

APPLICATION OF LIQUID ORGANIC FERTILIZER AND NPK Blue ON THE GROWTH OF PEANUT (*Arachis hypogea* L.)

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ABSTRACT

Peanuts make a significant contribution in meeting the needs of legumes, especially in Southeast Aceh Regency. This research was conducted in Kisam Village, Babel District, Southeast Aceh, with an altitude of ± 220 m above sea level. The aim of the study was to determine the application of liquid organic fertilizer and the dose of NPK fertilizer on the growth and development of peanut (*Arachis Hypogea* L.) plants. The design used in this study was a Randomized Block Design (RAK) which was arranged in a factorial manner with 9 treatment combinations with 3 (three) replications. The treatment consisted of 2 (two) factors, namely the first treatment of liquid organic fertilizer (P1) 2cc/l water, (P2) 4 cc/l water and (P3) 8 cc/l water, while the second factor was the dose of NPK fertilizer (N1) 1.25 g/plant, (N2) 1.75gr/plant and (N3) 2.25 g/plant. The observed variables were plant height, number of branches, number of petioles and number of leaves. The results showed that the application of liquid organic fertilizer (P1) gave the best results on plant height, number of branches, number of petioles and number of leaves. Dosage of NPK (N3) fertilizer gave the best results on plant height, number of leaves. The interaction of treatment with liquid organic fertilizer (P1) and dose of NPK fertilizer (N3) gave the best effect on the growth and production of peanut plants. The results of the analysis of variance showed that there was no significant interaction between the treatment of giving liquid organic fertilizer (Pocnasa) and chemical fertilizer (NPK Biru) to all observed variables.

Keywords: Peanuts, liquid organic fertilizer, NPK fertilizer.

INTRODUCTION

Peanut is a legume crop that belongs to the family of Fabaceae, genus *Arachis*, and botanically named as *Arachis hypogaea* [1]. Peanuts contain 25% - 30% protein, 40% - 50% fat, 12% carbohydrates, and vitamin B1, thus placing peanuts as a source of nutrition after soybeans [2]. According to [3] the need for peanuts will continue to increase, in line with the increasing population, community nutritional needs, and food

diversification. However, according to BPS data [4] from 2003 to 2015 the productivity of peanuts in Aceh Province in particular decreased from 16,887 tons to 2,527 tons. This is due to the decrease in agricultural land, plus the increasing population of Indonesia from year to year, resulting in an increase in the volume of peanut imports [5].

Organic fertilizers contain complete nutrients that plants need, because organic matter is known to contain many complex nutrients such as phytohormones, vitamins, amino acids and other active ingredients [6]. Organic matter has a great absorption capacity for groundwater, and has a positive effect on crop yields, especially in the dry season [7]. This is needed to increase peanut production.

Organic fertilizers affect the nutritional quality of plant crops, increasing the production of antioxidant metabolites in plants [8]. One of the organic fertilizers is POC which is in liquid form because the form of organic fertilizer made from liquid is preferred [9] and is already in the form of ions so that it is easily absorbed by plants so as to increase

crop yields [10]. The liquid fertilizer formula consists of a mixture of liquid organic fertilizers and hydroponic mineral solutions with low nutrient content based on formula calculations [11], which contains a variety of amino acids, phytohormones, and vitamins that play a role in increasing and stimulating soil microbial growth [12].

Loss of nutrients in fertilization often becomes a problem that causes low efficiency and environmental pollution problems. About 40-70% nitrogen [13]. Peanuts meet some of the N needs through the air carried out by rhizobium microbes which can reach 74-80% of needs. Some of the benefits of NPK fertilizer are stimulating root growth, increasing the size of fruit, seeds and tubers [14]. Therefore, peanuts need nutrients N, P, K, and Ca in sufficient quantities, thus requiring lime and fertilization both organic and inorganic [15] and the addition of organic matter can increase the efficiency of absorption of phosphorus (P), which can increase soil aggregation so that the soil becomes more friable, and is very favorable for the growth of gynophores [16].

RESEARCH METHODOLOGY

This research was conducted in Kism Village, Babel District, Southeast Aceh Regency with an altitude of approximately 220 m above sea level, flat topography and alluvial soil type. This research was conducted from December 2020 to January 2021. The approach in this research is quantitative, was a 3 x 3 factorial randomized block design (RAK) with 3 replications, namely the application of liquid organic fertilizer (P) with 3 levels and the dose of Blue NPK fertilizer (N) with 3 levels, with 3 replications, so there were 27 trial unit. The further test used is Honest Significant Difference (HSD). The materials used are local varieties of bean seeds, fertilizers, fungicides, and

insecticides. The tools used are: hoe, ground fork, raffia rope, plastic, meter, scales, tugal, gembor, hand sprayer, and stationery.

