

Citrus Stem Cuttings Growth Lime (Citrus Aurantifolia S) by Soaking Shallot Extract

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Abstract:- One of the techniques of plant multiplication that is easy to do is the technique of multiplication through cuttings. High low success rate of plant multiplication through cuttings determined by the ability in growing roots. The roots will absorb nutrients around so that crop growth can be maximal. This research aims to see the percentage of success of cuttings and the growth of lime shoots. The results showed that the best treatment for the observation of life-related cuttings percentage was the immersion of 300g/l shallot extract with a percentage of 95.83% and a death of 4.17%. On the growth parameters The buds also show the same results where the best treatment is found in the cuttings soaked in shallot 300g/L with an average number of shoots 1.96, length of shoots 6.67 and the number of leaves 14.65.

Keywords:- Stem Cuttings, Lime, Shallot Extract.

I. INTRODUCTION (HEADING 1)

Lime is one of the types of oranges that are widely used as foodstuffs, beverages, cooking spices and medicines. One of the techniques of plant multiplication that is easy to do and can be applied to citrus plants is a technique of cuttings multiplication. Cuttings is cutting some parts of plants with the intention

So that the parts of the garden form the roots (Nurlaeni, 2015). Advantages by expanding crops through the cuttings ie produce plants that have the exact same properties as its parent especially in terms of fruit shape, color, size, and flavor of the fruit. The indicator succeeded in the reproduction of plants through cuttings can be seen from the emergence of roots in the piece cuttings (Purwati, 2013).

Induction of root growth can be done by administering hormones or growing regulatory substances. The growing regulator (ZPT) is a compound that supports the physiological processes of plants. ZPT can be divided into two types namely ZPT natural and synthetic (Jayanti, 2019).

One plant that contains a natural growth regulator is red onion, because in shallots there is an auksin hormone. Auksin can increase the peroses of cell enlargement. Auxin causes the recipient cells in the plant to emit hydrogen ions around the cell wall that will then lower the pH and result in the looted of the cell walls, and cause the occurrence of cell extension (Siswanto et al. 2010).

This study aims to determine the effect of soaking the onion extract against the growth of lime juice (Citrus aurantifolia S).

II. METHODOLOGY

A. Place and Time research

This research was conducted in the experimental land STIPER Labuhan Batu in January until June 2018.

B. Planting Material Preparation

Planting material used in the form of a stem that is still green with brownish and pest-free disease. Plant stem cut along 10 cm which is close to the base of the stem.

C. Onion Extract Manufacture

The red onion bulbs of Rogol (*Alium cepa* var *astaticum* L) weighed 100g, 200g and 300g, then peeled and washed (fig. 1). The onion is clean in the blender until smooth, after which the water is added until the volume reaches 1 liter.



Fig 1:- A) Shallot before smoothed;
B) Shallot after smoothed.

D. Soaking the onion cuttings

The Setek that has been prepared are inserted into a solution of shallots at a dose (100, 200, and 300) G/L water. Cuttings immersion is done for 24 hours

E. Planting

Setek rods that have been in a solution soak the shallots are immediately planted, then installed a hood made of transparent plastic clear with the technique of sealing 1 cap for 1 polybag (Figure. 2).



Fig 2:- A) Planting of cuttings; B) Disclosure

III. RESULT AND DISCUSSION

A. Percentage of cuttings success

The success rate of oranges through multiplication can be seen in table 1. The highest percentage of the living is found in the immersion treatment of 300 g/L of red onion extract as much as 98.3% (table 1). The lifelike is characterized by the growth of shoots on the Setek. The high percentage of cuttings that lived at concentrations of 300 g/L due to the concentration of ausiksin hormone is higher than other concentrations (0, 100, 200) G/L.

Plant-growing regulators play an important role in controlling the growth speed of each network and integrating those parts into a crop. Auksin is one of the ZPT who plays a role in root induction so that the nutrients around it can be absorbed optimally. Cuttings who died begins with the occurrence of discoloration that is originally green colored into blackish Brown (Lestari EG, 2011).

Soaking shallots extract (g/l)	Cutting Percentage	
	Live	Dead
0	45.83	54.17
100	75.00	25.00
200	75.00	25.00
300	95.83	4.17

Table 1:- Response of lemon cuttings to onion extract

B. Average growth of lemon cuttings shoots

Essentially soaking the lime plant with onion extracts can affect the rate of growth of the new buds that are beeping from lime juice. Rapid growth rate of the bud because the tuber red onion contains auxin that can stimulate the growth of roots and vitamin B1 that play an important role in the process of the renovation of carbohydrates to energy in the metabolism of plants (Masitoh, 2016).

The growth of new buds derived from the cuttings that was given soaking red onion extract showed better growth compared to the cuttings who were not given a shallot extract (table 2). The growth of the buds can be seen from the average number of shoots, length of shoots and the number of leaves.

The best treatment for each parameter is on the cuttings which is given the immersion of 300g/l shallot extract with the average number of shoots 1.96, shoots length 6.67 cm and the number of leaves 14.65.

Soaking Shallots Extract (g/l)	Average growth		
	Number of shoots	Long shoots	Number of Leaves
0	1,27	1,70	2,55
100	1,44	2,79	8,83
200	1,67	3,57	10,28
300	1,96	6,67	14,65

Table 2:- Growth of lime shoots against shallot extract

The increasing number of shoots, length of shoots, and the number of leaves on lime juice is influenced by the red onion extract given on lime juice (Fig. 3). The red onion extract contains the become and thiamin compounds (vitamin B1) forming a chemical bond called allithiamin. The presence of become compounds in shallots can stimulate cell growth and increase energy so that the plant can grow rapidly (Purwitasari, 2004).



Fig 3:- Growth of the buds of the cuttings lime. A) The new shoots appear; B) Shoots that have lengthened

Siregar (2018) states that the immersion of red onion extract with a concentration of 60% with a long time soaking 9 hours is the best treatment for the percentage of sprouts, speed grows, Pajang hipokotil and the roots of cocoa seed to immersion other doses of red onions (0%, 20%, 40% and 60%). Other factors that affect the success of plant multiplication through cuttings is the light and nutrients contained in the media soil.

IV. CONCLUSION

The most surviving amount of cuttings is found in the immersion of 300g/L onion extract treatment as much as 95.8%. In the average parameter the number of shoots, the length of the buds and the highest number of leaves are also present at immersion of 300g/L with an average amount of tunas1,96; Long shoots 6.67 and the number of leaves 14.65.

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