

Applications Of Red Onion Skin Extract (*Allium cepa* L.) On The Growth And Years Of Peanuts (*Arachis hypogaea* L.)

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ABSTRACT. Groundnut (*Arachis hypogaea* L.) is one of the most widely cultivated commodities by farmers in Bengkulu Province after rice, cassava, corn, sweet potatoes and soybeans. The amount of peanut production in Bengkulu Province can be increased by increasing the area of land and increasing productivity through the use of superior seeds and good care. The harvested area of peanuts in Bengkulu Province in 2014 reached 4,535 ha with a total production of 4,612 tonnes (BPS 2015). Increasing the amount of production and harvested area will also increase the number of peanut products offered. This research was conducted from August to November 2022 at the Planting House of Pat Petulai University, Dwi Tunggal Village, Curup District, Rejang Lebong Regency, Bengkulu Province, with an altitude of 620 meters above sea level. The method used in this study was a completely randomized design (CRD) which consisted of 4 treatment levels. The results of the analysis of variance in the treatment of shallot skin extract did not have a significant effect on the variable number of flowers, number of leaves, and plant height. While the treatment of shallot skin extract had a significant effect on the variable number of pods (7.15 pods) and fresh weight (8.6 grams). The treatment of shallot skin extract had a very significant effect on dry weight (15.19 grams). The application of shallot skin extract effectively increased the yield of peanut plants, because it increased the number of pods, fresh weight, and dry weight of plants. At a concentration of 45 ml/liter of water, shallot skin extract gave the best results on the variable number of pods and fresh weight on the growth and yield of peanuts. Based on the results of research that has been conducted regarding the application of shallot skin extract to the growth and yield of peanut plants, the authors suggest the use of shallot skin extract at a concentration of 45 ml/liter of water in peanut cultivation in areas with an altitude of 620 meters above sea level.

Keywords : Peanut, Extract, Shallot Peel

INTRODUCTION

Groundnut (*Arachis hypogaea* L.) is one of the most widely cultivated commodities by farmers in Bengkulu Province after rice, cassava, corn, sweet potatoes and soybeans. The amount of peanut production in Bengkulu Province can be increased by increasing the area of land and increasing productivity through the use of superior seeds and good care. The harvested area of peanuts in Bengkulu Province in 2014 reached 4,535 ha with a total production of 4,612 tons (BPS 2015). An increase in the amount of production and harvested area will also increase the number of peanut products offered. An increase in the amount of production and harvested area will also increase the number of products offered peanuts. Onion waste (*garlic onion* L.) contains essential oils, cycloalin, methylalin, dihydroalin, flavonglycosides, quercetin, saponins, peptides, phytohormones, vitamins and starch. The hormone content in shallots is in the form of auxin and gibberellin so that it can stimulate seed growth, to accelerate and maximize growth it requires a growth regulator in the form of auxin which stimulates root development, the gibberellin hormone will stimulate growth in leaves. and stems (Siswanto, 2010). Onion skin also contains various chemical compounds that can be used for other plants. It contains protein, minerals, sulfur, anthocyanins, kaempferol, carbohydrates and fiber. Unused shallot skin is usually thrown away, even though the concentration of chemical compounds it contains is very useful if it is processed for other plant nutrients. Peanuts are legumes or legumes belonging to the Fabaceae family, and are the second most important legume crop after soybeans in Indonesia. This native American plant grows as a 30 to 50 cm (1 to 1½ ft) tall shrub with small, compound leaves.

MATERIALS AND METHODS

This research was conducted from August to November 2022 at the Planting House of Pat Petulai University, Dwi Tunggal Village, Curup District, Rejang Lebong Regency, Bengkulu Province, at an altitude of 620 meters above sea level. The materials used in this study were hybrid striated peanut seeds, shallot skins, and water. The method used in this study was a completely randomized design (CRD) which consisted of 4 treatment levels, namely: P0=No shallot waste extract (without treatment), P1=Concentration of shallot waste extract (15 ml/liter of air), P2 = Composition

of shallot waste extract (25 ml/liter of air), P3= Composition of shallot waste extract (35 ml/liter of air), P4 = Composition of shallot waste extract (45 ml/liter of air). Based on the treatment composition, it was repeated 5 times to obtain 50 treatment units. The parameters measured in this study were: Number of Flowers, Number of Leaves (strands), Plant Height (cm), Number of Pods (Pods), Wet Weight (Grams), and Dry Weight (Grams). The results of calculating the data obtained from the observation variables were then analyzed using ANOVA Analysis of Variance. If the obtained F count is greater than the F table at the 5% level, it will be tested further using the Least Significant Difference (LSD) method.