The sequence of research implementation starts from land preparation, seed preparation, planting, fertilization, plant maintenance and continued observation. Parameters observed were plant height, number of branches, number of stalks, number of leaves.

RESULTS AND DISCUSSION

Peanut Plant Height (cm)

The results of the F test showed that the application of liquid organic fertilizer and NPK Biru chemical fertilizer had no significant effect. The complete observation results are presented in Graph 1 that the highest plant height at the age of 10, 20, and 30 DAP was obtained in the treatment

of giving liquid organic fertilizer P3 = 8cc/L water (P3), and the application of Blue Npk fertilizer tended to show better growth 1 75 g/plant. Although statistically it showed no significant difference with other treatments. The relationship between plant height 10,20 and 30 DAP in various treatments

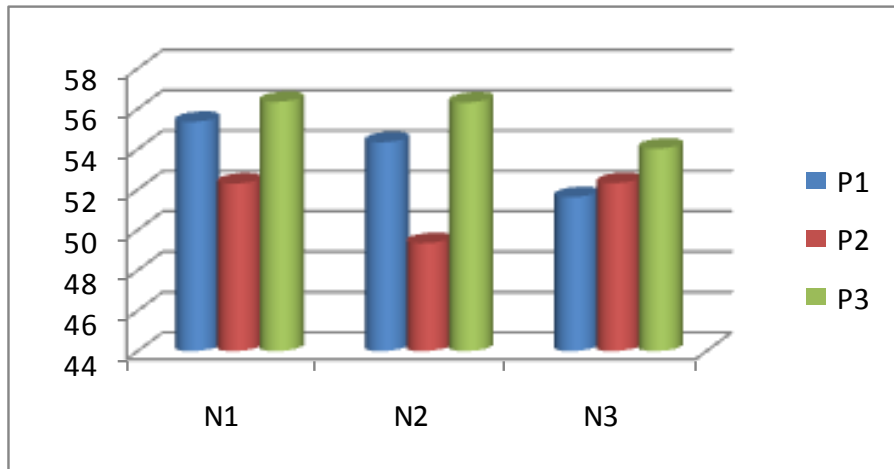


Figure 1. Peanut Plant Height Aged 10,20 and 30 DAP

Number of branches

The results of the F test showed that the application of liquid organic fertilizer and NPK Biru chemical fertilizer had no significant effect. The complete observation results are presented in graph 2. that the highest number of branches at the age of 20 DAP and 30 DAP was obtained in the

treatment of giving 2cc/L water (P1) liquid organic fertilizer, and the application of Blue Npk fertilizer tended to show better growth 2.25 gr/plant. Even though statistically it showed no significant difference with other treatments. The relationship between plant height 10, 20 and 30 DAP in various treatments

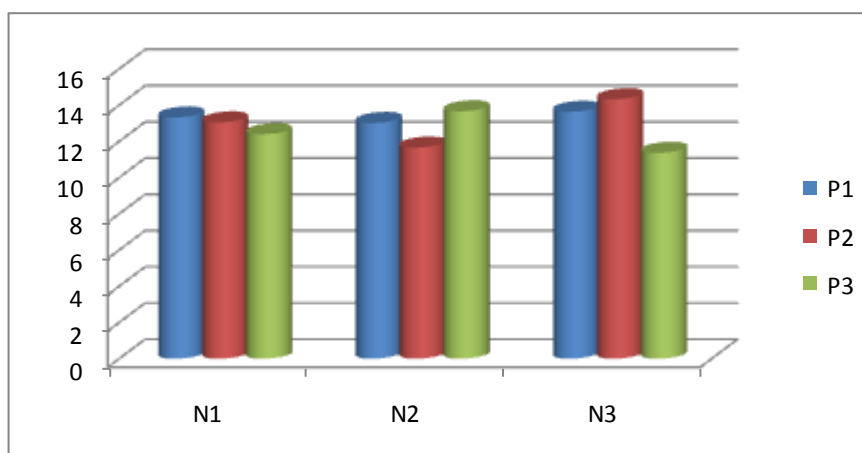


Figure 2. Number of Branches of Peanut Plants Aged 10, 20 and 30 DAP

Number of Leaf Stalks

The results of the F test showed that the application of liquid organic fertilizer and NPK Biru chemical fertilizer had no significant effect. The results of complete observations are presented in Graph 3. that the number of leaf stalks of peanut plants at 10 DAP showed better growth tended to

be treated with liquid organic fertilizer Pocnasa 4cc/l water (P2), 20 and 30 at 2cc/l water (P1) and chemical fertilizer Npk Biru 2.25 g/plant (N3). The relationship between the number of plant stalks 10, 20 and 30 DAP in various treatments

