Akta Agrosia

Growth and Yield Response of Bambara Groundnuts (*Vigna subterranea* L) to the Mixed of Peat and Mineral Soil with Several Dosage of Dolomite

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ARTICLE INFO

Keywords:
Bogor groundnut
peat
mineral
dolomite

Article history:
Received: December 26, 2017
Accepted: December 30, 2017

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ABSTRACT

Bambara groundnut (Bogor groundnut) was an alternative food crops having high nourishing, better taste and bigger size nut than the soy beans and peanuts. To meet the need for food and industrial needs, the program to increase production of Bogor groundnut was required, one of which is the use of peat as a growing medium using the technology of mixing peat and mineral soil. The research objective was to obtain a mixture of peat with mineral soil and dolomite lime dose suitable for the highest growth and yield of Bogor groundnut. This study was conducted in May 2015-September 2015 in the Greenhouses of Faculty of Agriculture, University of Bengkulu. The experiment was arranged in a completely randomized design (CRD) with two treatment factors and three replications. The first factor was soil mix of peat and mineral soil (G0: 100% peat + 0% mineral soil; G1: 75% peat + 25% mineral soil; G2: 50% peat + 50% mineral soil; G3: 25% peat + 75% mineral soil) and the second factor was the dose of dolomite (D0: without lime dolomite; D1: 3 ton ha^{-1} and D2: 4 ton ha^{-1}). The results showed that the response of biomass dry-weight to a mixture of peat with mineral soil was influenced by the dose of dolomite, but there was no interaction on other variables. Treatment of a mixture of peat 100% alone was capable of generating the highest number of leaf, biomass fresh- and dry-weight. Bogor groundnut plants showed the same response to the dose variation of dolomite lime.

INTRODUCTION

Bambara groundnut or Bogor groundnut is one of the high nutritious alternative food crops. Minka and Brunetiau (2000) stated that per hundred grams of Bogor groundnuts contain 370 calories of energy, 16 grams of protein, 6 grams of fat, 85 mg of potassium (K), 264 mg of phosphorus (P), 42 mg of iron, and 0.8 mg vitamin B1. The demand for nuts (legumes) will continue to increase as the population increases. The World Bank estimates that the population of Indonesia in 2025 reaches 275 million people with food demand, especially rice reaching 65.214 tons of dry milled grain. To meet current and future food needs, both direct food and the food industry needs a program of food diversification, that is by utilizing alternative food (Rukmana and Oesman, 2000). Bogor groundnut is one of the alternative food crops that can be cultivated in Indonesia. Bogor groundnuts have a wide adaptability to various types of soil, including peat soil.

The total area of peatland in Bengkulu Province reaches 30,000 ha and has the potential to be developed (Saleh, 1999). Peat soils were rich in organic soil, but because peat soil is acidic soil (low pH), so the organic matter in peat soils cannot decompose and is well available to plants. Barhanudin and Nurmansyah (2010) stated that the development of peanut crops on peat soil still faces many obstacles, such as high degree of acidity (pH), low cation exchange capacity (CEC) and not best structured and does not form soil chunks.

Mineral soil is a soil that contains few types of

ISSN: 1410-3354

Cited this as: Pamungkas, I., E. Turmudi, and K. S. Hindarto. 2017. Growth and yield response of Bambara groundnuts (*Vigna subterrane a* L) to the mixed of peat and mineral soil with several dosage of dolomite. Akta Agrosia 20(2):54-60.

minerals needed for plant fertility (Darmawijaya, 1990). Mineral soil contained in Bengkulu City is dominated by the Yellow-red Podzolic (YRP). Yellow-red podzolic soil in the soil taxonomy including ultisol is naturally low productivity and less supportive to optimal growth of plants. The characteristics of this soil include low pH, high Aluminimum (Al) solubility, Manganese (Mn), Ferrum (Fe) or relatively high iron, and low available of Calcium (Ca), Magnesium (Mg), Molybdenum (Mo), Nitrogen (N), Phospor (P) and Sulfur (S) or sulfur, because the decomposition process is very slow (Prasetyo *et al.*, 2005). However, with good management, this land can be more productive. For that purpose, there is a need for a technology capable of making peat soil and YRP soil become an appropriate planting medium for Bogor groundnut plants.

