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EFFECTS OF DIFFERENT MEDIA ON ROOTING OF SAGE (Salvia officinalis L.)

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SUMMARY

This research was carried out at the University of Ankara. Faculty of Agriculture experimental field and greenhouse of Field Crops Department. In this study fresh pearlite used pearlite sand the mixture of sand and pearlite mixed soil were used as a rooting media. Cuttings were collected on the date of 14 th of April (before flowering) and planted to the strong-boxes containing different media. Green (alive) cutting rate was 46 % in mixed soil while all cuttings survived (100 %) in other four media used, Root formation on green cuttings was not observed in mixed soil. The highest number of rooted cuttings (92.0 %) and root number per cutting (7.75) were recorded in fresh pearlite. Similar results were obtained in all four media used regarding root length.

TIBBİ ADAÇAYIN (Salvia officinalis L.) KÖKLENMESİ ÜZERİNE FARKLI ORTAMLARIN ETKİLERİ

ÖZET

Bu araştırma Ankara Üniversitesi Ziraat Fakültesi Tarla Bitkileri Bölümünün sera ve tarlalarında yürütülmüştür. Çalışmada köklendirme ortamı olarak kulanılmamış perlit, kullanılmış perlit, kum, kum+perlit ve harçlı toprak olmak üzere beş farklı köklendirme ortamı kullanılmıştır.

Bitkilerden çelikler 14 Nisan'da (çiçeklenmeden önce) alınmış ve farklı köklendirme ortamlarının bulunduğu kasalara dikilmiştir. Harçlı toprakta canlı kalan çelik sayısı %46 olurken, diğer dört ortamda çeliklerin tamamı (%100) canlı kalmıştır. Harçlı toprakta canlı kalan çeliklerin hiç birinde köklenme görülmemiştir. Köklenen çelik sayısı (%92.0) ve çelik

başına kök sayısı (7.75 adet) en fazla kullanılmamış perlitte bulunmuştur. Her dört ortamda da kök uzunlukları bakımından birbirine yakın değerler elde edilmiştir.

1. INTRODUCTION

Sage (**Salvia officinalis L.**) grows in the wild of some countries such as Greece, Yugoslavia, Albania, France and Spain Which have Mediterranean climate. Howeöer, it does not grow in East Mediterranean and Turkey (1, 2, 3). İt is cultivated in west Germany, Hungary, France, Russia and The United States of America (4, 5, 6, 7).

Sage has been used for medicinal purposes and as a spice. Its stems, leaves and essential oil are used for many purposes. Generally it exists in pharmacopoei of many contries (8). Sage leaves contain 1-2.5 %5 essential oil and thujone (it is a colorlessoily ketone and its formula is $C_{10}H_{16}O$) is the main component. Thujone has some important peculiarties such as stomathic, tranqulizer, diuretic and disinfectant. It also decreases the blood sugar. Sage essential oil is used in toothpaste prodution and in solutions for aphthous affections of the mouth and pharynx. Sage preparation must not be Used for a long period with high doses as essential oil of sage contains high amount of thujone (8, 9).

Although sage is cultivated in the gardens, it does not grow in the wilds of Turkey. Researches on cultivation of sage in Turkey were conducted and successful results were obtained (4, 10). On the other hand, these researches showed that sage has a poor seed setting. It was reported that androecium and gynaeceum which are also a kind of abnormalities occur partialy in the genus **Salvia** causing poor seed setting. This abnormality is called Cytomixis (11).

Since sage does not grow naturally in Turkey, domestic consumption and export requirements are not usually covered. For this reason rapid propagation of sage is needed to obtain large number of new plants. In addition, rapid vegetative propagation of sage is vary important for clonal reproduction of highly valuable genotypes and the prevention of genetice segregations which may occur during the production of plants from seed.

2. MATERIAL AND METHODS

Seeds of sage used in the experiments were obtained from abroad. Sand, fresh pearlite, used pearlite, used pearlite, the mixture of sand and pearlite, mixed soil (one portion sand + one portion garden soil + one portion barnyard mnure) were used as a medium for rooting. Cuttings were collected on the date of 14 the of April and planted to the strong-boxes containing fivi different rooting media. Each treatment hat 4 replicates and each replicate contained 25 cuttings. After cuttings planted, they were watered daily so that surfaces of the media were always wet.

On May 10 (25 days after planting the cuttings to the strong-boxes), number of green (alive) cuttings, number of rooted cuttings, number of root per cuttings and root length were recorded. After all observations were completed, cuttings were then transplanted into the field.

3. RESULTS AND DISCUSSION

Results obtainved from this research were shown on the table 1.