RESULTS AND DISCUSSION

The results of the analysis of variance in the treatment of shallot skin extract did not have a significant effect on the variable number of flowers, number of leaves, and plant height. While the treatment of shallot skin extract had a significant effect on the variable number of pods (7.15 pods) and fresh weight (8.6 grams). The treatment of shallot skin extract had a very significant effect on dry weight (15.19 grams).

Table 1. ANOVA results of shallot skin extract on the variable number of flowers, number of leaves, plant height, number of pods, fresh weight, and dry weight

No	Variable	F-count	KK
1.	Interest amount	6,163 ns	5,77%
2.	Number of leaves	5,470 ns	2,95%
3.	Plant height	5,416 ns	3,50%
4.	Number of pods	7,15 *	4,37%
5.	Wet weight	8,6*	2,81%
6.	Dry weight	15,19*	2,75%
F-table 5%		6.26	

Information: :

* : Have a real impact

KK : Coefficient of Diversity

** : Very Significant Influence

ns : they don't mean

Smallest Significant Surgical Follow-Up Test Results (ABS) Application of Shallot Skin Extract (*Alium cepa* L.) on the Growth and Yield of Peanut (*Arachis hypogaea* L.)

Table 2. 5% BNT Advanced Test Results, The Effect of Shallot Skin Extract on the Number of Pods

Treatment	Variable		
	Number of Pods (Pod)	Wet Weight (Gram)	Dry Weight (Gram)
P0 (No Treatment)	11,92 ^b	23,4 ^a	17,55 ^b
P1 (15 ml/ 1 Liter Air)	10,24 ^a	24,37 ^b	13,8 ^a
P2 (25 ml/ 1 Liter Air)	8,96 ^a	26,96 ^{ab}	15,55 ^a
P3 (35 ml/ 1 Liter Air)	12,64 ^c	26,65 ^c	16,06 ^b
P4 (45 ml/ 1 Liter Air)	12,6 ^c	31,55 ^d	15,65 ^b

Note: The numbers followed by the same letter in the same column are not significantly different horizontally on the BNT test at the 5% level.

Number of Pods

Based on the results of the BNT advanced test (5%), the treatment of shallot skin extract on the variable number of pods in treatment P4 (45 ml/liter of water) was not significantly different from the treatment of shallot skin extract and the treatment of shallot skin extract P3 (35 ml/liter water) but different. significant effect of shallot skin extract P2 (25 ml/liter of water), shallot skin extract P1 (15 ml/liter water) and shallot skin extract P0 (without treatment) on the number of pods. The treatment of shallot skin extract P4 (45 ml/liter water) was significantly different from the treatment of shallot skin extract P3 (35 ml/liter water), shallot skin extract P2 (25 ml/liter water), shallot skin extract P1 (15 ml/liter of water) and shallot skin extract P0 (without treatment) on wet weight variable.

The treatment of shallot skin extract on the dry weight variable showed that the treatment of shallot skin extract P4 (45 ml/liter of water) was not significantly different from the treatment of shallot skin extract P3 (35 ml/liter of water) and shallot skin extract P0 (without treatment), but significantly different from the treatment of shallot skin extract P2 (25 ml/liter of water) and shallot skin extract P1 (15 ml/liter of water) on dry weight.

RESULTS AND DISCUSSION**Effect of Shallot Skin Extract Treatment on Number of Flowers, Number of Leaves and Plant Height Variables**

Based on the Sidik Ragam analysis, it shows that shallot skin extract has no significant effect on the variable number of flowers, number of leaves and plant height (Table 1). The results of the analysis of shallot skin extract showed that a concentration of 45 ml/liter of water (P4) was not able to optimize the growth of the variable number of flowers, number of leaves and plant height. It is suspected that the concentration of shallot skin extract has not affected the growth and yield of peanuts. This is in accordance with the opinion of Marpaung and Hutabarat (2015), which states that the concentration of shallot extract that is not quite right can inhibit the growth of the plants given depending on the conditions of each plant. In addition, there are environmental factors that come into play. For example, plants that have superior characteristics will only be able to grow quickly in fertile land and suitable conditions. If the plants are in barren land and the conditions are not suitable, the growth and development of these plants will not be optimal (Firiantini, 2019). This is supported by Gardner *et al* (2017), that the presence of sufficient nutrients allows young leaves and old leaves to fulfill their nutrients, and limited nutrients are more often distributed to young leaves, thereby reducing the rate of photosynthesis in old leaves.

Shallots can be used as a compound/substance that can grow plants, because in the extract the shallot skin contains rhizokalin and auxin which play a role in influencing the development and growth of plants, especially in the roots, so that the absorption of water and plant nutrients is fulfilled (Tarigan *et al*, 2017).