The technology used is mixing of peat soil with mineral soil. This is based on the notion that peat soils were more porous than mineral soils, so the air space in peat soils is larger and the movement of water in the soil is faster. Mixing of peat and minerals makes the air space in the soil suitable for commodities producing in the soil. Carrot, potato, sweet potato, peanut and peanuts Bogor plants require porous soil with water movement in relatively moderate soil. This can be seen from the volume weight (VM) of peat that ranges from 0.4 to 0.6 which assumes a larger air space, whereas mineral soils range from 1.2-1.4, which assumes a smaller air space (Agus *et al*., 2006). A combination of peat soil and mineral soil is carried out to obtain BVs ranging from 0.8 to 0.9 for proper pore space in the soil, but inland soil movement is available for plants.

The result of the research of Redjeki (2003) showed that Bogor groundnut plant produces 0.77 ton ha^{-1} dry seed without fertilization. Madamba (1995) also stated that the Bogor groundnut on marginal growth environment condition in Zimbabwe produced 0.3 ton ha^{-1}, but in optimal growing environment will produce 4 ton ha^{-1} dry beans. This shows that the Bogor groundnut plant is indeed able to adapt to various types of soil and still produce in poorly growing environment conditions.

The development of peat soil as agricultural land using peat soil mixing technology with mineral soil is still not enough to raise the acidic soil pH. The key to successful crop cultivation in peat soils or using peat soil media is to increase pH, nutrient availability for plants and reduce the activity of toxic monomeric organic acids. The usual ways of repairing problematic soils include liming (fertilization of dolomite), fertilization and giving of polyvalent cations, such as copper (Cu) and zinc (Zn) (Lestari, et al, 2010).

Dolomite lime addition is also needed to increase the availability of calcium nutrients as well as to increase the saturation of bases, since the saturation of base peat soil is relatively low, especially bases, such as potassium (K), Ca, and Mg (Barchia, 2006) . The dolomite lime dosage of 1 ton ha-1 in soybean was able to increase the number of pods and dry beans as much as 23.19 plant $pods^{-1}$ and 0.39 tons ha^{-1} compared to those without dolomite lime (Anwar and Alwi, 2000).

Soepardi (2001) stated that it is not difficult to fix the acidic soil to be better, safer and ready for profitable and sustainable farming. This constraint can be prevented by applying liming technology followed by care and selection of suitable plant species under these conditions. The mixture of peat and mineral soil appears to have a positive effect on the utilization of peat soil in Bengkulu as agricultural land.

The objective of this research is to obtain comparison of mixture of peat soil and mineral soil to dolomite lime dosage which is best for growth and yield of Bogor groundnut plant.

MATERIALS AND METHOD

This research was conducted on May to September 2015 held at Greenhouse Faculty of Agriculture University of Bengkulu, Kandang Limun Village, Muara Bangkahulu Subdistrict, Bengkulu City. The materials used in this research consisted of Bogor groundnut seed, peat soil, mineral soil, dolomite lime, NPK fertilizer. The tools used consist of hoes, machetes, gauges, tarpaulins, polybags 40 x 60 cm, plastic bags, screen wire, bucket, watering can, scales, analytical scales, trays, plastics, pens, markers, notebooks, and ruler.

This research was conducted in the form of pot experiment using a factorial experiment arranged in a Completely Randomized Design (CRD) with two factors. The first factor was a mixture of peat soil and mineral soil consisting of 4 (four) levels, namely 100% peat soil + 0% mineral soil, 75% peat soil + 25% mineral soil, 50% peat soil + 50% mineral soil, or 25% of peat soil + 75% mineral soil. The second factor was dolomite lime dose consisting of 3 (three) levels, namely without dolomite lime (0 kg ha^{-1}), 3 ton ha^{-1}, or 4 ton ha^{-1}. From these two treatment factors, 12 treatment combinations were repeated three times, so there were 36 experimental units with 2 plants $unit^{-1}$.

