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ANALYSIS OF GROWTH CHARACTERISTICS OF *ARUNCUS DIOICUS* (WALTER) FERNALD BY PERIOD

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Abstact

Aruncus dioicus (Walter) Fernald is a perennial herb of the rose family that grows naturally in alpine regions across the Korean peninsula. In this study, the growth patterns of the underground and the ground, such as root and leaf development characteristics, were investigated every certain period after sowing and germinating *Aruncus dioicus* (Walter) Fernald seeds. Through this, it was intended to investigate the proper timing of potted seedling production for transplantation and the characteristics of infant growth necessary for pest control, and to provide information necessary to use snow horse as a skin plant such as soil cover as well as high-end farms. In addition, it was intended to provide a foundation for stable supply through efficient production and mass cultivation of excellent snow dog horseback riding by providing real photos by growth period. The results from this study shows that the appropriate time for transplantation after sowing of *Aruncus D.* seeds was about 10 to 12 weeks after germination.

Key Words: Short-term income forest products, *Aruncus dioicus*, Growth Characteristics by Period

Introduction

Those who wish to grow short-term income forest products are having difficulty with appropriate cultivation methods for the item and application techniques within the forest to maintain cleanliness. Stable forestry income is possible through quality control such as mass production and standardization to the extent that forest products produced by forestry workers are continuously supplied, but it is insufficient to cultivate varieties for mass production of short-term income forest products. *Aruncus dioicus* (Walter) Fernald has a lot of leaves, and grows in semi-shade or shade, and has confirmed the native places of Gyeongsangnam-do, Gyeongsangbuk-do, Gangwon-do, Gyeonggi-do, and Ulleungdo in Korea. It is also called Samnamul in the private sector, and it is mainly used as a high-quality vegetable used as bibimbap, soup, and seasoned ingredients because it is rich in carbohydrates, vitamins, and other minerals. Recently, it has been evaluated as a plant resource to reduce soil loss in cuttings or sloping farmland.

In Korea, forest products produced in each region have different taste and efficacy depending on local soil characteristics and climate. Mountain villagers and forestry workers want to produce forest products in the region, but they are having difficulty differentiating forest products by region, such as the desired cultivation characteristics of forest products do not match the natural conditions of the region or are previously cultivated in other regions. Understanding cultivation

conditions such as germination characteristics, early growth characteristics, and transplantation timing in securing seeds, as well as the status of native areas such as clinical conditions and location conditions, is a condition for forestry workers to continue to produce promising short-term income forest products. In particular, wild vegetables such as snow dog horseback riding are sensitive to unexpected situations such as growth inhibition such as stem dryness and early harvest due to abnormal climate from sowing to the stage before full-fledged growth.

Material and Method

1. Material

On May 19, 2022, *Aruncus diicu*s (Walter) Fernald's seeds were sown in a vinyl greenhouse in Chungnam National University. Preferably, similar to the cultivated area, the development situation of the ground was investigated while maintaining an environment under light conditions of 25±1℃ for 16 hours. In addition, to investigate the development status of the underground, the same seeds were planted in a test tube with 1.0% Charcoal added to a 7.0% Agar medium.

2. Measurement method

2-1 Development of the above-aerial part

Starting with germination, it was photographed and investigated by period from the time when the ground part was observed with the naked eye. Since the initial germination was observed, a total of eight surveys were conducted every week to 10 days. As for the size of the survey, 10 objects were randomly selected for each survey, the degree of stem elongation, leaf development, etc. were measured, and photographed.

2-2 Development of the Underground

The roots of the seeds planted in the test tube were photographed immediately after development. Also the roots of the seeds sown in the greenhouse were investigated for the length of the root and the degree of development of the root in the individuals which investigated the stem development situation.

Results and Discussion

1. Development of the above-aerial part

Seeds sown in greenhouses on May 19, 2022 were first observed to germinate on June 17, 2022. On July 12, 2022, approximately four weeks after germination, the total length was measured to be 118.9 mm (Fig. 1), with 9.3 leaves developed (Fig. 2). On September 7, 2022, about three months later, the total length was 265.4 mm and the number of leaves was 23.4. In addition, when the length of the developed leaf was measured with a long diameter and a short diameter, it was 21.7mm and 12.7mm on July 12, respectively, and 50.2mm and 22.0mm on September 7.

