'Raya', 'Silver' and 'Vera' lavender varieties of Lavandula angustifolia species as field material and 'Giant, Hid, cote', 'Dutch' and 'Supera' lavender varieties of Lavandula x intermedia species and selected the 'Super A' lavender variety of Lavandula x intermedia that could be adapted in Diyarbakir conditions. Production and reproduction of lavender plant as in other aromatic plants are carried out in two main ways, generative and vegetative. However, because of the infertility of the 'Super A' lavender variety of Lavandula x intermedia and the lack of seeds, vegetative propagation and shoot steels were used. The seedlings of the "Super a" lavender of the Lavandula x intermedia line were placed 1 m above and 3 m apart from the row, in the experimental area of the Dicle University Medical and Aromatic Plants Application and Research Center 7 days a week 6-7 April 2017. A total of 2100 seedlings were planted in the trial area and later juveniles were given. The maintenance and irrigation works of the seedling lites were carried out regularly at the trial and drip irrigation system was used in the study. At the beginning of June some of the seedling lites were found dead. The survival of the remaining seedling lites continued and the adaptation rate was 63% Flowering The flowers were harvested 3 times between June and October, which began in June. In December, the shoot steels were rooted in the serpentine and replicated in the plants we obtained for seedling formation At the end of this study; 21-33 cm long plants were obtained, These results formed the opinion in light of lavender farm will be made in Diyarbakir in Turkey. This year we will also work on the determination of the medical and aromatic contents of plant materials obtained from our work.*

Key Words: *Lavender, seedling, steel and planting*

1. Introduction

In recent years, the demand for herbal medicines for treatment, the perfumery of fragrant plants, the formation of the main raw materials of the food and cosmetics industry and the emergence of new areas of use have increased the demand for medical and aromatic plants. Raw materials obtained from these plants have recently been used in the food industry, especially in the industrial sectors such as paint, ornaments, and they have begun to spread [15].

Lavanta is most prevalent in southern Europe and in neighboring countries of North Africa [8], especially in the Mediterranean and Balkan countries. France, Bulgaria, Spain, Italy, Greece, England, USA, Russia, Austria and North Africa [22].

Lamiaceae (Labiatae) family is represented in the world with about 224 genera and 5600 species, Turkey constitutes one of the Lamiaceae family of genes important for the center. Additionally, this family of 45 genera in Turkey, there are 565 species and 735 taxa [12]. The important species of this family, which are medicinal and aromatic, are *Mintha*, *Thymus*, *Origanum*, *Sage*, *Sideritis*, *Melissa Rosmarinus* and *Lavandula* [14].

The real lavender plant is a semi-annual plant, a perennial plant. As you get older, a large number of branches are formed, starting from the bottom upwards, with an average length of 40-60 cm and a maximum length of 1.2 m. There are mutually 2-5 cm long, short-stemmed, greyish-green leaves in the dahlia, and the flowers are gathered at the ends of the stems 15-20 cm long resembling the head of the head. There are an average of 6 flower clusters in each spike and 5-20 flowers in each cluster. The flower clusters are protected by two sheets facing each other. The actual lavender flowers, which are very short stalks, are wrapped in gray-blue color, with straight, bright, non-hairy 4-6 mm long dish leaves. The leaves of the dish wrap around like a flower pipe and end with 4 small pointed teeth at the end. There are four male organs among the petals that vary from violet to violet [13-17].

The real lavender is rich in limestone, and has developed very well in dry and calcareous soils with a pH of 5.8-8.5. It produces less volatile oil in soils that are extremely humid, have a high base water and a high proportion of organic matter. It is originated from the Mediterranean and is very resistant to stasis and temperature. However, the resistance to cold is not as high as the resistance to stasis. Cold weather can sometimes be seen in regions where winter is very hard. The southern-facing, dominant winds are less cold-covered in sloping areas. However, in sloping areas, the direction of planting is planned to be steep [4-16].

The most Lavander in the World (*L. angustifolia* Mill.) and lavandin (*L.x intermedia* Emeric ex Loisel.) agricultural varieties into their species maintained, while in Turkey in economic terms only lavandin in Isparta (*L.x had intermedia. Super A*) culture is done. Lavender has adapted very well to this irrigation, barren and sloppy land. [7].

There is *intermedia L.* grown in Isparta. Fresh lavender with an average of 500-750 kg / da is taken from the Supera lavandin variety. After drying, 100-150 kg / da dry flower yield is obtained with the sap leaves. When fresh bunch of 5 kg stems are dried, about 1 kg of stemless dry lavender flowers are produced. 65% of the dried stem flower bundles are sap, 35% are fruit [5].

Production and multiplication of lavender plant as it is in other aromatic plants is done in two main ways, generative and vegetative. Some types of lavender are generative only, some types are vegetatively, and some types of lavender and varieties of lavender can be reproduced more easily and quickly in both ways. [3-6].