Preparation of planting media begins by taking peat soil and mineral soil using hoes, buckets and 'arko'. The peat soil used was the land contained in front of the Laboratory of Agricultural Science Technology, Faculty of Agriculture, University of Bengkulu. Mineral land used was Yellow-red Podzolic located around the environment of Bengkulu University. The total mixture of peat and mineral soil is 10 kg of $polybag^{-1}$ with the ratio of: 10 kg of peat + 0 kg of minerals; 7.5 kg of peat + 2.5 kg of mineral; 5 kg of peat + 5 kg of mineral; 2.5 kg peat + 7.5 kg minerals.

Analysis of soil moisture was done by first cleaning the peat soil and mineral soil from root pieces, twigs and dried leaves, then dried to reduce the water content, then analyzed in Soil Science Laboratory to obtain 10 kg of soil polybag-1 without moisture content . The analyzed soil sample was taken as much as ± 50 gram, then put into the

weighed plate, after which weighing the soil wet without the cup. The sample was heated in an oven at 110^0C for 24 hours and weighed dry oven dry weight without a saucer. The soil was then fed into polybags according to the percentage of mixture with the specified mineral soil of 10 kg of polybag-1 soil.

The volume weight analysis was performed after the peat soil and mineral soil were mixed in the polybags according to the criteria, i.e. compressing the soil by pressing and watering for one week in order to determine dose of dolomite and base fertilizer on four soil mixtures (G0, G1, G2 and G3). Furthermore, the soil was taken using a ring of soil samples and weighed in weight, then the soil was washed at 110^0C for 24 hours and weighed.

The dolomite lime used in this study consists of 3 (three) doses, namely (1) D0: without dolomite lime (0 ton ha^{-1}), (2) D1: 3 ton ha^{-1} and (3) D2: 4 ton ha^{-1}. Before use, dolomite lime was weighed using a digital scale to determine the dose of each treatment. Dolomite was put into polybags then mixed evenly with the soil. Lime dolomite was applied after mixing peat and minerals i.e. one week before planting.

The fundamental fertilizer used was NPK fertilizer which is given according to recommended dosage for Bogor groundnuts and various other legumes with the same amount of 300 kg ha^{-1}. NPK fertilizer sown and mixed well into the polybag then watered with water. NPK fertilizer is given one week before planting. Planting was done by sowing the seeds of Bogor groundnut first on the nursery media in order to obtain a uniform seed and to anticipate the seeds that do not grow. Seedlings were planted after 1 week on planting medium in the polybag with spacing of 60 cm x 30 cm.

Plant maintenance activities include irrigation, weeding and control of plant disease organisms. Watering was done in the morning and evening to keep the soil moisture by splashing water into polybags. Weeding was done by directly removing weed growing around and inside the polybags. Pest control was done manually by capturing (destroying) invading pests.

Harvesting was done when the plant was 120 days old and some parts of the leaves begin yellowing. Harvesting was done by removing the Bogor groundnut plant from the planting medium. To facilitate the removal and reduce the risk of pods left behind in the soil, the planting medium was soaked with enough water, then the chunks soil were broken down and the plants were slowly pulled out.

Observation was conducted on the number of leaf, obtained by counting the number of petiole on each clump every 2 weeks during the vegetative phase, then averaged to get the average value. The greenness of the leaf, measured at 8 weeks after planting by chlorophyll meter on the leaf taken randomly five times then averaged. Measurements were made by clamping the leaf of Bogor nuts on chlorophyll meters. The biomass fresh weight which was obtained by weighing fresh Bogor groundnuts (leaves, stem, roots) by Sartorius BP 6100 digital scale. Biomass dry weight was obtained by drying the whole plant with oven at 70 ^{0}C until reaching constant weight then weighed. The number of pods (pods) were calculated at the end of the observation by counting the number of pods contained in every batch of Bogor pea plants. e. The weight of fresh and dry pods were obtained by weighing the Bogor groundnut pod using the Sartorius BP 6100 digital scale. Then the dry weight pod value was obtained by drying the pod using the oven at 70 ^{0}C until constant, then weighed again to know the dry weight. The seed weight was obtained by weighing the Bogor groundnut per hill after being peeled from the pod using. Weight per 100 dried seeds was obtained by weighing the beans of Bogor groundnuts as much as 100 seeds using the Sartorius BP 6100 digital scale.

