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Effect of Fertilizer SP-36 And Kascing Fertilizer on the Growth of Peanuts (*Arachis Hypogaea* L)

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ABSTRACT

Peanut production in Indonesia in 2016 amounted to 570,477 tons and in 2017 decreased by 495,396 tons. One of the important factors in increasing peanut production is fertilization. Applying phosphate fertilizers can also increase crop yields, especially in soils that lack this element. roots and required P. Vermicompost fertilizer contains various nutrients needed by plants such as gibberellins, cytokinins and auxins which play a role in increasing plant height. The purpose of this study was to determine the effect of growth and production of peanuts (Arachis hypogaea L.) on the application of SP 36 fertilizer and vermicompost fertilizer. This study used a factorial randomized block design with factor I giving POC Lamtoro leaves (P) with 4 levels, namely: P0: Control, P1: 200 cc/plant, P2: 300 cc/plant, P3: 400 cc/plant. Factor II Fertilizer application SP 36 (F) with 4 levels, namely: Fo: Control, F1: 25 g/plot, F2: 50 g/plot and F3: 75 g/plot. The results showed that the application of SP 36 fertilizer and the application of vermicompost fertilizer and the interaction of the two factors had no significant effect on the observed parameters of the number of plant branches.

Keywords: Vermicompost Fertilizer, Peanut, Phosphorus Fertilizer, Organic

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1. INTRODUCTION

Domestic peanut production is not sufficient for Indonesia's needs, which still require import substitution from abroad (Sembiring.et al, 2014). The need for peanuts from year to year continues to increase in line with the increasing population, community nutritional needs, food diversification, and the increasing capacity of the feed and food industry in Indonesia. peanuts (Adisarwanto, 2000). The need for peanuts from year to year increases by around 4.4%, while peanut production only increases by 2.5% (Wijayanarko, et al., 2011). Peanut production in Indonesia in 2016 was 570,477 tons and in 2017 it decreased by 495,396 tons (Central Bureau of Statistics, 2017).

One of the important factors in increasing peanut production is fertilization. Fertilization is the addition of material to planting media or plants to meet the nutrient needs needed by plants so they can produce well (Rosmarkam and Yuwono, 2002). The need for fertilization is due to the low availability of nutrients in the soil, loss of nutrients through washing, transportation at harvest time, and the desire to maximize profits (Susila et al., 2010). Fertilizers that can be used can be either inorganic or organic fertilizers.

The application of phosphate fertilizers can also increase crop yields, especially in soils that lack this element. roots and P needed (Lokot Ridwan, 2017). Inorganic phosphorus fertilizers are given periodically when the plants are of a certain age so that nutrient uptake is more efficient. This is done because the process of releasing nutrients from inorganic fertilizers is faster than organic fertilizers (Martajaya, et al., 2010).

Phosphate fertilizer has the following properties and advantages: 1. Not hygroscopic, 2. Easily soluble in water, 3. As a source of the nutrient phosphorus for plants, 4. Stimulates root growth and a good root system, 5. Stimulates the formation of flowers and ripening of fruit/ seeds, 6. Accelerates harvest, 7. Increases the percentage of flowers forming into fruit/seeds, 8. Increases plant resistance to pests, diseases, and drought (Sutarwi et al., 2013).

Vermicompost fertilizer has advantages over other organic fertilizers because the nutrients can be directly available, contain complete microorganisms and also contain growth hormones so that they can accelerate plant growth. Vermicompost fertilizer contains essential nutrients containing N, P, and K which play a role in plant growth and increase the metabolism needed by plants. Vermicompost fertilizer contains various nutrients needed by plants such as gibberellins, cytokinins, and auxins which play a role in increasing plant height (Novita et al., 2014).

The need for peanuts in Indonesia is quite high but the availability of peanuts in Indonesia is not sufficient due to the cultivation system that is still underdeveloped and the lack of public interest in peanut cultivation. To overcome this, fertilization is carried out using organic fertilizers including the use of vermicompost fertilizer as an organic fertilizer which contains lots of N, P and K elements which are very good for the growth and production of peanuts.

The purpose of this study was to determine the effect of growth and production of peanuts (Arachis hypogaea L.) on the application of SP 36 fertilizer and vermicompost fertilizer.

2. MATERIALS AND METHODS

This research was carried out at the Univa experimental garden in Simalingkar B village, from May to August 2022. The materials used were peanut seeds (Elephant variety), Lamtoro leaf liquid organic fertilizer, SP 36 fertilizer, water, granulated sugar, EM4, Antracol fungicide 70 WP, Dithane M-45 80 WP and Dursban insecticide 200 EC.

The tools used were hoes, handsprayer, knapsack, machetes, buckets, knives, plastic straps, analytical scales and ordinary scales, gembor, tape measure, scissors, repeat signs, treatment signs, calculators, wood, cameras and stationery.

This research was conducted using a randomized block design (RAK) Faktorial dengan dua faktor yang diteliti yaitu :

1. Provision of POC Lamtoro Leaves (P) with 4 levels, namely: P0: Control
P1 : 200 cc/plant
P2 : 300 cc/plant
P3 : 400 cc/plant
2. Fertilizer application SP 36 (F) with 4 levels, namely: Fo: Control
F1 : 25 g/plot
F2 : 50 g/plot
F3 : 75 g/plot

Parameters observed in this study include:

2.1. Plant height

Observations of plant height were measured starting from plants aged 2 weeks after planting to plants aged 6 weeks after planting with an interval of 2 weeks. Measurement starts from the base of the stem (standard stake) to the highest growing point. Number of Branches per Plant Observation of the number of branches per plant is done when the plant is old 2 weeks after planting with an observation interval of 2 weeks. Branches that are counted are primary branches until flowering plants.

