

## EFFECT OF CUTTING LENGTH OF SEED TIP ON PRODUCTION OF SHALLOT (*ALLIUM CEPA* L) BIMA BREBES VARIETY ON DRY LAND

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Article Received on 22/12/2021

Article Revised on 12/01/2022

Article Accepted on 02/02/2022

### ABSTRACT

This research was carried out at the experimental garden of the Faculty of Agriculture, Gedung Johor, Medan, from July 2020 to September 2020. The study consisted of two experiments. The experiment was conducted to analyze the growth and development of *Allium cepa* L. plants by cutting the tips of the tubers. The study used a non-factorial Randomized Block Design (RBD) with Onion Seed Cutting (P) treatment with three levels, namely: Length of cutting onion bulbs: P<sub>0</sub> = Not cut, P<sub>1</sub> = Cut off ¼ end, P<sub>2</sub> = Cut ⅓ end part. The results showed that cutting the tip of the tuber greatly affected the growth of the Bima Brebes variety of shallots. The results of the data showed that cutting the ends of the tubers between P<sub>0</sub> = without cutting, P<sub>1</sub> = cut, and P<sub>2</sub> = ⅓ cut, it was known that the cutting (P<sub>1</sub>) of the tuber tip was the best in terms of the percentage of growth reaching 100% and the average plant height. His average reaches 12.53 cm.

**KEYWORDS:** Cutting tubers, Bima Brebes variety.

### INTRODUCTION

Shallots (*Allium cepa* L.) is a horticultural commodity that is classified as a spice vegetable. According to,<sup>[1]</sup> the national need for shallots continues to increase along with the rate of population growth, while shallot production has not been able to meet the needs of shallots. Suwandi (2015) stated that the demand for domestic shallots is greater than the production.<sup>[2]</sup>

The production of shallots in North Sumatra Province in 2018 according to the Food Crops and Horticulture Service Data quoted from BPS was 16,337 tons, with a planting area of 2,128 hectares and a harvested area of 2,083 hectares. Meanwhile, production in 2019 was 18,072 tons, with a planting area of 2,283 Ha, and the harvested area is 2,246 Ha. When compared to 2019, there was an increase from the previous year, this was due to the expansion of the area carried out by the regional government and added assistance from the government for the development of new areas. Meanwhile, the need for shallots in 2019 reached 43,758 tons. This amount is only able to meet 60 percent of the needs of shallots in North Sumatra. From this data, the production of shallots in North Sumatra is still far from being needed. To meet the needs of shallots, import arrangements are made from the island of Java and

abroad. This is a spur to produce domestic production by optimizing the system and technical cultivation in addition to expanding the area.

Selection of seed tubers is the first step that will determine the success of production. Several treatments need attention after the tubers are selected and ready for planting. According to Jumini (2010), cutting the end of the seed tuber is approximately 1/3 or 1/4 of the length of the tuber, so that the tuber grows evenly, stimulates shoots, accelerates plant growth, frees shoot channel barriers at the end of the tuber that dries up, uniformly growth of seed tubers, can stimulate the growth of side tubers and can encourage the formation of tillers.<sup>[3]</sup>

### MATERIALS AND METHODS

This experiment is a field experiment which was carried out at the experimental garden of the Faculty of Agriculture, Johor Building, Medan, on July 02 – 23, 2020.

This study was arranged based on a non-factorial Randomized Block Design (RBD) with treatment of onion bulb cutting length (P) with three levels, namely: P<sub>0</sub> = Not cut, P<sub>1</sub> = Cut 1/4 of the tip, P<sub>2</sub> = Cut off 1/3 of the tip.

**RESULTS**

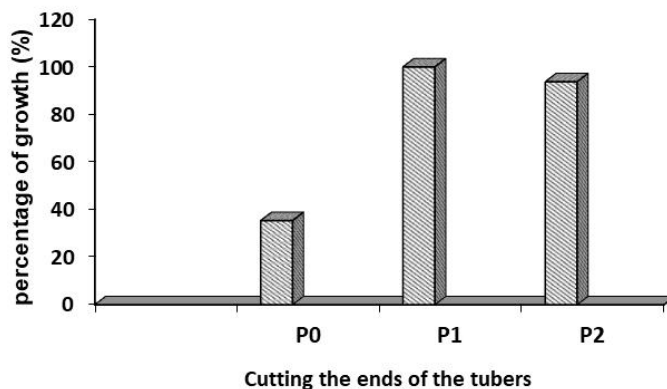
**Percentage of Growth (%)**

The data on the average percentage of growing shallots of the Bima Brebes variety at the age of 1-2 WAP can be seen in Appendix 2 and 4. The results of the analysis of variance showed that the treatment of cutting the tip of the tuber had a very significant effect on the percentage of growth of onion plants at the age of 1-2 WAT. This can be seen in Table 1 and Figure 1 below.