The observed data were then analyzed by analysis of variance (ANOVA) with F test at α=5% with the mathematical model of $Y_{ijk} = \mu + \alpha_i + \beta_j + (\alpha\beta)_{ij} + \varepsilon_{ijk}$. Data of variance analysis which have real effect, followed Main comparison by Duncan Multiple Range Test (DMRT) test at 5% level was performed on the data when analysis of variance showed significant difference.

RESULTS AND DISCUSSION

This research uses mixed plant media between peat soil and mineral soil. The peat soil used in this study belongs to the relatively nutrient rich peat category. Mineral soils using the Yellow-red Podzolic type which were acidic and relatively low fertility, due to the poor of macro nutrients needed for optimal growth of plants.

Soil analysis before treatment, i.e. peat soil with 40% soil moisture, volume weight 0.62 gram/cm^3, then nitrogen (N) 2.17% (very high), phosphor (P) 11.10 ppm (height); potassium (K) 0.44 cmol (+) kg $^{-1}$ (medium); Carbon (C) 31.90% (very high criterion) and pH 3.6 (very acid). While for mineral soil, that were soil moisture (14%), volume weight 0,94 gram/ cm^3, nitrogen (N) 0,10% (low); phospor (P) 9.72 ppm (medium); potassium (K) 0.26 cmol (+) kg^{-1} (low); carbon (C) 5.74% (very high) and pH 4.8 (acidic).

Soil analysis results after comparative treatment of soil mixture to weight of volume and soil analysis result after treatment of comparison of soil mixture with dolomite lime dose to soil pH was presented in Table 1. Weight of volume, the higher the percentage of peat soils the lower the weight value of the volume. Conversely, the higher the percentage of mineral soils the higher the weight value of the volume. The soil pH value indicates that the higher dose of dolomite lime gives an increase to soil pH value in all comparative soil mixtures (Table 1).

The growth phase of the Bogor groundnut plant appears to grow uniformly, but it indicated by pest attack, characterized by the presence of holes in the leaves and broken leaf stalks. Pests that attack Bogor groundnut plants were grasshoppers, caterpillars and ants. Locust and leaf caterpillars were mechanically controlled by being captured, destroyed and thrown away directly. The ant pest was chemically controlled by spraying insecticide with 50 gram L^{-1} active ingredient of *fipronil* in the affected clump,

after controlling the existence of grasshopper pest, caterpillar and ants were reduced. During the vegetative and generative phases there was no attack of the disease.

The pattern of change in growth of Bogor nuts plant based on observation time was performed every 2 weeks during the vegetative phase showed improvement (Figure 1). The number of leaf increased with the age of Bogor groundnut plant. Data obtained from growth of Bogor groundnut leaf stalk the highest average occurred in treatment of mixture of 75% peat soil + 25% mineral soil without lime dolomite (134 leaves). The lowest average growth of leaf stalk occurred in the treatment (G1D2), i.e. 75% mixture of peat soil + 25% mineral soil with dolomite dose 4 ton ha^{-1} of 90 stalks. This result occurs because the type of peat used in this study was relatively nutrient-rich peat soil, as seen from the analysis of nutrients N (very high criteria), P (high criterion), K (medium criterion), and C-organic (very high criterion), so with 75% mixture of peat soil and 25% mineral soil without dolomite giving able to produce Bogor groundnut plant with the highest number of leaf stalk.

Another variable observed on the growth of Bogor groundnut plant was the greenish leaf score. Greenish leaves were an indicator of plant fertility. This variable was closely related to the level of chlorophyll present in plant leaves. The greener the leaf color, the better the growth of the plant. The average of greenish score was presented in Figure 2. The highest score occurred in 100% peat soil treatment (52.63). The lowest average green leaf score score occurred in 100% peat soil treatment with 4 ton ha^{-1} dose of dolomite lime (G0D2) of 46.98.