Effect of Shallot Skin Extract Treatment on Variable Number of Pods, Wet Weight and Dry Weight

The application of shallot skin extract significantly affected the variable number of pods, in the treatment of shallot skin extract P3 (35 ml/liter of water) it had the highest number of pods, namely 12.64 pods and in the treatment of shallot skin extract P2 (25 ml/liter of water) had the least number of pods, namely 8.96 pods. This is in line with (Febriana *et.al*. 2018) which states that nutrient N is a nutrient that functions for vegetative development, especially in plant growth. Furthermore, according to (Lidia *et.al*. 2018) states that the element nitrogen is a constituent of amino acids, proteins and nucleic acids as well as chlorophyll which plays an important role in plant vegetative growth. Shallot skin extract also contains the hormones auxin and gibberellin so that it can stimulate seed growth, to accelerate and maximize growth, a growth regulator is needed in the form of auxin which stimulates root development, the gibberellin hormone will stimulate growth in leaves and stems (Siswanto, 2010). The hormone auxin is a plant hormone substance found at the tips of stems, roots and flower formation which functions as a regulator of cell enlargement and stimulates cell elongation in the area behind the tip meristem.

Auxin was first isolated in 1928 from inactive seeds and flower pollen, from the isolation results it was obtained the chemical formula auxin (IAA = Indolacetic Acid) or $C_{10}H_9O_2N$ (Husnul *et al*, 2013). Auxin plays an important role in plant growth. The function of the auxin hormone is to help accelerate the process of plant growth, both in the form of root growth and stem growth, accelerate germination, assist in cell division, and accelerate fruit ripening. Meanwhile, the gibberellin hormone is a PGR that plays a role in encouraging seed development, bud development, stem and leaf elongation, encouraging flowering and fruit development, and affecting root growth. Gibberellin or GA_3 is a hormone found in plants and fungi. Its chemical formula is $C_{19}H_{22}O_6$ (Maharani *et al*, 2018). When purified, it is a white to pale yellow solid. So that the shallot extract is very good for use in the vegetative development period of the plant. The application of shallot skin extract has a significant effect on the wet weight variable. The results of the analysis showed that treatment P5 (45 ml/liter of water) had the heaviest wet weight of 31.55 grams and treatment P0 (without treatment) had the lowest wet weight of 23.4 grams, this was caused by the nitrogen content. which is contained in shallot skin extract which can make the pods grow more and more. This is in line with research (Djarwatiningsi, 2018) which states that nitrogen is needed by plants in the vegetative phase, namely to increase the number of pods in plants.

The treatment of shallot skin extract significantly affected the dry weight shown in table (4), that in the treatment of shallot skin extract P0 (without treatment) it had the largest dry weight of 17.55 grams, and in the treatment of shallot skin extract P1 (15 ml / liter of water) has the smallest dry weight, namely 13.8 grams, this is due to the element nitrogen which is very important for the growth

of peanuts such as increasing the size of the pods. This is in line with (Alviansyah, 2019) which states that nitrogen is needed for the formation of important compounds such as chlorophyll, nucleic acids and enzymes. If there is a shortage of nitrogen, plants will grow slowly and stunted.

Furthermore, according to (Nanda, 2016) in his research added that nitrogen is the main nutrient which is generally needed by plants for the formation and growth of vegetative parts of plants such as leaves, stems and roots. Shallot skin extract did not significantly affect the number of flowers, number of leaves, and plant height, this was caused by the same water content in each treatment so that the plants had the same root length and were not significantly different. In line with (Rahmayanti, 2019) which states that water is an important factor in the rate of root growth because roots have the function of transporting water and nutrients in the soil. On the other hand, it is also suspected that the root growth is not optimal so that the plant needs nutrients and water as a material for photosynthesis which will produce low carbohydrates. According to Rahmani et al. (2020) that shoot weight will increase if the carbohydrate content is distributed to the plant parts with more content.

The content of food reserves such as water, nutrients and available environmental conditions will affect the operation of auxin in plants which is a very important factor in elongating shoots on stems and supporting the process of photosynthesis. Plant dry weight is the accumulated dry matter found in all plant branches and leaves. According to Pradani et al (2018) dry weight can increase if the needs for nutrients and water in plants are fulfilled.

The results of the analysis showed that the treatment of shallot skin extract had a significant effect on the peanut dry weight variable. This may be due to the auxin-like concentration of auxin-like compounds contained in the shallot skin extract. The increase in hormone content is thought to stimulate the division and enlargement of meristematic cells around the growing point area (Eko Fransisko et al, 2021). Almudi et al (2017) stated that the smaller or larger the root weight, the smaller or larger the shoot weight. Roots are the first and main organs in absorbing nutrients from the soil where they are then distributed to all parts of the plant.

CONCLUSION

The application of shallot skin extract is effective in increasing peanut crop yields, because it can increase the number of pods, fresh weight and dry weight of plants. peanut yield.

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