2.2. Flowering Age

Observation of the age of flowering is carried out when the plants have flowered 50% of all plants in one plot have flowered, at that time the determination of the age of the flowers is carried out.

3. RESULTS AND DISCUSSION

3.1 Plant Height

Peanut plant height in this study can be seen in table 1 below:

Table 1. Height of Peanut Plants with SP 36 Fertilizer and Kascing Fertilizer

Fertilizer	SP36	Average

Kascing	P0	P1	P2	P3	
K0	29,16	27,12	26,00	27,87	28,29a
K1	29,00	28,41	30,54	28,79	29,44a
K2	29,92	28,37	28,29	27,17	28,69a
K3	30,75	29,46	26,04	31,50	30,44a
Average	28,21a	29,09a	29,22a	30,33a	

Note: Numbers followed by unequal letters in the same column or row are significantly different at the 5% level based on Duncan's Distance Test.

Based on table 1, it can be seen that the plant height with the highest average for the application of SP 36 Fertilizer was in the P3 treatment (3 g/polybag) which was 30.33 and the lowest was in the P0 treatment (without treatment) which was 28.21. While the plant height with the highest average in the vermicompost treatment was K3 (36 g/polybag) which was 30.44 and the lowest was in the K0 treatment.
The interaction of SP 36 fertilizer and vermicompost fertilizer had an effect on the height of peanut plants. In accordance with the opinion of Kartosapoetra and Sutedjo (2010) states that if one factor has a stronger influence than other factors, the other factors will be covered and each factor has properties that greatly influence its influence and the nature of its work will produce an influential relationship in influencing growth and production. a plant.

Number of Branches per Plant
The application of SP 36 fertilizer and the application of vermicompost fertilizer and the interaction of the two factors had no significant effect on the parameters of the observation of the number of plant branches, which can be seen in table 2 below.

Table 2. Number of Branches of Peanut Plants with SP 36 Fertilizer and Kascing Fertilizer

Fertilizer Kascing	SP36				Average
	P0	P1	P2	P3	
KO	6,58	6,25	6,50	8,58	6,98
K1	7,00	7,50	7,75	7,83	7,02
K2	8,25	7,58	6,83	7,50	8,29
K3	8,25	7,33	7,58	8,75	8,73
Average	7,03	7,17	7,17	9,67	

Note: Numbers followed by unequal letters in the same column or row are significantly different at the 5% level based on Duncan's Distance Test.

Based on table 2, it can be seen that the number of branches with the highest average for the application of SP 36 Fertilizer was found in treatment P3 (3 g/polybag), namely 9.67 and the lowest in treatment P0 (without treatment), namely 7.03. While the amount with the highest average K3 casting fertilizer treatment (36 g/polybag) was 8.73 and the lowest was in the K0 treatment (without treatment) namely 6.98.

3.2. Flowering Age

Based on the results of the analysis of variance (ANOVA) with a randomized block design (RAK) showed that the application of SP 36 fertilizer and the provision of vermicompost fertilizer and the interaction of the two factors had no significant effect on the observed parameters of flowering age. The average flowering age can be seen in Table 3.

Table 3. Flowering Age of Peanut Plants with SP 36 Fertilizer and Kascing Fertilizer

Fertilizer Kascing	SP36				Average
	P0	P1	P2	P3	
KO	25,00	25,00	25,00	25,00	25,00

K1	25,00	25,00	26,00	26,00	25,20
K2	25,00	25,00	25,00	26,00	25,25
K3	25,00	26,00	26,00	26,00	25,35
Average	25,00	25,20	25,25	25,75	

Note: Numbers followed by unequal letters in the same column or row are significantly different at the 5% level based on Duncan's Distance Test.

Based on table 3, it can be seen that the fastest average flowering age for the application of SP 36 Fertilizer was found in treatment P3 (3 g/polybag), namely 25.75 and the slowest in treatment P0 (without treatment), namely 25.00. While the number with the fastest average in the vermicompost treatment was K3 (36 g/polybag) which was 25.35 and the lowest was in the K0 treatment (without treatment) which was 25.25.

According to Lingga and Marsono, 2018 Phosphorus serves as a raw material for the formation of certain proteins, helps assimilation and respiration and accelerates flowering, ripening of seeds and fruit. And according to Oka, 2007 vermicompost contains various materials needed for plant growth, namely a hormone such as gibberellin, cytokinin and auxin, and contains nutrients (N, P, K, Mg and Ca) and Azotobacter sp. which is a non-symbiotic N-fixing bacteria that will help enrich the N elements needed by plants

4. CONCLUSIONS AND SUGGESTIONS

The application of vermicompost fertilizer on peanut plants had no significant effect on plant height, number of branches, and flowering time. its influence and the nature of its work will produce an influential relationship in influencing the growth and production of a plant.**4.2. Saran**

Perlu dilakukan kajian lebih lanjut dengan menggunakan unsur-unsur agroklimatologi tambahan dan ciri-ciri tindakan agronomi. Selain itu, data yang digunakan mencakup rentang waktu yang lebih besar, sehingga memastikan temuan analitis yang andal.

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