This result was of course influenced by the nitrogen (N) element present in the peat soil, the N element has an effect on the formation of green leaf on the plant. The result of soil analysis conducted at Soil Science Laboratory of University of Bengkulu showed nutrient Nitrogen (N) 2.17% with very high criterion, so that 100% peat treatment able to produce the highest leaf green on the green leaf score variable. In addition to other factors that support peat soil was the use of polybags, planting media with aeration and good air circulation will affect the acidity of the soil, the content of nutrients in 100% peat soil can be available and well absorbed by plants without having to provide soil enhancers such as soil minerals and dolomite lime.

The results of analysis of variance on growth and yield of Bogor groundnut plants treated with mixture of peat soil and mineral soil with dolomite dose to the observed variables were shown in Table 2. From ANOVA result showed interaction between mixture of peat soil and mineral soil with dose of dolomite on dry weight variable, but there was no interaction on other variable. The ratios of peat soil mixture with mineral soil was significantly different on the number of leaf, the fresh weight of biomass, and the dry weight of the fruits, but not significantly different in the other variables. The dolomite dose treatment was not significantly different for all of observed variables.

In 100% peat soils and 50% peat soil + 50% mineral soil, dolomite lime dose was not significantly different on biomass dry-weight. However, in the mixture of peat soil 75% + mineral soil 25%, dolomite dose produced biomass dry-weight lower than 100% peat soil did. The lowest dose of dolomite i.e. 0 kg ha^{-1} yielded the highest value compared to other dolomite doses, whereas in the peat mixture of 25% + mineral soil 75%, the higher dose of dolomite i.e. 4 ton ha^{-1} actually yielded the highest value compared to other dolomite doses. Generally, in 100% peat although it was not significantly different, the dose of 3 ton ha^{-1} yielded the highest value of all treatments (Table3).

The results were not significantly different in 100% peat soil and 50% peat soil + 50% mineral soil suspected dolomite dose 3 ton ha^{-1} and 4 ton ha^{-1} were not sufficient as soil enhancer for Bogor groundnut plant, thereby dolomite lime dosage treatment were not significantly different in 100% peat treatment and 50% peat + 50% minerals.

In a mix of 75% peat and 25% minerals, the lower dose of dolomite, 0 kg ha-1, yielded the highest value compared to other dolomite doses, whereas soil analysis after treatment of soil pH indicates 75% peat + 25% minerals with dolomite dose 0 kg ha^{-1} yields only a soil pH of 5.0 in acidic category (Table 1). This was because the ratio of peat in the mixture was still high and the results of the soil analysis showed that the element of N, P, K and C-organic were very high, high, medium, and very high criterion, respectively. The element content nutrient in planting medium with mixture of 75%, therefore, high enough to fulfil the requirement of Bogor groundnut plant. In addition, the use of pot systems that produce aeration and good air circulation allegedly affect the value of soil pH on planting media. So in 75% peat, although only with a dose of 0 ton ha^{-1} could produce the

Table 1. Soil analysis after comparative treatment of soil mixture and dolomite lime application to soil pH

Treatment	volume weight (g/cm^3)	Dose of dolomit		
		0 ton ha^{-1}	3 ton ha^{-1}	4 ton ha^{-1}
		soil pH		
Peat 100%+mineral 0%	0.54	3.6	5.6	6.5
Peat 75%+mineral 25%	0.66	5.0	6.3	6.8
Peat 50%+mineral 50%	0.83	5.3	6.4	6.9
Peat 25%+mineral 75%	0.87	5.1	6.2	6.7