In medicinal and aromatic plants, the active substances vary depending on the genotype and the environment. The characteristics of the plants such as metabolite extractions, volatile oil composition, volatile oil content, age and dry drug yield may vary. Tissue culture technique micro-cultivation method has the same genetic structure to eliminate the negative aspects of seed and steel production, allowing vegetative propagation of seedlings quickly and in large quantities. In addition, micro-production techniques in medical and aromatic plants, which are particularly sensitive to environmental conditions, can be considered as an alternative form of production to traditional production methods [11-19-20].

In addition, in order to obtain a large number of seedlings, it is necessary to encounter difficulties in obtaining suitable steel, and a large rootstock garden to be taken of the steel. In seed production, development is generally slow, seed germination problems can occur, and there are large variations in morphological and volatile oil composition due to foreign pollination [18].

Since lavender is a perennial plant, it is economically beneficial for at least 15 years from the same lavender plantation. Lavender steels are mostly planted in early spring or early summer [10].

Lavender plants begin budding in June and bloom in July. Flowering time varies depending on species and variety, climate and soil conditions, altitude and region. Harvest time in *lavandula* is very effective on the yield and quality of essential oils [21].

The increase in interest in lavender farming in recent years has increased the importance of scientific research on this plant's advanced breeding techniques and made significant improvements. Studies on the propagation of the steel have gained tremendous value, especially in species with seed multiplication problems. Smoking irrigation of Isparta province, arid areas and slopes to extremely good harmony lavender, which provides a dry crops, if it is determined varieties that produce volatile fatty marketable quality in the world and then can be distributed determined to rapidly reproducing manufacturers seedlings of these varieties, lavender and Isparta big win for both Turkey's economy [2].

The purpose of this research; lavender cultivated economically in Turkey made only in Isparta region for higher flower yield and high volatile oil quality (containing high proportions of linalyl acetate and low in camphor) has, adaptability high *lavandin* varieties Diyarbakir and to provide the local and this kind of agricultural and to determine the technological properties, to adapt to in vivo conditions of lavender cultivar with limited possibilities of production with seeds and sometimes even impossible, and to investigate possibilities of propagation by means of steel, to produce a large number of healthy seedlings from mature lavender plants.

2. Material and Method

2.1. Research Place and Year

Field experiment, Dicle University Medical and Aromatic Plants Application and Research Center between April 6, 2017-2018; The sera experiment was carried out in 2018 in the Medical and Aromatic Plants Application and Research Center.

2.2. Plant Species Used in Research

In the study, "Supera" from Egridir Fruit Research Center located in Egridir district of Isparta province was used as material by taking fidelity of variety. This variety is one of the most important

varieties used in the production of commercial lavender in the world. The location obtained with the lavandin type used in the experiment is given in Table 1.

Table 1. The type of lavandin used in the research and its origin

Type	Variety name	Trade name	Origin(when available)
L.x intermedia	Super A	Lavandin	Türkiye-Isparta

The characteristics of variety used in the research are briefly mentioned below by making use of "Anonymous [1]".

2.3. Soil preparation

Dicle University Medical and Aromatic Plants Application and Research Center area on April 6, 2017 140x30 m (4.2 decares) area is determined. Immediately prior to planting, fertilization was carried out in such a way as to be 6 kg N, 6 kg P₂O₅ per decare, which is widely applied in the area. Land was cultivated before cultivation. Lines were then opened with row openers to form rows and rows of 3 m and a drip irrigation system was established after the soil was left to rest. The struggle with weeds was carried out by rotating them with a rotator, and the rows were processed with anchors.

Table 2. Monthly climate data for the period of the experiment *

MONTHS	TEMPERATURE			RAINS			HUMIDITY(%)		
	HIGH	AVG	LOW	HIGH	AVG	LOW	HIGH	AVG	LOW
JANUARY	12	7	-4	4,1	0,5	0	100	71	13
FEBRUARY	18	8	-2	0,5	0	0	100	62,3	6
MARCH	20	9,16	-1	10,9	1,8	0	100	68,48	14
APRİL	26	12,26	0	16	1,8	0	100	67,63	14
MAY	33	18,41	7	9,9	0,8	0	100	57,03	7
JUNE	42	25,7	12	3	0,1	0	77	29,2	4
JULY	43	31,22	19	0	0	0	49	18,67	4
AUGUST	44	30,06	17	0	0	0	52	22,06	4
SEPTEMBER	40	26,26	13	0	0	0	58	21,36	4
OCTOBER	29	17,09	6	21,1	1	0	100	38,09	7
NOVEMBER	21	10,06	-2	5,1	0,3	0	100	66,66	20
DECEMBER	17	6	-5	2	0,2	0	100	73,45	16

*Diyarbakır Regional Directorate of Meteorology 2017 records

2.4. Preservation of seedlings

In the study, the roots of the 'Supera' lavandin from Egridir Fruit Research Center located in the district of Egridir in Isparta province were kept in water for 1 day before fiddling and then planted.