3.1. Number of Green (alive) Cuttings

Table 1. The Influence of Different Media on Rooting of Sage

Media	Green (alive) Cutting (%)	Rooted Cutting (%)	Number of root (number/cutting	Root Length (mm)
Fresh pearlite	100a	92.0 a	7.75	31.50 a
Used pearlite	100 a	58.0 b	5.10 b	35.40 a
Sand	100 a	65.0 b	2.25 c	29.75 a
Sand + pearlite	100 a	45.0 b	2.75 c	21.60 a
Mixed soil	46 b	-	-	-
LSD (%1);	24.6	23.7	2.27	14.6

According to the results of this research, all cuttings survived in mixed soil. However, after a week of observations, all cuttings in mixed soil diled. Figure 1 shows the influence of different media on survival of sage cuttings.

3.2. Number of Rooted Cuttings.

There was no rooting on cutting in mixed soil. The highest frequency of root formation was achieved in fresh pearlite. In fresh pearlite as 92 % while the frequency of rooting was 65 % in the sand. The lowest frequency of root development was obtained in the mixture of sand and pearlite (%45). According to the rooted cutting values, there is no statistical significance among used pearlite, sand and sand + pearlite. The influence of different media on number of rooted cuttings is shown on the Figure 2.

3.3. Root Number Per Cutting

Figure 3 summaries the effect of different media on root numbers. The highest root number was obtained in fresh pearlite (7.75 number/cutting). (Sand medium gave the lowest root numbers per cutting (2.25). Used pearlite produced reasonble number of roots per cutting (5.10). According to the root number per cutting, fresh pearlite and usedpearlite statistically entered to the different groups while sand and sand+pearlite entered to the same groups. The results of this study showed that pearlite the most suitable medium for rooting of sage cuttings.

3.4. Root Length

The highest root length was obtained in used pearlite (35.40), followed by fresh pearlite (31.50), sand (29.57) and the mixture of sand and pearlite (21.60). Differences among the media are not statistically important. Figure 4 shows the media are not satistically important. Figure 4 shows the effect of different media on the root length. The literature could not be found about the effect of different media on rooting of sage.

According to the results of this research, some recommendations belove were given:

1. The sage can be rapidly propagated by vegetative methods.
2. Mixed soil is not suitable for rooting
3. The best resuts were obtained from pearlite medium
4. Sand can be used as a rooting medium if pearlite is not available.

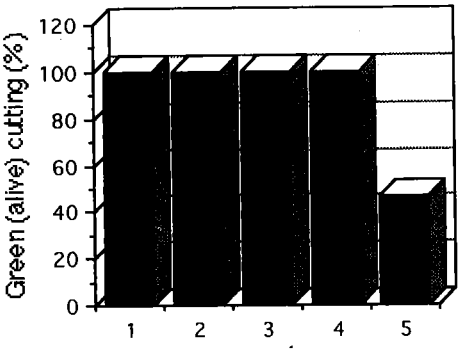

Figure 1. Influence of different media on survival of sage cuttings

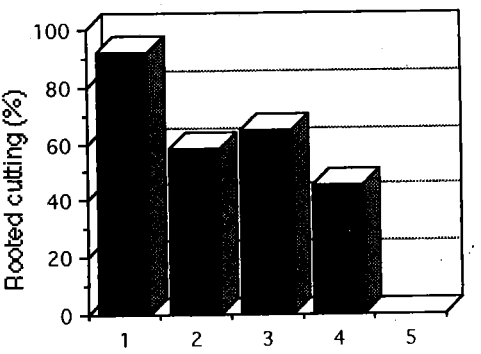

Figure 2. Influence of different media on rooting of sage cuttings

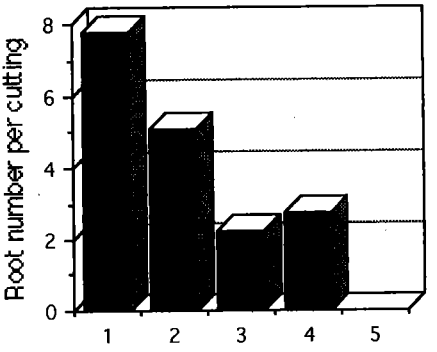

Figure 3. Influence of different media on root numbers per cutting

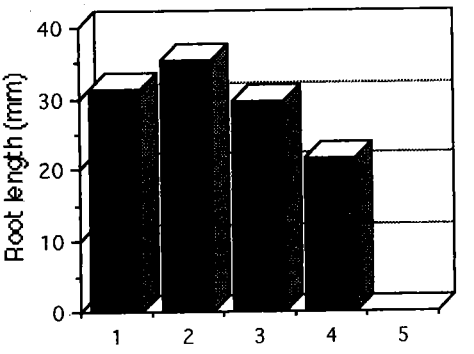

Figure 4. Influence of different media on root length of sage

1: Fresh pearlite
2: Used pearlite
3: sand
4: Sand+pearlite
5: Mixed soil

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