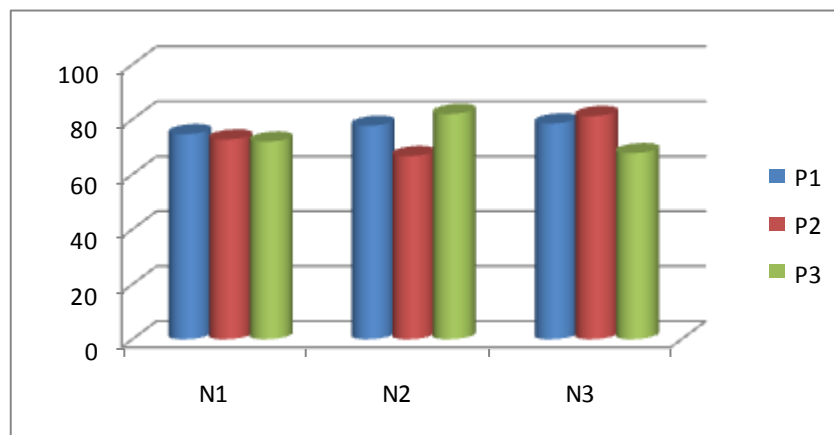
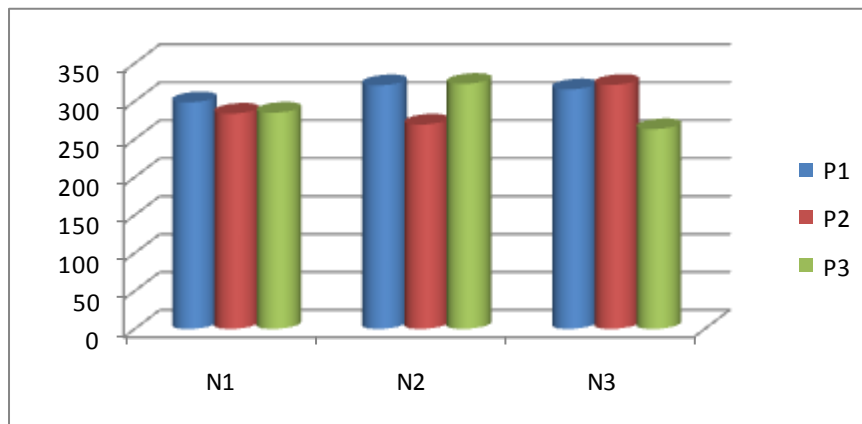


Figure 3. Number of leaf Stalks of Peanut Plants Aged 10, 20 and 30 DAP

Number of Leaves

The results of the F test showed that the application of liquid organic fertilizer and NPK Biru chemical fertilizer had no significant effect. The results of the complete observations are presented in graph 4. that the number of leaves aged 10 DAP tended to show better results with the

application of liquid organic fertilizer Pocnasa 8cc/l water (P3), 20 and 30 showed better results tended to be 2cc/l water (P1) and application of chemical fertilizer Npk blue 1.75 g/plant (N2). The relationship between the number of leaves at 10, 20 and 30 DAP in various treatments.



Graph 4. Number of leaves of peanut plants aged 10, 20 and 30 DAP

Interaction

The results showed that there was no significant interaction between the treatment of liquid organic fertilizer and Blue NPK fertilizer on

the observed variables of stem height, number of branches, number of stalks and number of leaves on peanut plants

CONCLUSION

The application of liquid organic fertilizer had no significant effect on all growth and development variables of peanut plants. Better growth tends to be shown in the application of liquid organic fertilizer 2 cc/l of water (P1). Chemical fertilizer application (Npk Biru) has no significant effect on growth and development variables of peanuts. Better growth tended to be shown by the application of Blue Npk (N3).

There was no significant interaction between the treatment of liquid organic fertilizer and chemical fertilizer (Npk Biru) on all growth and development variables in the observed peanut plants. So it is necessary to do further research on the types and sources of different liquid organic fertilizers and other doses of blue npk fertilizer on the growth and development of peanuts

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