2.5. Seedlings planting

A total of 1552 seedlings were planted in the previously prepared 140X30 m (4.2 decare) area of the 'Super A' lavandin, previously moistened with roots in water. Then, after the sewing operation was finished, the drip irrigation system was opened and all the seedlings were given water.

There is intermedia L.x. Super A; In June and July, long flowers are blossoming, bluish purple color, flower stalks are long, sharp fragrant, leaves are silvery green, frequently arranged, branches are very long and semi-slanting up to 90 cm, volatile oil and flower is high, used as ornamental plant a kind of lavandin.

3. Findings and Discussion

In the research conducted between 2017-2018, there are intermedia of lavandin L.x in the ecological conditions of Diyarbakir. The adaptation, flowering stage, yield and harvesting period of the Supera variety were investigated in vivo.

3.1. Adaptation of the planted Supera 'lavandin variety seedlings and flowering phase

In the research, irrigation and maintenance operations were carried out continuously after the planting phase of the 'Supera' lavandin type fidelites taken from Egridir district, Egridir Fruit Research Center in Isparta province. There is intermedia L.x. The adaptation of the Super A plant is almost ensured. The first weekly plantings of the fidelites planted in May, June, July, August, September and October were observed, and the numbers of plants adapted to flowering and flowering were determined (Table 3).

Table 3. The results of the adaptation and flowering stages of the planted Supera 'lavandin variety seedlings

MONTHS	LIVING PLANT NUMBER(%)	NUMBER OF BLOOMING PLANTS
MAY	45	0.0
JUNE	55	1155
JULY	60	1230
AUGUST	63	1323
SEPTEMBER	63	1323
OCTOBER	63	1232

*The data were taken at the end of each month.

3.2. There is intermedia L.x. The yield and harvesting period of Super A 'lavandin plant

Lavender reaches the full bloom cycle in July, with varying species and varieties, climate and soil conditions, altitude and direction, and is harvested during this period. There is intermedia L.x. The adaptation of Supera plant in Diyarbakir conditions and harvesting after the flower period reached the end of June. Sowed grass knives are used in the harvest of the plant. However, the yield was low because the yield was low in the first year. [9], reported that first year yield was not obtained in

lavender cultivation and that yield was started to be obtained from second year. This supports the quality of our work.

In recent years, harvesters have been harvested with gasoline hedge mowers. Machine harvesting saves labor and time.

The harvested flowers were laid out in a shaded environment at a thickness that would not create an escape. Dried lavender flowers with the handle were separated by hand from the stems and the number of flowers on the surface was noted (Table 4).

Table 4. There is intermedia L.x. The yield and harvest period results of the Super A 'lavandin plant

MONTHS	NUMBER OF FLOWER	NUMBER OF FLOWER AT HARVEST TIME
MAY	0.0	0.0
JUNE	2310	0.0
JULY	2460	18450
AUGUST	2646	0.0
SEPTEMBER	2646	0.0
OCTOBER	2646	12320

*The data were taken at the end of each month.

4. Results

In recent years, agriculture of medicinal and aromatic plants, which are used for pharmaceuticals, cosmetics, perfumery, industry and food and have important share in exports, is becoming increasingly widespread. In medical plants, quality concept is more important than efficiency. Because the plants that are actually used and effective in these plants are the substances in the composition of that plant. Therefore, the scientific researches on quality improvement enhancing techniques have been increased and significant developments have been recorded.

Production and reproduction of the lavender plant as it is in other aromatic plants is carried out in two main ways, generative and vegetative. However, because of the infertility of the 'Super A' lavandin variety of *Lavandula x intermedia* species and the lack of seeds, vegetative propagation and fleece obtained from shoot steels were used. A total of 1552 seedlings were planted from the 'Super A' lavandin variety of *Lavandula x intermedia* line, from the field of Dicle University Medical and Aromatic Plants Application and Research Center to the field of 4.2 and April 6, 2017 in the field. Observations during the months of May, June, July, August, September and October of the survey showed that some of the fidelites had died. The survival of the remaining fidelites continued and the adaptation rate was 63% in the trial area. Flowering The flowers were harvested 3 times between June and October, which began in June. At the end of this study; 21-33 cm long plants were obtained. This results in light of lavender farm in Turkey, was concluded in Diyarbakir to do outside of Isparta.

In the next step, we will work on the production of the herbal materials obtained from our work in steel, in vitro and in vitro, and on the determination of their medical and aromatic contents.

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