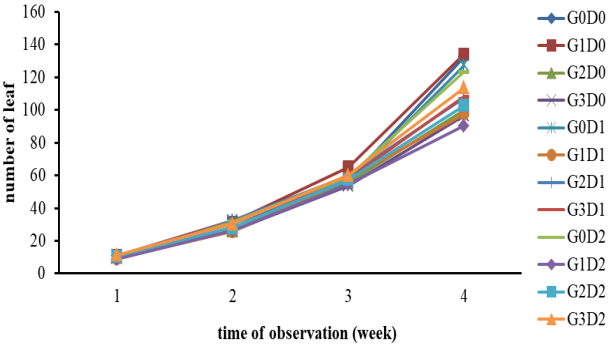

Figure 1 Graph of number of leaf of Bogor groundnut

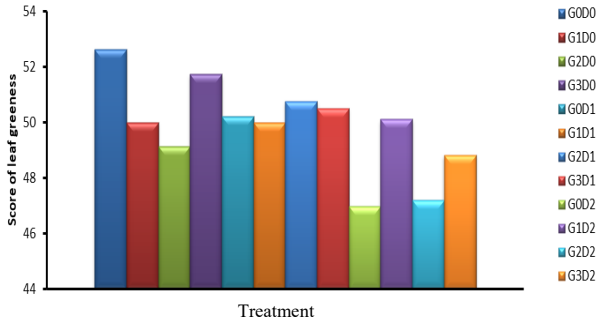

Figure 2 Histogram of score of leaf greenness of Bogor groundnut

highest value of biomass dry-weight.

In the mix ratio of peat 25% + mineral 75%, the higher dose of dolomite i.e. 4 ton ha^{-1} produced the highest value among dolomite doses. This was due to the most suitable soil pH of the mix for plant growth. The result of analysis after treatment showed soil pH on peat mixture 25% + mineral 75% with dolomite dose 4 ton ha^{-1} yield pH 6.7 with neutral criterion see (Table 1) so dolomite dose 4 ton ha^{-1} able to yield highest value although only 25% of the peat mixture.

The result of Duncan Multiple Range Test (DMRT) on the effect of mixture of peat soil and mineral soils was significantly different for the number of leaf and biomass fresh-weight (Table 4). The average number of leaf in the 100% peat soil treatment resulted in the highest number of leaf among soil mixtures, 127.67 leaves. While for fresh weight variable, although it was not significantly different from peat soil 50% + mineral soil 50%, 100% peat soil medium yielded the highest value among soil mixture, 236.13 gram.

The mixture of peat 75% + minerals 25%, peat 50% + minerals 50% and peat 25% + minerals 75% were were not significantly different with respect to the number of leaf. This was because the mixture of mineral soil with the percentage of 25%, 50% and 75% turned to reduce the fertility level of peat soil, because the mineral soil used was yellow-red podzolic soil. Mineral soil was a soil that contains few types of minerals needed for plant fertility (Darmawijaya, 1990). As one type of ultisol soil, yellow red podzolic soil has characteristics of (1) low soil organic content (<9%), (2) low nitrogen (N), phospor (P), potassium (K) and calcium (Ca) content, (3) moderate to slow rate of permeability (infiltration and percolation), (4) poor chemical and physical properties due to low aggregate (soil chunk) stability and (5) low to moderate soil productivity (Prasetyo, et al., 2005). Soil analysis also showed the availability of nitrogen (N) 0.10 (low criterion); phospor (P) 9.72 (medium criterion); potassium (K) 0.26 (low criterion). With soil characteristics that did not support optimal plant growth, the mineral soil mixture applied to peat soil was not able to provide nutrient intake for Bogor groundnut plant.

Different results were found in 100% peat treatment, this was because the type of peatland used in this study was nutrient-rich peat soil. The availability of nutrients contained in peat soil was used to produce the largest number of leaf compared to other soil mixtures treatment. Especially for macro element nitrogen (N) was an element needed by plants in growth in the vegetative phase, namely the growth of branches, stems and leaves. Result of soil analysis conducted at Soil Science Laboratory of University of Bengkulu showed that element of N in peat soil that was 2.17% (very high criterion). Availability of N element was sufficient to provide nutrient intake for optimal growth of number of stem of Bogor groundnut plant.

The results of DMRT test in a single comparison of mixture of peat and mineral soil significantly affect the biomass fresh-weight of Bogor groundnut. The biomass includes the roots, stems, stems and leaves of Bogor nuts in freshly harvested condition. Fresh weight was closely related to the water content