Note: The numbers followed by the same letter in the same row or column are not significantly different at the Duncan test level of 5% and 1%

**Table 1: Average percentage of growth (%) in the treatment of cutting the ends of the tubers at the age of 2 WAP.**

Treatment	Average
P0	35,42 a
P1	100,00 b
P2	93,75 bc



**Figure 1: Growth Percentage (%) of the treatment of cutting the ends of the tubers at the age of 2 WAP.**

From the data in Table 1 and Figure 1 above, it is known that the treatment of cutting the ends of the tubers has a very good response in the growth of the Bima Brebes variety onion. The best growth percentage of the 3 treatments was P0 = No cut, P1 = cut, and P2 = 1/3 cut and the best was P1 = cut with a growth percentage rate of 100%.

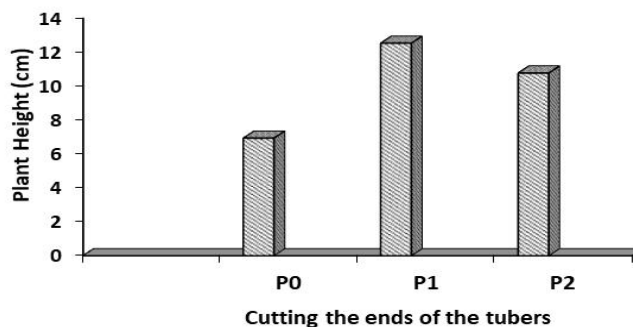
Note: The numbers followed by the same letter in the same row or column are not significantly different at the Duncan test level of 5% and 1% From the results of the data that has been known above, that the treatment of cutting the tip of the tuber on the Bima Brebes variety red onion has a very good response to plant height, where the Bima Brebes variety onion at P1 = treatment was cut to a height of 12.53 cm. and this is the highest compared to the treatment P0 = Uncut and P2 = 1/3 cut.

**Plant Height (cm)**

The data on the average increase in height of the shallots of the Bima Brebes variety at the age of 1-2 WAP can be seen in Appendix 6 and 8. The results of the analysis of variance showed that the treatment of cutting the tips of the bulbs had a very significant effect on the increase in height of the onion plants at the age of 1-2 WAT. This can be seen in Table 2 and Figure 2 below.

**Table 2: Average Plant Height (cm) in the treatment of cutting the ends of the tubers at the age of 2 WAP.**

Treatment	Average
P0	6,93 a
P1	12,53 b
P2	10,77 bc



**Figure 2: Plant height (cm) of the treatment of cutting the ends of the tubers at the age of 2 WAP.**

## DISCUSSION

From the results of the research conducted, it can be seen that cutting the tips of the onion bulbs of the Bima Brebes variety had a very significant effect at the age of 1 WAP and 2 WAP. The best growth percentage and plant height were found in P1 treatment (1/4 of the tuber tip was cut) with an average growth percentage of 100% and an average plant height of 12.53 cm.

There was a significant effect on the percentage of growth and plant height due to the emergence of new shoots that did not grow simultaneously due to the relatively faster germination of shallots in plants that received tuber cutting treatment. Cutting the tip of the tuber is able to induce the hormone ethylene so as to encourage the breakdown of bud dormancy. By cutting the onion bulbs, it will break dormancy, as described by Kato (1966) in Purba *et al.* (2018) that the termination of the tuber dormancy period has a correlation with budding, this is due to the balance between growth regulators and the carbohydrate content in the tubers during the tuber metabolism process itself.<sup>[4]</sup> According to Jumini (2010) which states that cutting tubers to the size of 1/4 and 1/3 of the plant does not have a significant effect on the parameters of onion plant height, but better growth is shown by cutting the size of 1/4 part.<sup>[3]</sup> The low growth value of shallot plants in the treatment without cutting the seed tubers was thought to be caused by the slow release of the buds due to the drying of the tuber layer, so that shoot growth and tiller formation were inhibited and resulted in non-optimal plant growth. Plant growth is not only measured by plant height, but the number of leaves and number of tillers is also a benchmark that shows good growth in shallot plants.

This is in accordance with the opinion of Rukmana (1995) that cutting seed tubers will accelerate plant growth and multiply tillers.<sup>[5]</sup> The purpose of cutting the tip of this seed tuber is so that the tubers can grow evenly, stimulate shoot growth, accelerate the growth of plants, and stimulate the growth of tillers. before the onion seed bulbs are planted, it is better to cut the seed tubers 1/2 part. The relationship with the research, if the seed tubers to be planted, first cut the ends one by one-

two days before planting, about 1/2 and 1/4 of the total length of the tuber, so the growth of the seeds is uniform (uniform). The research results of Mufairoh *et al.* (2018) showed that the application of fertilizer had an effect on the growth of shallots. Treatment of giving fertilizer every week with a dose of 100 ml. show good results the best for each plant height observation.<sup>[6]</sup>

## CONCLUSION

Cutting the tip of the tuber greatly affects the growth of the Bima Brebes variety of shallots. The results of the data showed that cutting the end of the tuber between P0 = without cutting, P1 = cut, and P2 = cut 1/3 it was known that cutting (P1) of the tuber tip was the best in terms of the percentage of growth reaching 100% and plant height which was average. the average reaches 12.53 cm

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