Table 1. Development of leaves

Date and time of measurement	Length of leaves (major axis, mm)	Length of leaves (minor axis, mm)
22.07.12	21.7	12.7
22.08.09	36.1	19.6
22.08.26	66.0	31.0
22.09.07	50.2	22.0

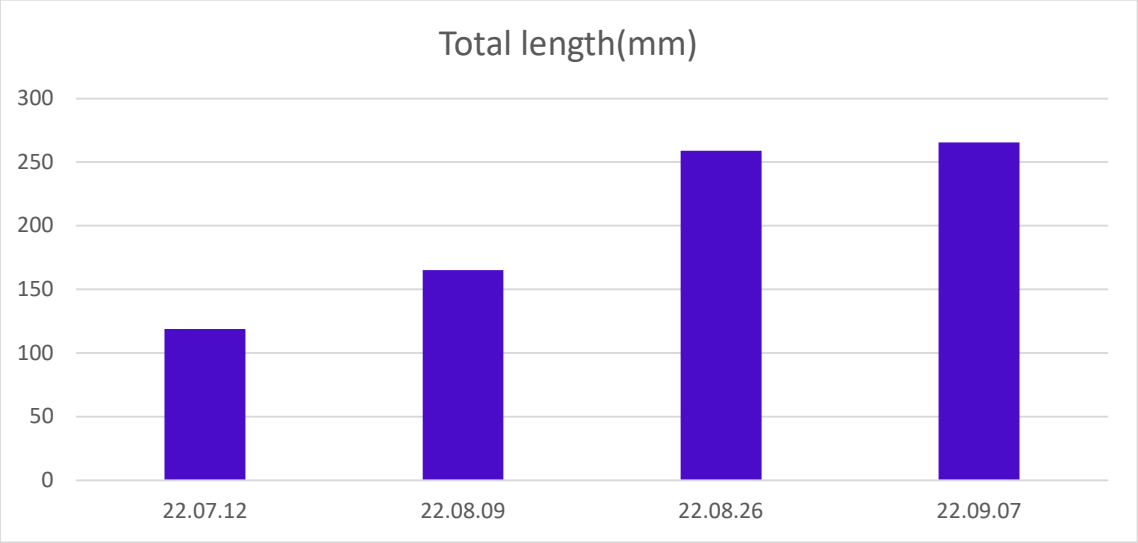

Figure 1. Length development of leaves

Figure 2. The number of leaves by period

2. Development of the under ground part

The development status of the underground was measured by the length of the main root and the number of developments of the close aides. On July 12, about four weeks after germination began, a root length of 47.5 mm was measured, and on September 7, it was observed that the root was

extended to 105.7 mm. The number of close aides was surveyed at 14.5 on July 12, and 28.3 close aides were surveyed by September 7 (Table 2).

Date and time of measurement	Length of tap root(㎜)	No. of lateral roots
22.07.12	47.5	14.5
22.08.09	63.0	21.0
22.08.26	93.8	24.1
22.09.07	105.7	28.3

Root development was first observed in the test-tube mounted *Aruncus D.* seeds in four days, and it was investigated that direct muscle development began after two more weeks (Figure 3).

Figure 3. Root development of *Aruncus. D*. germinated in test tube

3. Growth characteristics by period

The actual appearance was scanned after germination to find out the appropriate time required when the *Aruncus D*. was planted on a tray and transplanted into the open land or to be formalized in the main gun, and the results are shown in Fig. 4. The development of leaves and roots is clearly observed from 4 weeks after germination, and after 11 weeks, the development of the ground area almost stops and the development of the underground area continues. Therefore, it was estimated that the appropriate time for transplantation after sowing was about 10 to 12 weeks after germination.

4 weeks	8 weeks	11 weeks

Figure 4. Actual appearance after germination of *Aruncus D*.

Conclusion

The growth patterns both of the above and underground were observed after sowing seeds of *Aruncus dioicus* (Walter) Fernald. Above parts were 265.4 mm in the total length and the number of leaves was 23.4. after about three months. Underground parts were 105.7 mm in the root length and 28.3 in the number of lateral roots. From this study, we suggest that the appropriate time for transplantation of *Aruncus dioicus* (Walter) Fernald after sowing was about 10 to 12 weeks after germination.

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