Table 2. Summary of analysis of variance on growth and yield of Bogor groundnuts

No	Variables	calculated F		
		mix of peat and mineral soil	Dose of dolomit	Interaction
1.	Number of leaf	4.33 *	0.81 ns	2.26 ns
2.	Biomass fresh-weight	3.78 *	0.71 ns	2.19 ns
3.	Biomass dry-weight	5.93 *	0.35 ns	2.59 *
4.	Number of pod	2.02 ns	0.54 ns	1.10 ns
5.	Pod fresh-weight	1.67 ns	0.43 ns	1.59 ns
6.	Pod dry-weight	1.35 ns	0.002 ns	1.12 ns
7.	Bean weight	1.58 ns	0.19 ns	1.44 ns
8.	Weight of 100 seeds	0.1 ns	0.03 ns	1.73 ns
9.	Greenness score	0.28 ns	2.19 ns	0.56 ns

Note: *, ns: significant, not significant difference, respectively, based on F test at a=5%

Table 3. Response of dry weight in a mixture of peat soil and mineral soil to dolomite dose.

Medium mixture treatment	The dose of dolomite		
	0 ton ha^{-1}	3 ton ha^{-1}	4 ton ha^{-1}
Peat 100% + mineral 0%	62.32 a A	78.50 a A	70.55 a A
Peat 75% + mineral 25%	63.03 a A	41.25 b B	51.13 b AB
Peat 50% + mineral 50%	56.08 ab A	58.28 ab A	52.15 b A
Gambut 25% + mineral 75%	41.40 b B	51.02 ab AB	63.78 ab A

Note: Numbers followed by the same letter in the same column (lowercase) and on the same line (uppercase), were not significantly different in the DMRT at a=5%

Table 4. Effect of peat mixed soil and mineral soil treatment on the number of leaf and biomass fresh-weight

Treatment	Number of leaf	Biomass fresh-weight
Peat 100% + mineral 0%	127.67 a	236.13 a
Peat 75% + mineral 25%	107.33 b	183.31 b
Peat 50% + mineral 50%	103.28 b	196.56 ab
Peat t 25% + mineral 75%	106.17 b	175.84 b

Note: Numbers followed by the same letter in the same column were not significantly different based on DMRT at α=5%

contained in the biomass. Macro element affects the existing content in fresh plant. Based on the results of soil analysis was known that the peat soil used was indeed rich in nutrients, especially elements of N, P, K and C-organic. All of these elements greatly affected the number of leaf and weight of Bogor groundnut plants, so that 100% peat was capable of producing the highest value of the biomass fresh-weight.

The effect of single factor of dolomite dose on growth and yield of Bogor groundnut plant was not significantly different in all observation variables (Table 5). Dolomite dose treatment had no significant effect on all observed variables. It was suspected that dolomite lime dose given 3 ton ha^{-1} and 4 ton ha^{-1} was insufficient for Bogor groundnut plant. According to the results of the study of Redjeki (2003) Bogor groundnut plant capable of producing dry beans as much as 0.77 tons of ha^{-1} without fertilization and Madamba (1995) also stated that bambara groundnuts, in marginal condition of Zimbabwe, produced 0.3 tons ha-1 dry bean. It was likely that the Bogor groundnut plant was indeed able to adapt to various soil types and still produced in poorly growing environment, therefore dolomite lime dose 3 ton ha^{-1} and 4 ton ha^{-1} have no significant effect on the growth and yield of Bogor groundnuts. In addition, the use of planting media with pot systems produced aeration and good air circulation in polybags. Aeration and good air circulation affects the level of acidity in the planting medium. So that the planting media with dolomite of 0 ton ha^{-1} was not significantly difference from that of 3 or 4 ton ha^{-1}.

CONCLUSIONS

There was a growth and yield of Bogor groundnuts response represented by dry weight to the mixture of peat soil with mineral soil influenced by dolomite dose, but there was no interaction on other variables. The 100% peat treatment was better treatment compared to other treatments because it produced a greater number of leaf, the heaviest biomass fresh and dry weight. Bogor groundnuts showed similar response to dolomite lime dose variation.

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Table 5. Effect of dolomite dose on yield of Bogor groundnuts

Dolomite dose (ton ha^{-1})	Number of pods	Pod Fresh-Weight (g)	Pod dry-weight (g)	Seed weight (g)	weight of 100 seeds (g)	Greenness leaf score
0	37,54	121,85	55,71	34,15	88,66	50,88
3	38,21	121,88	57,26	34,52	87,16	50,37
4	42,71	136,66	59,40	37,34	88,25	48,29

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